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Technical Skills Required in Production and Processing of *Moringa olifera* Leaves into Powder for Improving Health Status of Rural Families in Enugu State of Nigeria

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Abstract

The study identified the technical skills required in production and processing of *Moringa oleifera* leaves into powder. Four research questions and four null hypotheses guided the study. A structured questionnaire of 76 items was used to elicit response from 40 respondents comprising 30 Crop Science Lecturers and 10 Agricultural Education Lecturers. The instrument was face validated by three experts and Cronbach alpha reliability test which yielded a coefficient of 0.79 was used to establish the internal consistency. The data collected were analysed using Mean to answer the research questions and z-test statistic to test the null hypotheses at 0.05 level of significance. The findings of the study revealed the technical skills required site selection, climatic requirements and land preparation, planting and post planting of Moringa, harvesting of Moringa leaves and processing of Moringa leaves into powder. Based on the findings, it was recommended among others that the identified technical skills should be applied by the rural families for the production of *Moringa oleifera* leaves for their benefit.

Key Words: Production, Families, Processing, Moringa leaves, Skills, Health status.

Introduction

Moringa oleifera is a tree crop known throughout the tropics. It is a versatile plant that can grow as a perennial vegetable under intensive cultivation. Moringa trees can grow up to 4m(15ft) a year reaching a height of 15m(50ft) and can live for approximately 20 years(Doerr and Cameron,2005). It is known for human food, livestock forage, medicine, dye and water purification. Palada and Chang (2003) stated that *Moringa Oleifera* leaves have more beta-carotene than carrots, more protein than peas, more vitamin C than oranges, more calcium than milk, more potassium than bananas, and more iron than spinach.

Almost every part of Moringa plant has nutritional values. According to Sauveur and Broin (2010) *Moringa oleifera* leaves are eaten as greens, boiled, fried, in soup or for seasoning. Dried leave powder can be added to any kind of meal as a nutritional supplement. The seed can be roasted and eaten like a peanut. Leaves and young branches are used as fodder. Radovich (2011) noted that press cake left after extracting seed oil is utilized as a fertilizer and as a flocculent for water clarification. The author stated that seed cake contains positively charged compounds that are effective in settling suspended solids out of water(flocculation) because most particles have a net negative surface charge while suspended in aqueous solution. The oil is edible and it is becoming popular in the cosmetic industry (Sauveur and Broin).

According to Newton (2006), Moringa grows best between 25 to 35^{o}c, but will survive up to 48^{o}c. The drought tolerant tree grows well in areas receiving annual rainfall range from 250 to 1500mm. The author stated that *Moringa oleifera* prefers a well drained sandy loam or loamy soils and a ph range between 5.0 to 9.0. These conditions signify that Moringa production is favoured in Enugu State.

Moringa oleifera production involves the cultivation of the plant to get its products such as leaves, seeds, pods, roots among others. Production according to Oji(2002) is the process whereby some goods and services called inputs are transformed into other goods and services called output or product. The author stated that many types of activities are involved in the production process. Moringa production therefore requires a fertile land, seeds and seedlings, manure, herbicides, labour, technical skills of the management, among others as the inputs. The products obtained from Moringa production are processed to increase the value of the products. Processing according to Pearson in Ukonze and Ifeanyieze (2012) involves making of food, materials or goods ready to be used or sold, for example through preservation or improving them in some way. Therefore, processing of Moringa leaves involves the transformation of the leaves into powder. In processing of Moringa leaves, Sauveur and Broin (2010) stated that the leaflets should be stripped out of the petiole and wash thoroughly with clean portable water to remove dirt. Though Moringa leaves can be eaten fresh, Moringa powder can stay for a long period of time without losing its efficacy provided it is stored dry and under normal temperature. This was supported by Doerr and Cameron(2005) who noted that Moringa leaf powder should be stored in air-tight containers protected from heat, humidity and light. The authors stated that if the powder is not adequately dried or stored, it could encourage the growth of moulds or mildews which could cause problems ranging from unpleasant to harmful. If stored powder is exposed to heat or light, it will degrade and the nutrient content will be reduced. Hence, one needs to acquire the technical skills in Moringa leaf production and processing before venturing into it.

Technical skills are the manipulative skill required to do something correctly. Hippel (1988) stated that technical skills are the accumulated practical expertise that allows one to do something smoothly and efficiently. Skills according to the Executive Committee and Council of Presidents of Melbourne(1974) is the knowledge and experience of a technical, commercial, administrative, financial or other nature, which is practically applicable in the operation of an enterprise or the practice of a profession. Technical skills in *Moringa oleifera* production and processing is therefore the practical knowledge inherent in the production and processing of the plant and its products which one requires to acquire so that he can produce and process it efficiently. These include the practical skills required in soil selection, climatic requirement and land preparation, planting, post planting, harvesting and processing of *Moringa oleifera* leaves into powder. These practical skills are possessed by the Agricultural Education Lecturers and Crop Science Lecturers of Universities. Agricultural Education Lecturers of Universities are the teachers that implement agricultural education curriculum in Universities. Osinem (2008) stated that a Lecturer is any teacher that is trained in the knowledge and skills of the subject matter as well as in the methodology of imparting the acquired knowledge and skills to the students in the university. Agricultural Education Lecturers and Crop Science Lecturers are therefore the teachers trained in the knowledge and skills of crop production and processing including *Moringa oleifera*, as well as on the methods of imparting the knowledge and skills to the students. Moringa provides cheap source of medication to the rural families.

Rural families are the fathers, mothers and their children living in non-urban communities. These families are mainly farmers that operate at subsistence level. As a result, they live below the poverty level and are subject to a lot of health problems. Mungall in Wood and East(2004) stated that there are a number of illnesses that are particular to rural populations and are more likely to be treated only by rural practice. The authors noted that rural communities generally face poor access to healthcare services. Redovich(2011) reported that *Moringa oleifera* leaf powder is noted for its medicinal value. The author stated that the most common direct medicinal use of the plant is as poultice of the leaves and can be applied directly to wounds as anti-microbial and to promote healing. The anti-fungal and anti-bacterial properties of Moringa extracts are well known and are thought to be derived at least in part from 4-(α-L-rhamnopy-ranosyloxy) benzyl isothiocyanate. The author stated that work at Johns Hopkins University is supporting traditional use of Moringa to treat cancer.

Allison(2005) identified low income or poverty as one of the most significant barrier in assessing healthcare among rural families. Some rural families do not attend hospital for proper diagnosis and treatment when they are sick only because they do not have the money to pay for the hospital bills. This is one of

the reasons Amagloh and Benang(2009) reported that such families resort to sources such as dams, dug outs, streams, rivers and lakes. The authors noted that water from these sources is usually turbid and contaminated with micro-organisms that may cause many diseases including guinea worm and bilharzias. Hence, the need to identify the technical skills required in production and processing of *Moringa oleifera* leaves into powder for improving health among rural families in Enugu State.

Purpose of the Study

The general purpose of the study was to identify the technical skills required in production and processing *Moringa oleifera* of *Moringa oleifera* leaves into powder for improving the health status among rural families in Enugu State of Nigeria. Specifically, the study determined the technical skills in:

1. soil selection, climatic requirements and land preparation of *Moringa oleifera*.
2. planting and post planting of *Moringa olifera*.
3. harvesting of *Moringa oleifera* leaves.
4. processing of *Moringa oleifera* leaves into powder.

Research Questions

The following research questions guided the study.

What are the technical skills required in:

1. soil selection, climatic requirements and land preparation of *Moringa oleifera*?
2. planting and post planting of *Moringa oleifera*?
3. harvesting of *Moringa oleifera* leaves?
4. processing of *Moringa oleifera* leaves into powder?

Hypotheses

The following hypotheses formed the basis of the study and were tested at 0.05 level of significance.

There is no significant difference in the Mean responses of Crop Science Lecturers and Agricultural Education Lecturers on the technical skills required in:

HO_1: soil selection, climatic requirements and land preparation of *Moringa oleifera*.

HO_2: planting and post planting of *Moringa oleifera*.

HO_3: harvesting of *Moringa oleifera* leaves.

HO_4: processing of *Moringa oleifera* leaves into powder.

Methodology

Design and Area of the Study

The study adopted a survey research design. The study was conducted in Enugu State. Enugu state comprised of seventeen Local Government Areas (LGAs). Enugu State has suitable environmental conditions for the growth of *Moringa oleifera*.

Population for the Study

The population for the study was 40 which made up of 30 Crop Science Lecturers and 10 Agricultural Education Lecturers both from the University of Nigeria, Nsukka. The entire population was studied since it was manageable. The choice of Lecturers was that they were believed to possess enough skills

in Moringa production and processing and therefore in a good position to respond to the instrument.

Instrument for Data Collection

A structured questionnaire consisting of 76 items was used to elicit responses from the respondents. The instrument was face validated by three experts, two from Crop Science Department and one from Agricultural Education Department, all from Ebonyi State University. Cronbach alpha statistical tool was used to determine the internal consistency of the instrument and yielded a co-efficient of 0.79.

Data Collection and Analysis Techniques

The questionnaire was administered by the researchers and the whole instruments administered were retrieved and analyzed. Mean was used to answer the research questions. Nominal values were assigned to different scaling items of the questionnaire and the corresponding Mean Scores were interpreted using real limit of numbers. Any item that had a Mean Score of 3.50 and above was regarded as Highly Required, 2.50 to 3.49 as Moderately Required, 1.50 to 2.49 as Slightly Required and 0.50 to 1.49 as Not Required. Similarly, z-test statistic was used for testing the null hypotheses at probability of 0.05 level of significance. The null hypothesis was upheld for any item whose z-calculated was less than z-table of 1.96 at 0.05 level of significance, and otherwise the item was rejected.

Result

1. Soil Selection, Climatic Requirements and Land Preparation of *Moringa oleifera*.

Table 1: Mean Score and z-test Analysis of the Respondents on Technical Skills Required in Soil Selection, Climatic Requirements and Land Preparation of *Moringa oleifera*

S/N	Items	$\overline{X}_G$	Dec	Crop Science Lecturers $\overline{X}_1$	SD_1	Agric Education Lecturers $\overline{X}_2$	SD_2	z-cal	Rem
1	Select a well drained soil	3.02	MR	3.03	1.00	3.00	1.05	0.08	NS
2	Select a sandy loam or loamy soil	3.09	MR	2.97	1.10	3.20	1.03	-0.22	NS
3	Avoid clayey soil	3.29	MR	3.27	0.87	3.30	0.82	-0.10	NS
4	Select fertile soil rich in organic matter	3.39	MR	3.37	0.81	3.40	0.70	-0.38	NS
5	Avoid waterlogged soil	3.42	MR	3.43	0.97	3.40	0.97	0.09	NS
6	Select termite free soil	3.44	MR	3.47	0.82	3.40	0.84	0.23	NS
7	Select soil with a ph range between 5.0-9.0	3.52	HR	3.53	0.68	3.50	0.71	0.12	NS
8	Grows well in annual rainfall range of 250-1500mm	3.42	MR	3.53	0.78	3.30	1.06	0.63	NS

9	Requires a temperature range of about 25-35^{o}c	3.45	MR	3.50	0.82	3.40	0.70	0.37	NS
10	Clear the land of all vegetation	3.40	MR	3.60	0.67	3.20	1.03	1.15	NS
11	Plough the land by using plough	3.52	HR	3.53	0.82	3.50	0.53	0.14	NS
12	Harrow the land by using harrow	3.54	HR	3.57	0.77	3.50	0.71	0.26	NS
13	Make ridges or beds of 30cm high to facilitate drainage	3.49	MR	3.57	0.68	3.40	1.08	0.47	NS

Note: $\overline{X}$ G = Grand Mean; $\overline{X}_1$ = Mean 1; $\overline{X}$ 2 = Mean 2; SD_1 = Standard deviation 1; SD_2 = Standard Deviation 2; HR = Highly Required; MR = Moderately Required, NS = Not significant; z-cal = z-calculated; NI = Number of Crop Science Lecturers; N2 = Number Agricultural Education Lecturers, z-table = 1.96, N1 = 30, N2 = 10

The data presented in Table 1 above showed that items 7, 11 and 12 had their grand Means 3.50 and above. This implies that the items are highly required(HR) in soil selection, climatic requirements and land preparation of *Moringa oleifera*. The table also indicated that items 1, 2, 3, 4, 5, 6, 8, 9, 10,and 13 had their grand Means ranging from 3.02-3.49 and therefore moderately required(MR) in soil selection, climatic requirements and land preparation of *Moringa oleifera*. Similarly, the table revealed that all the items had their calculated z-values ranging from -0.10 to 1.15 which are less than the z-table value of 1.96 at 0.05 level of significance. This implies that there is no significant difference in the Mean responses of Crop Science Lecturers and Agricultural Education Lecturers on the technical skills required in soil selection, climatic requirements and land preparation of *Moringa oleifera.* Therefore, the null hypothesis(HO_1) of no significant difference was upheld.

2. Planting and Post Planting of *Moringa oleifera.*

Table 2: Mean Score and z-test Analysis of Crop Science Lecturers and Agricultural Education Lecturers on the Technical Skills Required in Planting and Post Planting of *Moringa oleifera*.

S/N	Items	$_G\overline{X}$	Dec	Crop Science Lecturers $\overline{X}_1$	Crop Science Lecturers SD_1	Agric Education Lecturers $\overline{X}_2$	Agric Education Lecturers SD_2	z-cal	Rem
1	Propagate by seeds, seedlings or stem cutting	3.32	MR	3.43	0.94	3.20	1.03	0.62	NS
2	Get seeds from reliable sources	3.40	MR	3.50	0.82	3.30	0.95	0.60	NS
3	Get good seeds that are viable, clean and disease free	3.54	HR	3.57	0.73	3.50	0.71	0.27	NS
4	Sow seeds at a maximum depth of 2cm	3.50	HR	3.60	0.72	3.40	0.97	0.60	NS

5	Plant 1 or 2 seeds per hole	3.64	HR	3.67	0.55	3.60	0.52	0.36	NS
6	Thin or supply when the plant is 30cm high	3.50	HR	3.60	0.67	3.40	0.84	0.68	NS
7	Pre-fill polyethylene bags or sack with damp loamy soil for nursery preparation	3.54	HR	3.67	0.55	3.40	1.07	0.77	NS
8	Sow at a depth of 2cm and 1 to 2 seeds per bag	3.55	HR	3.60	0.62	3.50	0.85	0.34	NS
9	Place the bags in a slightly shaded area	3.62	HR	3.63	0.61	3.60	0.70	0.12	NS
10	Make a small incision on the poly bags to serve as drains	3.58	HR	3.60	0.67	3.56	1.01	0.12	NS
11	Water the seedlings every 2 to 3 days depending on the dampness of the soil	3.54	HR	3.57	0.82	3.50	0.53	0.31	NS
12	Apply 10-12ml of water to each bag	3.57	HR	3.63	0.72	3.50	1.08	0.36	NS
13	Protect the young plant from grasshopper, locust, termite and ruminant	3.45	MR	3.50	0.78	3.40	0.97	0.39	NS
14	Transplant at the height of 30-40 cm	3.62	HR	3.53	0.63	3.70	0.95	-0.53	NS
15	Gently remove the polybag when transplanting	3.64	HR	3.57	0.57	3.70	0.67	-0.55	NS
16	Avoid damaging the roots of the plant	3.47	MR	3.53	0.57	3.40	0.97	0.40	NS
17	Use hard wood of 45-150cm long and 4-6cm diameter for stem cutting	3.55	HR	3.60	0.56	3.50	0.71	0.41	NS
18	Keep the prepared cuttings in shade for 3 days	3.62	HR	3.53	0.82	3.70	0.48	-0.80	NS
19	Plant one third of the length in the soil	3.59	HR	3.57	0.77	3.60	0.70	-0.11	NS
20	Transplant 2-3 months if prepared/planted in nursery	3.55	HR	3.60	0.77	3.50	1.08	0.27	NS
21	Irrigate newly transplanted seedlings	3.50	HR	3.60	0.81	3.40	1.26	0.47	NS
22	Irrigate regularly for the first 2 months in dry and arid climate	3.52	HR	3.53	0.78	3.50	0.97	0.09	NS
23	Apply farmyard or compost manure during land preparation	3.50	HR	3.60	0.72	3.40	0.70	0.78	NS
24	Remove weeds regularly by using hoe	3.64	HR	3.67	0.61	3.60	0.97	0.21	NS
25	Avoid cattle, sheep, pig and goat by fencing	3.62	HR	3.63	0.61	3.60	0.70	0.12	NS
26	Use neem seed preparation as foliar spray to control insects	3.55	HR	3.60	0.62	3.50	0.97	0.31	NS
27	Avoid pesticide that kill or inhibit the growth of beneficial organisms	3.52	HR	3.63	0.61	3.40	0.97	0.70	NS
28	Choose pesticide that targets the specific pest	3.45	HR	3.50	0.73	3.40	0.84	0.14	NS
29	Delay leaf harvesting when chemical pesticide is used	3.32	MR	3.43	0.77	3.20	1.03	0.65	NS

The data presented in Table 2 above revealed that items 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39 and 40 had their grand Means 3.50 and above. This shows that all the items are highly required in planting and post planting of *Moringa oleifera*. The table also revealed that

items 14, 15, 26, 29, 41 and 42 had their grand Means between 3.32 and 3.47. This implies that the items are moderately required in planting and post planting of Moringa. The table as well indicated that all the items had their calculated z-values ranging from -0.11 to 0.78 which are less than table z-value of 1.96 at 0.05 level of significance. This also implies that there was no significant difference between the Mean ratings of the respondents on the technical skills required in planting and post planting of *Moringa oleifera* and therefore, the null hypothesis(HO_2) of no significant difference was upheld

3. Harvesting of *Moringa oleifer* Leaves

Table 3: Mean Score and z-test Analysis of the Respondents on the Technical Skills Required in Harvesting of *Moringa olaifera* Leaves

S/N	Items	$\overline{X}_G$	Dec	Crop Science Lecturers $\overline{X}_1$	SD_1	Agric Education Lecturers $\overline{X}_2$	SD_2	z-cal	Rem
1	Harvest leaves manually with shears, sickle or sharp knife	3.35	MR	3.40	0.77	3.30	0.82	0.34	NS
2	Harvest when it reaches a height of 1.5 to 2.0m	3.44	MR	3.47	0.68	3.40	0.70	0.28	NS
3	Make first harvesting between 50-90 days	3.47	MR	3.53	0.78	3.40	1.07	0.35	NS
4	Harvest subsequently at 35-40 days interval	3.55	HR	3.60	0.62	3.50	0.97	0.31	NS
5	Cut the entire shoot 30cm-1m above the above the ground	3.54	HR	3.57	0.73	3.50	1.08	0.19	NS
6	Harvest the leaves early morning or late in the evening	3.50	HR	3.40	0.67	3.60	0.70	-0.25	NS
7	Keep the harvested leaves under shade to avoid wilting	3.37	MR	3.43	0.63	3.30	1.06	0.37	NS
8	Ensure that there is no dew on the leaves before harvest	3.47	MR	3.43	0.73	3.50	0.71	-0.27	NS
9	Maintain high level of hygiene during harvesting	3.45	MR	3.50	0.61	3.40	0.97	0.31	NS
10	Transport freshly harvested leaves as quickly as possible to the processing centre	3.62	HR	3.63	0.67	3.60	0.97	0.09	NS
11	Avoid packing the harvested leaves on heaps as it encourages deterioration	3.55	HR	3.60	0.72	3.50	0.97	0.30	NS

The data presented in Table 3 above indicated that items 46, 46, 48, 52 and 53 had their grand Means 3.50 and above. This signifies that those items are highly required in harvesting of Moringa leaves. The table also showed that items 43, 44, 45, 49, 50 and51 had their Means between 3.35 and 3.47 which implies that the items are moderately required in harvesting of *Moringa oleifera* leaves. Similarly, the table revealed that all the items had their z-calculated values

ranging from -0.25 to 0.37 which are lower than the z-table value of 1.96 at 0.05 level of significance. This as well implies that there was no significant difference in the Mean ratings of the respondents on the technical skills required in harvesting of *Moringa oleifera* leaves and therefore, the null hypothesis (HO_3) of no significant difference was upheld.

4. Processing of *Moringa oleifera* leaves into Powder

Table 4: Mean Scores and z-test Analysis of the Respondents on the Technical Skills Required in Processing of *Moringa oleifera* Leaves into Powder

z-table = 1.96 **N1 = 30** **N2 = 10**

S/N	Items	$G\overline{X}$	Dec	Crop Science Lecturers $\overline{X}_1$	SD_1	Agric Education Lecturers $\overline{X}_2$	SD_2	z-cal	Rem
1	Strip all the leaflets from the leaf petiole	3.29	ME	3.37	0.76	3.20	1.02	0.48	NS
2	Remove damaged or diseased leaves	3.35	MR	3.40	0.72	3.30	0.67	0.40	NS
3	Wash the leaves with clean water	3.42	MR	3.43	0.57	3.40	0.52	0.15	NS
4	Wash again in 1% saline solution for 3-5 minutes	3.44	MR	3.47	0.51	3.40	0.70	0.29	NS
5	Finally wash with clean water to remove the saline	3.40	MR	3.50	0.51	3.30	0.95	0.64	NS
6	Strain water from the leaves in bucket that have been perforated	3.49	MR	3.47	0.78	3.50	0.53	-0.14	NS
7	Spread leaves on tray made with mesh and leave to drain	3.45	MR	3.50	0.73	3.40	0.97	0.30	NS
8	Dry the leaves in a well ventilated room	3.59	HR	3.57	0.57	3.60	0.52	-0.15	NS
9	Use insect, rodent and dust proof room	3.52	HR	3.53	0.68	3.50	0.71	0.12	NS
10	Spread the leaflets thinly on mesh tied racks	3.55	HR	3.60	0.50	3.50	0.97	0.31	NS
11	improve air circulation by using ceiling fan	3.34	MR	3.37	0.81	3.30	0.82	0.23	NS
12	Turn the leaves over at least once with sterile groves	3.44	MR	3.47	0.57	3.40	0.70	0.29	NS
13	Use UV treated or opaque polyethylene when drying in a solar dryer	3.54	HR	3.47	0.63	3.60	0.70	-0.52	NS
14	Filter the air intake to keep out dust	3.37	MR	3.43	0.68	3.30	0.48	0.68	NS
15	Use Organza or Muslim cloth as a filter	3.55	HR	3.60	0.56	3.50	0.97	0.31	NS
16	Dry in the dryer for about 4 hours	3.62	HR	3.53	0.78	3.70	0.48	-0.82	NS

17	Dry at temperature between 35 to 55^{o}c	3.65	HR	3.60	0.62	3.70	0.67	-0.42	NS
18	Use electric or gas hot-air in mechanical drying	3.54	HR	3.57	0.68	3.50	0.97	0.21	NS
19	Keep on drying until moisture content is less 10%	3.62	HR	3.63	0.61	3.60	0.70	0.12	NS
20	Pound dry leaves in a mortar or mill with a kitchen blender	3.55	HR	3.60	0.72	3.50	0.71	0.38	NS
21	Mill in stainless steel harmer mill for a large scale production	3.54	HR	3.57	0.68	3.50	1.08	0.19	NS
22	Sieve the leaf powder with a sieve	3.49	MR	3.57	0.73	3.40	0.52	0.78	NS
23	Dry the leaf powder at 50^{o}c for 30 minutes	3.64	HR	3.67	0.66	3.60	0.97	0.21	NS

The data presented in Table 4 above indicated that items 61, 62, 63, 66, 68, 69, 70, 71, 72, 73, 74 and 76 had their grand Means 3.50 and above, which implies that those items are highly required in processing of Moringa leaves into powder. Similarly, the table showed that items 54, 55, 56, 57, 58, 59, 60, 64, 65, 67 and 75 had their grand Means between 3.29 and 3.49 which also signifies that the items are moderately required in processing of Moringa leaves into powder. The table also revealed that all the items had their calculated z-values less than z-table value of 1.96 at 0.05 level of significance which shows that there was no significant difference in the Mean responses of Crop Science Lecturers and Agricultural Education Lecturers on the technical skills required in processing of Moringa Leaves into powder. Therefore, the null hypothesis (HO_4) of no significant difference was upheld.

Discussion of the Findings

The result indicated that all the items such as selection of well drained soil, selection of sandy loam or loamy soil, avoidance of clay soil, selection of fertile soil, avoidance of waterlogged soil, selection of termite free soil, selection of soil with a ph between 5.0 and 9.0 among others are required in *Moringa oleifera* production. This findings were in consonance with Radovich(2011) who reported that *Moringa oleifera* leaves and pod production requires high average daily temperature of 25-35^{o}c, well distributed annual rainfall, high solar radiation and well drained soil. According to the author, growth slows significantly under temperatures below 20^{o}c, and it is relatively tolerant to drought and poor soil, responds well to irrigation and fertilization.

From the study, it was found in Table 2 that all the technical skills were required in planting and post planting of *Moringa oleifera*. These include: propagation by seeds, seedlings or stem cutting, obtain seeds from reliable sources, viable, clean and disease free seeds, among others. This was supported by Palada and Chang (2003) who reported that Moringa is planted either by direct seeding, transplanting or using hard stem cutting, sow one to two seeds per hole at a depth of 2cm for direct seeding. Two weeks after

germination, thin to the strongest seedling per stand. The author stated that pots or bags may be used to grow Moringa in nursery. Other technical skills identified include: irrigating newly transplanted seedlings, irrigating regularly for the first two months in dry and arid areas, applying farmyard or compost manure during land preparation, removing weeds regularly, avoiding cattle, sheep, goat and pigs by fencing, using neem seed preparation to as foliar spray to control insect, among others. This was in line with Sauveur and Broin(2010) who stated that weeding must be regularly done to avoid competition for nutrients, especially for nitrogen. Manual weeding with a hoe removes weeds and loosens the soil for good aeration. According to the author, it is advisable to irrigate regularly during the first three months after seeding for optimal growth. Irrigation is also necessary to produce leaves all the year round including dry seasons. Moringa can produce large quantities of leaves, but only if it receives enough organic supplements. Its leaves are rich in proteins and minerals which means that the soil needs to provide enough nitrogen and minerals to the plant. Instead of chemical fertilizer, farmyard manure or compost can provide the necessary nutrients as well as improve the soil structure (Sauveur and Broin(2010).

The findings of the study showed that harvesting leaves manually with shears, sickle or sharp knife, harvesting when it reaches a height of 1.5-2.0m, making first harvest between 60-90 days, harvesting subsequently at 35-40 days interval, cutting the entire shoot 35-40cm above the ground, harvesting leaves early in the morning or late in the evening, keeping the harvested leaves under shade, ensuring that there is no dew on the leaves before harvesting, maintaining high level of hygiene during harvesting, among others are required in harvesting or Moringa leaves. This was in agreement with Newton (2006) who noted that leaves from high density Moringa fields can be harvested after plants grow 1.5-2.0m, which usually takes at least 60-90 days in a well drained fertile soil. Harvest leaves by cutting the leaf stems manually with a sharp knife at 20-45cm above the ground. The author stated that harvesting in this manner will promote the development of new shoots. Subsequent harvesting can be done every 35-40 days. According to the author, Moringa plants should be harvested at a height where they are high enough so that they are not shaded by the companion crops if any.

From the study it was found that all the identified technical skills in the processing of Moringa leaf into powder are required. This was supported by Doerr and Cameron(2005) who stated that Moringa leaves should be dried in an area protected from light to prevent loss of vitamins and protected from dust. The drying process should be completed as quickly as possible to prevent the growth of moulds. If leaves mould or mildew they should be thrown away or used as compost. The author noted that if humidity of the air is high, leaves should be spread out in a thin layer and mixed frequently.

According to the authors, dehydrators, ovens, driers or fans may be used in cases of extreme humidity.

Conclusion

Moringa oleifera is extremely hardy plant known in Africa, Asia and Latin America. It grows in marginal soil, re-grow after being cut down and one of the few trees that produce fruits during the period of drought. All parts of the plant are beneficial to man including the root, leaves, bark, parts of the fruit and seeds. It is easy to cultivate and process the leaves into powder. Moringa leaf powder is rich in proteins, vitamins and minerals. It can be used to supplement the nutritional needs of the rural families. The anti-fungal and anti-bacterial properties of the plant make it useful to the rural families in taking care of their health problems.

Recommendations

Based on the findings of the study, it was therefore recommended that:

1. The rural families should apply the technical skills identified in Moringa production
   for the cultivation of the plant for their benefit.
2. Skill acquisition centres should integrate the identified technical skills into their curriculum for the training and retraining of youths.
3. National Commission for Colleges of Education (NCCE) should integrate the technical skills identified into the curriculum of Colleges of Education for the training of NCE students who after graduation employed to teach in lower and upper basic schools and therefore impart the knowledge to the students.

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Entrepreneurship Education in Clothing and Textiles Programmes of Tertiary Institutions in Rivers State

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Abstract

The aim of this study was to investigate the challenges of teaching and learning of entrepreneurship education in Clothing and Textiles in Tertiary Institutions in Rivers State. The study adopted a survey research design. The study was guided by three research questions. A sample of 400 students taking courses in clothing and textiles in tertiary institutions involved in the study, were randomly selected and used for the study. Data was collected through a questionnaire and analyzed using mean scores. The findings revealed 5 problems such as negative attitudes of students, inadequate qualified teachers, inadequate time/instructional materials and poor admission requirements. To reduce these problems, it is important that adequate qualified teachers, sufficient time and materials are employed in the teaching and learning of entrepreneurship education in Clothing and Textiles.

Keywords: Entrepreneurship, Clothing, Textile, Learning, Education, Instructional materials.

Introduction

Clothing is one of the basic needs of man, which influences an individual's health, wellbeing and status (Molokwu, 1990; Arubayi, 2003; Ukpore, 2006). Clothing and textiles education is a branch in Home Economics education that is concerned with the acquisition and development of practical skills, by the beneficiaries (Ezema, 2002 and Lemchi, 2001). Ossai (2001) noted that clothing and textiles is one of the courses offered in Nigerian tertiary institutions. One of the objectives of Nigerian education is to produce skilled persons who are able to play effective roles in National economic and technological growth and development (Lemchi, 2001). This was supported by Arubayi's (2003) view, who noted that

the aim of Clothing and Textiles is to help learners acquire knowledge, skills and techniques for meeting personal and societal clothing needs. The aim of Clothing and Textiles is to teach the learners how to strategically plan and use available resources in his/her environment to improve his/her home, family and societal clothing needs (Osisefo, 2004).

Clothing and Textiles as a skill-oriented course helps to equip individuals with saleable skills needed for self-reliance. Clothing and Textiles, according to Mberengwa (2004) provides students with apprenticeship opportunities in clothing, textiles, and fashion.

Entrepreneurship education seeks to provide students with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings. Entrepreneurship education equips people with the ability to seek investment opportunities. Through entrepreneurship education, success habits are imparted as the individuals develop entrepreneurial integrity. It ensures that skills, ideas, attitudes, etc are utilized to create employment for self and others.

Entrepreneurship is defined as the process of creating something different with value by devoting necessary time and assuming the accompanying financial psychic and social risks and reviewing the resulting rewards of most personal satisfaction (Lankford, 2004). Hence, Entrepreneurship Education is about learning self-reliance, creativity and taking risk. Entrepreneurship education is the continuous process of utilizing resources to produce new goods and services.

Ode (2006); Dabson and Malkim (2003) defined entrepreneur as a person who makes money by running a business especially when it involves taking financial risk. Entrepreneurship is the continuous process of combining resources to produce new goods and services Ode (2006); Dabson and Malkin (2003) further stated that an entrepreneur is a person who creates and manages a business undertaking, assuming the risk for the sake of profit. An entrepreneur should be self-confident; that is, he or she should believe in himself or herself, be self-reliant, innovative and creative, hardworking, be a goal setter and be able to take risks from financial investment.

In the context of this study, entrepreneurship implies the investment of one's resources in planning, organizing, implementing Clothing and Textiles education objectives in order to generate wealth for one's economic survival. The goal of entrepreneurial skills education, therefore, is to orient students towards self-reliance if wage-earning jobs become inaccessible. In summary, if Clothing and Textiles education, which is one of the major areas in Home Economics, should be studied at the tertiary and university levels, emphasis should be on entrepreneurship education for its graduates with a view to enhancing their capability for self-employment ventures.

Entrepreneurship education in Clothing and Textiles programme can

equip students that will enable them create and develop enterprises in various areas of Clothing and Textiles. This will in-turn help to enhance graduate employment and reduce unemployment. The realization of these laudable objectives of entrepreneurship education in Clothing and Textiles education depend largely on the implementation strategies employed for students to be able to perform adequately in Clothing and Textiles.

This paper therefore, focuses on the identification of entrepreneurial opportunities available in Clothing and Textiles, problems associated to the teaching and learning of entrepreneurship education in Clothing and Textiles and solutions to the problems of the teaching and learning of entrepreneurship education in Clothing and Textiles.

Purpose of the Study

The main purpose of the study was to investigate the challenges of teaching and learning of entrepreneurship education in clothing and textiles in tertiary institutions in Rivers State. Specifically, the study sought to:

(i) find out entrepreneurial opportunities available in clothing and textiles in tertiary institutions in Rivers State.
(ii) identify the problems of teaching and learning of entrepreneurship education in clothing and textiles in tertiary institutions in Rivers State.
(iii) find out the solutions to the problems of teaching and learning entrepreneurship education in clothing and textiles in higher institutions in Rivers State.

Research Questions

The following research questions were formulated to guide the study:

(i) What are the entrepreneurial opportunities available in clothing and textiles?
(ii) What are the problems associated with the teaching and learning of entrepreneurship education in clothing and textiles?
(iii) What are the solutions to the problems of teaching and learning of entrepreneurship education in clothing and textiles?

Methodology

***Area of Study*:** The area of the study is Ignatius Ajuru University of Education, Rumuolumeni and Federal Government College of Education (Technical) Omoku, both in Rivers State. These are the only tertiary institutions in the state where clothing and textiles education is offered.

***Design of the Study*:** This study employed the survey type of the descriptive research. This was considered suitable for this study because it will enable information to be gathered from the students involved in this study.

***Population for the Study*:** The population for this study consisted of all the regular and part-time students in the Home Economics Departments of the Ignatius Ajuru University of Education, Rumuolumeni and Federal Government College of Education (Technical), Omoku in Rivers State.

***Sample for the Study*:** The sample for the study consisted of all the 130 Home Economics students of the Ignatius Ajuru University of Education, Rumuolumeni and 270 Home Economics students of the Federal Government College of Education, Omoku; making a total of 400 Home Economics students that were used for the study.

***Instrument for Data Collection*:** The instrument used to generate data for the study was a structured questionnaire which was developed based on literature and research objectives.

***Validation and Reliability of Instrument*:** The instrument was validated by three Home Economics Education Lecturers. The instrument was adjudged to be reliable and consistent in measurement. To ensure the reliability of the instrument, it was trial-tested on 50 students taking courses in Vocational Education who were not part of the respondents that were used in this study. The data from the trial-testing was analyzed. The Cronbach Alpha reliability coefficient index was used to determine the reliability of the instrument, which yielded and was consistent in measuring what it is supposed to measure because a coefficient of 0.87 is high and acceptable.

***Data Collection and Analysis Techniques*:** Four Hundred copies of the questionnaire were distributed to the students involved. All questionnaires were properly completed, retrieved and used for the study. Data collected were analyzed using Mean scores. A cut-off point of 3.50 and above is regarded as Agreed, while any point below 3.50 is regarded as Disagreed.

Findings: The following findings were discovered:

1. Twelve (12) entrepreneurial opportunities were identified as the entrepreneurial opportunities available in clothing and Textiles Education. Each had mean ratings above 3.50. See Table 1.
2. Problems associated with the teaching and learning of entrepreneurship Education in clothing and Textiles include poor admission requirements, students' attitudes towards practical lessons, lack of facilities/equipment and insufficient time allocated to the teaching and learning of the course.
3. Solutions which will help to a great extent solve the problems of teaching and learning entrepreneurship education in Clothing and Textiles were proffered by the respondents which includes allocation of sufficient instructional time and materials to the teaching and learning of practical lessons in entrepreneurship education, adoption of appropriate methods to the teaching of entrepreneurship skills, reviewing of Senior Secondary Schools Curriculum to include entrepreneurship education and review of students' admission requirements to make room for only qualified students to offer the course, provision of internet facilities on entrepreneurship education in clothing and textiles among others.

Table 1: Mean Scores of Responses on the Entrepreneurial Opportunities Available in Clothing and Textiles Education.

S/No	Entrepreneurial Opportunities	Means Rating	Remark
1.	Designing	3.54	Agreed
2.	Dress making/clothing Construction.	3.88	Agreed
3.	Dry Cleaning and Laundering	4.00	Agreed
4.	Tie-Dyeing and Batiking	3.85	Agreed
5.	Modelling	3.55	Agreed
6.	Beauty Care and Hair Dressing.	3.56	Agreed
7.	Fashion/Textile Merchandising.	4.00	Agreed
8.	Pattern Illustration	3.89	Agreed
9.	Knitting and Crocheting.	3.55	Agreed
10.	Textile Production.	3.99	Agreed
11.	Interior Decoration	4.00	Agreed
12.	Production of curtains, Bed sheet/pillow cases and other household linens.	4.00	Agreed

The entire items in Table 1 scored above 3.5. Hence, the study indicated that these entrepreneurial opportunities are available in clothing and textiles education.

Table 2: Mean Scores of Responses on the Problems Associated to the Teaching and Learning of Entrepreneurship Education in Clothing and Textiles.

S/ No	Problems Associated to the Teaching/ Learning of Entrepreneurship Education.	Means Rating	Remark
1.	Poor attitude of students towards practical lessons.	3.50	Agreed
2.	Inadequate number of Teachers in Entrepreneurship Education in Clothing & Textile Teachers.	3.53	Agreed
3.	Lack of resourcefulness and innovation by the Clothing & Textile Teachers.	3.33	Disagreed
4.	Lack of Funds for the Purchase of Materials for Teaching/ Learning of Entrepreneurship Education in Clothing and Textiles.	4.00	Agreed
5.	Lack of sufficient Time Allocated to the Teaching and Learning of Clothing and Textiles.	3.98	Agreed
6.	Lack of well-equipped Clothing and Textiles Laboratories.	3.67	Agreed
7.	Students spend more time on Elective courses than core courses.	3.50	Agreed
8.	Inability Of Teachers To Improvise Instructional Materials.	2.56	Disagreed
9.	Irregular power supply for using electronic materials.	2.55	Disagreed
10.	Students' population affect the teaching and learning of clothing and Textiles Practical Lessons.	3.68	Agreed
11.	Sharing of limited equipment for Clothing and Textiles Practical among Students.	4.00	Agreed
12.	Poor admission requirements.	3.54	Agreed

In Table 2, only items 3, 8 and 9 had a mean rating below 3.50, while the remaining 9 items had mean ratings above 3.50. This indicates that the students did not see, "The Clothing and Textiles teachers are not innovative and resourceful", "Inability of Teachers to improvise instructional materials" and "Irregular power supply for using electronic materials" as problems associated to the teaching and learning of entrepreneurship education in clothing and Textiles.

Table 3: Mean Scores of Responses on the Solutions which will help to a great extent solve the Problems of Teaching and Learning of Entrepreneurship Education in Clothing and Textiles.

S/N	Possible Solutions to the Problems of Teaching and Learning of entrepreneurship education in Clothing and Textiles.	Means Rating	Remarks
1.	Qualified Teachers should be used in the teaching/ learning of entrepreneurship education in Clothing and Textiles.	3.56	Agreed
2.	Sufficient instructional time and materials should be allotted to the teaching and learning of entrepreneurship education in Clothing and Textiles.	3.85	Agreed
3.	Appropriate methods of Teaching of entrepreneurship education in Clothing and Textiles should be designed and implemented for effective learning of entrepreneurial skills in the subject.	4.00	Agreed
4.	Teachers in entrepreneurship education should be regularly sponsored to seminars and workshops for updates of new skills.	3.99	Agreed
5.	In-service training for teachers of entrepreneurship education should be organized annually.	3.50	Agreed
6.	Regular Research works/ seminar presentations in entrepreneurship education should be encourages among the teachers in the areas of entrepreneurship.	3.85	Agreed
7.	Curriculum for Senior Secondary Schools should be reviewed to include Entrepreneurship Education in Clothing and Textiles.	3.56	Agreed
8.	Students' Admission Requirements should be reviewed to make room for only qualified students to offer the course..	3.59	Agreed
9.	Internet facilities on entrepreneurship education in clothing and textiles should be provided.	3.60	Agreed

The entire items in Table 3 scored above 3.50. Hence, the students indicated that the items in table 3 are solutions which will help to a great extent solve the problems of teaching and learning of

entrepreneurship education in clothing and textiles.

Discussion

Responses to research question 1 revealed that the entire items are entrepreneurial opportunities available in Clothing and Textiles education. This finding agrees with the view of Anaykoha, 2007; Okeke and Anyakoha, 2004 who noted that Clothing and Textiles education should equip students in tertiary institutions with saleable skills such as Designing, Dress making/clothing construction, Dry cleaning and Laundering, Tie-Dyeing and Batiking, Modelling etc. Furthermore, Osisefo (2004) asserted that the aim of clothing and textiles curriculum at tertiary level is to teach the learners how to strategically plan and use available resources in his or her environment to improve his or her home, family and societal clothing needs. Clothing and Textile also provides students with an apprenticeship in clothing, textiles and fashion, which if properly carried out will equip them with strategies for earning income in the future (Mberengwa, 2004).

In research question 2, it was found that students' attitude and teacher quantity also presented great problems to the teaching and learning of entrepreneurship education in clothing and textiles. The study indicated that there were inadequate Clothing and Textiles teachers in their institutions. This finding collaborates with the observation of Mberengwa (2004) that, the insufficient quantity of teachers have the tendency to influence teaching and learning negatively with its implications on performance. Azih (2001) also found that the quantity of teachers in Nigerian tertiary institutions is so low. It was further revealed that lack of funds for the purchase of materials, lack of well-equipped Clothing and Textiles laboratories, students' population affect the teaching and the sharing of equipment among the students during practical lessons, among others constituted problems to the teaching and learning of entrepreneurship education in clothing and textiles.

Finally, responses to research question 3, preferred some solutions which will help to a great extent solve the problems associated to the teaching and learning of entrepreneurship education in clothing and textiles. These, among others include; reviewing of the curriculum for Senior Secondary Schools to include Entrepreneurship Education in Clothing and Textiles; reviewing of students' Admission Requirements to make room for only qualified students to offer the course and using of qualified teachers to teach entrepreneurship education in clothing and textiles (Osisefor, 2004).

Conclusion

Findings of the study have shown that there are varieties of entrepreneurial opportunities available in clothing and Textile education. These opportunities are summarized as follows: Designing, Dress making/clothing construction, Dry cleaning and Laundering, Modeling, Tie-Dyeing and Batiking production of curtains, Bed

sheets/Pillow cases, Bed spreads, throw pillow, Head Rests and other household linens.

The findings of the study also revealed that the teaching and learning of these entrepreneurial opportunities in clothing and textiles are beset with variety of problems, such as poor attitude of students towards practical lessons, inadequate number of Clothing and Textiles teachers, students' admission requirements, lack of funds for the purchase of materials for teaching and learning of the subject, lack of well-equipped Clothing and Textiles Laboratories, lack of sufficient time allocated to the teaching and learning of Clothing and Textiles, lack of resourcefulness and innovations by the clothing and textiles teachers among others.

Under the situations mentioned above, the desired goals of the teaching and learning of entrepreneurship education can handily be attained. It become imperative that enough quality teachers, appropriate methods for the teaching and learning Textiles practicals should be employed for effective teaching and learning of the subject. New technological innovation should be provided for Clothing and Textiles teachers, Clothing and Textiles teachers should be sponsored regularly to seminars and workshops. In-service training should be organized for the teachers to learn the new innovations in the teaching/learning of entrepreneurship in clothing and Textiles. Entrepreneurship education is a practical oriented programme, where emphasis is on skills acquisition. Therefore, the desired objectives cannot be achieved without making provisions for these basic resources stated above.

Recommendations

Considering the importance of entrepreneurship education in Clothing and Textiles, the following recommendations are made:

1. Clothing and Textiles lecturers should be pragmatic, innovative, acquaint themselves to the new technological inventions and be committed to the teaching of entrepreneurship education in clothing and Textiles.
2. Opportunities for in-service training in entrepreneurship education programme be given to Clothing and Textiles teachers by the government.
3. Government should provide adequate fund for the provision of adequate facilities and equipment for Colleges of Education and Universities where the subject is offered.
4. Clothing and Textiles lecturers should improvise when it is imperative to do so.
5. Government and school management should produce new and relevant information on entrepreneurship education in clothing and textiles.
6. Entrepreneurship education in Clothing and Textiles in senior secondary schools' curriculum in Nigeria be planned and implemented.
7. There should be an annual workshop and exhibition in clothing and Textiles entrepreneurship education

in the department of Home Economics.

8. The students of Home Economics should be allowed to specialize in one of the major areas, after two years of General Home Economics study. In this way, enough time and attention will be given to the area of specialization by the students, thereby encouraging professionalism.
9. The students should be provided materials for their practical works by school management.
10. Industrial Training (IT) or SIWES should be encouraged and well supervised. The duration should be extended to six months, instead of the usual 16 weeks.

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Strategies for Facilitating the Activities of Itinerant Tailors in Niger State

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Abstract

The study examined the strategies which could be adopted to facilitate the activities of itinerant tailors in Niger state. Five research questions guided the study. The population for the study consisted of 1549 itinerant tailors and 379 teachers of Home Economics in the state. This gave a total population of 1,928. The sample was made up of 154 itinerant tailors and all the 37 Home Economics teachers, who were present at the meeting of Home Economics Teachers Association in the state giving a total of 191 respondents. The tailors were purposively selected from the three geo-political zones with equal representation of the 3 major towns across the state. A structured questionnaire was used for data collection which was face validated by three experts in related fields. Data were analysed using the mean scores. Findings revealed among others that the activities carried out by itinerant tailors are limited.

Keywords: Itinerant, Tailors, Strategies, Activities, Skills

Introduction

There are very few occupations which can give the same degree of pleasure and satisfaction as tailoring. Tailoring can help to express interest and skill in design and colour, and making of garments that reflect taste and ideas.

Tailoring is an ancient craft which man's ingenuity gradually enabled him to make new tailoring materials. This made the making of garments became less difficult. Tailoring according to Igbo and Iloeje (2012) means making something so that it is exactly right for someone's particular needs or for a particular purpose. This implies that skill and dexterity are needed to achieve good results. Interest and applications are needed to learn tailoring activities. The sense of achievement experienced on the completion of a well constructed, wearable garment is indeed worth working for. Tailoring involve designing, cutting, fitting and sewing of clothes and other household articles. It is a highly skilled activity involving craft, which is most personal and essential of all the applied arts (Vanderhoff, 2004).

Obiakor (2006) stated that activities are things that people do especially in order to achieve a particular aim.

According to Clayton (1997), tailoring activities is a vocation, which involves skills in designing, taking measurements, cutting, fitting and sewing of clothes. Activity involves doing something because the individual enjoy practising it. Vanderhoff (2004) noted that tailoring activities are valuable skills to have. He observed that knowing how to sew well is an activity which can help to save money by making or repairing clothes for self, family members and or for someone else.

Vanderhoff (2004) further pointed out that these activities can generate money and serve as a means of expressing creativity. Creativity in tailoring can best be expressed when the activity is carried out in a comfortable place. This is supported by Weber (1990) when he expressed that there is not much joy in tailoring if the work has to be packed up every time there are other things to do. Weber (1990) further observed that, the ideal is to have somewhere to leave it untouched. However, there are itinerant tailors who move about with all the tailoring materials which make the job stressful.

According to Obiakor (2006) itinerant mean formal travelling from place to place, especially to work. Itinerant tailors can therefore be seen as those tailors that move from one place to another with their sewing/tailoring facilities such as the sewing machines, scissors, tape measure, threads, zips, buttons, hooks and eyes and other handy tools in the process of carrying out their tailoring activities for them to earn a living. The itinerant tailors move from one street to another with the weight of the hand sewing machine and other sewing accessories which may probably not be complete for the daily tailoring activities. This is a problem which may result in job limitations. Moving up and down in the harsh weather and the sitting posture involved in carrying out the tailoring activities is also a challenge to health. This is not in line with suggestion by (Neal, 2000) that, the ideal tailoring environment should have a large table with a smooth surface on which to layout the work. Neal (2000) further observed that a seat where the tailor can sit comfortably with the knees underneath the table is a necessity; this will enhance comfort and facilitate tailoring activities. The skill to select, cut and sew clothes and other household articles and repair clothes freely without any problem is all about facilitating the activities of tailors. Horn and Gurel (1981) opined that, a good knowledge about the use and care of sewing tools and equipment will facilitate tailoring activities.

Itinerant tailors travel from one place to another which probably make their job stressful, many of them do not know how to stitch clothes very well, they do not know how to cut, no knowledge about appropriate use of colour and no knowledge of ironing. The nature of their job which involved carrying sewing equipment and tools do not make it easy for them to carry all the important items needed to facilitate their activities. Many of them may probably not be able to afford buying all the necessary sewing tools. The sitting position in which they carry out their

job is also a challenge to health. There is the need to facilitate the activities of this group of tailors.

Itinerant tailors occupy important position in our society. This is because most of the clothing repairs of families and households in our society are being carried out by them. The sedentary tailors are mostly occupied with cutting and sewing of new clothes. The busy nature of their job does not allow them to have the time to loose and mend old clothes. This gap have created job for itinerant tailors and making them to be relevant to almost all families in Nigeria. There is therefore the need to proffer strategies for facilitating the activities of this group of tailors. A well-planned series of action for achieving effective job facilitation is the strategy.

Olaitan (2005) defined strategy as a well planned series of actions for achieving an aim. He explained that, it involves the ways and means of making use of available human and material resources intelligently and skillfully to arrived at a vision. Making use of available input to generate output through effective planning process is strategy. According to Craig (1983) effective strategies for facilitating the activities of itinerant tailors should involve knowledge and skill if maximum value is expected. Adequate knowledge which involves knowing about appropriate technique for sewing and a good tailoring plan is necessary. Skill which is the ability to do something very well especially because one has learned and practiced it is also necessary. According to Osinem and Nwoji (2005) skill is the ability to perfom an act expertly. Expertise or proficiency in the performance of a task is needed by itinerant tailor who travel from one place to another carrying their working tools and equipment all around in order to perform their daily job for sustainability. Most of these tailors engage in clothing repairs and alterations.

According to Weber (1990) clothing repairs involve changing of size, shape, length or design of garment. Neal (2000) in addition observed that clothing repairs and alteration include such tailoring activities as changing decorative – trims, collars and cuffs, making and replacing patches and fastenings. These tailoring activities are very important to families and households in our society. The fully established sedentary tailors claim not to have time for such jobs. They concentrate only on sewing new clothes. The bulk of family clothing repairs now rest on the itinerant tailors which many of them do not do very well. Many of these tailors cannot change collars and cuffs, they also use threads that are not matching in colour and very many of them cannot cut and change styles. Trekking around streets, carrying the sewing machine and other tools which are not often complete and the sitting position in which they carry out their activities is stressful and not in line with the suggestion of Neal (2000) that a seat where the tailor can be sit at comfortably with the knees underneath the table is a necessity. Inability to get the complete tailoring tools around them is a problem which can limit job. These are probably, associated with

ignorance and poverty. Okeke (2005) observed that appropriate skills to facilitate tailoring activities have not attained the expected level. Supporting this Njoku (2002), opined out that different clothing alterations and repairs require varying amounts of skills in sewing. With time and patience it is often possible to perform the activities. Ezeobele (2006) pointed out that it is however, unfortunate that some people lack necessary tailoring skills needed and the result is poor output.

There is therefore the need for government and other stakeholders to address the problems of this group of people.

The government, the society, curriculum planners and the itinerant tailors will benefit if the findings of the study is adopted:

The government will benefit when the problems/needs of itinerant tailors are known and adequately addressed it will help in solving the problem of youths under employment. Itinerant tailors will benefit when the stakeholder are aware of their problems and help them, this will facilitate their activities for improved work output and sustainable development.

The curriculum planners will benefit in that, the findings will shed light on skills deficiency and training needs of itinerant tailors thereby aiding appropriate curriculum planning.

The society will benefit when itinerant tailors are adequately trained and skilled because there will be better output for consumer satisfaction. For this reason, it has become necessary to identify strategies for facilitating the activities of itinerant tailors in Niger state.

Purpose of the study

The major purpose of this study was to investigate the strategies for facilitating the activities of itinerant tailors in Niger State. Specifically, the study determined the:

1. activities carried out by itinerant tailors in Niger state.
2. tailoring tools needed to facilitate the activities of itinerant tailors in Niger state.
3. sewing skills needed to facilitate the activities of itinerant tailors in Niger state.
4. problems encountered by itinerant tailors in carrying out their jobs in Niger state.
5. strategies that could be adopted to facilitate the activities of itinerant tailors in Niger state.

Research Question

The following research questions were used to guide study:

1. What are the activities carried out by itinerant tailors in Niger state?
2. What are the tailoring tools needed to facilitate the activities of itinerant tailors in Niger state?
3. What are the sewing skills needed by itinerant tailors to facilitate their activities in Niger state?
4. What are the problems encountered in carrying out tailoring activities by itinerant tailors in Niger state?
5. What strategies could be adopted toward facilitating the activities of itinerant tailors in Niger state?

Methodology

Area of study: Area of study was Niger state using three major towns each under the three emirate councils: Bida, Minna and Kontagora which are zones A, B, and C respectively. Itinerant tailors in Niger state engage in clothing repairs and the kind of work they do demand that they work in large communities and markets in order to get enough patronage to make money for economic survival.

Population for the study: The population for the study consisted of 1549 itinerant tailors and 379 Home Economics teachers in secondary schools and Colleges of Education in Niger state. This gave a total population of 1928 subjects. The study is on ways of facilitating the activities of itinerant tailors in the state. These group of tailors travel from one place to another carrying their sewing tools and equipment to perform their job which is mainly clothing repairs. These tailors are mostly concentrated in large towns and market places to enhance patronage. Most of the itinerant tailors are illiterates and communicate mostly in Hausa language. Overtime some of them learn to speak pidgin English for effective communication and patronage.

Sample for the study: The sample consisted of 154 itinerant tailors working in Niger state and 37 registered members in attendance of Home Economics Teachers Association Meeting. These teachers were used because of their relevance to the study. Proportionate stratified random sampling was used to select three towns each from the three geo-political zones. Zone "A" Bida (21) respondents, Mokwa (19) respondents and Lapai (14) respondents respectively. Zone "B" Minna (21) respondents, Suleja (22) respondents and Gwada (10) respondents. Zone "C" have Kontagora (18) respondents, Kagara (12) and Rijau (17) respondents. This gave a total of 154 itinerant tailors. All the 37 teachers of Home Economics were used giving a total of 182 respondents. Purposive sampling was used in the selection of the itinerant tailors.

***Instrument for Data Collection*:** Questionnaire consisting of 79 questions was used for data collection. The validation of the questionnaire was ascertained by three experts from the department of Home Economics, College of Education, Minna. The reliability of the instrument for data collection was calculated from the responses of twenty (20) respondents who were served on pilot scale. The group did not form part of the final sample using respondents. The data was computed using Cronbach's Alpha Reliability index for internal consistency of the instrument. The coefficient of the analyzed data was 0.9812 confirming the reliability and consistency of the instrument.

***Data Collection and Analysis Technique*:** The questionnaire contained questions related to the five research questions which were sectioned accordingly. A total of 191 copies of the questionnaire were produced and personally administered by the researcher to ensure high return rate. The questionnaire was distributed to the 37 Home Economics teachers at the

meeting which they all filled and returned immediately. The itinerant tailors used were illiterates so, interview method was adopted based on the questions which the researcher filled and used. All the copies were properly filled and were used for data analysis. The data were analysed using the mean and any item with a mean score of 3.50 and above was agreed with (accepted) while any item with mean score below 3.50 was regarded as disagreed with (unaccepted).

Findings: The following findings were made:

1. Four types of activities were carried out by itinerant tailors (see table I).
2. Twelve tailoring tools were needed by the itinerant tailors to facilitate their activities (see table 2).
3. Twenty one tailoring skills were needed by the tailors to facilitate their activities (see table 3).
4. Thirteen problems were encountered by the itinerant tailors in carrying out their duties (see table 4).
5. Six strategies were identified for facilitating the activity of the itinerant tailors (see table 5).

Table 1: Types of activities itinerant tailor carryout

S/No	Activities Engaged	Mean	Remark
1	Adjust length of garment	4.94	A
2	Replace zipper	3.90	D
3	Mend holes	3.52	A
4	Change styles	1.63	D
5	Adjust waist-band	2.51	D
6	Change lace, bias and ribbons	2.91	D
7	Change seams	4.22	A
8	Cut and sew new clothes	1.04	D
9	Take body measurement	1.32	D
10	Change collar	2.91	D
11	Change cuffs	2.63	D
12	Oil the machine	4.69	A
13	Make simple machine repairs	2.80	D
14	Replace sleeves	2.35	D
15	Iron clothes	0.24	D
16	Alter necklines	1.22	D
17	Cut and change pockets	2.52	D

A = Agree D = Disagree

Table 1 shows that itinerant tailors engage in few activities, they scored the highest mean of 4.94 in item 1 which is adjusting length of garment, oiling of machine followed with 4.69 in item 12, item 7 scored 4.22 mean for changing of seam and mend holes which is item 3 scored a mean of 3.52. Other activities engaged in are rated below decision limit of 3.50 means, this indicates that their job is limited in practice.

Table 2: Needed working tools by itinerant tailors to facilitate their activities.

S/No	Tailoring tools/equipment	Mean	Remark
1	Tape measurement	3.62	A
2	Yard stick/metric stick	0.00	D
3	Small ruler	0.00	D
4	Guage	3.84	A
5	Seam ripper	3.65	A
6	Scissors	4.96	A
7	Tracing wheel	2.16	D
8	Dressmaker's carbon	1.46	D
9	Iron	1.24	D
10	Ironing board	1.44	D
11	Processing ham	2.88	D
12	Pins	4.82	A
13	Hand needles	4.41	A
14	Thimble	3.74	A
15	Pin cushion	3.82	A
16	Pinking shears	3.66	A
17	Sewing machine	4.98	A
18	Machine oil	4.44	A
19	Screw driver	3.72	A

A = Agree D = Disagree

Table 2 revealed the working tools needed by itinerant tailors to facilitate their activities. The respondents agreed with items 1,4,5,6,12,13,14,15,16,17,18,19 as tools required to facilitate their job. Item 2,3,7,8,9,10 and 11 are not rated as essential tools.

Table 3: Needed tailoring skills by itinerant tailors to facilitate their activities.

S/No	Needed sewing skills	Mean	Remark
1	Preparing fabric (preshrink)	1.42	D
2	Taking body measurement	4.08	A
3	Fabric selection and characteristics	4.10	A
4	Machine care and maintenance	3.95	A
5	Using the sewing machine	2.19	D
6	Cutting clothes for garment construction	4.84	A
7	Ironing	3.81	A
8	Making patterns	4.97	A
9	Fitting clothes	3.98	A
10	Speed and accuracy	3.61	A
11	Changing bias, ribbons and lace	3.56	A
12	Relining coats and jackets	4.86	A
13	Adjusting fit for physically challenged persons	4.86	A
14	Replacing zippers	3.59	A
15	Changing and adjusting waist band	4.02	A
16	Changing collars	3.61	A
17	Changing cuffs	4.13	A

18	Altering neckline	4.22	A
19	Mending tears and holes	4.32	A
20	Changing pockets	3.55	A
21	Changing sleeves	3.71	A
22	Changing facing	3.94	A
23	Piping edges	4.01	A

A = Agree D = Disagree

Table 3, showed that the respondents need skills to facilitate their activities. Items 1 and 5 as very low mean, this indicates that respondents needs little or no skills in preparing fabrics and using of the sewing machines. All other items are rated very high as indicated in the table, which means they require various skills as identified.

Table 4: Problems encountered in carrying out tailoring activities.

S/No	Problems encountered	Mean	Remark
1	Inadequate tools	4.96	A
2	Sitting posture	4.96	A
3	Stress of trekking	4.96	A
4	Tiredness from weight of machine	4.96	A
5	Inadequate skills	4.98	A
6	Inadequate knowledge of new fabric and handling	4.98	A
7	Communication	4.69	A
8	Lack of access to loan	4.61	A
9	Low income	4.98	A
10	Limited job opportunity	4.23	A
11	Hostility by some customers	4.42	A
12	Weather condition	4.25	A
13	Lack of recognition by government	4.96	A

A = Agree; D = Disagree

Table 4, showed that itinerant tailors in Niger state encounter problems, ranging from inadequate sewing tools, sitting posture, stress of trekking, communication, low income, weather condition, non-recognition by government among others, when carrying out their activities. All the 13 items were rated very high.

Table 5: Strategies for facilitating the activities of itinerant tailor activities.

S/No	Strategies for job facilitation	Mean	Remark
1	Access to loan	4.69	A
2	Skill training programme by government and non-governmental organization (NGO)	3.94	A
3	Workshop on entrepreneurship education	3.94	A
4	Workshops/seminar of health and stress management	4.95	A
5	Apprenticeship training	3.65	A
6	Formation and formal registration of group with government for recognition	2.99	A

A = Agree; D = Disagree

Table 5, showed that the ways in which the job of itinerant tailors can be facilitated through access to loan, skill training programmes by government and non-governmental, organizations (NGOs), workshop of health and stress management, workshop on entrepreneurship education and apprenticeship training. The table also indicates that formation and formal registration of group with government for recognition might, but not necessarily facilitates the activities of itinerant tailors.

Discussion

The study has generated information on activities carried out by itinerant tailors in Niger State. The finding of the study revealed that majority of the itinerant tailors carry out limited tailoring job as indicated on Table 1. The respondents scored the mean of 3.50 and above in only 4 items which are 1,3,7 and 12 out of 8 identified activities. The itinerant tailors only, adjust length of garments, mend holes, change seams and oil their sewing machine. This is not in line with Clayton (1997) who pointed out that the major qualification for employment as a tailor is "better-than average" sewing skill. These tailors are not skilled as such their earning capacity is limited to the little job they are able to do. In her fact finding effort, the researcher observed that the itinerant tailor are very poor. They live together in cluster of eighteen to twenty-two with all the sewing machines and accessories in just that one room. The earning from the job is not enough for sustenance. Itinerant tailors must be prepared to work on different types of garments and features on them Clayton (1997).

Table 2 revealed that itinerant tailors in Niger state require working tools to facilitate their activities such tools as revealed are tape measure, guage, seam ripper. Scissor, pins, hand needles, thimble, pin cushion, pink shears, sewing machine, machine oil and screw driver. These were rated very high in the table. This is in line with Anyakoha (2010) who pointed out that knwoledge of sewing equipment/tools is necessary to become an accomplish tailor, Neal (2000) gave a list of important sewing tools while Weber (1990) noted that, success in tailoring depend on the availability and effective utilization of relevant tools and equipment. Itinerant tailors actually require these tools to effectively carry out their jobs.

Table 3 sort to find the needed tailoring skills by itinerant tailors to facilitate their activities. The result of the finding revealed that out of the twenty three identified tailoring skills, the respondents do not require only two areas which are preparing fabric 1.42 and using the sewing machine 2.19. The respondent rated twenty-one skills very high as areas of skill needed. Relining of coats and jackets, adjusting fit for physically challenge persons and making patterns were rated above 4.85. Okeke (2005) supporting the need for skill learning noted that, appropriate skills in tailoring have not attained the expected level. Jenkins (2006) observed that, mistakes in tailoring can be

avoided by learning the proper procedures in tailoring.

The finding of the study in table 4 shows that the itinerant tailors encounter problems in the course of doing their jobs. The respondent identified inadequate tools, sitting posture, stress of trekking, tiredness from weight of machine, inadequate skills, inadequate knowledge of new fabrics and handling, low income and lack of recognition by government are rated 4.96 and above. Other identified problems are communication 4.69, lack of access to loan 4.61, limited job opportunity 4.23, hostility by some customers 4.42 and weather condition 4.25. All the problems identified must be adequately addressed as this will enhance the activities of itinerant tailors.

Table 5 revealed that itinerant tailors in Niger state should be given access to soft loan, skill learning centres should be provided by government so that they can learn tailoring and be skilled. Workshops on skill development and health should be recognized to enlighten the itinerant tailors. They should go through formal apprenticeship training to make them competent and skilled for capacity building and entrepreneurship. They should also come together and form cooperative body to be officially registered for government recognitions.

Conclusion

The finding of the study revealed that itinerant tailors are not skilled, they engage in minor tailoring activities such as the simple straight stitching and seam adjustment. This is a problem because it limits their jobs opportunities thus making their earning capacity very low. The finding also revealed that this group of tailors have limited tools which affect their earning capacity. The finding as well revealed that the itinerant tailors in Niger state are faced with job challenges such as inadequate tools skills and knowledge. They also face problem of sitting posture, stress, communication and poverty.

Recommendation

In view of the findings and discussions, the following recommendations were made:

1. Itinerant tailors should be encouraged to go on apprenticeship training so that they can be skilled before engaging in tailoring activities to enhance their earning capacity.
2. Itinerant tailors should purchase and utilize appropriate tools to facilitate their activities.
3. Government and non-government organization should assist this group of people to come together and should be assisted with soft loan for entrepreneurship and sustainability.
4. Seminars and workshops should be organized for itinerant tailors on stress management.

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Impact of the National Fadama Development Project Phase-II (NFDP-II) on Rural Infrastructural Provision and House Hold Farm Yield in Kaduna State

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Abstract

This paper appraises the impact of the National Fadama Development Project Phase 11 on rural infrastructural provision and household farm yield in Kaduna state. Two research questions and two hypotheses guided the study. Questionnaire was used for data collection. The sample of the study was 465 consisting of 415 FPFs and 50 EAs. Findings of the study revealed that infrastructural facilities were more available in the study area after the implementation of the project than before it was implemented. Also farmers recorded increases in their farm yield on the different agricultural enterprises as a result of participation in the project. It was recommended, among others that measures should be taken to sustain the improved agricultural practices brought about by the project.

Keywords: Fadama, Development, Project, Infrastructure, Farm, Impact.

Introduction

Agriculture is one of the cornerstones of rural development in developing countries including Nigeria. Majority of Nigerian population, about 70% reside in the rural area and are mostly peasant farmers (Federal Office of Statistics, 2004). These people largely depend on agriculture for their livelihood. Unfortunately however, this sizeable population of the country is the most poor and neglected with little or no presence of infrastructure and support services to encourage meaningful agricultural productivity. In line with this observation, the International Fund for Agricultural Development, IFAD (2009) stated that social services and infrastructure are limited or non-existent in rural Nigeria. Sudhir and Yassir (1999) stated that the provision of infrastructure in developing countries of

course Nigeria inclusive does not receive attention by policy makers. Some of the difficulties arising as a result of inadequate infrastructure include non-availability of hand pumps, tube wells, collection centers for products, lack of storage facilities, and inadequate processing facilities, poor linkage with the market and bad roads. These problems affect the level of productivity and inhibit full utilization of potentials of farm households thereby leading to low agricultural productivity, low level of income and poor standard of living. According to the Project Coordinating Unit, National Fadama Development Office (PCU-NFDO, 2005), the role played by infrastructure can be likened to secondary and tertiary arteries of the body system and they are crucial as the main arteries for blood circulation.

For the agricultural sector to achieve its potential, investment in infrastructure is necessary. In the opinion of Zongzhang and Xiaomin (2009), the development of rural infrastructure is highly related to agricultural production. The authors observed further that rural infrastructure not only provides essential agricultural production conditions such as roads, telecommunications, power, irrigation systems but also provides education and medical services related to enhancing the quality of rural labors.

Rural infrastructure as used in this study are those services and agricultural equipments/inputs provided by fadama project phase 11 such as rural roads, irrigation pumps, grinders, storage tanks, open wells, tube wells, wash bores, sprayers, ridgers etc. Indeed the status and development of rural infrastructure not only influence agricultural production and operation modes directly, but also improve the living standards of rural people and enhance quality of rural labor. Deficient rural infrastructure may hinder agricultural production and induce poor technical performance.

Realizing the place of agriculture in the national economy, various governments in Nigeria past and present have come up with several programs, approaches, policies and strategies aimed at developing the sector and improving the conditions of the rural poor. Some of these efforts are still on course while many have since gone moribund. Some of the programs embarked upon by various governments in Nigeria aimed at developing agriculture and improving rural living conditions include the National Accelerated Food Production Program (NAFPP), the Nigerian Agricultural and Cooperative Banks (NACB), the Operation Feed the Nation (OFN), the Agricultural Credit Guarantee Scheme (ACGS) and the River Basin Development Authority (RBDA). Others are the Green Revolution (GR), Directorate of Food, Roads and Rural Infrastructure (DFRRI) and the Family Economic Advancement Program (FEAP) (Ajayi 2001, Akinleye, Awoniyi, and Fapojuwo 2005 and Daudu 2008).

A recent effort towards improving the rural living condition and boosting farm yield was the introduction of the

Fadama Development Project Phase II (NFDP-II). The project was launched in 2004 and was to last till 2010 (2004-2010). The NFDP-II is co-funded by the World Bank and the African Development Bank, (ADB) to the tune of 100million and 30million US dollars respectively. The fadama project implementation manual (PIM) reported that Fadama 11 is coordinated at the state level by the State Fadama Development Offices (SFDOs) housed at the Agricultural Development Projects (ADPs). The Kaduna state Fadama Coordination Office(2004) stated that farmers (project potential beneficiaries) are encouraged to form economic activity specific groups referred to as Fadama Resource User Groups (FRUGs). ADP extension agents (EAs) who are communicators of change were contracted as project facilatators. According to the National Fadama Development Office, (NFDO z2004), eighteen (18) states of the federation are participating in the Fadama Phase II and they include Adamawa, Bauchi, Gombe, Imo, Kaduna, Kebbi, Niger, Lagos, Ogun, Oyo, Taraba, Kogi, Katsina, Jigawa, Plateau, Kwara, Borno and the Federal Capital Territory, FCT, Abuja.

The project aimed at providing support to economic ventures in the rural areas such as crop production, livestock production, honey production, fishing, hunting, marketing, processing, transportation etc. Fadama Project Phase 11 also aimed at providing basic rural infrastructure necessary for meaningful agricultural productivity such as access roads, culverts, water supply, etc.

One of the goals of the National Fadama Development Project Phase 11 (NFDP-11) was the provision of basic rural infrastructure necessary for the stimulation of meaningful agricultural productivity. A lot of human and material resources have been committed in to the National Fadama Development Project Phase 11. The federal, state and local government areas in collaboration with the funding agencies have put in a substantial sum of money for the realization of the project's objectives. The project has been fully implemented and its life cycle has expired. The strengths and weaknesses of the project need to be established in order to find justification for the huge investments that have been made. An evaluation study is considered expedient to determine whether the project has achieved its objective of bettering the living condition of the rural dwellers through the provision of basic rural infrastructural facilities and consequently raising the farm yields of the project beneficiaries. Such information will be useful to government policy makers in that it will reveal the weaknesses and strengths of the project design and implementation and therefore serve as a useful guide in the design and implementation of future projects and programmes.

Purpose of the Study

The major purpose of the study was to ascertain the impact of the National Fadama Development Project Phase II on rural infrastructural provision and farm yield of the beneficiaries in

Kaduna state. Specifically, the study determined the respective levels of

1. Availability of infrastructural facilities in the area before and after the project.
2. House hold farm yield before and after the project.

Research hypotheses

HO_1: There is no significant difference between the Mean ratings project participants on the levels of availability of infrastructural facilities in the area before and after the project intervention.

HO_2: There is no significant difference between the Mean ratings of Fadama II project participants on their levels of farm income before and after the project intervention.

Methodology

***Area of the Study*:** The area of the study was Kaduna State which comprised of twenty-three local government areas (LGAs). Only ten of the twenty-three LGAs were covered by Fadama phase 11 project. The ten LGAs were, for administrative purpose, organized into Fadama zones.

Design of the Study: The survey research design was adopted for the study.

***Population for the Study*:** The population for the study was 12,177 project farmers (PFs) in the ten local government areas in Kaduna state covered by the project. This number included Fadama 11 Project farmers engaged in different agricultural activities spread across the three Fadama zones in the study area. Information on the total number of project farmers was obtained from the Kaduna State Fadama Development Coordinating Office.

***Sample for the Study*:** Multistage and purposive sampling techniques were employed. First two LGAs were purposively selected from each of the three Fadama zones in the state. The criterion was two LGAs in each zone with the highest number of project farmers. The procedure produced 8,306 project farmers at this stage. Finally, 5 percent of the farmers in the six LGAs were randomly sampled which gave a final sample size of 415 project farmers.

***Instrument for Data Collection*:** A structured questionnaire called 'Fadama Project Farmer's Questionnaire (FPFQ)' was developed and used for the study. The instrument was designed to obtain information from the project farmers (PFs), ratings of their respective levels of farm yield and availability of infrastructure in the area before and after the implementation of Fadama Project phase 11. A "Before and After Impact Assessment Model" was adopted for the study. A five-point rating scale was constructed for the farmer's response. The scale points and their respective numerical values were Very High (5), High (4), Moderate (3), Low (2) and Very Low (1). The instrument was validated by three experts and pilot-tested for internal consistency. A reliability coefficient of 0.89 was obtained with Cronbach Alfa (α) technique and the instrument was considered reliable.

***Methods of Data Collection and Analysis*:** Since most of the farmers

were not literate, the questionnaire developed was in some cases used as an interview schedule. Data collection was carried out through personal contact with the services of three research assistants. Four hundred and fifteen (415) copies of the instrument were administered and 383 retrieved.

The Mean and frequencies were data analysis techniques used to answer the research questions. The mean scores were used to determine the respective levels of availability of infrastructural facilities and house hold farm income in the study area before and after the project implementation expressed on a 5-point scale for each of the items. The hypotheses of the study were tested using t-test statistic at 0.05 level of significance.

Findings

The following findings were made:

a) Availability of infrastructural facilities

Table 1: Mean Ratings, Standard Deviations and t-test analysis of the responses of Fadama project participants on the level of availability of infrastructural facilities in the area before and after NFDP-II (N=383)

s/ no	Infrastructural facility/service Item	BEFORE NFDP-2			AFTER NFDP-2			t-value	Sig (2 tailed)	Decision
		$\overline{X}$	SD	RMKS	$\overline{X}$	SD	RMKS			
1	Sprayers	1.71	.492	Low	3.76	.702	High	-46.663	0.000*	Rejected
2	Ridgers	1.58	.702	Low	3.66	1.008	High	-33.245	0.000*	Rejected
3	Work bulls	1.52	.650	Low	3.83	1.119	High	-34.930	0.000*	Rejected
4	Ox-cart	1.82	.758	Low	3.56	1.041	High	-26.547	0.000*	Rejected
5	Storage tanks	1.86	.797	Low	3.63	.876	High	-29.355	0.000*	Rejected
6	Irrigation pumps	2.21	.759	Low	3.84	.943	High	-28.102	0.000*	Rejected
7	Tube wells	1.65	.740	Low	3.80	.905	High	-36.051	0.000*	Rejected
8	Open wells	1.79	.795	Low	3.56	1.198	High	-24.097	0.000*	Rejected
9	Wash bores	1.98	.804	Low	4.00	1.057	High	-29.777	0.000*	Rejected
10	Pvc pipes	1.81	.841	Low	4.17	.680	High	-42.698	0.000*	Rejected
11	Rice/maize huller	2.00	.992	Low	4.05	.795	High	-31.517	0.000*	Rejected
12	Vegetable grinder	2.00	.836	Low	3.82	.898	High	-29.031	0.000*	Rejected
13	Groundnut sheller	1.79	.744	Low	3.86	.853	High	-35.815	0.000*	Rejected
14	Oil press	1.77	.786	Low	4.03	.751	High	-40.707	0.000*	Rejected
15	Juice extractor	1.92	.975	Low	3.70	1.200	High	-22.510	0.000*	Rejected
16	Groundnut oil extractor	1.86	.775	Low	3.92	1.087	High	-30.119	0.000*	Rejected
17	Maize sheller/thresher	2.30	.895	Low	4.33	.777	High	-33.597	0.000*	Rejected
18	Cassava grater	2.01	.811	Low	3.79	.872	High	-29.351	0.000*	Rejected

19	Spaghetti roll machine	1.81	1.028	Low	2.96	1.545	High	-12.030	0.000*	Rejected
20	Chick incubator	1.85	.625	Low	4.81	.506	High	-72.180	0.000*	Rejected
21	Poultry pan, drinker/feeder	1.97	.932	Low	3.96	.897	High	-30.100	0.000*	Rejected
22	Bee hive	2.12	.921	Low	3.39	.843	High	-20.018	0.000*	Rejected
23	Honey press	1.99	1.040	Low	3.72	1.044	High	-22.893	0.000*	Rejected
24	Bee harvesting kit	2.21	1.032	Low	3.73	1.053	High	-20.018	0.000*	Rejected
25	Fishing nests/gears	2.12	1.063	Low	3.48	1.033	High	-17.998	0.000*	Rejected
26	Fish pond	2.17	.957	Low	3.63	.983	High	-20.856	0.000*	Rejected
27	Fishing hooks and line	2.39	1.092	Low	3.51	1.186	High	-13.500	0.000*	Rejected
28	Fishing canoe	1.74	1.063	Low	2.30	1.401	High	-6.189	0.000*	Rejected
29	Sewing machine	2.23	1.037	Low	3.51	.730	High	-19.619	0.000*	Rejected
30	Knitting machine	2.00	.817	Low	3.79	.928	High	-28.384	0.000*	Rejected
31	Culvert/bridges	1.93	.927	Low	3.85	.880	High	-29.424	0.000*	Rejected
32	Rural roads	1.94	.966	Low	3.81	1.010	High	-26.177	0.000*	Rejected
33	Power generator	1.95	1.102	Low	2.92	1.245	High	-11.399	0.000*	Rejected
34	Market stalls	2.14	.886	Low	3.50	.859	High	-21.537	0.000*	Rejected
35	Wheel barrows	1.78	.863	Low	3.29	1.082	High	-21.416	0.000*	Rejected
36	Agro-credit facilities	2.16	1.073	Low	4.27	1.013	High	-27.980	0.000*	Rejected
37	Extension education services	2.23	.897	Low	3.91	1.052	High	-23.838	0.000*	Rejected
38	Deep freezer	1.99	.989	Low	2.76	1.192	High	-9.699	0.000*	Rejected
39	Poultry pen	2.04	1.102	Low	3.96	1.026	High	-24.835	0.000*	Rejected
40	Pig, sheep and goat pens	2.15	1.151	Low	3.24	.912	High	-14.445	0.000*	Rejected
41	Ice-block making machine	2.31	1.028	Low	3.20	1.163	High	-11.224	0.000*	Rejected

Number of respondents (N) =383; p≤0.05; 0.000*=significant

Data in table 1 revealed that Mean scores of availability of infrastructural services before the NFDP-11 ranged from 1.52-2.39. This means that before the project, the infrastructural facilities listed all had low level of availability in the area. After the project intervention, item 20 i.e. chick incubator had a Mean response value of 4.81. The implication is that it was very highly available in the area after the implementation of the project. Item 28 i.e. canoe had a low level of availability after the project implementation with a Mean response of 2.30. Items 19,22,25,33,35,38,40 and 41 were moderately available (Mean ranged 2.76-3.48) after the NFDP-II. The

remaining items were highly available after project intervention.

The result of the t-test analysis on Table 1 showed that there was significant difference ($p \leq 0.05$) between the Mean ratings of the responses of the project participants on the level of availability of infrastructural facilities in the area before and after the project with Mean ratings after been higher than that of before. This implies that there was a significantly positive impact of the project on the availability of infrastructural facilities in the area.

b) Household farm yield of the Project Participants

Table 2 Mean Ratings, Standard Deviations and t-Test analysis of the Responses of Project Farmers on their levels of house hold farm yield before and after the project intervention (N=383).

Variable	BEFORE NFDP-2			AFTER NFDP-2			t-value	Sig(2 tailed)	Decision
	$\overline{X}$	SD	RMK	$\overline{X}$	SD	RMK			
Crop production									
Maize	2.60	1.031	Mod	3.82	0.886	High	-17.558	0.000*	Rejected
Rice	2.31	1.073	Low	3.99	0.779	High	-24.772	0.000*	Rejected
Cassava	1.88	0.747	Low	3.73	0.872	High	-31.513	0.000*	Rejected
Tomato	1.82	0.889	Low	3.84	1.081	High	-28.143	0.000*	Rejected
Pepper	2.28	0.811	Low	4.02	0.964	High	-27.052	0.000*	Rejected
Okra	1.93	0.849	Low	3.92	0.817	High	-33.051	0.000*	Rejected
Livestock production									
Poultry	1.88	0.719	Low	4.38	0.679	High	-49.552	0.000*	Rejected
Goat	1.72	0.880	Low	3.73	0.876	High	-31.814	0.000*	Rejected
Sheep							-32.125	0.000*	Rejected
Pig	1.93	0.869	Low	3.89	0.818	High	-20.712	0.000*	Rejected
Cattle	2.00	0.898	Low	3.91	0.915	High	-29.137	0.000*	Rejected
Fish production									
Fishing	2.13	1.125	Low	4.13	0.789	High	-28.407	0.000*	Rejected
Bee farming									
Honey	2.33	1.035	Low	3.41	1.085	Mod	-14.085	0.000*	Rejected

Note: $p \leq 0.05$; $\overline{X}$ =Mean; SD=standard deviation; RMK=remark; Mod=Moderate

Data analysis on crop production cluster presented in Table 2 indicated that item 1 had a Mean response value of 2.60 before the project. This implies that yield on the item was moderate before the intervention of the project. All other items on same cluster before the intervention had Mean response values ranged 1.82-2.31. The implication is that Fadama II project participant's farm yields on these items were low before the project intervention. The same cluster revealed that after the project, the items had Mean response values

ranged 3.73-4.02. This means that after the project, participants recorded high yield on the items. Data analysis on livestock production cluster revealed that all the items on this cluster before the project had Mean response values ranged 1.72-2.14. This implies that yields on the items were low before the project intervention. After the project, the respondent's Mean ratings of the items ranged 3.69-4.38. The interpretation is that respondents recorded high yields on livestock production after the project intervention.

The cluster on level of yield in fish production showed that before the project, the respondent's Mean response was 2.13. This means that there was low yield in fish production before NFDP-II. After the project there was high yield in fish production as the Mean response of the participants rose to 4.13.

Data on honey production cluster of the table revealed that before the project, respondent's Mean response value was 2.33 implying that yield in honey production was low before the intervention of the project. After the project, respondent's Mean response value was 3.41. This means that there was a moderate yield in honey production after the project.

Results of the t-test on participant's Mean ratings of the levels of yields of the various enterprises (crops, livestock, fish and bee production) before and after the project showed that there was significant difference ($p \leq 0.05$) between them in each case. In each item, the Mean scores after the project are higher than the Mean scores before the project. This implies that there was a significant positive impact of the project on level of farm yield.

Discussion of Findings

The findings of this study on the levels of availability of infrastructural facilities before and after the project agrees with that of Oluwole (2011) who evaluated the impact of cocoa resuscitated program and found out that project farmers reported to have access to basic infrastructure after the program participation than before it. The Findings of the study on availability of rural infrastructure before and after participation in Fadama project phase 11 concurs with that of Nwachukwu, Agu, Mbanasor, Onyenweaku and Kamalu (2008) whose findings showed that house hold access to productive assets increased after participation in the National Fadama Development Project.

The findings of the study on level of farm yield agrees with that of Onemolease (2005) who found out that Agricultural Development Project had a positive and significant impact on yield of poultry. The result of this study on farm yield conforms with the findings of Inoni and Omotor (2009) that road infrastructure had a significant positive effect on farm yield. It is also in line with the findings of Nwalieji (2005) whose study on Evaluation of Fadama Phase 1 Vegetable Production Project of Anambra State Agricultural Development Project indicated that fadama project farmers recorded higher yields in their farms than non-project farmers. The finding is also in agreement with that of Kwa in Ezeh (2006) who found out that maize

production doubled from 237 million tons in 1985 to 460 million tons in 1999 in ADP enclave areas. Findings of the study are in tune with the one of Oyaide in Ezeh (2006) that ADP contact farmers had better yields than non-contact farmers. The study showed that the provision of rural infrastructure such as roads, irrigation facilities, storage facilities among others helped to raise household farm yields. The improvement in yield recorded by the farmers after the project intervention is as a result of enhancement of production efficiency brought about by the infrastructure provided by the project. This is in consonance with the submission of Chen and Lin (2002) that rural infrastructure such as irrigation, transportation, storages among others can decrease transportation cost, storage expenses and enhance efficiency. The result of the study is also in agreement with the submission of Peng (2002) and Fang *et.al* (2004) who observed that the potential of agricultural production can be released through rural infrastructure investment such as country road construction for instance. Investments in rural road infrastructure could reduce the expenditure of agricultural production. The result of this study also concurs with the submissions of Chen, Huffman and Roselle (2006) and Chaves *et. al* (2005) that factors influencing agricultural productivity include mechanization, access to credit among others. These facilities were provided by Fadama Development Project Phase 11 and the facilities so provided helped to boost the production capabilities of the project beneficiaries.

Conclusion

One of the goals of initiating the National Fadama Development Project was to provide rural infrastructural facility necessary for increased agricultural productivity. An attempt was made in this study to find out the extent to which these basic facilities were actually provided in the area of study and how it impacted on agricultural productivity as measured by household farm yield. The result of the study indicated that infrastructural facilities and services were more available in the study area than there were before the project implementation. The study also showed that farm yield of rural house holds increased significantly as a result of participation in the project.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Measures should be taken to sustain the improved agricultural practices brought about by the project
2. efforts should be made to extend the project to other areas of Kaduna state that did not benefit from the project and
3. Government should adopt the same design and approach used fadama 11 project on similar future projects.

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Rural-Urban Migration among Secondary School Graduates in the Southern Senatorial Zone of Kaduna State: Causes and Effects on Agricultural Production

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Abstract

The study sought to determine the causes of Rural-Urban migration among secondary school graduates in the Southern Senatorial Zone of Kaduna State and how it affects agricultural production. Two research questions and two hypotheses guided the study. The population for the study was 264 comprising of 41 Agricultural Development Project (ADP) Extension Agents and 223 teachers of agriculture in the three educational inspectorate divisions in the area of study. The sample used for the study was 131 respondents. Questionnaire was used for data collection. Data was analyzed using the mean to answer the research questions while the t-test statistic was employed in testing the hypotheses of the study. Major findings include that lack of good road network, poor prices of agricultural products among others are causes of rural-urban migration. Respondents also perceived low agricultural production, poverty, hunger, food insecurity, loss of the most informed and enterprising portion of the rural population among others as effects of rural urban migration on agricultural production. The results of the test of hypotheses showed that there was no statistical significant difference in the Mean Responses of the respondents. It was recommended that government and non-governmental organizations should come up with policies and programs that will lead to the development of the rural areas such as rural roads construction, rural electrification, farm input subsidy, rural health services among others.

Key words: Migration; Secondary school graduates; Agricultural Production

Introduction

Human migration involves the movement of people from one place to another. People move from one place to another for various reasons. In the context of this study, rural-urban migration is the movement of people (secondary school graduates) from the rural areas to the urban centers. Tunde (2009) opined that migration is an inevitable part of human existence. The author further stated that migration has had a long history and its pattern has changed considerably over time. In their submission, Olatunbosun and Adepoju in Tunde (2009) observed that rural-

urban migration assumed prominence in the oil boom era of the 1970s. Fadayomi (1992) reported that rural-urban drift became more intractable with obvious dichotomy in access to modern facility and living standards between rural and urban centers.

Rural urban migration has continued to deprive the Nigerian rural agrarian areas of able-bodied literate youths who are supposed to be an important source of farm labor and more pre-disposed to new and improved methods of farming. Useful natural resources which can be harnessed for economic development abound in rural Nigeria. Akande (2002) observed that Nigeria has a large proportion of both the rural sector and rural people and that the inhabitants of rural Nigeria engage in agriculture. Lending support of this assertion, the Agricultural Development Fund (ADF, 2005) stated that agriculture employs about 80% of the Nigerian rural population. Olatunbosun in Tunde (2009) pointed out that agricultural activity occupies four-fifth of the rural population in Nigeria.

With majority of the Nigerian population (60%) and by extension majority of secondary school graduates resident in the rural areas as pointed out by Gana (2001) where agricultural production is favored, this group of individuals (secondary school graduates) instead of remaining in the rural areas in order to take advantage of the God-given abundant natural resources prefer moving to the cities in search of non-existing white-collar jobs. The rural communities in Nigeria are characterized by lack of social infrastructure such as portable drinking water, good roads, electricity, health facility among others as a result of rural-urban investment imbalance.

The implication of rural-urban migration is obvious. It remains one of the reasons for which agriculture and the rural area continues to be undeveloped as pointed out by Tunde (2009). In the opinion of Makinwa (1981), agricultural development cannot make any substantial progress if allowed to remain bereft of requisite human capital. As a result of the selective nature of rural-urban migration with regards to human resources, it has been noted to cause major hindrances to rural productivity and farm growth (Colayide, 1975 and Fadayomi, 1994). Migration to the urban areas therefore affects food production and agricultural exports; causing hunger and poverty in the rural areas. It also makes youths to create and live in slums. Also, when in the town without doing anything meaningful to make ends meet, most youths are tempted to go into criminality and other anti-social behaviors.

The ugly trend of concentrating social and economic infrastructure and services in the urban centers to the neglect of the rural areas where most agricultural production takes place thus resulting in the mass movement of the rural labor force should not be allowed to continue. Makinwa (1981) observed that to achieve a reasonable growth rate in the rural sector would require active participation of a sizeable, informed, healthy, economically and socially

motivated population. It is in realization of this that various governments past and present initiated different policies and programs aimed at developing the rural areas and checking the problem of unemployment were put in place. Some of these programs and policies put in place by government in Nigeria include: the National Agriculture and Cooperative Banks, NACB established to facilitate agricultural financing to farmers, the National Accelerated Food Production Program, NAFPP to emphasize agricultural research and extension support to farmers. Others are the Operation Feed the Nation, OFN initiated to build the spirit of dignity of labor and re-engaging idle hands back to land; the River Basin Development Authority, RBDAs and the Directorate of Food Roads and Rural Infrastructure, DFFRRI. The DFFRRI was established to provide the Nigerian rural populace with infrastructural facilities such as roads, electricity, water, boreholes etc. in order to enhance food production, processing and evacuation of their produce to urban markets and to stem the tide of rural-urban migration. Yet another government initiative aimed at improving the rural living condition was the introduction of the Directorate of Employment, NDE. The NDE according to Igbeka (2003) was to address unemployment problem of graduate school leavers. The list of government policies and projects is by no means exhausted in this paper. Some of the policies are still on course while others have since gone moribund. Despite government's efforts in initiating programs, projects and policies aimed at developing the rural areas, Tunde (2009) stated that the efforts of Nigerian government towards this course over the years have failed to make any meaningful improvement in the rural Nigeria.

The rural area of Nigeria is favorable for agricultural production because of the abundant natural and human resources. Rural Nigeria inhabits over 70% of the total population of the country. Unfortunately, this rural majority are the most neglected with little or no presence of basic social amenities resulting in the mass drift of the ruralites into the urban areas where life is more comfortable. The exodus of people mostly youths from the rural farming areas to the urban centers has implications on agricultural production and poses threat to security of lives and property. There is therefore the need to carry out a study that will look in to the reasons why secondary school graduates migrate from the rural areas of southern senatorial zone of Kaduna state to urban centers. The effects of this trend on agriculture should also be established and possible solutions recommended.

Purpose of the Study

The purpose of the study was to investigate the factors responsible for rural urban migration among secondary school leavers and how it affects agricultural production in the southern senatorial zone of Kaduna state. Specifically, the study

i. Identified the factors responsible for rural-urban migration among

secondary school graduates in the area.

ii. Determined the effects of rural-urban migration on agricultural production in the southern senatorial zone of Kaduna state.

Research Questions

1. What are the factors responsible for rural-urban migration among secondary school graduates in the southern senatorial zone of Kaduna state?
2. What are the effects of rural-urban migration among secondary school graduates on agricultural production in southern senatorial zone of Kaduna state?

Research Hypotheses

HO_1: There is no significant difference between the mean ratings of agricultural science teachers and extension agents on factors responsible for rural-urban migration among secondary school graduates in southern senatorial zone of Kaduna state.

HO_2: There is no significant difference between the mean ratings of agricultural science teachers and extension agents on the effects of rural-urban migration among secondary school graduates on agricultural production in southern senatorial zone of Kaduna state.

Methodology

***Area of the Study*:** The area of the study was the southern senatorial zone of Kaduna state. The area has three educational inspectorate divisions and one agricultural development zone. Southern Kaduna Senatorial zone is in the savanna vegetational zone of Nigeria with large expanse of cultivable land and favorable climate for both arable crop and animal farming.

***Design of the Study*:** The study adopted a survey research design. The design was appropriate because the study used questionnaire to collect data from agricultural science teachers and extension agents.

***Population for the Study*:** The population for the study was 264 comprising of 223 teachers of agriculture in public secondary schools (drawn from the three educational inspectorate divisions) and 41 Extension Agents (E.As) (of the Samaru Agricultural zone) in the southern senatorial zone of the state. The total number of agricultural science teachers was obtained from the three educational inspectorate divisions in the zone while the total number of agricultural extension agents was obtained from the Samaru agricultural zone. These individuals were used because they are in a better position as experts in agriculture to give possible causes of rural urban migration among secondary school graduates and the effects of the trend on agriculture.

***Sample for the study*:** The sample of teachers used for the study was 90 obtained through the proportionate random sampling technique based on the three educational zonal inspectorate divisions in the southern Kaduna senatorial district. This involved sampling the teachers in proportion to the total number of teachers in each of

the educational zones. The zone with the highest number of teachers had more teachers involved in the study than the one with lesser. Based on this therefore, 40 teachers were sampled from Kafanchan inspectorate division, 32 teachers sampled from Zonkwa inspectorate division and 18 teachers sampled from Godo-Godo inspectorate division. All the 41 Extension Agents were involved in the study since they were few giving a total sample size of 131.

***Instrument for Data Collection*:** A 36 item questionnaire 'Rural-Urban Migration Questionnaire (RUMQ)' was developed from literature and used for data collection. The instrument was designed to obtain from the respondents ratings of the questionnaire base on the extent to which such items are perceived as causes of rural urban migration and how it affects agricultural production. A five-point rating scale was constructed for the respondent's responses. The scale points and their respective numerical values were: 'to a very great extent', TVGE (5), 'to a great extent',TGE (4), 'to some extent',TSE (3), 'to a little extent',TLE (2) and 'to no extent at all' TNE (1). The instrument was face validated by three experts and pilot-tested for internal consistency. A reliability coefficient of 0.89 was obtained with Cronbach Alfa technique and the instrument was considered reliable.

***Methods of Data Collection and Analysis*:** Data collection was carried out through personal contact with the help of three research assistants. One hundred and thirty one copies of the questionnaire were administered. All the 130 copies were retrieved, giving a 100% return.

The Mean and frequencies were used to answer the research questions. The mean scores were used to determine the level of perception expressed on a 5-point scale for each of the items. A mean rating of 2.50 was used for decision making. The t-test statistic technique was employed for the test of hypotheses of the study. The hypotheses were tested at 0.05 level of significance.

Results

Table 1: **Mean responses and t-test Analysis of the responses of agricultural science teachers and Extension Agents on factors responsible for rural-urban migration among secondary school leavers in southern senatorial zone of Kaduna state.**

s/ no	Factors	$\overline{X}_1$	SD_1	RMK	$\overline{X}_2$	SD_2	RMK	t-cal	t-tab	Dec
1	Search for white-collar jobs	4.64	0.62	TVGE	3.44	0.64	TSE	0.97	1.96	NS
2	Poor road network	3.63	1.44	TGE	3.31	0.72	TSE	0.61	1.96	NS
3	Farming is strenuous	4.17	0.48	TGE	3.72	0.56	TGE	0.67	1.96	NS
4	Lack of pipe-born water	3.46	0.94	TSE	3.40	0.50	TSE	0.87	1.96	NS

5	Lack of good marketing facilities	3.30	0.44	TSE	3.60	0.72	TGE	-1.16	1.96	NS
6	Lack of credit facilities	3.49	0.61	TSE	3.22	0.87	TSE	0.80	1.96	NS
7	Absence of good health facilities	4.21	0.68	TGE	3.19	0.86	TSE	-1.26	1.96	NS
8	Conservativeness of rural life	3.08	0.64	TSE	3.35	0.65	TSE	0.81	1.96	NS
9	Absence of good educational opportunities	3.61	0.46	TGE	3.42	0.53	TSE	0.46	1.96	NS
10	Lack of good storage facilities for farm produce	3.20	0.64	TSE	3.67	0.89	TGE	-1.11	1.96	NS
11	Escalating cost of farm labor	3.21	0.64	TSE	3.15	0.68	TSE	0.77	1.96	NS
12	Misunderstanding among family members or neighbors	3.69	1.08	TGE	3.67	0.75	TGE	-1.52	1.96	NS
13	Poor prices of agricultural commodities	3.81	0.75	TGE	3.03	0.86	TSE	0.21	1.96	NS
14	Low farm productivity	2.67	0.46	TSE	3.98	0.32	TGE	0.35	1.96	NS
15	Farming not a lucrative business	2.92	0.82	TSE	2.97	0.22	TSE	0.79	1.96	NS
16	Lack of commitment to agriculture by government	4.23	1.21	TGE	3.45	0.25	TSE	0.80	1.96	NS
17	Need to change personal status	3.31	0.32	TSE	3.21	0.71	TSE	-1.20	1.96	NS
18	Lack of rural electricity	4.04	0.65	TGE	3.60	0.11	TGE	0.91	1.96	NS
19	Clumsiness of rural life	3.87	0.17	TGE	3.41	0.72	TSE	0.56	1.96	NS
20	Aspiration for better living conditions	3.62	0.55	TGE	2.73	0.66	TSE	0.53	1.96	NS
21	Unjust treatment of school leavers by parents, neighbors, friends etc.	2.64	0.51	TSE	3.22	0.41	TSE	0.97	1.96	NS
22	Inability to meet family demands	4.22	0.70	TGE	3.60	0.31	TGE	0.21	1.96	NS

KEY: $\overline{X}_1$=Agric. Sc. Teachers; $\overline{X}_2$= Extension Agents; SD= Standard deviation; NS= Not significant; TVGE=To a very great extent; TGE= To a great extent; TSE=To some extent; N_1= Number of agric. Science teachers (=90), N_2= Number of extension agents (=41).

Table 1 reveals that the Mean scores of agricultural science teachers on their perception on the causes of rural-urban migration ranged from 2.64-4.64. Based on the scale points of the instrument used for data collection and the real limits of the respective numerical values of the points, it indicates that agricultural science teachers perceived all the items listed in the table as causes of rural urban

migration. Data analysis presented in the same table revealed that the Mean scores of extension agents on the same items ranged from 2.73-3.98. The Mean values indicated that the respondents perceived all the items listed in the table as causes of rural-urban migration.

Furthermore, the result of the t-test analysis showed no significant ($p \leq 0.05$) difference between the Mean scores of the two groups of respondents. The null hypothesis was then upheld in all the instances. The study therefore, revealed that the respondents did not vary in their opinion of the items as causes of rural-urban migration.

Table 2: **Mean responses and t-test Analysis of the responses of agricultural science teachers and Extension Agents on effects of rural-urban migration among secondary school leavers on agricultural production in southern senatorial zone of Kaduna state.**

s/n	Effects of rural urban migration			Agric teachers		Extension agents		t-cal	RMK
		G	Dec	$\overline{X}_1$	SD_1	$\overline{X}_2$	SD_2		
1	Loss of manpower	3.40	TSE	3.45	0.69	3.35	0.94	0.08	NS
2	Decline in the gross domestic product	3.10	TSE	3.06	0.94	3.13	0.01	0.05	NS
3	Decline in food production	3.51	TGE	3.39	0.91	3.63	1.08	0.65	NS
4	Escalating cost of feedstuff	3.59	TGE	3.41	0.89	3.76	1.98	0.32	NS
5	Rural poverty	3.52	TGE	3.63	0.68	3.40	0.93	0.25	NS
6	Food insecurity	3.63	TGE	3.71	0.56	3.55	0.56	0.29	NS
7	Food importation	3.56	TGE	3.71	0.51	3.41	0.90	1.22	NS
8	Decline in export earnings	3.66	TGE	3.64	0.48	3.67	0.78	0.36	NS
9	Loss of the literate population	3.51	TGE	3.72	0.88	3.30	0.45	1.04	NS
10	Increase in criminality	3.41	TSE	3.41	0.62	3.41	0.91	0.41	NS
11	Loss of the most enterprising rural population	2.07	TLE	3.06	0.86	3.15	0.75	0.28	NS
12	Loss of prospective adopters of farming innovation	3.15	TSE	3.10	0.56	3.20	1.02	0.66	NS
13	Hunger	3.23	TSE	2.90	0.76	3.56	0.67	0.75	NS
14	Insecurity of life and property	3.50	TGE	3.15	0.86	3.05	0.91	1.05	NS

NOTE: G=Grand Mean; TGE=To a great extent; TSE=To some extent; TLE=To a little extent; $\overline{X}$1=Mean one (Teachers); $\overline{X}_2$=Mean two (extension agents); SD_1=Standard deviation one; SD_2=Standard deviation two; N_1= Number of agric teachers (=90); N_2= Number of extension agents (=41); t-tab=1.96

Table 2 shows that the Grand Mean scores of agricultural science teachers and extension agents ranged from 2.07-3.66. The Grand Means indicated that the two groups of respondents perceived the items to be effects of rural-urban migration to a great extent (items 3, 4, 5, 6, 7, 8, 9, and 14) and to some extent (items 1, 2, 10, 12, and 13). Item 11(i.e. loss of the most enterprising rural

population) was perceived as an effect of rural-urban migration to a little extent.

The results of the test of hypothesis of no significant difference between Mean scores of agricultural science teachers and extension agents showed no significant ($p \leq 0.05$) values in all cases. The null hypothesis of no significant difference was therefore upheld.

Discussion of Findings

The study has shown that the factors responsible for rural-urban migration among secondary school graduates in the southern senatorial zone of Kaduna state include among others search for white collar job, lack of good health facilities, and absence of good road network, changing self status, aspiration for better living condition, lack of educational opportunity etc. The finding is in agreement with those of Chant (1992), Fadayomi (1992), Bates (2001), Deltan and Rogally (2002) and Tunde (2009). Both authors both authors submitted that factors responsible for rural-urban migration include the search for job opportunities, changing of self identity, conflict, rural urban investment imbalance, and absence of basic social amenities. Absence of good road network for instance, does not encourage meaningful agricultural productivity as cost of importing farm inputs is high and farmers incur high cost in transporting their produces to the markets and most times suffer losses due to the bad nature of the roads. The findings of the study showed that secondary graduates in the area of study migrate to the cities as a result of aspiration for better living conditions. This may not be unconnected with the fact that secondary school leavers being youths and full of energy would have a dream of a life condition better than what is obtainable in the rural areas.

The findings of the study also showed that effects of rural-urban migration among secondary school graduates on agriculture in southern senatorial zone of Kaduna state include loss of manpower, food insecurity, decline in food production, loss of prospective adopters of farming innovations, loss of literate and most enterprising population, hunger, insecurity of lives and property among others. Similar findings were reported by Essang and Mabawanku (1974), Makinwa (1988),Dyavand (1993), Fadayomi (1994), and Tunde (2009).

Conclusion

The study investigated the factors responsible for rural-urban migration among secondary school graduates in Kaduna state and how it affects agricultural production. It was found out that rural-urban migration among this group of individuals is caused by a number of factors principal among which is rural-urban investment imbalance. Also the study indicated that rural migration has an implication on agricultural production in the area. It results in decline food production, hunger, loss of active and informed manpower among others.

Recommendations

The following recommendations are made based on the findings of the study.

1. Government should evolve policies and programs aimed at developing the rural areas so as to retain secondary school graduates in the rural areas where they can get engaged in meaningful economic activities.
2. Credit facilities should be made available to youths who want to venture into agriculture since lack of capital is found to be a major set-back in any business ventures.
3. Kaduna state government should make adequate arrangement for the prompt and attractive purchasing of farm products produced by farmers to serve as motivation to the youth to go into farm business.

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Fostering Creativity Among Secondary School Adolescents: Roles of Mothers and Teachers

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Abstract

This study investigated roles of mothers and teachers in fostering creativity among secondary school adolescents. It was a survey. Three research questions guided the study. The population comprised of all mothers in Federal College of Education (Tech), Umunze and all the secondary school teachers in Orumba-South Local Government Area of Anambra-State. Questionnaire was used for data collection and mean was used for analysis. Findings include; 10 factors militating against fostering creativity among secondary school adolescents, 8 roles of mothers and 8 roles of teachers for fostering creativity among secondary school adolescents were also identified. Based on the findings, recommendations were made which include parents especially mothers providing materials and encouraging creative activities among their adolescent children to increase their cognitive flexibility and idea generation skills.

Key Words: Creativity, Fostering, Adolescent, Mother and Teacher.

Introduction

The word creativity is linked with the origin itself. It is from the Latin word "creare" which means "to make". Creativity therefore is the process of producing something that is characterized by originality, expressiveness and imagination. According to Craighead and Nemeroff (2004), creativity is a term that can be used to describe the process of bringing something new into being by becoming sensitive to gaps in human knowledge, identifying these deficiencies, searching for their solution, making guesses as to a potential solution, testing one's hypotheses and communicating the final result. Runco (2004), views creativity as an important element in the recombination of elements, to produce

new technologies and product and consequently, economic growth. Creativity therefore, is any act, idea or product that changes an existing domain into a new one.

Creativity requires hard work, long training, unrelenting criticism, perfectionist standard an atmosphere that is free from stress, openness to experiences and lack of rigidity, acceptance of one's own evaluation, ability to toy with concepts and to shape wild hypothesis. According to Onu and Ikeme (2008) it includes ability to generate new and lots of ideas, flexibility as opposed to rigidity, associate and linked facts and brainstorm, analyze and incubate. Some of the characteristics of a creative personality include: having a great deal of energy, often quiet and at rest, smart yet naïve, playfulness, discipline, responsible, imaginative and fantasy, habours opposite tendencies on the continuum between extroversion and introversion, remarkably humble and proud at the same time etc. Creative individual therefore should respect the irrational element in himself and trust that he will be able to produce a new order from them (Barron, 1989)

Creativity like any other gift is of both genetic and environmental factor that needs maturity before it blossoms (Uzor, 1996). It is seen as synonymous with productive thinking, divergent thinking, critical thinking and even problem solving. Components or underlying factors of the creative process could be approached by looking at how creative product is measured or evaluated. The most common criteria according to Sandeep (2012) for the evaluation include:

* ***Flexibility*****:** This captures the ability to cross boundaries and makes remote association. This is measured by number of different categories of ideas generated.

***Origi*n*ality:** This measures how statistically different or novel ideas are compared to a comparison group. This is measured by the number of novel ideas generated.

* ***Fluency*****:** This captures the ability to come up with many diverse ideas quickly. This is measured by the total number of ideas generated.

* ***Elaboration*****:** This measure the amount of detail associated with the idea. Elaboration has more to do with focusing on each solution/idea and developing it further.

Fostering creativity skills is of great importance in the life of adolescents as this group of people is the future leaders, developers, builders of any country. Again, since technology is advancing our society at an unprecedented rate, creative problem solving will be needed to cope with these challenges as they arise. At adolescence stage, educational input must be at its height in order to get the greatest output. Therefore, the need for creative teaching cannot be overemphasized in the life of adolescents because it offers them the opportunity of always having independent judgment in whatever they are doing. It equips them with the skill of autonomy, developing their personality traits, use of intuition,

proper utilization of their environment, attraction to complexity etc. According to Barron & Harrington (1981), fostering creativity in the life of adolescents give them ability to resolve paradoxes or to accommodate apparently opposite or conflicting aspect of one's self-concept, having firm sense of one's self as creative. Mothers as the first teachers of children should always provide opportunities for choice and discovery for children in order to develop creative mind. However, when mothers deliberately planned creative activities for children especially the adolescent, new ideas will begin to emerge, and implementation of these new ideas taken through processes will ensure quality services thereby given room for sustainability.

In the Nigerian educational system, especially at secondary school level, government emphasis is on providing technical and vocational skills necessary for agricultural, industrial, commercial and economic development which calls for creative teaching for this goal to be achieved (National Policy on Education, 2004). According to Omeke (2011) promoting intrinsic motivation and problem solving are two areas where creativity can be fostered in students. He went further to say that students are more creative when they see a task as intrinsically motivating, valued for its own sake. However, to promote creativity, educators should identify what motivates students and structure teaching round it. Uko-Aviomoh (2005), noted that to teach creatively, teachers should use a variety of instructional materials and techniques, engage in series of research in order to be adequately equipped to deliver their lessons creatively and provide learners with opportunities to learn beyond the classroom. Teachers may also employ the method of brain-storming and creative problem solving by teaching the students how to generate un-usual ideas, encouraging acquisition of domain-specific knowledge. However, according to Ezenwanne (2007) and Anene-Okeakwa (2002), many teachers teach without instructional materials or laboratory facilities. Some of them teach mostly theoretical concepts and mostly adopt lecture method of teaching which stifle creativity among students. The present quest for fostering creativity among learners makes it imperative that teachers and mothers should help in giving instructional activities that promote creativity skill needed for poverty reduction. Oloido (2000) remarked that the absence of creativity skills among adolescents and school leavers is an impediment to sustainable development, which if not tackled would continue to incite and increase incidences of unemployment among the Nigerian populace.

Creativity skills therefore, are highly needed by adolescents because creativity as knowledge economy can enable individuals, families, communities and even countries without any natural resources to grow faster than those with abundance of such resources. Relying only on natural resources to the neglect of creativity, a knowledge economy may, not guarantee survival in this current dynamic era. It therefore becomes

pertinent to study the factors that are militating against creativity development among secondary school adolescents, the roles of mothers and teachers to foster creativity among this group of people in Orumba-South Local Government Area of Anambra State. This is the main thrust of this paper.

Purpose of the Study

The general purpose of the study is to determine the roles of mothers and teachers in fostering creativity among secondary school adolescents. Specifically, the study determined the following:

1. Factors militating against creativity development among secondary school adolescents in Orumba-South Local Government Area.
2. The roles of mothers in fostering creativity among secondary school adolescents
3. The roles of teachers in fostering creativity among secondary school adolescents

Research Questions

The study answered the following research questions:

1. What are the factors militating against creativity development among secondary school adolescents in Orumba-South Local Government Area?
2. What are the roles of mothers in encouraging creativity among secondary school adolescents?
3 What are the roles of teachers in encouraging creativity among secondary school adolescents?

Methodology

Design of the Study: The study employed a survey research design.

***Area of the Study*:** The area of study was Orumba-South Local Government Area in Anambra-State. The Local Government Area is made up of 15 towns with headquarter at Umunze. It has a total population of 184,548 (Federal Republic of Nigeria Official Gazette, 2009). The indigenes are predominantly farmers.

***Population of the Study*:** The population of the study consisted of the 550 working mothers of Federal College of Education (Tech), Umunze (Research & Statistics unit, Federal College of Education (Tech), Umunze, September, 2012) and 124 secondary school teachers in Orumba-South Local Government Area (Education Unit, Orumba-South Local Government Area, Anambra-State, September. 2012)

***Sample and Sampling Technique*:** A sample of 200 out of the 550 mothers working at the Federal College of Education (Tech), Umunze was randomly selected and 65 out of the 124 secondary school teachers were randomly selected making the sample size a total of 226 respondents.

***Instrument for Data Collection*:** The instrument for data collection was questionnaire designed by the researchers. The instrument was divided into two main sections. Section A was structured to obtain personal data of the respondents. Section B was subdivided into A, B, C and sought information aimed at providing answers to the three research questions. A four point rating scale of "Strongly agreed", "Agreed",

"Disagree" and "Strongly disagree" was used.

The instrument was subjected to both content and face validation by two experts in Home Economics Education Department and one from Measurement and Evaluation Department of Federal College of Education (Tech), Umunze.

The instrument was pre-tested using 20 mothers and 15 teachers of secondary school in Orumba-South Local Government Area who are not part of the sample for the study. Cronbach Alpha reliability index was used to arrive at a coefficient value of 0.82 which showed a good reliability.

***Data Collection and Analysis Technique*:** A total of 226 copies of questionnaire were administered with the help of a research assistant. The collection of all the copies was by hand. Data collected were analyzed using **mean**. The researchers used 2.50 as the level of acceptance; that is any item with mean rating of 2.50 and above was regarded as accepted while any item with mean below 2.50 was regarded as rejected.

Findings of the Study: The following findings were made:

1. Ten factors militating against fostering of creativity among secondary school adolescents in Orumba-South Local Government Area (Table 1)
2. Eight roles of mothers in fostering creativity among secondary school adolescents (Table 2)
3. Eight roles of teachers in fostering creativity among secondary school adolescents (Table 3)

Table 1: Mean Rating of Respondents on the Factors Militating against Fostering of Creativity among Secondary School Adolescents in Orumba-South Local Government Area

S/N	Factors militating against fostering of creativity	$\overline{X}$	Decision
1	Teachers and mothers are not creative	3.14	Agreed
2	Lack of variety of instructional materials and technique of imparting the knowledge on students	2.81	Agreed
3	Not encouraging teacher's professional development in creativity	3.08	Agreed
4	Non engagement of knowledgeable resource persons to explain techniques of teaching creativity to secondary school teachers	3.06	Agreed
5	Teachers do not attend workshops and seminars	2.94	Agreed
6	Teachers are not ICT complaint to obtain information on creativity from internet	3.20	Agreed
7	Not allowing children to be unique and to express their individuality	2.78	Agreed
8	Unsafe and unfavourable creative environment	3.00	Agreed
9	Teachers do not foster originality among students in their academic work	3.20	Agreed

10	Inadequate provision of creative stimulating materials both at homes and at school	2.78	Agreed

Table 1 above reveals that the entire items scored above the cut off point of 2.50. Therefore, the respondents agreed that the listed items were factors that militate against creativity among secondary school adolescents

Table 2: Mean Responses of the Respondents on the Role of Mothers in Fostering Creativity among Secondary School Adolescents

	Roles of Mothers in Fostering Creativity	$\overline{X}$	Decision
1	Provision of conducive learning environment at home and provision of materials needed	3.00	Agreed
2	Affording adolescents freedom to explore their environment	2.87	Agreed
3	Not being too authoritative and protective over adolescent	2.63	
4	Provision of right type of food that ensures healthy development	3.00	Agreed
5	Verbal encouragement and incentives for any new things or skills exhibited	3.20	Agreed
6	Avoiding sex-role stereotype among children	2.70	Agreed
7	Encouraging confidence and willingness to take risk	3.01	Agreed
8	Giving children challenging tasks that demand finding solutions by themselves	3.00	Agreed

Table 2 above reveals that all the respondents agreed to all the items listed. All the items had mean rating above 2.50. This implies that all the items are the roles of mothers in encouraging creativity among secondary school adolescents.

Table 3: Mean Responses of the Respondents on the Role of Teachers in Encouraging Creativity among Secondary School Adolescent

S/N	Roles of teachers in fostering creativity	$\overline{X}$	Decision
1	Building motivation, especially internal motivation	2.78	Agreed
2	Embarking on excursions, projects and field trips with the adolescents	3.00	Agreed
3	Using varied teaching technique to foster creativity in adolescents	2.49	Agreed
4	Identifying and encouraging the acquisition of creativity skills among adolescent student in the course of teaching	3.20	Agreed
5	Advocating and encouraging originality by assisting adolescent to come up with new uses of object	2.70	Agreed
6	Stimulating and rewarding curiosity and exploration	2.60	Agreed
7	Helping the adolescents to redefine problems and think across subject through brain storming	3.67	Agreed
8	Display of good creative work done by others in the class	3.50	Agreed

Table 3 reveals that all the respondents agreed to all the items listed. All the items had mean ratings above 2.50; this implies that all the items are the roles of teachers in fostering creativity among secondary school adolescents.

Discussion of Findings

Table 1 shows the mean responses of the respondents on factors militating against creativity among secondary school adolescents. The result indicates that parents and teachers agreed to all the items as factors responsible. All the items have mean scores of 2.50 and above. The findings reveal that most teachers in secondary schools are not creative, that there is lack of instructional materials being supplied both at home and at school and also inappropriate teaching techniques that will help stimulate creativity in these young people. Hence, when these entire ingredients for teaching and learning are lacking, adolescents on their own will not perform magic. This finding is in line with the findings of Ezenwanne (2007) and Anene-okeakwa (2002) who noted that many teachers are not creative, that they teach without instructional materials or laboratory facilities. Some of them teach mostly theoretical concepts and mostly adopt lecture method of teaching which stifle creativity among students. This has great implications on the creative ability of the students. One easily noticed that originality is not encouraged at all and this hinders these children being unique and inability to express their individualistic tendencies.

Table 2 shows the mean responses of respondents on the roles of mothers in encouraging creativity among secondary school adolescents. The result indicates that mothers have a lot of roles to play in enhancing creativity in the lives of their children. The implication then is that mothers should assist the adolescents in the development of their creative abilities by providing a very good conducive learning environment that take care of the materials needed for growth and development, provide them with right type of food that ensures healthy development.

Finally, table 3 looked at the roles of teachers in encouraging creativity among adolescents. The findings show that respondents agreed to all the items as the roles of teachers to foster creativity. The findings are in line with Uko-Aviomoh (2005), who noted that to teach creatively, teachers should use a variety of instructional materials and techniques, engage in series of research in order to be adequately equipped to deliver their lessons creatively and provide learners with opportunities to learn beyond the classroom. He went further to say that teachers should build motivation, especially internal motivation in their students for the creativity abilities to be sustained in their lives. Oloido (2000), remarked that the absence of creativity skills being sustained among adolescents and school leavers, is an impediment to sustainable development, which if not tackled would continue to incite and increase incidences of unemployment among the Nigerian populace.

Conclusion

Creativity is the major answer to solving human problems. In Nigeria, there are many adolescents endowed with creative abilities, but due to lack of encouragement from mothers at homes and teachers in the schools who are the main agencies of education, these talented young men and women are wasting away. Some are being used as maids only to hawk and generate income for the family, while some are used as tugs by politicians. If nothing is done to salvage this situation, these young people will just waste away. This poses a great challenge to individual families, government and the nation as a whole. Adolescents are the bedrock of any society and should be given adequate training at this stage of their lives and helped to develop creative abilities that promote and sustain knowledge economy.

Recommendations

1. Parents especially mothers should be up and doing in providing materials and encouraging creative activities among their adolescent children to increase their cognitive flexibility and idea generation skill.

2. Teachers, on their part should always feel free to collaborate with each other to share professional ideas and even engage resource persons to put them through in the areas they are not competent enough.

3. Government should send these secondary school teachers on training courses that relate to creativity and always organize conferences and workshops for them.

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Production, Proximate and Sensory Evaluation of "*Gulguli*" a Nigerian Indigenous Snack/Meal

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Abstract

The study was carried out to improve on the production of *Gulguli* using sorghum. A formula was developed from the original production of *Gulguli* from African arrowroot lily ("Dumsu") /groundnut at the ratio of 80:20 as control (sample A) to sorghum/groundnut blends by varying the levels of groundnut. The blends were formulated thus: sample B (sorghum/groundnut, 80:20), sample C (sorghum/groundnut, 70:30), sample D (sorghum/groundnut, 60:40) and sample E (sorghum/groundnut, 50:50). Standard techniques were used to analyze the proximate and organoleptic attributes. Data were statistically analyzed using pair comparison test method. Results showed that sample B had the highest moisture content (39.00%) and carbohydrate content (61.50%). However, sample E appears to have the most desirable/highest nutrient profile (crude fat content 40.20%, ash content 2.80%, crude protein 26.25%, and crude fibre 1.95%) and organoleptic attributes (7.60) on a 9-point descriptive hedonic scale, thus most acceptable for consumption.

Keywords: *Gulguli,* Indigenous, Production, Proximate, Sensory Evaluation

Introduction

Gulguli is a indigenous snack/meal from African arrowroot lily (*Tacca involucrata*) / "Dumsu" (Fulani name for African arrowroot lily) and groundnut (*Arachis hypogeal L.*) which are consumed by both adult and children among "Fulanis, Verawas, Dandankwo, Chambawas, Kilba' and many other tribes in Adamawa State of Nigeria. Nowadays people are using sorghum (*Sorghum bicolor L.*) as an alternative for the production of *Gulguli*. Sorghum is one of the most important crops in Africa with more than 35% grown directly for human consumption (Anglani, 1998; Awika and Rooney, 2004). Dikko, Hilhorst and Traore (2005) emphasized that sorghum grains are generally used for the preparation of "ogi" (porridge) and couscous. Kangama and Rumei (2005) stressed that more that 7000 sorghum varieties have been identified; therefore there is a need of their further uses in the production of traditional diets.

African arrowroot lily (or "Dumsu") is a perennial plant that belongs to the

family *Araceae* of the other Arales. It is native to tropical Africa, and is widely distributed in most parts of the forest and savannah regions of Nigeria. The tuber is spherical in shape and measures up to 5cm in diameter and it is one of the unconventional and less exploited sources of food for human and animal nutrition (Igbabul, 2000). Groundnut (*Archis hypogeal L.*) is an indigenous legume whose fruits are formed underground (Olapade, Oke and Olaokun, 2003). It is a protein rich tuber that grows well in semi-arid regions. It contains about 25% protein and 40% oil (Ihekoronye and Ngoddy, 1985). The chemical composition of unshelled groundnut consists of 4-13% water, 36-54% fat, 21-36% protein, 12-45% carbohydrate and 2-3% ash (Okorie, Ebiringa and Ehirim, 2005).

The conventional raw material of *Gulguli* production are "Dumsu" and groundnut. Access to "Dumsu" in recent time is scarce and facing extinction. Increase in its cultivation which could have been a solution is hindered because "Dumsu" is inherently a wild plant which does not survive the low rainfall in northern area of Nigeria where it is staple; therefore, sorghum is currently used as traditional substitute for "Dumsu" in the production of *Gulguli*. However, consumers are no longer accepting *Gulguli* prepared from sorghum and groundnut because its critical blending ratio is not yet determined.

Objective of the Study

The general objective of this study therefore, was to determine the acceptable ratio of sorghum and groundnut in the production of *Gulguli* with a view to enhancing its acceptability thereby popularizing the consumption in Nigeria. Specific objectives were:

i. To formulate sorghum/groundnut blends of varying ratios for the production of *Gulguli*
ii. To evaluate the proximate composition and sensory attributes of the blends
iii To recommend acceptable blend that can also retain more consistent product qualities.

Materials and Methods

***Materials*:** "Dumsu", sorghum and groundnut were purchased from a local market in Yola South local government area of Adamawa State while sugar, salt, water and polythene bags were purchased from North Bank market in Makurdi, Benue State, Nigeria and transported to the laboratory for treatment and analysis.

Processing methods:

"Dumsu" flour

Step 1: "Dumsu" tubers (10kg) were washed; peeled, grated and excess water added and allowed to settle over night

Step 2: water decanted off and the tubers spread on flat surface to dry (40^0C for 12hrs)

Step 3: dry milled in attrition miller

Step 4: then sieved with 500mm mesh.

Sorghum grain

Step 1: Sorghum grains (5kg) were sorted and cleaned by washing with clean water

Step 2: dried at 40^0C for 12hrs
Step 3: dry milled in attrition miller and
Step 4: then sieved with 500mm mesh.

Groundnut seeds

Step 1: Groundnut seeds (3kg) were sorted to remove dirt
Step 2: roasted in a frying pan on a gas cooker marked 3 to dark brown
Step 3: dehulled, winnowed and ground to fine paste in attrition miller.

***Formulation of composites (blends*):** A formula was developed from the original production of *Gulguli* from "Dumsu"/groundnut at the ratio of 80:20 as control (sample A) to sorghum/groundnut blends by varying the levels of groundnut as shown in Table 1. The blends were separately mixed thoroughly in a kenwood kitchen mixer.

Table 1: Blends of Ingredients for *Gulguli* Production

Sample	Dumsu" (g)	Sorghum (g)	G/nut (g)	Sugar (g)	Salt (g)	Water (g)	Total (g)
A	43.20	0.00	10.80	15.61	0.39	30.00	100
B	0.00	43.00	10.80	15.61	0.39	30.00	100
C	0.00	37.80	16.20	15.61	0.39	30.00	100
D	0.00	32.40	21.60	15.61	0.39	30.00	100
E	0.00	27.00	27.00	15.61	0.39	30.00	100

Key: Sample A ("Dumsu"/groundnut, 80:20 as control), sample B (sorghum/groundnut, 80:20), sample C (sorghum/groundnut, 70:30), sample D (sorghum/groundnut, 60:40) and sample E (sorghum/groundnut, 50:50).

Preparation of Gulguli: The processing procedure used for *Gulguli* production was according to the following steps:
Step 1: The flour was formed into paste with the addition of water.
Step 2: Sugar and salt were added followed by manual mixing.
Step 3: The paste (30g) was moulded on a pastry board to a uniform thickness of 1.5cm and cut into 7cm length.
Step 4: The product was wrapped in fresh leaves of palm front or "barkeje" leaves.
Step 5: The product was steamed at 130^0C for one hour (1hr). It was then cooled and packaged in polythene bag until analysis commenced.

Proximate Analysis

The micro-kjeldahl method as described by Pearson (1991) was used to estimate the crude protein. The value obtained was multiplied by nitrogen factor (N x 6.25%) to get the percent crude protein content of the sample. Crude fat was estimated by extraction with petroleum ether using Soxhlet method of Association of Official Analytical Chemist (2000). Total ash was estimated by incinerating 2g of the sample at 550^0C for about 8hrs until the content was carbon free as described by AOAC (2000). The crude fibre was determined using the method of AOAC (2000).and modified method of Pearson (1991) while total carbohydrate was obtained by difference as described by Pearson (1991)

Sensory Evaluation:

***1. Instrument for Data Collection*:** The instrument for data collection in this

study was a structured questionnaire titled Evaluation of *Gulguli.* The face validity of the instrument was done by experts in the field of Home Science and Management of University of Agriculture, Makurdi. The validated questionnaire made up of sensory evaluation for appearance/colour, texture (smooth, loose and gummy), taste (sweet, salty and bland) and general acceptability was used and the reliability determined. Ratings were based on a 9-point descriptive hedonic scale with 9 (like extremely) being the maximum and 1(dislike extremely) the minimum in accordance with method described by Iwe (2002).

***2. Panel of Judges*:** The population was made up of the entire academic staff and the students of Food Science and Technology and Home Science and Management, University of Agriculture, Makurdi from were sample of five (5) academic staff, ten (10) students was drew. The purposive sampling technique was adopted in the selection of the panel of judges because the academic staff and senior students have better knowledge of food than other junior students and would therefore give better interpretation on what would be required on them.

***Statistical Analysis*:** Data was analyzed using pair comparison test method of Ihekoronye and Ngoddy (1985). Test of significant ($P<0.05$) difference among the samples were determined by Analysis of Variance (ANOVA) as described by Steel *et al.,* (1997) while Turkey's Least Significant Difference Test was used to separate the means as given by Ihekoronye and Ngoddy (1985).

Results

Table 2: Proximate Composition of *Gulguli* made from different composites and the control

Sample	Moisture content (%)	Crude fat (%)	Ash (%)	Crude protein (%)	Crude fibre (%)	Carbohydrate (%)
A	39.50±0.05	18.80±0.21	3.00±0.23	17.50±0.11	2.15±0.32	58.55±0.19
B	39.00±0.15	18.60±0.16	1.00±0.15	17.60±0.18	1.30±0.18	61.50±0.14
C	37.50±0.16	20.80±0.13	2.00±0.17	19.80±0.16	1.60±0.25	54.80±0.16
D	35.50±0.17	30.05±0.14	2.40±0.19	21.88±0.21	1.78±0.16	43.89±0.13
E	33.50±0.14	40.20±0.21	2.80±0.13	26.25±0.11	1.95±0.13	28.80±0.11

Key: Sample A ("Dumsu"/groundnut, 80:20 as control), sample B (sorghum/groundnut, 80:20), sample C (sorghum/groundnut, 70:30), sample D (sorghum/groundnut, 60:40) and sample E (sorghum/groundnut, 50:50).

The results of proximate composition of *Gulguli* are presented in Table 2. Moisture content of the formulated samples ranged from 39.00% for sample B to 33.50% for sample E. It decreased proportionately in all the formulated samples (B-E) with increased groundnut level. The crude fat content for the formulated samples ranged from 18.60 to 40.20%, with sample E having the

highest crude fat content of 40.20% while sample B had the lowest crude fat content of 18.60%. It increased proportionately in all the formulated samples (B-E) with increased groundnut level.

Ash content of all the formulated samples ranged from 1.00% for sample B to 2.80% for sample E. It increased proportionately in all the formulated samples (B-E) with increased groundnut level. The crude protein of sample E had the highest value (26.25%) while sample B had the least (17.60%). There was proportional increased in all the formulated samples (B-E) with increased groundnut level. Crude fibre of all the formulated samples ranged from 1.30% for sample B to 1.95% for sample E. It increased proportionately in all the formulated samples (B-E) with increased groundnut level. Carbohydrate content of sample B (61.50%) was the highest while sample E (28.80%) had the lowest value. The definite trend noticed showed proportional decreased in all the formulated samples (B-E) with increased groundnut level.

Table 3: Mean Sensory Evaluations of *Gulguli* made from different composites and the control

Colour	Texture		Taste			General acceptability
	Smooth	Loose	Gummy	Sweet	Salty	Bland	
A	6.73±1.71^{a}	6.20±2.27^{a}	5.53±2.20^{a}	6.27±2.02^{a}	7.27±1.71^{a}	5.07±2.76^{b}	6.00±2.17^{a}	7.40±2.03^{a}
B	5.93±2.22^{ab}	5.80±2.42^{a}	4.53±2.72^{a}	5.40±2.61^{a}	6.20±2.60^{b}	4.93±2.87^{c}	5.38±2.32^{b}	6.00±2.75^{a}
C	5.40±1.92^{c}	6.10±1.28^{a}	5.07±2.05^{a}	5.67±2.09^{a}	6.00±2.51^{b}	5.13±2.64^{b}	6.47±1.73^{a}	6.60±2.53^{a}
D	5.80±2.04^{b}	5.60±1.72^{ab}	5.87±1.81^{a}	6.20±1.47^{a}	6.33±1.95^{b}	5.33±2.13^{a}	6.00±1.82^{a}	6.93±2.15^{a}
E	5.73±1.98^{b}.	6.50±1.41^{a}	6.53±1.40^{a}	6.80±1.21^{a}	6.60±2.20^{b}	5.47±2.62^{a}	6.33±1.79^{a}	7.60±1.96^{a}
LSD	1.27	0.75	3.65	1.53	0.97	0.27	0.67	1.72

Values with different superscript a, b, ab, and c down the column are not significantly (P≥0.05) different.

Key: Sample A ("Dumsu"/groundnut, 80:20 as control), sample B (sorghum/groundnut, 80:20), sample C (sorghum/groundnut, 70:30), sample D (sorghum/groundnut, 60:40) and sample E (sorghum/groundnut, 50:50).

Table 3 shows the sensory evaluation results of the *Gulguli* made from different composites and the control. The result shows that the *Gulguli* made from sorghum/groundnut, 50:50 (sample E) was the most acceptable while the one from sorghum/groundnut, 80:20 (sample B) was least acceptable.

Discussion

Results in Table 2 showed that moisture content was found to decrease proportionately in all the formulated samples (B-E) with increased groundnut level. All the formulated samples (B-E) were significantly different (P<0.05) from the control (Sample A, 39.50%) with slight decreased noticed in sample B (39.00) while sample E was having the least (33.50%). The moisture content was high in samples B than other formulated

samples because sample B was less dense. The lowest moisture content noticed in sample E could be ascribed to it density, which was more than other samples because of its highest ratio of groundnut paste.

The low crude fat levels observed in sample B (18.60%) while compared with other formulated samples was expected since sample B had least ratio of groundnut blends. Also, the fact that legumes store energy in form of starch rather than fats/lipids could be attributed to the low crude fat levels. However, the low crude fat content is beneficial to the products as it will guarantee longer shelf life for the products since chances for rancidity will be reduced drastically.

The highest ash content (2.80%) in sample E was a clear indication that sample E is a good source of mineral compared to other formulated samples. This can also be attributed and agreed with the work of Richard (2003) and Christine and Gibson (2007) who reported increased ash content as a result of food supplementation and fermentation.

The highest protein content (26.25%) in sample E could be attributed to the increased ratio of groundnut level in the blend. This is because a common knowledge knows that groundnut is a legume which contains appreciable amount of protein. Also, food supplementation enhances protein content which invariably increases the nutritional worth of the products.

Crude fibre of all the formulated samples ranged from 1.30 to 1.95%, with sample E having the highest crude fibre content of 1.95% while sample B had the lowest crude fibre content of 1.30%. There were significantly different ($P<0.05$) in the crude fibre content of the samples. Certain physiological responses have been associated with the consumption of dietry fibre, such as lowering of plasma cholesterol, lowering of nutrient bioavailability, and increase in faecal bulk. Hence, sorghum/groundnut blends in the ratio 50:50 (sample E) with highest crude fibre content would imply higher lowering of nutrient bioavailability.

Carbohydrate content of all the formulated samples ranged from 28.80 to 61.50%, with sample B having the highest carbohydrate content of 61.50% while sample E (28.80%) had the lowest value. The high carbohydrate content noticed in sample B might be attributed to the high proportion of sorghum in the sample. Also, the significant ($P<0.05$) decrease in the carbohydrate content of sample E (28.80%) could be attributed to the high proportion of groundnut supplementation in the sample.

Table 3 shows the mean sensory evaluation results of the *Gulguli* made from different composites and the control. Statistical analysis indicates that there was no significant difference ($P>0.05$) between all the samples with respect to texture (smooth, loose and gummy) and general acceptability except for their appearance and taste (sweet, salty and bland). There was a significant different ($P<0.05$) for sample C (sorghum/groundnut, 70:30) which had the least appearance preference of 5.40 when compared with sample A ("Dumsu"/groundnut, 80:20) which

had highest appearance preference of 6.73. Similarly sample A had the highest taste (sweet) preference of 7.27 followed by sample E (6.60) while sample B had the least taste (sweet) preference of 6.20. The means score for sample A (5.07) salty taste showed decrease in sample B (4.93) which was the least salty taste preference, while sample E (5.47) showed the highest salty taste preference and that indicated that the higher the level of groundnut in the sample the lower the resistant of salt. However, the result of the general acceptability shows that the "Gulguli" made from sorghum/groundnut, 50:50 (sample E) was the most acceptable while the one from sorghum/groundnut, 80:20 (sample B) was least acceptable.

Conclusion

The study has shown that sorghum/groundnut can be blended to produce an acceptable and nutritionally rich *Gulguli*. From the results, the "Gulguli" made from sorghum/groundnut, 50:50 (sample E) was the most acceptable with respect to sensory characteristics and nutritional value while the one from sorghum/groundnut, 80:20 (sample B) was least acceptable.

Recommendations

- Sorghum instead of "Dumsu" can be used as an alternative for the preparation of "Gulguli". However, the 50% sorghum and 50% groundnut blend should be used for the preparation of *Gulguli*.
- Further research can be done as to ascertain *Gulguli* shelf life and development of attractive and cost effective package.

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Clothing Recycling and Renovation Practices of Rural Women Living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State

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Abstract

This study was designed to investigate the clothing recycling and renovation practices of rural women living in Rumuolumeni in Obio/Akpor Local Government Area of Rivers State. The study adopted a survey research design. A sample of 400 women who were involved in the study was selected through the random sampling technique. Questionnaire was used for data collection. Data were analyzed using mean. Findings of this study revealed only seven recycling and renovating tools, three guidelines for recycling and renovating specific clothing articles were used by the women and four recycling and renovating methods were adopted by the women. Based on the findings, four recommendations for recycling and renovating the clothing for the rural women were made.

Keywords: Clothing, Recycling, Renovation, Reconstruction, Articles.

Introduction

According to Johnson and Foster (1990), clothing is anything placed on the body to adorn, protect or communicate intent. It constitutes visual communication, which gives varied impressions about the wearer (Nwadi and Anyakoha, 2011). Clothing includes, accessories, hair dos, make ups, shoes and others (Anyakoha and Eluwa, 2005).

Clothes, according to Jones (1990) are dresses, gowns, shorts, blouses and related articles used for protection, adornment, modesty, social status, occupational and traditional identity. Horns and Gurell (1993) opined that clothes play many functional and aesthetic roles which include protection from the environment, enhancement of personality as well as role identification. According to Olugbamigbe (2010), renovation can be defined as a process of enhancing the appearance of old articles, refurbishing old items or recycling out of used materials or items in order to make them useful and also

enhance their face values. Renovation is therefore, the process of refurbishing an old item or article in order to prolong its useful life. Many favourite garments could be altered, improved and made fashionable with little initiative. Each worn garment presents its problems, and this calls for one to see to these problems (Olugbamigbe, 2010). Recycling on the other hand is a way of mending a used material through a special process so that it can become useful again. It is also a change of feature on an article where the new product is seen to serve the consumer better than the former. For example, when a long sleeve blouse is burnt, it can be reconstructed into a short sleeve. Also, an old Buba and wrapper can be turned into a skirt and a blouse. Summer blouses can be turned also into pencil skirt and bolero. Skirts, slacks and sleeves can be shortened or lengthened. Make a dress longer by adding midriff or band of contrasting fabric at the hem. Turn old clothes into blouses (Awosika, 2003).

Several years after clothes are selected to meet the individual's psychological, sociological, cultural and physical needs, they get too tight or small in size and can no longer fit the individual; sometimes the styles are out of fashion for that season or the individual gets tired of the style. Clothing articles are expensive. They therefore, need to be recycled, repaired or renovated for them to be useful again. Clothing recycling and renovation activities include: reconstruction, remodelling and renovation (CESAC, 1995). Proper recycling of clothes helps to keep them in good condition so that appearance of the wearer is enhanced. Proper recycling involves decision making. According to Anyakoha and Eluwa (2005), decision making is the action taken in selecting from alternatives courses of action. Clothing recycling decisions include, among others, tools used in recycling, guidelines for recycling clothing articles, and various recycling methods adopted by families.

Recycling and renovation of clothes prevents wasting of clothing articles and also promotes economic activities within the household. Through this, the economy of the individuals and families can be enhanced as women of this country are equipped with the necessary skills that can help them to contribute their own quota to family development (Marshal, Suzanley, Stannley, Kafgan and Spetch, 2000). Adequate recycling and renovation facilities and processes for clothing, however, are management consideration (Wood, 2oo6). Recycling and renovation done to an old garment that is too tight and faded respectively will extend the useful life of such a garment. Out of fashion garment can be and renovated or recycled neatly and when well done, the garment can appear almost as good as new (Kattlean, 2005). Proper recycling and renovation of clothes in addition to making them look new, also make them better, useful and last longer. In Obio/Akpor Local Government Area of Rivers State, women have multiple responsibilities in the homes and outside the homes, including the management of family clothing. Recycling and renovation of

clothes are important aspects of this management. Most women often lack proper knowledge and skills on proper recycling and renovation of clothing. Furthermore, majority of rural dwellers particularly those in Rumuolumeni lack adequate supply of most infrastructural facilities like electricity supply, good roads and other facilities that could help them in their clothing management practices (Nathan, 2009).

Some of these women living in Rumuolumeni have their wardrobes full of clothes that are out of fashion, too small or tight in size, faded in colour for them to use and they therefore loose functionality (Wood, 2006). Besides, most Obio/Akpor Local Government Area women have been forced to adapt to the economic hardship facing the general populace in the nation because of the economic meltdown. Men and women, young or old now resort to the use of second hand clothes and over-use what they have. People can no longer dress well to work. Above all, families spend most of their take-home salaries on clothing their family members (Olugbomigbe, 2010). Ohovoriole and Ugeru (2002) stated that the knowledge of proper recycling and renovation of clothing is very important. Acquisition of specialized skills is paramount to all practical oriented skill such as recycling and renovation of clothing (Okoro, 1999). It is therefore, necessary to seek ways of helping the women living in rural areas to improve on their recycling and renovation practices. A meaningful step in this direction is to determine their present knowledge about clothing items in the home that can be recycled and renovated as a basis for determining ways of helping them.

Purpose of the Study

The major purpose of this study was to investigate the clothing recycling and renovation practices of rural women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. Specifically, the study sought to determine:

1. clothing recycling and renovation tools and aids adopted by women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State.
2. guidelines which the women adopted for recycling and renovating specific clothing in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State.
3. clothing recycling and renovation methods adopted by the women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State.

Research Questions

The study answered the following questions:

1. What clothing recycling and renovation tools and aids do women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State utilize in recycling of their old clothes?
2. What are the guidelines for recycling and renovating specific clothing articles used by women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State?

3. What methods for recycling and renovation of clothing are adopted by women living in Rumuolumeni, Obio/Akpor Local Government Area of in Rivers State?

Methodology

***Design of the Study*:** The design of the study was survey. The survey design was considered suitable for this study because it will enable information to be gathered from fairly large number of women with an intention of assessing their opinions on the present knowledge of clothing recycling and renovation practices among them.

***Area of the Study*:** The area of the study is Rumuolumeni in Obio/Akpor Local Government Area of Rivers State of Nigeria. It is made of four communities in Rivers West Senatorial Zone. The study focused on the women. Majority of these women resident in Rumuolumeni are working in Port Harcourt and came from different local government areas of Rivers State.

***Population for the Study*:** The population for the study was made up of all the married women in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. According to the Federal Office of Statistics, the total population of females in Rivers State by 2006 was 1,633,096. The population of females in Port Harcourt West zone by 2006 census is 14,662. The population of married women in the four communities of Rumuolumeni is about 10, 462 (Federal Office of Statistics, 2006).

***Sample for the Study*:** There are four communities in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. From each selected community, 100 married women (mothers) were purposively selected because each of them has a family made up of husband, wife and children. In general, the total sample of the study was four hundred (400) women living in Rumuolumeni areas from Mgbuoshimeni, Mgbuodahia, Nkpor and Iwofe in Rivers State. The women were met at their various homes in the evening when they have returned from their various places of works.

***Instruments for Data Collection*:** A structured questionnaire which was developed based on literature and research objectives was used to collect data for the study.

***Validation of the Instrument*:** The instrument was face validated by three Home Economists from the Department of Home Economics, Ignatius Ajuru University of Education. These validates were given three copies of the questionnaire and were requested to identify ambiguities and proffer suggestions for improving the study. The experts inputs were used to draft the final copy of the questionnaire for the study.

***Reliability of the Instrument*:** To ensure the reliability of the instrument, it was trial-tested on 45 women living in rural areas of Bonny Island in Rivers State who were not part of the respondents that were used in this study. The data from the trial-testing was analyzed. The Cronbach Alpha reliability coefficient index was used to determine the reliability of the instrument, which yielded a reliability coefficient of 0.87.

This reliability coefficient indicated that the instrument was reliable and was consistent in measuring what it is supposed to measure because a coefficient of 0.87 is high and acceptable.

***Data Collection and Analysis Techniques*:** Four hundred questionnaire forms were distributed to randomly selected respondents. Only 360 responses were properly completed and retrieved. Data collected were analyzed using Mean Scores in the data analysis. A cut-off point of 3.5 and above is regarded as Agreed, while any point below 3.5 is regarded as Disagreed.

1. Seven recycling and renovation tools were used by rural women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. See table 1.
2. Three guidelines for recycling and renovating specific clothing articles were adopted by rural women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. See table 2.
3. Three processes for recycling and renovation of clothing were adopted by rural women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State. See table 3.

Findings

The following findings were made:

Table 1: Mean Scores of Responses on the Tools Used by women in Recycling and Renovation.

S/No	Tools used in Recycling	Mean Rating	Remarks
A	Cutting Tools		
1.	Razor blade	3.5	Agreed
2.	Scissors	3.5	Agreed
3.	Ripper	1.4	Disagreed
B	Measuring Tools		
4.	Tape Measure	4.0	Agreed
5.	Yard Stick	3.8	Agreed
C	Sewing Tools.		
6.	Thimble	2.4	Disagreed
7.	Pin Magnet/Pin cushion	3.8	Agreed
8.	Machine Needles	2.3	Disagreed
9.	Hand Sewing Needles	4.9	Agreed
10.	Sewing Machine	1.4	Disagreed
D.	Pressing Tools & Aids		
11.	Charcoal Iron	4.9	Agreed
12.	Electric Iron	1.5	Disagreed
13.	Pressing Cloth	2.2	Disagreed
14.	Ironing Board	3.0	Agreed
15.	Assorted Spools of thread	3.5	Agreed

Table 1 show that seven out of the 13 tools are used by the women. Each of these seven has mean scores more than 3.5.

Table 2: Mean Scores of Responses on the Guidelines for Recycling and Renovation of Clothing Articles, African Prints or English Fabrics.

S/No	Guidelines for Recycling and Renovation of Clothing Articles, African Prints.	Mean Rating	Remarks
1.	The garment to be recycled should not be too old.	4.0	Agreed
2.	The fabric to be recycled should be sufficient to make the new garment.	3.9	Agreed
3.	The grain of the old garment fabric should be studied to make laying out of pattern pieces for the new garment easy.	3.0	Disagreed
4.	The new garment can be made attractive by the use of sewing accessories.	4.5	Agreed
5.	The garment should be suitable for the purpose for which it is intended.	4.9	Agreed

Table 2 shows that 4 out of 5 guidelines for recycling and renovation of clothing are used by the women. These have mean scores more than 3.5.

Table 3: Mean Scores of Responses on the Methods of Recycling and renovation of Clothing Articles.

S/No	Methods of Recycling and Renovation of Clothing Articles	Mean Rating	Remarks
1.	Making new garments out of old ones.	3.8	Agreed
2.	Changing the colour of the old garment completely.	3.8	Agreed
3.	By remodelling out of fashion garment into a garment of current style (fashion).	4.0	Agreed
4.	By making new things out of old garments. E.g., making a girl's garment out of mother's old clothes; a boy's pair of trousers out of Dad's pair of trousers; skirt and blouse from buba and wrapper.	3.9	Agreed
5.	Redye a faded shirt to restore or change colour.	3.9	Agreed
6.	Patch work	1.4	Disagreed

Table 3 shows that all the 5 methods of recycling and renovation of clothing are used by the women. Each of these 5 methods has mean scores ranging from 3.8 to 4.0.

Discussion

These findings are discussed based on the research questions that guided this study. The study was conducted to determine the recycling and renovation of clothing practices among the rural women living in Rumuolumeni,

Obio/Akpor Local Government Area of Rivers State.

The findings in table one revealed the recycling and renovation tools adopted in the area of study. The data also showed that some of the recycling and renovation tools include: the use of cutting tools in recycling and renovation e.g., scissors, razor blade, etc, measuring tools are tape, yard stick, sewing tools. These findings are in line with the opinions of some authors cited in review of literature. Marshal et al (2000) opined that most clothing recycling and renovation need a complete recycling and renovation kits like, sewing machine, ironing board iron etc.

The data presented in table two revealed that most of the guidelines for recycling and renovation of clothing articles are adopted in the study area. These findings were therefore in agreement with CESAC (1995) who enlisted the guidelines for recycling and renovation of clothing articles as follows: the garment to be recycled should not be too old, the fabric should be sufficient for the new ones (styles), etc. Chuta (1999) also supported this by saying that recycling and renovation can enhance the appearance of clothes. Marshal et al (2000) also suggested some guidelines for recycling and renovation of clothes in the same view with CESAC (1995). Koester (1995) finally agreed that clothing recycling and renovation activities are making new things out of old garments, remodelling out of fashion garment into a garment of current fashion or style, and dying of faded garments. The views expressed helped to validate the findings from the study – the recycling and renovation practices adopted by the rural women in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State.

The findings in table three showed that the respondents agreed on the six methods of recycling and renovation practices. This is in line with CESAC (1995) who pointed out that the methods of recycling and renovation of clothing include making new garment out of the old ones, changing the colour of the old garment completely, etc. This was in the same view with Mba (2000) who reported that recycling and renovation process is the changing of old garments to more attractive ones. This was supported by Johnson and Foster (1999) who opined that different ways of recycling and renovation of clothing should be learnt. The findings were also in line with Wood (2006) who summarized ways of recycling and renovation of clothing as reconstruction, or remodelling and renovation.

Conclusion

This study has investigated the present status of clothing recycling and renovation practices of women living in Rumuolumeni rural area of Rivers State. It determined the methods adopted by women in recycling and renovation of their clothes. The recycling and renovation tools adopted by women, the guidelines for recycling and renovation of clothing articles. Based on the findings, the recycling and renovation activities are not practiced effectively by the rural women living in Rumuolumeni, Obio/Akpor Local Government Area of Rivers State even

though they have the knowledge. In addition, there are several problems such as power supply, appropriate technique, negative attitude in the women living Rumuolumeni area encounter which hinder effective clothing recycling and renovation practices in the rural areas. Therefore, there is the need to enhance clothing recycling and renovation practices to empower families for sustainable lifestyle among women living in the rural areas of Rivers State.

Recommendations

Based on the findings of this study, the researchers made the following recommendations for proper clothing recycling and renovation practices for women living in the rural areas of Rivers State.

- Workshops and seminars should be organized to educate women on skills involving clothing recycling and renovation practices.
- There is the need for the women living in the rural areas to adopt correct and best methods, using appropriate techniques and strategies for effective clothing recycling and renovation practices.
- There is the need for government or non-governmental organization to create awareness on the economic importance of clothing recycling and renovation practices among the women living in rural areas.
- Women living in rural areas should be encouraged to attend all the enlightenment programmes on clothing recycling and renovation information.

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Wardrobe Management Practices of Pregnant Teachers in Makurdi

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Abstract

This study examined the wardrobe management practices of pregnant secondary school teachers in Makurdi metropolis. The research design was survey. Population for the study comprised 1909 female teachers in secondary schools in Makurdi, Benue state. A sample of 109 respondent adult female teachers who are pregnant or had been pregnant in previous years was randomly selected. The findings include that pregnant teachers were aware of the various clothing items required during pregnancy; that the predominant garments acceptable to pregnant teachers are free flowing garments. Unpredictable change of weather affects choice of clothing by pregnant teachers.

Keywords: Wardrobe, Pregnancy, Teachers, Dress sense, Students

Introduction

A pregnant woman is one who is carrying a developing foetus in her womb for about 36 weeks (Merenstein and Gardner, 2002). During this period, the woman could be identified through many characteristics; her physical shape, look, gait, sitting, standing and her walking position. Other physical characteristics common to the pregnant woman are breasts become fuller, firmer and the nipple areas become darker due to increase in hormone. Early morning sickness, referred to as nausea may occur. This results in vomiting and generally feeling unwell. Frequent urinating may occur, this is as a result of the bladder filling more frequently. Tiredness and dizziness sometimes occur in pregnancy. Pregnancy is also characterised by hand and feet swelling. Although not experienced by all pregnant women, increase of the foot is reasonable due to the increase of blood pressure in the mother. This is caused by changes in blood volume that will be automatically doubled to meet the needs of foetus. Enlargement of the feet may occur especially after a long day at work. Skin changes may also occur during pregnancy. Often fleck as melisma in black face, fold in the body such as the axilla (armpit) and neck, even the middle-relief and often the surface of the skin of the belly may appear and eventually protruding belly accompany pregnancy. All the stated conditions place some demands on the pregnant woman and her clothing. Discomfort may arise as a result of the

aforementioned conditions; therefore pregnant women need specific dresses or clothes for considerable comfort.

A teacher according to Adeyemo (1995) is trained both in theory and practical. Through his influence, character, experience, and way of dressing, many students are moulded or otherwise. Her correct use of different components of clothing span from her knowledge of clothing and dress essence. Knowledge as a basic tool for survival equips the teacher with dignity in the presence of her students, saves her from waste of finances and affords her good health to attend to her work schedule. Her example is very important to the students.

Clothing is any covering for the human body that is worn for various reasons including: comfort, protection, adornment and self esteem. Cloths comprise of what is worn on the body other than the skin. Wearable clothes include constructed body coverings such as garments/dresses, foot wares, hats and caps. Clothing performs a range of physical, social and cultural functions by protecting, distinguishing individual occupation, social status and gender differentiation. Clothes can tell who the wearer is emotionally, physically. Expressions of responsibility, joy, sadness, dirty habits, wellness etc can be assessed by what a person wears. Clothing choice of individuals is determined by factors such as activities, individual taste, shape or figure type, knowledge about clothing, and available finances. Others are fabric, materials for construction and accessories with which a dress item is worn. The clothing needs of a woman during pregnancy require careful management in order to stock suitable and relevant clothes in the wardrobe.

Management components include planning, organizing, implementing and evaluating. Management as explained by Clayton (1994) is using what you have to get what you want. People who manage well accomplish more with greater ease (Clayton 1994). The amount and types of clothing worn depend on function considerations (such as covering of a person's genital). While in some cultures much more clothing is expected, other cultures permit scanty clothing (Craig, 1984)

Wardrobe planning is the correct assemblage of different clothing requirement, coordinating clothes properly to meet the need of the hour by an individual (Agbo, 2008). Wardrobe planning is achievable with careful planning and correct placement of priorities as well as reliable resources (Anyakoha & Eluwa, 1991; Dead, 2012). A wardrobe full of clothing does not answer the common and usual question of what does one wear now. A well planned harmonious wardrobe builds self respect, confidence and tells who the individual is. An unplanned, inadequate wardrobe creates confusion, frustration and makes one timid (Craig, 1973; Webb-Lupo and Lester, 1987 and Clayton, 1994).The pregnant woman requires some ideal clothes in her wardrobe.

The quality and quantity of cloths and clothing accessories in a person's wardrobe has direct bearing with his or her economic status, educational status

(Agbo, 2008). Knowledge of fashion is generally reflected on the choice of clothing by individual or families. Families that value clothing are likely to spend more money on clothing than families whose living standards have less regards for clothing (Agbo, 2008)

Uncomfortable maternity dress may cause several anxieties to pregnant women. Prolonged or frequent anxiety may contribute to pre-mature birth or abortion. Tight clothing during pregnancy may lead to unhealthy pregnancy. The growing foetus could have poor blood circulation, foetal low oxygen supply and obstructed air movement (Goldman, 2005).poor and inappropriate clothing could bring about physiological discomfort, nauseas, excessive salivation among others and low input at the duty post of pregnant women. Physical harm such as cold, heat thrush, heat rashes and fall from inappropriate heels or slippery foot wear could also result from inappropriate clothing usage by pregnant teacher.

Lack of proper clothing, especially garments that should accommodate the changing physical, psychological need to prepare for the expected child can bring about family disorder and disenchantment among the family members. Poor knowledge dissemination to students will affect their dresssence in their future life. This research is set to address the problems that may confront the family, students as a result of lack of knowledge of clothing usage in pregnancy.

Objectives of the study

The main objective of this study was to determine wardrobe management practices of pregnant teachers in Makurdi Metropolis. Specifically, the study determined:

1. Level of awareness of pregnant teachers about wardrobe planning and management.
2. The contents of the wardrobe of pregnant teachers
3. The problems encountered by pregnant teachers in managing their wardrobe.

Methodology

Area of Study: the study was conducted in Benue State; one of the states in the middle belt of Nigeria. It shares boundaries with the following states: Cross Rivers, Nassarawa, Taraba, Anambra and Kogi. It is a major state linking the southern part of the country to the north. This advantaged position makes it a scholarly state. There are several primary, secondary and tertiary schools in the state. The total number of secondary schools in Benue State is 312. The secondary schools are situated both in the rural urban places of the state. There are 22 secondary schools in Makurdi the State headquarters.

Population for the Study: Population for the study comprised all the adult female teachers in the secondary schools in Makurdi Metropolis numbering 1909 (Teaching Service Board, Makurdi).Female teachers' dressing in recent times have received serious attention by the education administration. Heads of Schools and colleges insist on descent appearance of

teachers and especially female teachers while at work. The Benue State government insists on the use of corporate wears by teachers as against use of wrappers which may hamper their movement while teaching. This demand for appearing smart is even more needful for pregnant teachers who may be encumbered by their state of pregnancy; hence the focus on pregnant teachers.

Sample for the Study: Sample for the study was 190 adult female teachers who were pregnant or had been pregnant in past two years. Sample for the study was obtained using multiple techniques. Ten post primary schools were selected by simple random method from stratified 22 post primary schools in Makurdi metropolis. Stratification was based on location (North and South banks), government and private ownership. This is to ensure good participation of the entire population. In each of the selected schools, nine female teachers (10% of the sample size) who are pregnant or who had been pregnant within the past two years were purposively selected. Consent was sort from respondents using consent forms prior to distribution of the questionnaire.

Instrument for Data Collection: The instrument for data collection was a questionnaire designed by the researcher. The instrument was divided into two parts. Part one was structured to obtain personal data. Part two was subdivided into sections A, B, C and D which south information on challenges of clothing in pregnancy, clothing choices and wardrobe management practices. A 5- point Likert scale was used: 5 (strongly agree), 4 (Agree), 3 (Slightly agree), 2 (Disagree) and 1 (Strongly disagree). Mean of 3.0 was used for deciding level of acceptance. The instrument was face-validated by one clothing lecturer and measurement and evaluation lecturer at the University of Agriculture Makurdi.

Reliability of the instrument was established using Cronbach Coefficient alpha method since the test items have varying point values. The Coefficient alpha for the items administered to 50 female teachers was 0.82 indicating that the instrument internal consistency and is reliable.

***Data Collection and Analysis Technique*:** One hundred and ninety copies of the questionnaire were administered by hand to teachers in their classrooms or during break period. Data collection represented 100% recovery of the questionnaire. These were collected at scheduled dates. Data were analysed using percentages and means through SPSS.

Findings of the Study

(1) Demographic presentation showed that 68% were employed y government, 32% were employed by privately owned schools. Out of 190 adult female teachers, 60% were pregnant within the period of the research while 40% had been pregnant within the past two years. Thirty per cent of the teachers were within age range of 41-50years. Age of the respondents showed that 30% were within the age range of 41-50 years, 50%, 50% were within the age range of

31-40 years while 20% were within age range of 20-30 years.

(2) Pregnant teachers' awareness about wardrobe content during pregnancy: Data are summarised in Table 1.

Table 1: Awareness of Pregnant Teachers about Content of the Wardrobe during Pregnancy.

S/No.	Pregnant Teacher's awareness of clothing required in pregnancy	Mean	Remarks
1	Pregnant teachers should go on flat shoes or slippers	3.5	Agreed
2	Try different types of house wear compression	3.2	Agreed
3	Pregnant teachers should go on maternity out fits that are available which look great on them	3.1	Agreed
4	Pregnant women should wear warp dress made of rayon	3.3	Agreed
5	Pregnant teachers should wear maternity pants/trousers for comfort	2.4	Disagreed
6	Pregnant teachers should wear skirts with elastic waist band that are not firm	3.1	Agreed
7	Pregnant teachers should wear beautiful colors of official outfit	3.1	Agreed
8	Pregnant teachers dressing should be matched with simple accessories for comfort and beauty	3.3	Agreed
9	Large but firm brassieres should be worn to accommodate enlarging breasts	3.9	Agreed
10	Pregnant teachers should wear garments with openings and closures	3.7	Agreed
11	Pregnant teachers should use cosmetics that have mild odours/smells	3.2	Agreed
12	Pregnant teachers should use cosmetics that do not cause them sweating	3.4	Agreed

Table 1 shows that pregnant teachers were aware of the various clothing items required during pregnancy since each of the value for the respondents was higher than 3.0 for the items presented to the respondents. The use of maternity trousers was not accepted (mean = 2.4).

(3) Eleven items of wardrobe for pregnant teachers were presented to respondents to express their opinions on their usage or otherwise. Data are summarised in Table 2.

Table 2: Content of the Wardrobe for Pregnant Teachers in Makurdi Metropolis

S/No.	Content of Wardrobe	Mean	Remarks
1	Pregnancy basic maternity brassieres	3.6	Agreed
2	Versatile maternity clothes	3.7	Agreed
3	Maternity shirts, trousers	3.1	Agreed

4	Separates (blouses and skirts, trousers, tops)	3.5	Agreed
5	Stretch fabrics made into gowns and blouses	2.3	Disagreed
6	Ruched bust garments (frilly trimming garments)	3.5	Agreed
7	High heeled foot wears	2.8	Disagreed
8	Special foot wears that are flat and comfortable	3.7	Agreed
9	Clothing accessories to complement dresses	3.8	Agreed
10	Tight fitting blouses	2.1	Disagreed
11	Wrappers and blouses	3.9	Agreed

Table 2 shows that content of wardrobe for pregnant women consisted of variety of clothing items acceptable to the pregnant teachers. Wrappers and blouses had the highest mean (3.9). Stretchy garments have the least mean (2.3).

(4) Eight problems encountered by pregnant women in wardrobe planning and management practices outlined in the questionnaire. Data are summarised in Table 3.

Table 3: Problems Encountered in Wardrobe Planning and Management Practices by teachers in Makurdi Metropolis

S/No	Problems encountered in Wardrobe Planning and Management	Mean	Remark
1	Impulsive buying make pregnant teachers buy what they did not budget for	3.6	Agreed
2	Wrong choice of clothing leading to poor fitting	3.4	Agreed
3	Poor fabric selection	3.5	Agreed
4	Wearing of tight shoes, uncomfortable for pregnant teachers	3.1	Agreed
5	Pregnant women clothes get smaller quickly	3.1	Agreed
6	Maintenance cost for maternity clothes are high	3.2	Agreed
7	Unpredictable change of weather affects choice of what to wear	3.7	Agreed
8	Unavailability of garments, under wears, braziers specifically designed for pregnancy period	3.4	Agreed

Table 3 reveals that fluctuation in weather change (mean= 3.7) and impulsive buying (mean = 3.6) and fabric selection (mean = 3.5) were the greatest problems encountered by pregnant female teachers in Makurdi Metropolis.

Discussion of Findings

The findings of the study showed that female teachers in Makurdi Metropolis are aware of various wardrobe practices and stock various clothing items in their wardrobe. Several clothing requirements for pregnancy were identified by the female teachers. Such selections agree with earlier assertion by Blunin (2002) that pregnancy state

requires special clothing to accommodate the changes the changes in the body. The study also revealed that female teachers in Makurdi Metropolis have different items that form contents of their wardrobes to suit their lifestyle. This is reflected in the difference between responses on preferred maternity clothing. The use of clothing items like firm and large brassieres was noted by the respondents as necessary clothing. Merenstein and Gardner (2002) asserted that the changing breast size also promotes healthy functioning of the lymphatic and milk producing system of the breast during pregnancy. This makes it extremely important for correct choice of brassieres in pregnancy. Preferences of what to wear in pregnancy, for instance, wrappers and blouses (mean = 3.9) over the use of pants/ trousers (mean = 2.4), varied among female teachers in Makurdi Metropolis. The study showed that use of wrappers and blouses, skirts and blouses are more acceptable than the use of trousers and tops by females. This varies from the use of tight- fitted jean trousers and leggings acceptable for pregnancy in western culture reported by Krieger (2012). A type of clothing that may be acceptable in one culture maybe unacceptable in another. This finding supports the assertion by Agbo (2008) that culture influences clothing choices of people. Use of trousers is seen as a mark of gross irresponsibility within Makurdi Metropolis. Hence at antenatal clinics expectant mothers are encouraged to put on bouffant dresses.

Preference for basic maternity brazzarie, versatile maternity clothes, use of separates and stretchy fabrics revealed in this study are in consonance with recommended maternity garments by Blunin (2001) and Krieger (2012). Pregnancy grows steadily to a ten- size larger and one will have to get newer clothes to accommodate the size. Large firm brassieres with wider shoulder straps to hold the increased size of breast to avoid breast engorgement are equally helpful (100 babytips-com/pregnancy/maternity-clothes-tips.html). Modern maternity garments are made from lycra or spandex fabrics which give room for expansion of the body size and provide comfort for easy movement (Krieger, 2012). Wrap dresses with v-neckline that showcases the growing bust line, cotton maternity tanks with touch of Lycra, spandex and tannic filled across shoulders and arms are wonderful dresses in pregnancy recommended by Krieger (2012). Spending so much money to frequently buy clothing to fit the expanding size in pregnancy may be curtailed by the use of such stretchy garments. This solves the problem of frequent purchase and unplanned buying of garments to accommodate the increasing size of pregnancy. Family finances wrongly channelled may cause other areas of needs of the family to suffer resulting in rift and conflict in the family.

Difficulty in correctly choosing comfortable clothing for all day usage in spite of change of weather posed problems in the study areas as shown in table 3. A change in weather in the course of the day may mar the comfort of an individual. The factors to consider for wardrobe management during

pregnancy include weather, family standard, type of job, shape/figure type of woman. Weather plays very important roles in the clothing needs of pregnant women. Weather fluctuations make pregnant women very uncomfortable in their clothing. Separates, multiple garments pieces that could be taken off or put on independently could solve such weather changes and its effect on the clothing of the individual. One of the challenges revealed in the study is unavailability of specially designed garments fro pregnancy. This confirms the assertion by Chase and Quinn (2003) that specific garment designs for special body shape irregularities are not available. This may include skirts, trousers, overalls and camisoles and tops that take special cognizance of the expanding tummy.

Blunin (2011) noted that maternity clothing should be transformed to accommodate the changing physical, psychological, social need of expectant mothers using the wardrobe management by planning principles. Poor selection of maternity wear and wardrobe management by a pregnant woman may be a precursor to pregnant problems especially for the primigravida or in experienced women against the multigravidas or mothers with previous pregnancies (James, 2002). Uncomfortable maternity dresses that lead to a feeling of isolation and unwholesome attitude of a pregnant woman towards colleagues at the working place may lead to low productivity. Good wardrobe management practices gives confidence to pregnant women as role models in their society (Marenike, 2002). Preferably, their clothes should hang from the shoulder. They should be washed and ironed regularly. Due to enlargement of the breast as pregnancy progresses, the size of the bra should be checked regularly to avoid pressing the breast. Brassieres with functional components such as openings and closures for the pregnant woman to reach the nipples for cleaning are ideal. Low heeled shoes should be worn to give balance to the prospective mother and to prevent accidents and backache (Mallum and Kembe, 2011).

There is a relationship between pre-natal and post-natal clothing. Pre-natal clothing is the clothes that a pregnant woman wears in the first three months of her pregnancy. Normal clothing may be used taking note of fabric used for construction. In the second to third trimester free clothing to allow free flow of air around the body are used by pregnant women. Allowance for ease of movement and provision for donning and doffing easily are important.

Post-natal clothing refers to type of clothes that the pregnant woman should wear after the delivery of her baby. Free clothing is used within the puerperal 1^{1st} 40days as the reproductive organs have not fully gone back to their normal sizes. Front closure and openings are ideal for breast feeding mothers. Tight clothing such as girdle belt to assist the uterus to involute well 1st 14 days may be used. Tight girdles also provide control for the otherwise enlarged skin of the tummy after delivery. Tight girdles provide emotional and psychological satisfaction for having returned to the original shape

after delivery. Maternity under wears to ensure comfortable pregnancy include: maternity breast feeding bras and crop top, support bands to alleviate backache, shape maintenance to disguise or to improve post natal figure are applicable in pregnancy. The use of knickers provides support and comfort.

Pre-natal and post- natal clothing should be carefully planned to reduce waste of finances. Early purchase of maternity clothes is discouraged; this is because of the risk of fit later in pregnancy. In order to reduce cost, maternity clothes could be borrowed or purchased as second hand (Blunin (2001). The purchase of larger size clothes in fashion which could be used later after pregnancy which could be used later after pregnancy can reduce cost (100babytips-com/pregnancy/maternity-clothes-tips.html). Pregnant women should not buy or wear too tight garments that do not expand. Colours of fabric should be carefully selected. Such colours should be fast, should reveal dirt easily to ensure regular washing by the user. Colours are particularly important for the breast feeding mother since the baby is attracted to brilliant colours rather than dull colours. Garment designs that allow for easy breast feeding is preferable to garment that do not allow for easy breast feeding.

Conclusion

Pregnant teachers' awareness about wardrobe practices, wardrobe and problems encountered while planning and managing their wardrobe were assessed. Although there is evidence of clothing requirement, culture interferes with the selection. Unavailability of specially designed garments and other clothing articles posed problems to pregnant teachers while planning their wardrobes. Unplanned purchase of clothing items for pregnancy needs by pregnant female teachers in Makurdi Metropolis may affect the finances of their family. The study concludes that the problems revealed may pose challenges to the teachers, affect their output at work and may tamper with their very important position as role models for their students. Adequate knowledge on types of clothing needed in pregnancy and how to use them are necessary to improve their livelihood and equip younger students who are learning from the teachers.

Recommendations

- Pregnant women should select garments that provide maximum comfort for them irrespective of their cultural setting. These should include garments from stretchy expanding fabrics like spandex and lycra.
- Clothing entrepreneurs should provide garments and clothing items specifically designed for pre-natal and post-natal periods for working class women.
- Workshops and seminars should be organized periodically by Home Economics Extension Workers for female teachers on wardrobe management practices. This will provide more knowledge for the female teachers who are role models for the students

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Health Care and Safety Practices adopted by Caregivers in the Crèches in Lagos State

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Abstract

The major purpose of this study was to investigate the health care safety practices adopted by the caregivers in the crèches in Lagos state. Specifically, the study determined the important health care and safety practices which should be adopted by caregivers in the crèches and those that are actually adopted by caregivers in the crèches in Lagos State. The area of the study was Lagos state. The population for the study was 1005 respondents consisting of 701 caregivers in the crèches and 304 in-house medical nurses. A sample of 353 respondents made up of 237 caregivers and 116 nurses were used for the study. Questionnaire was used for data collection. The data were analyzed using mean. The major findings of the study included 18 important health care practices out of which 17 were adopted and 16 important safety practices out of which 15 were adopted by the caregivers in the crèches in Lagos State.

Key words: health, care, safety, practices, crèche, caregivers.

Introduction

The crèche is a non-maternal formal child-care setting where infants and children are kept for a particular period of time for nursing care, nutrition, sleep, excretion and general comfort of the children. It usually cares for a group of ten or more children often in a church, private home or school (Beith, Pullan and Robertson, 1998). The crèches make use of child caregivers or child minders. These refer to people who take responsibility of caring for the children on a long or short term basis in various child-care settings (Shelov, 1998). They provide the children with healthy, supportive, safe and stimulating environment that will make them feel secure and allow them, proper growth and development (Strickland and Worth, 2007). The crèches also have medical nurses attached to them. These are regarded as in-house nurses. They see to the treatment of mild illnesses and injuries in the crèches.

The importance of children's health and well being cannot be over emphasized. The happiness of a nation to a large extent depends on the health of the children who are leaders of tomorrow (Robertson, 1998). Good health enhances proper growth and development of children whereas poor health retards their growth and development (Santrock, 2007). The child's health depends significantly on the care and guidance that are offered to him or her during the early years of life

(Shelov, 1998). The uniqueness of young children's health care needs is evident when we consider their motor, cognitive and social development (Santrock, 2007).

The childhood period is a peak time for such illness as respiratory and gastrointestinal upsets. Illnesses, especially those that are not life threatening, provide excellent opportunity for young children to expand their development (Deluca, 1999). These illnesses usually are of short duration and are often handled outside the medical community through the family, day care or school. Such minor illness can increase the young child's knowledge of health and illness and sense of empathy (Santrock, 2004).

Provision of health care to the children also includes keeping them free from injuries. Everyday, life is full of well disguised dangers for children; sharp objects, shaky furniture, reachable hot water faucets etc. Keeping children physically safe is the most basic responsibility of the caregivers and a never ending one (Shelov, 1998). With each new developmental competency, a child has the chance of getting into trouble in entirely new and surprising ways. The emergence of mobility in one form or the other and the more adept use of fingers and hands mean more fun, learning as well as safety issues. The sphere of safety widens to wherever the child can move to (Dixon and Stein, 2000).

Many injuries that occur at home or crèches are predictable and preventable (Shelov, 1998). An accident infers a chance occurrence that is preceded by no control or responsibility. Because of developmental factors that limit children's physical, cognitive and emotional abilities, they more vulnerable to injury. Children are natural risk takers who attempt actions for which they lack skills. They want to test and master their environments. They therefore need a sense of trust and security that their environment is friendly and safe (Robertson, 1998).

The safety risks of indoor and outdoor environments vary widely. The indoor environment includes a multitude of items that can pose risks. Hazards come from household items, toys, animals, children's food, furniture, paints, medications, electrical outlets and cords among others (United Way Child-care Resource and Referral, UWCRR, 2012). To be able to protect the child from danger that he or she will encounter in and out of the centre, the caregivers have to see the world as the child does (Strickland and Worth, 2007).

The caregivers should be aware of what safety hazards exist in the environment. Knowledge of the potentials for injury will help the caregivers be aware of what is needed to create the protective and secure environment. Injury prevention also offers a plan to manage injuries as they occur with the least distress to everyone concerned. Injury prevention offers children the sense of safety and security needed to develop to their fullest potential (Devon County Council, 2012).

Child caregivers have important health and safety roles for young children (Santrock, 2004). They have the responsibility to provide optimal conditions to maximize the safety and sense of well being of the children in

their care (National Resource Centre for Health, NRCH, 2012). However, available report shows that two studies carried out in some crèches in Abeokuta and Benin City revealed poor hygiene practices that are injurious to children, Olaitan and Adeleke (2007) and Abiodun, Ihongbe and Ogbimi (1985). Hence this study was undertaken to identify the health care and safety practices adopted by caregivers in the crèches in Lagos State.

Purpose of the Study

The major purpose of this study was to investigate the health care and safety practices adopted by caregivers in the crèches in Lagos State.

Specifically, the study determined the:

1. Important health care practices that should be adopted and those adopted by the caregivers in the crèches in Lagos State.
2. The important safety practices that are actually adopted and those adopted by the caregivers in the crèches in Lagos State.

Methodology

***Area of the Study*:** The study was conducted in Lagos state. Lagos state lies in South-western Nigeria. It is a huge metropolis and the most populous conurbation in Nigeria with 9,013,534 inhabitants (NPC, 2006). Lagos is Nigeria's most prosperous city and much of the nation's wealth and economic activities are concentrated there (Lagos State Government, N.D). This has attracted many young entrepreneurs and families seeking a better life from throughout Nigeria and beyond. Many of these families have both parents with full or part-time employment outside the home. This makes it necessary for them to seek non-maternal care facilities for their children while they, the parents are at work. The use of crèches is one of such facilities.

***Population for the Study*:** The population was made up of all the caregivers in the 304 registered crèches in Lagos State as the time of this study (Ministry of Women Affairs and Poverty Alleviation (MWAPA) 2009). The crèches had 1005 staff made up of 701 caregivers and 304 in-house nurses as at the time of this study. The caregivers and nurses comprised young ladies, middle aged women as well as elderly women. Their ages ranged from 20 to 65 years of age. The nurses were qualified nurses who possessed the nursing certificate from nursing schools and/or university degree in nursing. They work in recognized hospitals but are attached to the crèches. They visit the crèches on scheduled days of the week and are also called upon as need arises. This group was selected because of their knowledge in the health and general care of children make them capable of determining the important child-care practices that should be adopted by caregivers in the crèches. The educational qualification of the caregivers ranged from General Certificate in Education (GCE) or its equivalent and below, to Nigeria Certificate in Education (NCE) and first university degree.

***Sample for the Study*:** A multistage sampling technique was used in selecting the respondents. The first stage involved an initial purposive sampling of seven Local Government Areas which were selected based on their accessibility.

These areas were Oshodi/Isolo, Mushin, Surulere, Ikeja, Amuwo-odofin, Kosofe and Agege which have a total of 169 crèches.

The second stage of sampling involved a cluster sampling of the crèches based on the selected seven Local Government Areas in which 70% of the crèches in each cluster (Local Government Area) were selected. The 70% cluster sampling of the crèches in the seven Local Government Areas yielded a total of 257 caregivers and 120 in-house nurses.

The last stage involved a random sampling of two caregivers and one nurse per crèche which yielded 240 caregivers and 120 nurses who constituted the 360 sample (respondents) for the study.

***Instrument for data collection*:** The instrument for data collection was questionnaire which was developed based on the review of related literature on health care and safety practices and the purpose of study. Research question one was answered by the in-house nurses while the caregivers answered the research question two. The instrument was face validated by two Home Economics lecturers one each from University of Nigeria, Nsukka and University of Lagos as well as one by child development expert from the Ministry of Women Affairs and Poverty Alleviation (WAPA) Ikeja. Cronbach Alpha reliability index which yielded reliability co-efficient of 0.987.

***Data Collection and Analysis Techniques*:** Three hundred and sixty (360) copies of the questionnaire were distributed by hand with the help of two trained research assistants. A total of 353 copies were successfully completed and retrieved after a week. These 353 respondents then became the actual sample for the study. The data from the two research questions were analyzed using the mean while a mean rating of 2.50 was used in decision making.

Findings of the study

The following findings were made:

1. 18 important healthcare practices out of which 17 practices were adopted by the caregivers.
2. 16 safety practices out of which 15 were adopted by the caregivers.

Table 1: **Mean Responses of In-house Nurses and Caregivers on the Important Healthcare Practices that should be adopted and those that are adopted by the Caregivers in the Crèches.**

		Nurses N = 116		Caregivers N= 257	
S/No	Important Health care Practices	$\bar{X}$	Remarks	$\bar{X}$	Remarks
1.	Caregivers should check the children daily for signs of infections and illnesses.	3.97	Imp	3.46	P
2.	Children with infectious diseases should not be allowed	3.92	Imp	2.60	P

	in the crèche until properly treated.				
3.	Caregivers should keep children's immunization record and help remind parents when due.	3.25	Imp	2.97	P
4.	Caregivers who have infectious diseases should not be allowed to handle children.	3.91	Imp	2.62	P
5.	Different towels and feeding items should be used for each child.	3.28	Imp	3.51	P
6.	Caregivers should ensure adequate ventilation at all times.	3.08	Imp	3.82	P
7.	Children should not be overcrowded in the crèche room.	3.05	Imp	3.65	P
8.	The floor and furniture should be cleaned and disinfected especially after meals and after any toilet accident or vomiting by the children.	3.11	Imp	3.85	P
9.	Children and caregivers should wash their hands thoroughly especially after toileting or diapering.	3.94	Imp	3.71	P
10.	Refuse should be properly and promptly disposed of.	3.92	Imp	3.85	P
11.	Caregivers should report any case of sudden illness to the in-house nurse.	3.97	Imp	3.52	P
12.	There should be a functional first aid box in the crèche.	3.05	Imp	3.82	P
13.	Caregivers should administer only the medications recommended by a doctor/nurse.	3.29	Imp	3.69	P
14.	Parents' permission should be obtained before giving any medication unless it is from parents.	3.05	Imp	3.71	P
15.	Medications should be given according to the recommended time and dose.	3.45	Imp	3.80	P
16.	The medications should be stored at the recommended	3.72	Imp	3.71	P

	temperature and place.				
17.	Caregivers should not refer to medicines as "sweet" in order to make children take it.	2.91	Imp	1.62	N P
18.	One child's medicines should not be given to others who show similar symptoms of illnesses.	3.09	Imp	2.95	P

X = Mean, SD = Standard Deviation, N = Number, Imp = Important, P = Practiced, NP = Not Practiced

Table 1 shows that all the 18 items were regarded by the in-house nurses as the important healthcare practices that should be adopted by caregivers in the crèches with their mean ratings all above the acceptance point of 2.5. 17 out of the 18 practices were adopted by the caregivers in the crèches. Item 17 was not practiced with a low mean rating of 1.62.

Table 2: Mean Responses of In-house nurses and the Caregivers on the Important Safety Practices that should be adopted and those that are adopted by the Caregivers in the Crèches.

		Nurses N = 116		**Caregivers N= 257**	
S/No	**Important Safety Practices**	$\bar{X}$	**Remarks**	$\bar{X}$	**Remarks**
1.	Caregivers should ensure that the floor are smooth, clean and dry	3.92	Imp	3.89	P
2.	All medicines and cleaning agents should be kept out of children's reach.	3.94	Imp	3.86	P
3.	They should ensure that plastic bags, ropes, sharp objects and electrical appliances are kept away from children.	3.95	Imp	3.95	P
4.	Table clothes should not be used in the crèches.	3.31	Imp	2.09	N P
5.	Caregivers should ensure that all furniture are in good order with no sharp edges.	3.91	Imp	3.87	P
6.	They should ensure that smoke does not enter into the crèche room.	3.88	Imp	3.31	P
7.	Breakable objects should be avoided.	3.75	Imp	2.74	P
8.	Caregivers should ensure that children do not handle tiny objects such as beads and buttons.	3.78	Imp	3.69	P
9.	Caregiver should ensure that there are a functional fire extinguisher and	3.82	Imp	3.68	P

emergency exit in the crèche.				
10. Caregivers should ensure that the play ground is covered with fine sand, and free from harmful objects.	3.88	Imp	3.82	P
11. The play equipment such as swings and slides should be firm and of suitable height for the children.	3.83	Imp	3.77	P
12. Caregivers should ensure that metal equipment are kept away from the sun.	3.75	Imp	3.69	P
13. Toys should be suitable for the children's age.	3.75	Imp	3.71	P
14. Caregivers should clean and clear away toys after use.	3.63	Imp	3.51	P
15. Caregivers should avoid toys that are tiny enough to be mouthed by the children.	3.78	Imp	3.62	P
16. Any damaged toy should be repaired or discarded immediately.	3.69	Imp	3.57	P

X = Mean, SD = Standard Deviation, N = Number, Imp = Important, P = Practiced, NP = Not Practiced

Table 2 indicates the important safety practices that should be adopted by caregivers in the crèches. All the 16 items were regarded as important and their mean ratings range from 3.31 to 3.95, while 15 of them are adopted by the caregivers.

Discussion of Findings

The study identified 18 important healthcare practices out of which the caregivers in the crèches adopted 17 practices. The findings include that the caregivers do check the children daily for signs of infections and illnesses and that those with infectious diseases are not allowed in the crèche until properly treated. These findings are in agreement with the healthcare recommendations of National Resource Centre for Health; NRCH (2012) that child caregivers have the responsibility to provide optimal conditions to maximize the health and sense of well being of the children in their care. The findings are also in agreement with the observations of Santrock (2004) that the childhood period is a peak time for such infectious illnesses as respiratory and gastrointestinal upsets. The findings that caregivers keep children's immunization record and help remind parents when due and that the caregivers who have infectious diseases are not allowed to handle children are consistent with the views of Strickland and Worth (2007) that the caregivers provide the children with healthy, supportive, safe and stimulating environment that will make them feel secure and allow them, proper growth and development.

Further findings that different towels and feeding items are used for

each child and that the caregivers ensure adequate ventilation at all times as well as that children are not overcrowded in the crèche room are in agreement with the views of Deluca (1999) that prevention of diseases and infections is one the primary roles of children's caregivers. They are also in line with the views of Hahn and Payne (2003) that caregivers need the tool of sensitivity to manage the spread of disease as well as manage mild illnesses among children. The findings that the floors and furniture are cleaned and disinfected especially after meals and after any toilet accident or vomiting by the children are in consonance with the views of Devon County Council (2012) that caregivers need to provide and maintain a healthy and sanitary environment for the children in their care. It is also consistent with the views of Strickland and Worth (2007) that caregivers need to provide and maintain a healthy environment even when handling illness. The findings that the children and caregivers wash their hands thoroughly especially after toileting or diapering and that refuse are properly and promptly disposed of, are in agreement with the opinions of Santrock (2007) that good health enhances proper growth and development of children whereas poor health retards their growth. The findings do not agree with the findings of Olaitan and Adeleke (2007) that revealed low level of hygiene in crèches through the various bacteria isolated from the floor, toilet, cots and the hands of caregivers in the crèches in Abeokuta. The findings of this study also are not in line with the findings of Abiodun, Ihongbe and Ogbimi (1985) that discovered rotavirus in the stool specimen of some children in the crèches in Benin City. The above researchers observed that the virus infection was as a result of poor hygiene practices such as improper hand washing and lack of disinfection of the crèche rooms.

The findings on the practice that caregivers report any case of sudden illness to the in-house nurse and that they ensure that there is a functional first aid box in the crèche are consistent with the healthcare recommendations of the NRCH (2012). The findings that caregivers administer only the medications recommended by a doctor/nurse and parents' permission is obtained before giving any medication unless it is from the parents are in agreement with the views of Robertson (1998) who indicated that no medication should be administered without written order of a doctor and parents must provide written permission authorizing the administration of medications. The finding that the medications are given according to the recommended time and dose and that they are stored at the recommended temperature and place are consistent with recommendations of United Way Child-care Resource and Referral; UWCRR, (2012) which indicated that caregivers should administer medications according to the dose and time prescribed. The finding on the practice that one child's medicines are not given to others who show similar symptoms of illnesses is in line with the healthcare

recommendations of Beith *et al* (1998) which also indicated that caregivers should explain what the child is being given and the reason for it. These findings are all in accordance with the opinions of the in-house nurses on the important healthcare practices that should be adopted by the caregivers in the crèches. They also are in line with the views of Deluca (1999) that illnesses that are not life threatening provide opportunity for young children to expand their knowledge and development.

The study further identified 16 important safety practices that caregivers in crèches should adopt out of which 15 of these practices were adopted. They include; the caregivers ensure that the floors are smooth, clean and dry and that all medicines and cleaning agents, plastic bags, ropes, sharp objects and electrical appliances are kept out of children's reach. These findings are consistent with the views of Shelov (1998) that life is full of well disguised dangers for children; therefore keeping the children physically safe is one of the most basic responsibility of the caregivers and a never ending one. The finding that caregivers ensure that all furniture are in good order with no sharp edges and they ensure that smoke does not enter into the crèche room are in line with the observations of Dixon and Stein (2000) that with each developmental competency, a child has the chance of getting into trouble in entirely new and surprising ways therefore the caregivers have to ensure that any potential hazard is out of their way. The finding that caregivers ensure that breakable objects are avoided in the crèche and that the children do not handle tiny objects such as beads and buttons are in consonance with the views of Robertson (1998) that children are natural risk takers who want to test and master their environments. They therefore need a sense of trust and security that their environment is friendly and safe. . The finding on the practice that caregivers ensure that there is a functional fire extinguisher and emergency exit in the crèche are in agreement with the safety recommendations of the United Way Child-care Resource and Referral, UWCRR (2012) on healthy practices that keep children safe.

The finding on the safety practices that caregivers ensure that the play ground is covered with fine sand, and free from harmful objects is consistent with the opinions of Dixon and Stein (2000) that the sphere of safety issues widens to wherever the child can move. The findings on the practice that the play equipment such as swings and slides are firm and of suitable height for the children and that metal equipment are kept away from the sun are in agreement with the safety guidelines of Devon County Council (2012). The findings also are consistent with the opinion of Robertson (1998) that children are more vulnerable to injuries because of developmental factors that limit their physical, cognitive and emotional abilities. Further findings of the study on toy safety practices showed that the caregivers provide toys that are suitable for the children's age is consistent with the recommendations of

Anyakoha (2007) on criteria that must be met to ensure toy suitability for young children. The findings on the practice that the caregivers clean and clear away toys after use and that they avoid toys that are tiny enough to be mouthed by the children while damaged toys are also repaired or discarded immediately are in line with the observation of Robertson (1998) that the knowledge of the potential for injuries helps caregivers to provide what is needed to create the protective and secure environment. The findings on the safety practices are also in consonance with the views of Shelov (1998) that outdoor and indoor safety issues include caregivers' practices, monitored conditions and children behaviour based on their development levels and physical activities.

Conclusions

The following conclusions were made based on the findings of the study: The in-house nurses agreed to all the 18 important health care and 16 safety practices that should be adopted by the caregivers. The caregivers in the crèches in Lagos State adopted 17 out of these 18 important health care and 15 out of the 16 safety practices. The important health care and safety practices that were adopted by the caregivers include the following: caregivers should check the children daily for signs of infections and illnesses and the children with infectious diseases should not be allowed in the crèche until properly treated. They should ensure that the floors are smooth, clean and dry and all medicines and cleaning agents should be kept out of children's reach.

Recommendations

Based on the findings and the conclusions made from the study, the following recommendations were made:

- The parents, the owners of crèches and the caregivers should work together to minimize the problems that caregivers encounter in the course of providing childcare for children.
- The government through the Ministry of Women Affairs and Poverty Alleviation should also supervise the crèches regularly to ensure that caregivers and their employers comply with the laid down guidelines on the required child-care practices.
- Home Economics educators should include crèche management in the curriculum so as to professionally train child caregivers that would work in the crèches. This would improve the health and safety practices adopted by child caregivers in the crèches.

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Availability and Utilization of Resources for Teaching Pre-Vocational Subjects in Junior Secondary Schools in Ekiti State

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Abstract

The major purpose of the study was to assess t he availability and utilization of resources for teaching pre-vocational subjects in Junior Secondary Schools (JSS) IN Eliki State. Specifically the determined the available resources and the level of the utilization of resources for teaching the following pre-vocational subject at the JSS level in Ekiti State: Agriculture, Basic Technology, Business studies and Home Economics. The study was carried out in Ekiti State. The population of the study was 724 teachers of pre-vocational subjects in Junior Secondary School in the State. The sample of the study was 250 teachers of pre-vocational subjects selected through purposive sampling technique Questionnaire was used to collect data for the study. It was found out that resources like cutlass, rake, soil samples, chisel, hammer, tester, perforator, scissors, kerosene stove, serving plate, spoons and trays, needle thread were available and utilized by teachers of pre-vocational subjects.

Keywords: Resources, Availability, Utilization, Teaching and pre-vocational subjects.

Introduction

Pre-vocational subjects according to Okoro (1999) are subjects taught in Junior Secondary Schools arouse the interest of studies in the world of technology, and to make them understand the necessity for productive work in the society. The author maintained that pre-vocational subjects include Agriculture, Introductory Technology, Business studies and Home Economics. Adeola (2011) emphasized that pre-vocation subjects lay solid foundation for the training of future technologists, accountants, managers and entrepreneurs. The author stated further that pre-vocational subjects

include: Agriculture, Business studies, Home Economics among others.

National policy on Education (2004) stipulated that pre-vocational subjects, namely: Agriculture, Business Studies, Computer Studies, Home Economics are taught in junior secondary schools to equips the students with basic knowledge and skills in the world of technology. Objectives of pre-vocational subjects as stated in National Policy on Education are to:

(i) Introduce students into the world of technology in order to arouse their interest towards the choice of a vocation;
(ii) Make students acquire technical skills;
(iii) Expose students to career awareness by exploring useable options in the world of work and
(iv) Enable youth to have intelligent understanding of the increasing complexity of technology (Federal Republic of Nigeria FRN 2004).

In order to achieve the above stated objectives of prevocational subjects in Ekiti state, resources must be made available and involved in teaching the subjects by pre-vocational subject teachers. Resources according to Adeogun (1999) are the available facilities that can be used to achieve educational goals and objectives, and these resources include physical, human, financial resources. Anaele and Alade (2009) stated that resource are things that go into the educational process to fashion out, train or educate people: these resources include human, materials, policies, ideas and information. In this study, resources are materials, equipments and tools that are expected to be made available for the teaching for pre-vocational subjects in Junior Secondary schools in Ekiti State. Availability of resources according to National Commission for College of Education (NCCE) (2009) implies the extent resources should be provided for implementation of Agricultural Education programme in Colleges of Education. In this study, availability is level or extent to which resources were provided and utilized by teachers to teach pre-vocational subjects in Ekiti state.

Utilization of instructional resources according to Olaitan, Nwachukwu, Igbo, Onyemachi and Ekong (1999) involves the teacher manipulating equipment, tools, facilities and consumables to facilitate teaching-learning. The author stated the importance of using instructional resources in instructional situations to include: learners will be exposed to opportunities that will help them develop skills of self instruction, mastery of knowledge of manipulation process by learners, acquisition of manipulating skills by learners.

In Ekiti State, pre-vocational subjects had been taught in Junior Secondary School (JSS) for several years yet, it is very clear that the objectives of teaching these subjects had not been achieved in the state. This is evident in the care –free attitudes of JSS students towards these pre-vocational subjects and their poor performance in the subjects in external examination as indicated by National examination council's NECO (2008) that

the performance of JSS students was very poor in pre-vocational subjects. Probably this is as a result of non-availability of resources for teaching the subjects, or as a result of non-utilization of available resources by teachers of pre-vocational subjects in the state. Fabumi (1997) observed that educational resources in secondary school are the major variables that determine the rate of educational success of schools, hence the quantity and quality of these resources will determine student performance. It is therefore imperative to assess the availability and utilization of resources for teaching pre-vocational subjects in actualizing the objectives of the subjects in the state.

Purpose of the study

The main purpose of this study was to assess the availability and utilization of resources for teaching pre-vocational subjects in Junior Secondary Schools in Ekiti State. Specifically, the study sought to determine the available resources and level of the utilization of resources for teaching the following pre-vocational subjects in at the JSS level in a Ekiti State:

1. Agriculture
2. Basic technology
3. Business studies
4. Home economics.

Research questions

1. Are resources available and utilized for teaching agriculture in JSS in Ekiti State?
2. How available and utilized are the resources for teaching Basic Technology in JSS in the state?
3. What is the level of availability and utilization of resources for teaching Business studies in JSS in the state?
4. How available and utilized are the resources for teaching Home economics in JSS in the state?

Methodology

***Research Design*:** Survey research design was adopted in this study. Survey design according to Anaekwe and Ozigbo (2002) is the collection of data using questionnaire for the purpose of describing and interpreting existing conditions or qualities regarding a population. This study adopted survey design because questionnaire was utilized to collect data from the respondents.

***Area of the study*:** The study was carried out in Ekiti State. There are 181 JSS in the sixteen local government areas spread across the three senatorial zones in the states. Many of these schools were situated within the urban areas in each of the senatorial zone.

***Population of the study*:** The population of the study was 181 JSS with 724 teachers of pre-vocational subjects spread across the three senatorial zones in Ekiti State.

***Sample and Sampling technique*:** purposive sampling technique was utilized to select 50 junior secondary schools that have teachers in the four pre-vocational subjects. A total sample of 250 teachers of pre-vocational subjects were selected from the 50 JSS schools that met the criteria of having teachers in the four pre-vocational subjects. The 250 teachers of pre-vocational subjects were made up of 75 teachers of

Agriculture, 62 teachers of Basic Technology, 58 teachers of Business studies and 55 teachers of Home Economics.

***Instrument for data collection*:** The instrument for data collection was questionnaire on availability and utilization of resources for teaching pre-vocational and subjects. The instrument had 4 points response options of highly available (HA), Averagely Available (AA), Low in Availability (LIA) and Not Available (NA) with corresponding value of 4, 3, 2, and 1 for section A of the questionnaire while section B contain another 4 points response options of Highly Utilized (HU), Averagely Utilized (AU), Slightly Utilized (SU) and Not Utilized (NU) with corresponding value of 4, 3, 2 and 1 respectively. The instrument was face validated by four experts from tertiary institutions, each from pre-vocational subjects' suggestions of the validates were used to improve the final copy of questionnaire. Cronbach Alpha method was employed to determine the internal consistency of the questionnaire items. A coefficient of 0.81 was obtained.

***Method of data collection*:** 250 copies of the questionnaire were administered on the pre-vocational subjects teacher in the three senatorial zones through the help of six (6) research assistant (2 research assistant from each zone). All the 250 copies of the questionnaire administered were retrieved according to the number of teachers of each pre-vocational subject in the area of the study.

***Method of data analysis*:** Data collected were analysed using Mean to answer the research questions while standard deviation was used to determine the closeness or departure of the respondents from the Mean. The values attached to the response options of the questionnaire were as follows.

Highly available (HA) or Highly Utilized (HU) =3.50–4.00 Averagely Available (AA), or Averagely Utilized (AU) =2.50 – 3.49, Slightly Available (SA) or Slightly Utilized (SU) = 1.50 – 2.49, Not Available (NA) or Not, Utilized (NU) = 0.50 – 1.49. Real limit of numbers was used to take decision. Any item with a Mean of 1.50 – 4.00 was regarded as been available or utilized for teaching each pre-vocational subject. While any item with a Mean value below real limit of 1.50 was regarded as not available or not utilized for teaching each pre-vocational subject. Any item with a low standard deviation indicates that the respondents were not too far from the Mean and from one another in their responses. But any item with a high standard deviation indicates that the respondent were far from the Mean in their responses.

Finding of the study

The following findings were made

(a) Available and utilized resources for teaching Agriculture: Findings are summarized in table 1

Table 1: Mean ratings of the responses of the teachers of Agriculture on the level of availability and utilization of resources for teaching Agriculture in JSS in Ekiti State.

N = 75

S/N	Resources for teaching agriculture	Availability		Utilization		Remarks	
		Mean ($\bar{X}_A$)	Standard deviation (SD_A)	Mean ($\bar{X}_U$)	Standard deviation (SD_U)	Availability	Utilization
1.	Agriculture laboratory	1.14	0.83	1.17	0.51	NA	NU
2.	School farm	1.32	0.80	1.35	0.70	NA	NU
3.	Cutlass	3.08	0.97	3.82	0.93	AA	HU
4.	Rake	2.62	0.98	3.76	0.86	AA	HU
5.	Hand trowel	2.55	0.55	3.91	0.96	AA	HU
6.	Hand fork	2.65	0.65	3.87	0.99	AA	HU
7.	Garden fork	1.40	0.75	1.10	0.67	NA	NU
8.	Wheel barrow	1.10	0.96	1.11	0.91	NA	NU
9.	Set of spanners	2.80	0.81	2.57	0.81	AA	AU
10.	Animal skeleton	1.12	0.80	1.05	0.93	NA	NU
11.	Soil samples	3.20	0.53	3.01	0.77	AA	AU
12.	Samples of different types of rocks	1.41	0.95	1.45	0.89	NA	NU

Key: HA = Highly Available, AA = Average Available, SA = Slightly Available, NA = Not Available, HU = Highly Utilized, AU = Average Utilized, SU = Slightly Utilized, NU = Not Utilized.

Table 1 above revealed that the following resources (cutlass, rake, Hand trowel, Hand fork spanners and soil samples) for teaching agriculture had their Mean values ranged from 2.55 to 3.25 and were above the real limit of 1.50 indicating that these resources were available for teaching Agriculture. Other six (6) resources in the table had their Mean values ranged from 1.10 to 1.41 and were below the real limit of 1.50 indicating that these resources were not available for teaching agriculture. The standard deviation of the twelve (12) resource items ranged from 0.53 to 0.95 and were low indicating that the respondent were not too far from the Mean and from one another in their responses.

On the utilization of available resources Table 1 revealed that the following available resources (cutlass, rake, hand trowel, hand fork, spanners and soil samples) for teaching agriculture had their Mean values ranged from 2.57 to 3.91 and were above the real limit of 1.50 indicating that these resources were utilized by teachers of

agriculture in teaching their students. Other six resources in table 1 had their Mean values ranged from 1.05 to 1.35 and were below the real limit of 1.50 indicating that these resources were not utilized by teachers of agriculture in their teaching. The standard deviation of all the (12) resource items ranged from 0.51 to 0.99 and were low indicating that the respondents were not too far from the Mean and from one another in their responses.

(b) Available and utilized resources for teaching Basic Technology: Findings are Summarized in Table 2

Table 2: Mean ratings of the responses of teachers of Basic technology on the level of availability and utilization of resources for teaching Basic technology in JSS in Ekiti State.

N = 62

S/N	Resources for teaching agric	Availability		Utilization		Remarks	
		Mean ($\bar{X}_A$)	Standard deviation (SD_A)	Mean ($\bar{X}_U$)	Standard deviation (SD_U)	Availability	Utilization
1.	Basic technology workshop	1.21	0.57	1.04	0.67	NA	NU
2.	Chisel	2.36	0.68	2.71	0.73	LIA	AU
3.	Hand fork	2.44	0.88	2.53	0.88	LIA	AU
4.	Hammer	3.84	0.71	2.50	0.81	HA	AU
5.	Scriber	1.32	0.93	1.33	0.51	NA	NU
6.	Snips	1.01	0.95	1.12	0.59	NA	NU
7.	Hawk saw	1.53	0.46	2.08	0.71	LIA	SU
8.	Surface plane	1.43	0.68	1.31	0.49	NA	NU
9.	Wooden saw	2.56	0.85	2.06	0.55	AU	SU
10.	Wooden mallet	1.11	0.72	1.43	0.67	NA	NU
11.	Try square	1.17	0.51	1.11	0.96	NA	NU
12.	Head pan	1.64	0.69	1.81	0.85	LIA	SU
13.	Spiral level	1.31	0.92	1.26	0.73	NA	NU
14.	Shovel	1.29	0.46	1.13	0.66	NA	NU
15.	Trowel	1.85	0.47	2.23	0.83	LIA	SU
16.	Line	3.50	0.66	2.28	0.61	HA	SU
17.	Tester	3.42	0.95	2.33	0.84	AA	SU
18.	Digital voltmeter	1.15	0.87	1.15	0.92	NA	NU
19.	Electric cables	1.06	0.55	1.21	0.99	NA	NU
20.	Pliers	1.35	0.97	1.42	0.93	NA	NU
21.	Screw driver	1.77	0.79	2.83	0.77	LIA	AU

Key: As in table 1

Table 2 revealed that the following ten (10) resources (chisel, file, hammer, hawk saw, wooden saw, head pan, trowel, line, tester, and screw driver) for teaching basic technology had their Mean values ranged from 1.53 to 3.84 and were above the real limit of 1.50 indicating that these resources were available for teaching basic technology. Other eleven (11) resources had their Mean values ranged from 1.01 to 1.43 and were below the real limit of 1.50 indicating that these resources were not available. The standard deviation of the twenty one (21) resource items ranged from 0.46 to 0.97 and were low indicating that the respondents were not too far from the Mean and from one another in their response.

On the utilization of resources it was revealed in table 2 that the ten (10) available resources for teaching basic technology had their Mean values ranged from 1.81 to 2.83 and were above the real limit of 1.50 indicating that these resources were utilized by teachers of Basic technology in teaching their students. Other eleven (11) resources that were not available had their Mean values ranged from 1.04 to 1.43 and were below the real limit of 1.50 indicating that these resources were not utilized by teachers of Basic technology. The standard deviation of the twenty one (21) resource items ranged from 0.51 to 0.99 and were low indicating that the respondents were not too far from the Mean and from one another in their responses.

(c) Available and Utilized resources for teaching Business Studies: Findings are summarized in Table 3.

Table 3: Mean ratings of the responses of teachers of Business Studies on the level of availability and utilization of resources for teaching Business Studies in Junior Secondary School in Ekiti State. N = 58

S/N	Resources for teaching Business Studies	Availability		Utilization		Remarks	
		Mean ($\bar{X}_A$)	Standard deviation (SD_A)	Mean ($\bar{X}_U$)	Standard deviation (SD_U)	Availability	Utilization
1.	Business study typing room	1.11	0.71	1.45	0.56	NA	NU
2.	Manual typewriter	1.13	0.83	1.23	0.49	NA	NU
3.	Typing desk	1.22	0.55	1.33	0.59	NA	NU
4.	Stapler	1.52	1.14	1.46	0.77	LIA	NU
5.	Staple remover	1.31	0.97	1.32	0.48	NA	NU
6.	Perforator	1.55	1.15	1.48	0.92	LIA	NU
7.	Stop watch	1.41	0.86	1.36	0.70	NA	NU
8.	Charts showing trading activities	3.71	0.66	3.81	0.52	HA	HU
9.	Record books	3.51	0.76	3.67	0.59	HA	HU
10.	Sample of cheque	1.25	0.93	1.37	0.90	NA	NU

Key: As in table 1

Table 3 revealed that charts showing trading activities, record books, perforator and stapler had their Mean values ranged from 1.52 to 3.17 which were above the real limit of 1.50 indicating that these resources were available for teaching Business Studies. Other six (6) resources in table 3 had their Mean values ranged from 1.11 to 1.41 and were below the real limit of 1.50 indicating that these resources were not available for teaching Business Studies. The standard deviation of the ten (10) resource items ranged from 0.55 to 1.15 and were low indicating that the respondent were not too far from the Mean and from one another in their responses.

On the utilization of resources for teaching Business Studies, it was revealed in table 3 that two available resources; charts showing trading activities with a Mean of 3.81, and record books with a Mean of 3.67; each of the Mean is above the real limit of 1.50 indicating that these two resources were utilized for teaching Business Studies. Other eight (8) resources had their Mean values ranged from 1.23 to 1.48 which were below the real limit of 1.50 indicating that these resources were not utilized by Business Studies teachers in teaching their students. The standard deviation of the ten (10) resources in table 3 ranged from 0.48 to 0.92 and were low indicating that the respondents were not too far from the Mean and from one another in their responses.

(d) Available and utilized resources for teaching Home Economics: Findings are summarized in Table 4.

Table 4: Mean ratings of the responses of teachers of Home Economics on the level of availability and utilization of resources for teaching Home Economics in Junior Secondary School in Ekiti State.

N = 55

S/N	Resources for teaching Home Economics	Availability		Utilization		Remarks	
		Mean ($\bar{X}_A$)	Standard deviation (SD_A)	Mean ($\bar{X}_U$)	Standard deviation (SD_U)	Availability	Utilization
1.	Home Economics laboratory	1.42	0.96	1.33	0.43	NA	NU
2.	Gas Cooker	1.31	1.04	1.10	0.61	NA	NU
3.	Kerosene stove	1.53	0.65	1.51	0.80	LIA	SU
4.	Oven for baking	1.22	0.88	1.35	0.71	NA	NU
5.	Cooking pots	3.57	0.91	2.56	0.97	HA	HU
6.	Serving trays	3.51	0.56	2.51	0.99	HA	HU
7.	Serving plates	3.62	0.90	2.50	1.23	HA	HU
8.	Serving spoons	3.73	0.69	2.57	1.15	HA	HU
9.	Sewing machine	1.15	1.12	1.45	0.99	NA	NU
10.	Tread	3.77	1.11	3.61	0.89	HA	HU

11.	Table for cutting clothes	1.69	0.84	1.52	1.31	LIA	SU
12.	Scissors	3.59	0.61	3.82	0.77	HA	HU
13.	Measuring tape	3.80	0.49	3.77	0.87	HA	HU
14.	Pressing iron	3.66	0.51	3.53	0.69	HA	HU
15.	Piece of clothes	3.75	0.67	3.70	0.76	HA	HU
16.	Needles	3.83	0.85	3.69	0.63	HA	HU

Key: As in table 1

Table 4 revealed that the following resources (kerosene stove, cooking pots, scissors, measuring tape, pressing iron, piece of clothes, needles, tread, serving spoons, serving plates, serving trays and tables for cutting of clothes) for teaching Home Economics had their Mean values ranged from 1.53 to 3.38 which were above the real limit or 1.50 indicating that these resources were available for teaching Home Economics. Other four resources in table 4 had their Mean values ranged from 1.15 to 1.42 and were below the real limit of 1.50 indicating that these resources were not available for teaching Home Economics. The standard deviation of the sixteen (16) resource items in table 4 ranged from 0.49 to 1.12 and were low indicating that the respondents were not too far from the Mean and from one another their responses.

On the utilization of resources for teaching Home Economics, it was revealed in table 4 that the twelve (12) available resources had their Mean values ranged from 1.51 to 3.82 which were above the real limit of 1.50 indicating that the twelve (12) available resources were utilized by teachers of Home Economics in teaching their student. Other four (4) unavailable resources in table 4 had their Mean values ranged from 1.10 to 1.45 and were below the real limit of 1.50 indicating that these resources were not utilized by teachers of Home Economics in teaching their students. The standard deviation of the sixteen resource items in table 4 ranged from 0.43 to 1.31 and were low indicating that the respondents were not too far from the Mean and from one another in their responses.

Discussion of Findings

The result of the study revealed that resources such as cutlass, rake and soil samples for teaching Agriculture were available and these resources were utilized by teachers of agriculture in teaching their students. The findings of this study on the availability and utilization of resources for teaching Agriculture in JSS in Ekiti State was in agreement with the findings of Eze (2001) in a study carried out on strategies for the improvement of instructional resources available for teaching Agricultural science in secondary schools in Ebonyi State where it was find out that the following instructional materials: Hoes, cutlass, shovel, spade watering can, hand fork and hand trowel were available and utilized for teaching Agricultural science in the secondary schools in the state.

The result of the study also revealed that chisels file, hammer, hawk saw, line and wooden saw were available and utilized by Basic Technology teachers for teaching the subject in JSS in Ekiti state. The findings of this study was in consonance with the findings of Ogbuanya, Ogundola and Ogunmilade (2010) in a study carried out on the level of Availability of Recommended tools and Equipments for teaching Motor vehicle machines works in Technical Colleges in South Western States, Nigeria where it was found out that: set of hand tools, drilling screw and cutting equipment, measuring tools, machine tools, metal joining tools were available for teaching the subject in the technical colleges.

The result of the study also revealed that: Manual typewriter typing desk, stapler, stop watch, record books and sample of cheque were available and utilized by Business studies teachers for teaching their student in JSS in Ekiti state. The finding was in consonance with the findings of Ekwe (2002) in a study carried out on evaluation of instructional materials for teaching Business studies in secondary schools in Delta state where it was found out that film slides, projectors, ledger booklets tape recorder and stop watches were available and utilized by Business study for teaching the subject in secondary schools in the state.

The result of the study revealed that: Kerosine stove, cooking pots, serving treys and plates, Needles and measuring tape were available and utilized by Home Economics teacher for teaching the subject in JSS in Ekiti state. This finding was in agreement with the findings of Anaele and Alade (2009) in a study carried out on Availability and utilization of Educational resources in the teaching and learning of Technical subjects in secondary schools for quality Assurance where it was found out that facilities such as workshops, equipments, furniture instructional materials and classrooms were available for teaching the subject in secondary schools in Ibadan metropolis. The findings of this study was also in agreement with the study of Arokoyu and Ugonwa (2012) in a study carried out on Assessment of Resource Availability for chemistry instruction in the secondary schools in rivers state where it was found out that concentrated acids, Burettes, Pipettes, Beakers and conical flask were available for teaching chemistry in secondary schools in the state.

Conclusion

Many Junior Secondary School graduate in Ekiti State could not demonstrate interest and rudimentary skills in technology due to poor acquisition of knowledge, skills and attitude in pre-vocational subjects which has probably led to their poor performance in the subjects in external examination of National Examination Council (NECO). It is therefore, necessary to assess resources into the teaching of pre-vocational subjects in Junior Secondary Schools in Ekiti State. The study therefore found out that resources such as cutlass, rake, head pan, hammer, chisel, kerosine stove, serving plates, needles, stapler, perforators, records

books were available for teaching the peculiar pre-vocational subjects (agriculture, Basic technology, Home Economics, Business Studies). The teachers of each of the pre-vocational subjects utilized the available resources in teaching their students. But many of the resources for teaching pre-vocational subjects such as garden fork, wheel barrow, digital voltmeter, electrical wires, gas cooker, agric laboratory, school farm, Basic technology workshop, typing room, Home Economics laboratory were not available for teaching the subjects.

Recommendation

Based on the findings of this study, it was therefore recommend that the stake holders (government, PTA members, school principals) in Junior Secondary Schools in Ekiti State should help improve the level of availability of resources for teaching pre-vocational subjects in Junior Secondary Schools in Ekiti State.

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Common Sources of Accidents in Kitchen Areas of Urban Households in Plateau State

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Abstract

The study was designed to investigate the common sources of accident in the kitchen area of urban households in Plateau State, based on four types of housing units. Four specific purposes guided the research work. The study adopted a descriptive survey design. The population for the study was made up of 490,643 households. The sample for the study was 1,008 homemakers drawn from the population of study through a multi-stage sampling technique. A structured questionnaire was used as the instrument for data collection. Mean was used for data analysis. The findings revealed 16 common sources of accidents in houses on a separate stand, 20 common sources of accidents in flat in block of flats, 20 common sources in detached houses and 22 common sources in let-in houses. The study recommends safety awareness creation campaign on common sources of accidents among urban households in Plateau State based on all the functional areas of the home.

Key words: Households, Social unit, Functional areas, housing units, Accidents.

Introduction

A household is a communal unit which allows for interaction among its members young and old, male and female. They also interact with their immediate environment while making a common provision for their food, shelter and other necessities for living. According to the United Nations organization (2004), a household is a group of two or more people who dwell together and usually purchase and prepare their food jointly. Olson and Defrain (2004), Anyakoha and Eluwa (2009) further explained that these household members could be related or unrelated by blood; in which case, their relationship is based on mutual understanding.

A typical home-stead, in which the household dwells, is often made up of functional areas wherein the specific activities of each member and the entire household takes place. Functional areas in a home are designated places where a particular kind of work is discharged on a daily basis. These areas are furnished to serve specific purposes such as; the

kitchen for the production and processing of food items for household consumption, dining area for food consumption, the store for storage of household tools, equipment and materials, the bathroom for cleaning of self, the living room for interaction and socialization, the garage for parking of vehicles and other household materials and the laundry area for washing of clothes (Chilton, 2001; Fermie, Keech, and Shepherd, 2005; Royal Society for the prevention of Accidents, 2010).

The kitchen is an indispensable functional area for all households. These kitchens are of different types, shapes, sizes and finishes. All members of the household interact in these kitchens as they use the various tools, equipment, material and substances in performing their daily activities. Households live and interact in different types of housing units such as; traditional house, farm house, wooden house, underground house, nomad dome, bungalow, duplex, semi-detached or detached houses (National Bureau of Statistics, 2008; Pandit, 2011).

The classification of these houses and their activity areas differ around the world as well as in both rural and urban areas. Urban houses are generally those types of dwelling places found in cities or towns. They are often characterized by a high population density with the availability of some essential household facilities and amenities (Reynells, 2000). The Plateau State Housing population Commission (2006) listed four common types of urban housing units, which are: houses on a separate stand, flat in block of flats, semi-detached or detached and let-in houses respectively. These urban housing units are often characterized by large population size and the availability of some modern facilities like electricity, pipe born water supply and use of modern gadgets like generators and other appliances (National Bureau of Statistics, 2008) which could cause various types of home related accidents.

Home accidents are those types of accidents which occur among household members as they perform their normal household chores (Chilton, 2002; Amoka, 2007). Many types of accidents could occur to workers; such as: falls, cuts, burns, electrocution, suffocation, bites and stings (Fermie, Keech and Shepherd, 2004; Bhenderi and Choudhary; 2008). In Plateau State, there are many existing types of household related accidents which have not been formally documented in reports. There is no known documented information on the sources of accidents in functional areas and specifically the kitchen area, as well as in different types of urban housing units in the State. Hence, this has created a gap in information and knowledge which needs to be filled. It is for this reason that this study sort to determine the common sources of accidents in the kitchens of the four types of housing units. The study will be of enormous benefit to households, Home Economists; health related workers, Government, non-Governmental Agencies, as well as educationists and researchers who may be interested in household studies. The geographical

scope of the study was limited to urban areas in Plateau State.

Purpose of the study

The major purpose of this study was to identify the common sources of accidents in the kitchens of four types of urban housing units in Plateau State. Specifically the study identified common sources of accidents in the kitchens (1) in houses on a separate stand, (2) within flats in block of flats (3) in detached housing units and (4) identified common sources of accidents in the kitchens of let-in housing units.

Methodology

***Design of the Study*:** This study adopted a descriptive survey research design to obtain the responses of the respondents on the common sources of home accidents in activity areas based on four common types of kitchens in urban housing units (Plateau State National Population Commission, 2008).

Area of the Study: The area of the study was Plateau State which is *located* in North-West geopolitical zone of Nigeria. The State is made up of seventeen (17) administrative Local Government Areas (LGAs) across the existing three senatorial zones in the State (National Population Commission, 2008). Plateau State is also characterized by a large household population with seven main types of housing units, out of which four are majorly urban housing units. These housing units are often equipped with modern amenities, facilities and home appliances (Plateau State Population and Housing Tables, 2006). Plateau State was chosen for this study due to frequent cases of various forms of home accidents in the State (Report of Fire Brigade of Nigeria, 2009; Jos University Teaching Hospital, 2009).

***Population of the Study*:** The population consists of 490,643 households dwelling in four major types of urban housing units. A homemaker from each of the households constituted the respondents for the study.

*S**ample for the Study:*** The sample for the study was 1,008 homemakers drawn from the population. A multi-stage sampling technique was adopted for the study. According to Eboh (2007), the multi-stage technique is used where the selection of units into the sample is organized into stages. The study was therefore organized into six stages as follows: (1) All the three Senatorial Zones were selected. (2) Local Government Areas (LGA) that was predominantly urban were purposively selected. (3) Two urban towns were purposively selected from each of the three LGAs, which are: Jos North and South in the Northern senatorial zone, Pankshin and Mangu in the central senatorial zone and Qua'anpan and Shendam in the Southern senatorial zone respectively. (4) A total of six communities (Anguwa) were purposively selected within the urban towns based on the availability of the four types of urban housing units. (5) Seven households were purposively selected for the study, making 28 households from 36 communities. (6) Finally, from each household, one homemaker was selected. Hence, an overall sample size of 1,008

homemakers constituted the respondents for the study.

***Instrument for data collection*:** The instrument for data collection was a questionnaire. This instrument was developed based on the purpose of the study and extensive review of related literature. It was structured to answer the research questions for the study. The instrument was structured into five Likert – type response options and were assigned values as: Strongly Agreed (SA) = 5; Agreed (A) = 4; Not Sure (NS) = 3; Disagree (D) = 2 and Strongly Disagree (SD) = 1. Any item whose mean value is 3.0 and above was regarded as agreed while those items whose means are below 3.00 was regarded as disagree. The instrument was face validated by three Lecturers from the Institute of Education and the Departments of Vocational Teacher Education and Health and Physical Education respectively, from the University of Nigeria, Nsukka. 20 copies of the instrument were administered to homemakers in Bauchi State in order to determine the internal consistency of the instrument. Cronbach Alpha reliability method was used and reliability coefficient of 0.92 was obtained.

Method of data collection and Analysis techniques: Three trained research assistants from each of the three zones administered and retrieved 112 questionnaires. This gave a total of 1,008 questionnaires (100%). The researcher collated the retrieved questionnaires after administration for the purpose of data analysis. The data were analyzed using Mean (X) and Standard deviation (SD) to answer the four research questions.

Findings of the study

The following findings were made:

(1) Sixteen (16) common sources of accidents in the kitchen area of houses on a separate stand.
(2) Twenty (20) common sources of accidents in the kitchen area of flat in block of flats.
(3) Twenty (20) common sources of accidents in the kitchen area of detached housing units.
(4) Twenty-two (22) common sources of accidents in the kitchen area of let-in houses.

Table 1: Mean Responses and Standard deviation of homemakers on the common sources of accidents in the kitchen area for houses on a separate stand

S/ No	Common Sources of Accidents	$\overline{X}$	SD	Remarks
	Work Place Related Sources			
1	Poor floor layout/arrangement	3.0	.86	AG
2	Inadequate work spaces and walkways	2.9	.97	DA
3	Rough or uneven work surfaces	3.3	1.0	AG
4	Lack of water supply	3.4	1.0	AG
5	Poor grouping of tools, equipment & appliances in work spaces	3.4	1.0	AG
6	Faulty electrical or gas operated appliances	3.5	.95	AG
7	Dilapidated sink or wash basins	2.3	.98	DA

8	Cooking pots & sauce pans with broken handles	3.2	1.0	AG
	Worker Related Sources			
9	Improper clothing during food handling, preparation & production	2.2	1.1	DA
10	Wrong footwear	2.6	1.1	DA
11	Physical disability and ill health e.g. catarrh	3.4	1.0	AG
12	Not using hand gloves & kitchen cloth when handling hot pots,etc.	3.3	1.0	AG
13	Lack of skills in operating equipment.	3.4	.97	DA
14	Spills and peels on floors e.g. water, oil, vegetable & fruit peels	3.5	.91	AG
	Work Related Sources			
15	Careless or poor handling of sharp utensils like knife, scissors, & graters.	3.5	.91	AG
16	Lifting of heavy equipment & sacks of foodstuff.	2.5	1.0	AG
17	Grinding, blending, pounding and mixing of food items.	3.2	.99	AG
18	Cutting, slicing, and shredding of food items like vegetables.	3.1	1.0	AG
19	Boiling, frying, baking and roasting of food.	3.7	1.1	AG
20	Poor routine or scheduling of work.	3.0	1.2	AG
21	Choking from bleached oil & smoke from burnt food while cooking.	3.3	1.0	AG
22	Mistaken ingestion of chemicals e.g. kerosene, liquid soap & others.	2.7	.92	DA

Key: AG: Agreed, DA= Disagreed, $\overline{X}$ = Mean, SD = Standard Deviation.

Table 1 shows the various mean scores of homemakers on the common sources of accidents in the kitchen areas of houses on a separate stand based on work place; worker and work. 22 items were listed and the respondents agreed with 16 as common sources of accidents in the functional area with their mean scores from 2.2 to 3.7 and a corresponding SD scores from .86 to 1.2. The range of the SD indicated similar ratings among all the respondents. They however disagreed with 6 items as common sources of accidents in this functional area with mean scores below 3.0.

Table 2: Mean Responses and Standard deviation of homemakers on the common sources of accidents in the kitchen area for flats in block flats

S/N	**Common Sources of Accidents**	$\overline{X}$	**SD**	Remarks
	Work Place Related Sources			
1	Poor floor layout/arrangement	3.1	.95	AG
2	Inadequate work spaces and walkways	3.3	.96	AG
3	Rough or uneven work surfaces	3.3	1.0	AG
4	Lack of water supply	3.3	1.1	AG
5	Poor grouping of tools, equipment & appliances in	3.3	1.1	AG

	work spaces			
6	Faulty electrical or gas operated appliances	3.4	.89	AG
7	Dilapidated sink or wash basins	2.4	1.0	DA
8	Cooking pots & sauce pans with broken handles	2.7	1.0	DA
	Worker Related Sources			
9	Improper clothing during food handling, preparation & production	3.5	1.1	AG
10	Wrong footwear	3.0	1.1	AG
11	Physical disability and ill health e.g. catarrh	3.3	1.1	AG
12	Not using hand gloves & kitchen cloth when handling hot pots,etc.	3.3	1.1	AG
13	Lack of skills in operating equipment.	3.0	.97	AG
14	Spills and peels on floors e.g. water, oil, vegetable & fruit peels	3.1	.89	AG
	Work Related Sources			
15	Careless or poor handling of sharp utensils like knife, scissors, & graters.	3.5	.89	AG
16	Lifting of heavy equipment & sacks of foodstuff.	3.1	1.0	AG
17	Grinding, blending, pounding and mixing of food items.	3.1	1.0	AG
18	Cutting, slicing, and shredding of food items like vegetables.	3.2	.95	AG
19	Boiling, frying, baking and roasting of food.	3.0	1.1	AG
20	Poor routine or scheduling of work.	3.4	1.2	AG
21	Choking from bleached oil & smoke from burnt food while cooking.	3.3	1.0	AG
22	Mistaken ingestion of chemicals e.g. kerosene, liquid soap & others.	2.5	.94	AG

Key: AG: Agreed, DA= Disagreed, $\overline{X}$ = Mean, SD = Standard Deviation.

Table 2 shows the various mean scores of respondents on the common sources of accidents in the kitchen areas of flats in block of flats based on work place; worker and work. Out of the 22 items listed, the respondents agreed with 20 as common sources of accidents in the functional area with their mean scores from 2.4 to 3.5 and a corresponding SD scores from .89 to 1.2. The range of the SD indicated comparable ratings among the respondents. Respondents disagreed with 6 items as common sources of accidents in this functional area with mean scores below 3.0.

Table 3: Mean Responses and Standard deviation of homemakers on the common sources of accidents in the kitchen area for detached housing unit

S/N	**Common Sources of Accidents**	$\overline{X}$	**SD**	Remark
	Work Place Related Sources			
1	Poor floor layout/arrangement	3.7	.73	AG
2	Inadequate work spaces and walkways	2.8	.95	DA

3	Rough or uneven work surfaces	3.4	.96	AG
4	Lack of water supply	3.4	.96	AG
5	Poor grouping of tools, equipment & appliances in work spaces	3.5	.90	AG
6	Faulty electrical or gas operated appliances	4.1	.78	AG
7	Dilapidated sink or wash basins	3.4	.82	AG
8	Cooking pots & sauce pans with broken handles	4.2	.82	AG
	Worker Related Sources			
9	Improper clothing during food handling, preparation & production	4.2	1.1	AG
10	Wrong footwear	4.0	1.2	AG
11	Physical disability and ill health e.g. catarrh	4.2	1.0	AG
12	Not using hand gloves & kitchen cloth when handling hot pots, etc.	3.9	.98	AG
13	Lack of skills in operating equipment.	2.9	.97	DA
14	Spills and peels on floors e.g. water, oil, vegetable & fruit peels	3.7	.63	AG
	Work Related Sources			
15	Careless or poor handling of sharp utensils like knife, scissors, & graters.	4.0	.76	AG
16	Lifting of heavy equipment & sacks of foodstuff.	3.2	.99	AG
17	Grinding, blending, pounding and mixing of food items.	3.3	.95	AG
18	Cutting, slicing, and shredding of food items like vegetables.	4.0	1.0	AG
19	Boiling, frying, baking and roasting of food.	4.1	1.1	AG
20	Poor routine or scheduling of work.	3.9	1.2	AG
21	Choking from bleached oil & smoke from burnt food while cooking.	3.8	.95	AG
22	Mistaken ingestion of chemicals e.g. kerosene, liquid soap & others.	4.2	.76	AG

Key: AG: Agreed, DA= Disagreed, $\overline{X}$ = Mean, SD = Standard Deviation.

Table 3 shows the various mean scores of respondents on the common sources of accidents in the kitchen areas of detached houses based on work place; worker and work. From 22 items listed, respondents agreed with 20 of the items as common sources of accidents in the functional area with their mean scores from 2.8 to 4.7 and a corresponding SD scores from .63 to 1.2. The variances among respondents were not too close. This means that the respondents varied in their opinions for some of the items rated. They disagreed with 2 items as common sources of accidents in this functional area with mean scores below 3.0.

Table 4: Mean Responses and Standard deviation of homemakers on the common sources of accidents in the kitchen area for let-in houses

S/N	Common Sources of Accidents	$\overline{X}$	SD	Remarks
	Work Place Related Sources			
1	Poor floor layout/arrangement	4.6	.76	AG
2	Inadequate work spaces and walkways	4.3	.87	AG
3	Rough or uneven work surfaces	3.5	.89	AG
4	Lack of water supply	3.6	.88	AG
5	Poor grouping of tools, equipment & appliances in work spaces.	3.4	.89	AG
6	Faulty electrical or gas operated appliances	4.5	.96	AG
7	Dilapidated sink or wash basins	3.5	.87	AG
8	Cooking pots & sauce pans with broken handles	4.5	.87	AG
	Worker Related Sources			
9	Improper clothing during food handling, preparation & production	4.2	.88	AG
10	Wrong footwear	4.2	.95	AG
11	Physical disability and ill health e.g. catarrh	4.5	.87	AG
12	Not using hand gloves & kitchen cloth when handling hot pots, etc.	4.5	.95	AG
13	Lack of skills in operating equipment.	4.6	.96	AG
14	Spills and peels on floors e.g. water, oil, vegetable & fruit peels	4.7	.82	AG
	Work Related Sources			
15	Careless or poor handling of sharp utensils like knife, scissors, & graters.	4.6	.78	AG
16	Lifting of heavy equipment & sacks of foodstuff.	3.3	.97	AG
17	Grinding, blending, pounding and mixing of food items.	4.1	.94	AG
18	Cutting, slicing, and shredding of food items like vegetables.	4.2	.91	AG
19	Boiling, frying, baking and roasting of food.	4.2	.78	AG
20	Poor routine or scheduling of work.	3.1	.94	AG
21	Choking from bleached oil & smoke from burnt food while cooking.	4.4	.95	AG
22	Mistaken ingestion of chemicals e.g. kerosene, liquid soap & others.	4.8	.81	AG

Key: $\overline{X}$ = Mean, SD = Standard Deviation.

Table 4 indicates the various mean scores of the respondents on the common sources of accidents in the kitchen areas of let- in housing units based on work place; worker and work. 22 items were listed and the respondents agreed with all the items listed as common sources of accidents in this functional area with their mean scores from 3.1 to 4.7 and a corresponding SD scores from .76 to .98. The range of the SD indicated very

similar ratings among all the respondents. They agreed with all the various items in this functional area with mean scores above 3.0.

Discussion of findings

Generally, the study of the four types of kitchens in the urban housing units in Plateau State revealed that accidents are common in all housing units, irrespective of type. The kitchen is a unique area because of the number of activities that takes place there. Some of the important activities include: food preparation, production and processing of food items for household consumption and as such, some unique types of facilities, equipment and materials are used in performing these major activities. Fermie, Keech and Shephard (2005) and Royal Society for the Prevention of Accident (2010), pointed out that accidents like falls, cuts, scalds, burns and suffocations occurred very often in the kitchen because of individual's involvement with items like cookers, cupboards, knives, chopping boards. Similarly, this study has revealed sources of accidents such as: (1) Poor floor layout or arrangement, (2) Faulty electrical or gas operated appliances, (3) Over grown grasses and lawns, (4) Mistaken ingestion of chemicals e.g. kerosene, liquid soap and others. This agrees with other studies done in some developed countries of the World (Haggarty, 1996; Park, 2005; Bhanderi, & Choudhary 2008).

From the study, the results on sources of accidents in houses on a separate stand where more of work related and then workplace related. In flats in block of flats, the accidents were more of work related activities (8 items), in detached houses, more accidents occurred as a result of work place (7 items) and work related (8 items) source, while in let- in- houses, accidents occurred from all the three source. This may be because of the fact that let-in houses contain more number of people who are lower income earners than the other three types of housing units. In Plateau State, many household chores are performed by young home makers who are both boys and girls of mostly primary and junior secondary school age and this could lead to accidents due to inexperience in the use of some of the tools and materials like chopping boards, sharp knives and use of gas or electrically operated household equipment.

Chilton (2002), Bhanderi and Choudhary (2008) and Stormy (2010) also highlighted some of the sources of these home accidents in relation to spills, peels, chemicals, smoke and other fuel sources used, which they explained are common to the kitchen area. Also because these young homemakers have no knowledge of the factors that can lead to accidents, they may fall victims. According to theorists of accident causation (Goetsch, 2002; Leveson, 2008; Harry, 2011), accidents are usually caused by action of preceding factors as such, the removal of the central factor will normally negate the action of the preceding factors which will also prevent accidents and injuries from occurring. This confirms that home accident in the kitchen area has to do with interaction between the worker, the

work place and the work performed as such, the sources of home accident in the kitchen area is a combination of the environment of work, the person involved in the work and the nature of the work involved in, hence, three forces are involved.

Conclusion

There are many prevalent sources of home accidents in the various kitchens of urban housing units in Plateau State. These accident sources come about as a result of the use of some household facilities, tools, equipment, material and substances while working in the functional area. The accidents also happen to all categories of household members, young or old, male or female.

Recommendations

The following recommendations were made:

- Intensification of research activities and documentation of findings on sources, types and victims of home accident in both urban and rural areas of Plateau State based on LGAs.
- There should be more intensive studies on home accident sources in the different types of housing units and functional areas, which should be conducted based on population, gender, age, sizes of housing unit and social status of household heads and homemakers.
- Training programs and curriculum material should be developed based on researches to update knowledge of all categories of household members on the various sources of accidents.

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Influence of Professional Roles of Dual Career Women on their Traditional Roles

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Abstract

This Study focused on the influence of professional roles of dual career women on their traditional roles in Port Harcourt Local Government Area of Rivers State. Specifically, the study determined ways dual career women influence their family finance and standard of living, as well as, ways dual career women can effectively cope with their multiple roles without conflict in their homes. The study was a survey design. The population was made up of working mothers in public and private sector. A multi-stage and non – proportionate stratified random sampling technique was used to select 300 working mothers. Questionnaire was used for data collection. Data obtained were analyzed using means. Finding revealed that working mothers engage in formal employment in order to increase their family standard of living and economic status. Although their dual role has been stressful and challenging, majority of the respondents agreed that they do not neglect their traditional roles. Ten ways of performing dual roles without conflict were identified. Base on this recommendations were made.

Keywords: Working, Mother, Roles, Traditional, work, Conflict.

Introduction

In the past women's lives revolved around household activities while men were the main bread winners, final authority in the area of discipline and decision making (Adebayo, 2001). However, due to the emergence of a new economic pattern and hardship prevalent in the country, increasing opportunities for education, rising standard of living and increased modernization, women have also started coming out of their traditional role of a home maker to join the work force. Women have successfully invaded the previous dominated social and economic spheres as men folk. The notion that men are the sole breadwinner is no longer tenable. In the face of the present day economic realities, an increasing number of household depend on two earners to maintain a suitable standard of living (Anyanwu & Etonyeaku, 2009).

In *1990, approximately 57 million adult wo*men ages sixteen and older were in the paid work force, while globally, it is estimated that women labour force

participation has increased from 36% in 1990 to 40% by 1997 (Watson, Quatman & Edler, 2002).According to the international labour organization (ILO) (2007), women's labour force participation has increased over the last five decades. Women today make up over 45% of the worlds workforce with more women than ever before participating in the labour force or actively seeking for jobs. Further, International Labour organization (ILO) (2007) observed that 1.2 billion of the 2.9 billion workers in the world in 2006 were women. Fullerton, Jr (1999) projected a continued rise in women workforce participation through the year 2015. In the same vein, Laura (2003) in Nwankwo (2005) reported that sixty-eight percent of all women are working. The percentage of working women rises from 64% during the pre-school years to over 78% in the middle childhood (U.S bureau of census 2001).In 2006, 70.9% of women were in labour force (employed or looking for work). The unemployment rate among women was only 3.6% (U.S Department of Health and Human Resources, 2007). As the number of working women is increasing, today, one can say that a Nigerian woman social and economic position is changing. This is because more and more women are becoming salary earners both before and during marriage. This has affected their traditional position by giving them some kind of independence that they did not have formerly (Akpan & Inyang, 2001)

Women participation in the labour sector in Nigeria was given a boost by the demise of colonialism and the subsequent accelerated effort at national development (Anugwom, 2009). Until the late 1960s, women were virtually not seen in the formal sector of Nigerian economy. It was the atmosphere of industrial revolution, large scale world wars, and urban growth that led to change in the economy. These changes also affected the pattern of family life. Some of the changes made it difficult for men alone to meet up with the needs of their families so women needed to come in to help by taking up jobs outside the home. Thus, the orientation towards women as people who could also be meaningfully used in the economic process of the family and society at large.

Women involvement in paid employment became possible due to their possession of skill and education. Their income earning increased with educational level. Thus, until women in Nigeria became serious human resources with all manner of qualifications, just as their male counterparts, they were not considered as real contributors to the economic system (Anugwom, 2009). Prior to this, women were mainly seen as reserve mental and physical resources called upon only in an emergency to help in national development (Afigbo, 1991 in Anugwom, 2009).

Similarly, the increasing number of women participation in Nigeria was due to the impact of the Structural Adjustment Programme (SAP) which has meant declining real wages, declining government social provisioning and withdrawal or cut

back on subsidies (Pearson, 1999 in Anugwom, 2009). These conditions have meant equally increased challenges of survival amongst families. This may have forced many women to seek employment in order to ensure family survival. According to Anugwom (2009), a lot of women who work do it out of concern to earn money in order to complement their husbands income or are driven out to work because of the non- existence of a male breadwinner (in the case of widows , Single parents and divorced women). According to Nwankwo, (2005) women also work to escape boredom and to satisfy professional goals, personal needs, care for their children and support their families. Work also allows women to realize their potentials, gain recognition and achieve power and status.

In the 21st century, Nigerian women have made some mark in their chosen profession be it education, business, or politics. Women now virtually do exactly the same work with their male counter- parts to support the home. The multiple roles of women as a wife, mother and formal sector employee is difficult and over bearing in most cases (Odunaike, 2012).This has brought about the common believe that the newly acquired professional status of women has made them deviate from child rearing and housekeeping activities. Some critics accused working mothers of being negligent mothers and even believed that their traditional female role has become a secondary consideration while their main activity lies in their newly acquired profession. Opportunities and right to work outside the home are viewed as having a negative impact on family life as mothers in formal employment are usually accused of abandoning their homes for their jobs. It is necessary therefore to find out if the professional status of mothers in Port Harcourt Local Government Area of Rivers State does affect their traditional role status.

Purpose of the Study

The major purpose of this study was to investigate the influence of professional status of working mothers in Port Harcourt Local Government Area of Rivers State on their traditional role Status. Specifically the study determined:

- Ways professional roles of dual career mothers influence their traditional roles.
- Ways dual career women influence their family finances and standard of living.
- Ways dual career women can cope with their multiple roles without conflict in their homes.

Research Questions

The study sought answers to the following research questions

1. What are the ways professional roles of dual career mothers influence their traditional role?
2. What are the ways dual career women influence their family finances and standard of living?
3. What are the ways dual career women can cope with their multiple roles without conflict in their homes?

Methodology

***Design and Area of Study*:** The study used the survey research design. The study covered Port Harcourt Local Government Area (Phalga) in Rivers State of Nigeria. Port Harcourt is the Capital City of Rivers States. It lies along Bonny River and is located in the Niger Delta. It is densely populated with professional working mothers from private and public sector.

***Population for the Study*:** Although the population size of working mothers in Port Harcourt Local Government Area of Rivers State is not available, the population of women in labour force has increased over the years. About 73% of working women had white collar jobs in 2009, a percentage that is expected to increase.

In 2011, there was an increase number of women (25%) in the 24 ministries at federal cabinet , 5.5% at state level , 6.4 % as permanent Secretaries and 9.2% of the numbers of directors (Gender Statistics Newsletter, 2011. The population for the study comprised of all professional working mothers from private and public sector in Port Harcourt Local Government Area of Rivers State.

Sample for the Study: A multi – Stage Sampling technique was used in the selection of the sample for the study. The first stage involved the simple random selection of two areas {old G. R. A and town} out of the five areas {Borikiri, Town, old G. R. A, Diobu, Amadi flat, known locally as Port Harcourt township. The second stage involves selection of two private secondary schools and the state secretariat from the areas. The third stage involves a purposive selection of six ministries out of the 24 ministries , four banks, a medical centre and business outlets all situated inside the state secretariat. A non – proportionate stratified random Sampling technique was adopted to select individual working mothers as follows: ministry of Education (49), Ministry of health (47), Ministry of Agriculture (39), Ministry of finance (38), ministry of Justice (41), Ministry of culture and tourism (22), medical centre (15), Banking sector (14), Business outlets (17), Private secondary schools (18). This is to ensure that the working women selected comprises of various profession. A total of 300 respondents participated in the study.

***Instrument for Data Collection*:** The instrument used for data collection was a 4 – point rating scale of: strongly agree – 4, agree – 3, disagree-2, strongly disagree -1. The questionnaire was developed with various sections according to the various purpose of the study. The instrument was validated by three experienced teachers. Based on their comments, some corrections were made on the instrument.

Data Collection and Analysis Techniques: A total of 300 copies of the instrument were distributed by hand to the respondents. All the three hundred questionnaires were retrieved. Data were analyzed using mean values in this study. A cut off $\overline{X}$ = 2.5 was considered as agreed and $\overline{X}$ lower than 2.5 was considered disagreed.

Findings

Tables 1: Mean Response on ways professional roles of working mothers influence their Traditional Female Roles

S/N	Views on ways professional Roles Influence traditional Roles	Mean $\overline{X}$	Rmk
1.	My job outside the home is stressful.	3.90	Agreed
2.	I am usually tired at the end of the day.	3.90	Agreed
3.	It is usually difficult to carry out domestic work along with professional ones.	2.70	Agreed
4.	I find it difficult to prepare family meals.	1.10	Disagreed
5.	I am always tired to supervise and care for the children.	1.10	Disagreed
6.	House keeping are sparingly done by me.	3.00	Agreed
7.	I have limited time with my family members daily.	2.50	Agreed
8.	I delegate duties to house- helps and other family members.	3.00	Agreed
9.	I make good use of available labour saving devices.	4.00	Agreed
10.	My husband helps out with domestics work.	2.40	Agreed
11.	I experience a lot of resource wastage (food) on account of not being at home most times due to the nature of my job.	3.00	Agreed

Table 1 shows eight ways the professional roles of working mothers influence their traditional roles. The table shows that the highest mean effect was that professional status of working mothers facilitates the use of labour saving devices to aid them perform their traditional female roles, ($\overline{X}$ = 4.00). This is followed by respondents indicating that their jobs outside the home is stressful and that they are usually tired at the end of the day ($\overline{X}$ = 3.90).The respondents also indicated that they delegate duties to house helps and other family members and that they experience a lot of waste resources (food) on the account of not being around ($\overline{X}$ =3.00). Further, the respondents agreed that it is usually difficult to carry out domestic work and that they have limited time with their families ($\overline{X}$ =2.70 and 2.50 respectively) but disagree strongly that they find it difficult to prepare meals, care and supervise their children and that their husbands do not help out with domestic work despite their being tired at the end of the day.

Table 2: Ways Professional Roles of women Influence Family Standard of Living

S/N	Ways professional roles of women influence Family standard of living	Mean $\overline{X}$	Remarks
	I contribute to:		
1.	The feeding of my family	3.80	Agreed
2.	Education of my children	3.60	Agreed
3.	Clothing of my children	3.80	Agreed

4.	Health care services of my family	2.80	Agreed
5.	My professional status improves the financial base of my family.	4.00	Agreed
	I work to:		
6.	Display affluence	2.00	Disagreed
7.	Feel validated (important)	2.50	Agreed
8.	Have economic stability	3.80	Agreed
9.	Revive my dead home lives	1.00	Disagree
10.	Teach my children independence	3.00	Agreed
11.	Set an example	2.80	Agreed
12.	Gain recognition	2.20	Disagreed
13.	Achieve power and status	2.40	Disagreed

Table 2 shows that majority of the respondent agreed strongly that their professional status contribute immensely to the economy of their families and that it has really improve the financial base and standard of living of their families as item 1-5 had a mean above 2.50. The respondents further agreed that they also work to feel validated, have economy stability, to set an example and teach their children independence as seen in item 7, 8, 11 and 10 with mean above 2.50. Item 6, 9, 12 and 13 had a mean below 2.50 showing that working mothers do not work because they want to display affluence, revive their dead home lives, gain recognition and to achieve power and status.

Table 3: Ways professional women can effectively cope with their dual roles without conflict

S/N	Ways of performing dual roles without Conflict	Mean X	Remarks
1.	Effective time management.	4.00	Agreed
2.	Focus at job while at work.	4.00	Agreed
3.	Focus on husband and children while at home.	4.00	Agreed
4.	Separate work and motherhood responsibilities.	3.80	Agreed
5.	Make a list of priorities.	3.60	Agreed
6.	Do what you can do yourself and involve others where possible and necessary.	2.70	Agreed
7.	Delegate duties to other members of the family.	3.50	Agreed
8.	Get house-helps.	3.80	Agreed
9.	Perform office jobs at home.	1.00	Disagreed
10.	Make daily schedules / time tables.	3.00	Agreed
11.	Obtain husband approval and support for formal Employment.	4.00	Agreed

Table 3 revealed that the respondents agreed on ten out of eleven ways working mothers can cope with their multiple roles without conflict. Ten effective ways of performing dual role without conflict obtained mean scores of

2.70 and above, and was accepted as effective ways of performing dual roles without conflict. Item 9 had mean score of 1.00 which revealed that performing office jobs at home can result to conflict.

Discussion of findings

Findings from the study revealed that greater percentage of the respondents agreed that holding unto dual roles of home maker and formal employment outside the home is stressful and that they are usually tired at the end of the day to carry out some of their traditional roles. The respondent agreed it is usually difficult to carry out domestic work and that house cleaning is sparingly done by them. Some of the respondent agreed that they have limited time with their family and that they experience a lot of waste resources on the account of not being at home. In some measures this is in agreement with the point raised by family education network (2011) that professional status of women possesses a problem to them. Also, Ezeigbo, (1999) noted that most Nigerian mothers live and laboured under stress because they are overwhelmed by the responsibilities in their lives, those created by the society and themselves. Most of the respondent agreed that though tired due to official duties they make out time to cook family meals and oversee the supervision of their children. This finding is in consonance with the view of Bianchi (2000) and Ezeigbo, (1999) which portrayed that the rapid movement of women into the labour force appears to have been accomplished without hurting children and that Nigerian women are expected to perform their traditional roles efficiently, run their homes, be good wives and mothers. The result of the findings could be attributed to the increase use of available labour saving devices by working mothers. Also, all works are not alike and the effect of mothers work on herself and family depend on what the work is like.

In contrast to this findings is the view of Sydarkasa (1985) that mothers holding unto dual role of home maker and formal employment can result in not properly attending to, or completely abandoning traditional female roles. Nwankwo (2005) also pointed out that growing children are negatively influenced when both parents work outside the home. With regards to research question two which borders on the influence of professional status of women on family standard of living, findings in Table 2 revealed that professional status of women helps improve family standard of living. Majority of the respondent agreed that they work to contribute to the livelihood of their family and to support children education. This finding is in line with Anugwom (2007); Odunaike (2012) who posited that women engage in formal employment basically for economic reasons in order to support as well as provide for the needs of the family due to stiff economic situation of the country. Hence, the reason for continuous support from their husbands as regards engagement in formal employment. World Economic forum, (2007) noted that decent work and wages lift women and their children out

of poverty and exert a positive and significant impact on the growth of nations and development. Equally, Synder (1990) stressed that women are principal, if not the sole economic support of their children, they ensure that their families have adequate supply of food. In the same vein, Ezeigbo (1996) also said that mothers are expected to contribute to the family income, cater for the extended family members and perform efficiently in their jobs or business. Ways of performing multiple roles without conflict in Table 3 shows that effective time management, making of daily schedules, making of a list of priorities, separating work and motherhood responsibility, focus at job while at work, focus on children, husband and domestic works while at home, delegating duties to house- helps and other members of the family, husband approval and support for formal employment are necessary in performing multiple roles without conflict, but performing unfinished job in the office at home may bring about conflict.

Conclusion

Changes in the economy and changes in family pattern in the 21st century has made women to go beyond home making to make the best use of their education, skills, talents and gift in improving their living standard as well as that of their families and nation at large. The dual roles of women can be stressful and challenging therefore the pursuit for success in ones profession should not hinder the proper management of the home so also the traditional roles of women should not hinder the pursuit in ones career. Working mothers should strike a balance between these dual roles as traditional roles of women in the home are a God giving privilege. Women should give quality attention to their children who will become tomorrow leaders.

Recommendations

Based on the findings the following recommendations are made to help professional mothers become successful in performance of their dual roles.

- Professional mothers should work harder towards balancing their dual roles so that none suffers at the expense of the other.
- Husbands should embrace an equal sharing of domestic activities and help their wives with domestic work.
- Management concept should be followed strictly to ease time pressure.
- Experienced house helps, nannies or competent relatives should be employed to help them look after their home and maintain good use of resources.

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Institutionalization and Rehabilitation of Street Children in Benue State

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Abstract

The study investigated institutionalization and rehabilitation of street children in Benue State. A Cross Sectional research design was used to conduct the study. Data was collected using two sets of questionnaires for staff and orphans, (Rehabilitation Staff Questionnaire, RSQ and Rehabilitation Orphan Questionnaire, RIQ). Two hypotheses were formulated and analyzed using mean and standard deviation. Finding show causative factors like poverty,(3.20),Abandonment(3.10), death of parents (2.20), divorce and remarriage (2.17) being responsible for street children and rehabilitation of children. Findings also showed a number of problems in these institutions to include late feeding (3.18), harsh punishment (3.03), in fighting amongst the orphans (2.95)) and liaise – faire attitude of the workers, (2.97).On the state of infrastructure and facilities, result shows that storage facilities and access road network represents 3.74 and 2.58 respectively, while, the environment and water recorded 2.28 and 2.20 respectively. On the programs for rehabilitation, all ten (10) programs scored below the acceptable mean of 2.00, which means performance was below expectations or these programs were minimally being carried out. Based on the findings, it was concluded that institutions for children rescued out of the street will continue to serve as alternative care centers for children, though, there are inherent problems that require interventions from the government, staff training and the involvement of NGOS and CBOS.

Keywords: Street children, Orphans, institutionalization, rehabilitation, programs.

Introduction

Over the last five decades, the phenomenon of street children has become a prominent global problem with serious implications for the survival, development, protection and participation of children below 18 years. The presence of street children in major cities of the world has transcended the level where it was viewed as strictly a religious and cultural injunction, (Dunapo, 2002, Child Rights Act, 2003). Global estimates of street children stood between 10-100 million in 2002 and the

number has been increasing rapidly since then, (UNFPA, 2003). The phenomenon has not only attracted public concern but has also become a matter of priority to governments as well as National and International Organizations (Panter-Brick, 2002). In Africa and in Nigeria especially, where the problem of street children is relatively new unlike the situation in Asia, Haiti and Lebanon, the presence of large number of children has also now become a major issue (Kopoka, 2000 and Mehta, 2000).

Street children have been variously described as homeless, vagrants, beggars, rag pickers, paupers, tramps, gathering of iron metals, outcasts of the street, idle, and jobbers, (Rivlin & Manzo,1987), whose principal abode and source of living is from the street. Indeed, these groups of children are readily available for any kind of menial, criminal and anti –social jobs that will satisfy the day's meal.

It is important to note that, the emergence of large number of children on the streets of Nigeria, and Benue State in particular is partly a reflection of the extreme poverty both in rural and urban areas that will provide families with a reasonable quality of life, and the lack of social services (Kembe, 2010). Low level of technology has been given as one of the significant factors why no one can accurately specify the number of street children in Nigeria (Ebigbo, 2003). All available figures on street children in Nigeria are often contested as estimates rather than actual figures derived from specific studies, because of increasing social and economic burdens on families and communities, the population of street children is likely to continue to increase in Nigeria.

UNICEF (2008) defines street children as "those who are of the street and on the street''. In this study, the term street children refers to those children below eighteen years of age who earn their living on the city streets and stay there for most, or all, of the day, they may or may not have parents or legal guardians. According to Street Child Africa (2005), street children are vulnerable children who are separated from their families. The options open to these category of children is the institutional homes and adoption. The institutional homes are in the form of an orphanage, juvenile homes and remand homes. The latter two is as a result of conviction over a minor crime such as stealing, house breaking, fighting and arson, (Schurink, 1993, Panter-Brick, 2002).

According to Kembe (2010), the responsibility of child development, rearing and protection rests with the parents. The parents provide the child with physical care including food, shelter and protection as well as love and affection. The absence of parental care and positive environmental stimulation contributes to the emergence of street children. Ormrod (2009) and Kembe (2010) mentioned that the environment (institution) influences personality development. A child who is from a positive environment develops a sense of belonging, self - esteem and individuality. That is why the environment of the child is critical to child development.

UNICEF (2004) identifies two kinds of street children found in Nigeria: those who live and work on the street, (children of the street) and those who work on the streets full or part time but who return to their homes each night (children in the street). These categories of children pose some concerns to the society in general, since it affects sustainable family survival. Sustained economy growth and improved living standards for families and individuals cannot be complete without adequate provision for a percentage of Nigeria children who are in rehabilitation.

UNICEF (2004) and UNICEF (2008) estimates that more than one million children are institutionalized in rehabilitation facilities in Africa. The report of the study shows that street children are involved in child prostitution and trafficking, juvenile crimes, drug and alcohol abuse and disturbance of attachment and personality, (Mehta, 2000).

These children are vulnerable to different types of hazards such as vehicular accidents, collision, environmental threats and various forms of abuse such as physical, sexual abuse and exploitations. Dunapo (2002) and UNICEF (2008) revealed that 29.4% of children are on the streets. In a special report, it was revealed that in Lagos state alone there are one hundred thousand children who live on the street, (100,000). Rehabilitation institutions seem to be the option in providing a support system to help rehabilitate street children. It is possible to engage them in programmes which will equip them with life sustaining skills.

Objectives of the Study

The main objective of the study was to investigate institutionalization and rehabilitation of street children in Benue state.

Specifically the study:

1. Identified factors leading to institutionalization in Benue State.
2. Determined the problems street children encountered in the rehabilitation institutions in Benue state.
3. Determined the state of facilities and infrastructure of these institutions in Benue state.
4. Determined the various programs designed for rehabilitation of street children in Benue State.

Research Questions

The following are the research questions that guided the study:

1. What are the factors leading to institutionalization of street children in Benue State?
2. What are the problems encountered by street children in institutional homes in Benue state?
3. What is the state of infrastructure/facilities in these institutional homes in Benue State?
4. What are the programs designed for rehabilitation of children in Benue state?

Methodology

Research Design: The research design considered appropriate for this study was the cross sectional survey research

design. It sought data from institutional homes in two geo-political zones of Benue State that is, B and C. Each of these zones represents the Idoma and Tiv speaking areas which are the major ethnic groups in Benue state.

Population for the Study: The population for the study comprised all the street children under the custody of eleven registered institutional homes in Zone B and C in Benue State. The total of three hundred and thirty five people (335) comprising both staff working in these homes and the children, (Ministry of Women Affairs, 2006) formed the total population of the study.

Sample for the Study: The sample for this study was drawn from the three types of rehabilitation institutions, that is, orphanages, remand homes and juvenile homes. To ensure that each sample was adequately represented stratified random sampling was used to generate the required sample size for type of institutions. Furthermore, the proportionate sampling technique was used to select the final sample of one hundred and fifty eight (158) respondents that is 47% of the population.

Instrument for Data Collection: Two types of questionnaires were developed. The Réhabilitation Staff Questionnaire, (RSQ) and Réhabilitation Orphan Questionnaire, (ROQ). Items on the questionnaire were developed in line with the stated objectives of the study and are divided into sections A and B. A total of 46 items were contained in the questionnaire respectively.

Data Collection: Three research assistants were trained for the purpose of assisting in data collection. The researcher was able to administer one hundred and fifty eight copies of the questionnaire over a period of one week to the respondents. On-the-spot collection was adopted to facilitate the retrieval of the instrument.

Data Analysis Techniques: Descriptive method of data analysis was used in answering the research questions using Means and Standard Deviation. A Mean of 2.00 was recorded as a factor and any score below 2.00 was referred to as not a factor.

Results

Table I: Mean and Standard Deviation of the Responses on the Factors Leading to Institutionalization in Benue State.

Item	Mean	SD	Remarks
Mental Health Problems	1.37	0.50	NF
Peer Pressure	1.43	0.80	NF
Poverty	3.20	1.04	F
Death of Parent(s)	2.28	1.26	F
Abandonment	3.10	1.68	F
Divorce/Remarriage	2.17	2.00	F
Poor Parenting Style	1.62	0.80	NF
Step Parenting	1.33	0.70	NF

N= Factor; NF=Not a Factor

Table I shows the factors leading to institutionalization in Benue State. The highest factor was poverty with a mean value of 3.20; death of parents and abandonment recording, 2.28 and 3.10 respectively, another factor is divorce/remarriage, (2.17).

Table 2: Mean and Standard Deviation of the Responses to the Problems Encountered by Children in Institutional Homes in Benue State

Item	Mean	SD	Remarks
Beaten by caregivers	2.16	3.24	F
Infighting among the children	2.95	1.53	F
Sexual abuse	2.20	0.82	F
Harsh punishment	3.03	1.41	F
Late feeding	3.18	1.40	F
Lateness to bed	2.31	1.10	F
Laissez-fair attitude	2.97	1.51	F
Excessive freedom	2.28	1.31	F

F: Factor

Table 2, indicates the mean response to the various problems encountered by children in institutional homes. The responses shows all the items as factors: late feeding (3.18), harsh punishment (3.03), infighting, (2.95), laissez-faire parenting style,(2.97) and lateness to bed,(2.31).

Table 3: Mean and Standard Deviation of the Responses on the State of Infrastructure/Facilities in these Institutional Homes in Benue State

Item	Mean	SD	Remark
Access road network	2.58	1.39	F
Adequate accommodation	1.07	1.02	NF
Clinic/sick bay	1.82	1.11	NF
Kitchen equipment	2.27	1.21	F
Play Ground	2.27	1.64	F
Toilet & bathroom facilities	1.63	0.79	NF
Space (individual space & corporate)	2.77	1.54	F
Environment for good neighborhood	2.28	1.31	F
Vocational school/training Centre	1.88	0.67	NF
Electricity supply	1.74	0.88	NF
Portable water	2.20	0.82	F
Games/recreational facilities	1.70	0.74	NF
Furniture & furnishing	1.90	0.80	NF
Storage facilities (individual & corporate)	3.74	1.41	F

F=Factor; NF=Not a factor

Table 3, indicates that infrastructural facilities like storage facilities has a mean value of 3.74, access road network (2.58), space recorded, 2.77, environment (2.28), while

water scored 2.20, all indicating availability and adequacy. Facilities such as electricity, furniture and furnishing, vocational training, availability of a clinic or a sickbay, all recorded below the acceptable mean of 2.00.

Table 4: Mean and Standard Deviation on the Response to the Programmes Designed For Rehabilitation of Street Children in Benue State.

Programmes	Mean	SD
Agricultural skill acquisition in (Animal & Crop Husbandry)	1.05	0.89
Moral instruction	1.29	0.17
Entrepreneurship	1.95	0.03
Family adjustment programme	1.25	1.14
Citizenship education	1.51	0.21
Special trade training in (welding, woodwork & joinery)	1.62	0.80
Basic literacy programmes	1.90	0.96
Training in human kinetics/arts	1.28	0.89
Basic computer literacy training	1.67	0.68
Beads/soap/confectionaries training	1.73	0.86

Table 4 indicates the Mean and Standard Deviation of the responses to the programmes designed for rehabilitation of street children in the various institutionalized homes. The responses show that all of the programmes designed by these institutions are not a factor.

Discussion of Findings

There are many complex factors leading to children living on the street as such it cannot be attributed to one particular factor. From the findings, the leading factor is poverty, closely followed by child abandonment, death of parents, divorce and remarriage. Rivlin and Manzo (1987), reports that young children have been driven by poverty toward independence by living on the street, providing their own food, clothing and shelter. There are other reasons that can contribute to street life, such as emigration as can be observed by the number of children from the neighboring Niger republic who have thronged major urban streets in Nigeria for survival. Homelessness could be accompanied by internal crises which threatens the stability of the country.

The provision of orphanages and institutional homes by the government, religious and other philanthropic organizations seem to be principled along the lines of providing custodial and other care services to these children who are taken off the street, (Hodges & Tizard, 1989), however, it is pertinent to note that it may not be the best alternative to child care without positive environmental stimulation. That is why; factors affecting these institutions must be addressed.

Financial crises can often lead to depression creating unemployment,

poverty and homelessness, for example, the incidence of child hawking and abuse is often associated to street children. A child who is nurtured in a stable home environment develops positive outcomes in terms of self confidence, independence and achievements in other life outcomes, (Papalia, Olds & Feldman, 2002 & Kembe, 2010).

Also, Ohai (2010), revealed that poor financial base especially of orphanages in Nigeria who mostly depend on government and other philanthropic individuals for support has contributed to the low level of housing, feeding and essential requirement that may be needed by the children. In addition, Alemika, Chukuma, Lafratta, Messerli and Souckova (2004), believes that there is severe lack of financial support from both the federal and state government allocated to the protection and promotion of Children's Rights, especially vulnerable children like street children and orphans.

Other factors leading to street children and institutionalization aside from poverty includes; the issue of death of parents, child abandonment, divorce and remarriage. This is in agreement with Swart (1998) who stated that although few street children are actually homeless or orphaned needing institutional homes, there are some that are functionally homeless because their parents are incapable of caring for them due to such problems as divorce and remarriage. Issues related to family stability, family composition and its effect on child behavior are widely reported in research showing an effect on children personality.

Furthermore, Schurdink (1993) reported that the problems encountered in most institutional homes include poor accommodation, absence of medical facilities and vocational training. This is in line with earlier research findings (Drake,1989, Swart, 1998 & Alemika *et al*, 2004), who ascertained that problems encountered in institutional homes are related to lack of trained staff, poor funding and inadequate infrastructure and facilities. According to Hodges and Tizard (1989), virtually all cognitive, social and behavioral measures had the least outcomes with children who are institutionalized. Beijing International Committee for Chinese Orphans (BICCO, 2013) addresses staff capacity building amongst several other goals for the rehabilitation of orphans. It ensures that staff, caregivers, and volunteers play an active role in the children development.

The finding on programs designed for rehabilitation of street children in Benue State shows the following: Agricultural farming skill acquisition, Moral instruction, Entrepreneurship, Family Adjustment program, Citizenship, Special trade including welding, wood work/joinery, Basic literacy and other forms of training in the life skills. This is in line with the reports that rehabilitation of street children involves skill building programs and counseling. The findings show all the scores below the acceptable mean of 2.00.

An institutional home is considered adequate if it has made provisions for

basic educational facilities, establishing training centre's for the inmates, so they can be trained and taught some vocational skills as well as the provision of games and recreational facilities. USAID (2008) initiated the rehabilitation of orphaned children in Lebanon; the components of the program were developed with the aim to prevent delinquency and address the needs of children living under difficult situations. This program has a social integration component which builds capacities for indigenous NGO's through the provision of equipment, materials and training programs, as well as initiating socio-economic development at an institutional level.

Another important program is the Housing, Education and Rehabilitation of orphans (HERO). The mission of this program is to provide housing, education and rehabilitation for orphans and street children in Haiti, (http://www.haitihero.org). Through the program, street children and orphans are given permanent housing and quality education and the ability to rehabilitate the mind and body from years of neglect. As a result, the children attain the knowledge and skills necessary to become successful participants both in Haiti and the world.

From the examples derived from Lebanon and Haiti, it therefore explains the low scores for all the programs for rehabilitation of orphans in Benue state. This therefore, calls for the involvement of other agencies aside the government in providing a suitable environment and in meeting the daily needs of these orphans.

Conclusion

The institutionalization and rehabilitation of street children is a corporate social responsibility both for the society and the well being of children. Children are an important and potential segment of the society. Circumstances such as street life with all its accompanying factors have called for the need for these children to be placed in foster care, often at an orphanage, remand home and juvenile homes where there are incidences of anti-social behavior. These children are expected to be catered for socially, economically, educationally, physically and in other necessary dimensions. This research concludes that in as much as these institutions serve as an alternative care centers for children, there are inherent problems that need to be addressed through programs equipped with life sustaining skills such as vocational, literacy and entrepreneurial.

Recommendation

As a result of the outcomes of the findings, the following recommendations were reached:

1. *Government Intervention*: The Nigerian government through the various levels, State and local government need to establish social security for the vulnerable group such as children and the aged. Furthermore, the Ministries of women affairs and youth development should establish cottage and small scale Agro-Allied industries so that youths can adequately gain skills. Youth skill

acquisition program should be an integral component of rehabilitation of children in the institutions

2. *Need for training of Social workers and other care givers:* looking at the problems associated with these institutions, it can be seen that with adequate training of the social workers, some of the anti-social behaviors like infighting, beaten and bullying, harsh punishment, lateness to bed and late feeding are some of the practices that can be corrected with the staff being properly trained in providing social welfare services.
3. *Involvement of NGOS/ CBOS and Funding*: Funding is needed from the government and other concerned people so that such rehabilitation facilities can be able to run effectively and efficiently.

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Assessment of the Availability and Adequacy of Farm Inputs for Sustainable Agricultural Production in Ekiti State

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Abstract

The main purpose of the study was to assess the availability and adequacy of farm inputs supplied to farmers by Agricultural inputs supply Agency (AISA) for sustainable Agricultural production. This study was carried out in Ekiti State. The population of the study was 800 register farmers in the three agricultural zones in Ekiti State. The sample of study was 264 selected through (33%) proportionate random sampling technique. A 24 items structured questionnaire was used to collect data for the study. It was found out that: farm inputs such as agro-chemicals, livestock feeds, improve seeds, fertilizers and farm tools were made available by Agricultural Input Supply Agency (AISA) for farmer's use; Storage services of AISA were inadequate. It was recommended that the state government and the administrator of AISA should improve the storage services of AISA to reduce the problem of wastage of agricultural produce in the State.

Keywords: Assessment, farm-inputs, Agricultural-produce, Sustainable-production, Availability and Adequacy.

Introduction

Sustainable agricultural production has remained a fundamental concern of the people of Nigeria. Okigbo in Njoku (2000) explained sustainable agricultural production as maintaining an acceptable and increasing level of crop and animal production that satisfies present and future food consumption needs of the people. In this study, sustainable agricultural production implies the production of crops and animals that

will meet the need of the growing population in Ekiti State through the use of appropriate farm inputs by the farmers. In order to attain sustainable agricultural production in Ekiti State, Agricultural inputs supply agency (AISA) was established in 1996 by the state government and saddled with the responsibility of providing adequate agro-inputs to the teaming farming population at the right quality, time and place.

Ekiti State has a unique climate condition that combines the characteristic of guinea savanna (as in Northern Nigeria) with rain forest (as in Southern Nigeria). The Northern part of the state is suitable for the growth of arable crops like maize, rice, yam, sorghum and rearing of animals. While the southern part is suitable for the cultivation of cash crops like cocoa, oil palm, plantain and kola nut. This dual image of being able to produce what different parts of the country produce place the state in a very important position in agricultural production in the country. Agricultural Input Supply Agency (AISA) was established for sustaining agricultural production in the state through their adequate supply of farm inputs to farmers.

Farm inputs according to Iwena (2008), are fertilizers, herbicides, improved seed and seedlings, tools, equipments machines and farming system employed in the production of crops and animals. The international Institute of Tropical Agriculture IITA (2000), explained that farm inputs are seed and seedlings, tools, machines and improved practices employed by farmers in the production of crops and animals. In this study, farm inputs are fertilizers, pesticides, tools, machines, storage facilities, improved seeds herbicides and livestock feeds that should be made available in adequate quantity by Agricultural Input Supply Agency (AISA) to farmers at affordable price for the production of crops and animals to a sustainable level in Ekiti State. To attain this singular goal of sustainable agricultural production in the state, (AISA) has the following objectives to:

(a) enhance agricultural production in the state by providing farmers with high quality and low cost agro-chemicals, fertilizers, improved seeds and other relevant farm inputs at appropriate time and locations.
(b) operate pest/disease control services to help farmers in combating the menace of these pest and diseases
(c) provide storage and warehousing facilities to farmers.
(d) engaged in the production of livestock feeds to service numerous livestock farmers in the state, among others (AISA 1997).

In order to determining whether the stated objectives of AISA is achieved in the state, AISA programme or activities need to be assessed. Assessment in the view of Scriven (1991) is the action taken to determine the importance, size or value of a thing or substance. Olaitan, Nwachukwu, Igbo, Onyemachi and Ekong (1999) stated that assessment is the process of determining the functionality or usefulness of a programme to the products and other

stake-holders in the word of work. The authors further stated that in assessing a programme, assessment efforts usually indicate the level of achievement of the objectives of the programme. Assessment in this study therefore is the determination of the extent to which farm inputs are made available to farmers by AISA for sustainable agricultural production in the state.

The privileged position of Ekiti state to be able to produce many varieties of crops and animals has also made it vulnerable to invasion of farm pest and diseases. The farming community in the state are daily faced with problem of wastage of agricultural produce, as large part of what is produced in the state seems to be unavailable to the consumers because substantial part of the farm produce are probably lost between harvest and consumption due to pest invasion or lack of storage facilities. There is the need to combat the menace of pest and diseases with agro-chemicals and improved technology through the services of AISA.

Purpose of the Study

The main purpose of the study is to assess the availability and adequacy of farm inputs supply to farmers by AISA for sustainable agricultural production in Ekiti State. Specifically, the study determined:

1. Agro-chemicals made available to farmers by AISA;
2. Feed stuff, improved seed and farm tools made available to farmers by AISA;
3. The adequacy of storage services made available to farmers by AISA.

Research Questions

The following research questions guided the study.

1. What are the Agro-chemicals made available to farmers by AISA in Ekiti state?
2. What are the feed stuff, improved seed and farm tools made available to farmers by AISA?
3. How adequate are the storage services of AISA made available to farmers?

Methodology

Research Design: Survey design was adopted by the study. The survey design in the view of Owens (2002) is that in which the same information is gathered from on unbiased representative group of interest. It is a valuable tools for assessing the opinion and trends from representative group of population. Survey design is appropriate for the study as data were collected from the representative group of the population of the study.

***Area of the Study*:** The study was carried out in Ekiti state made up of three agricultural zones with the sixteen local government in the state spread across the three agricultural zones.

Population, Sample and Sampling Technique: The population of the study was 800 register farmers in the three zones. The sample of the study was 264 farmers from the three zones selected through (33%) proportionate random sampling technique.

Instrument for Data Collection: The instrument used for data collection was a 24 items structure questionnaire. The

instrument had a 5-point response options of very highly available (VHA), highly available (HA), moderately available (MA), poorly available (PA) and Not available (NA) with corresponding value of 5, 4, 3, 2 and 1 for section B of the questionnaire. While another 5-point response options of very adequate (VA), adequate (AD), moderately adequate (MA), inadequate (IA) and very inadequate (VIA) with corresponding value of 5, 4, 3, 2 and 1 for section C.

The instrument was face validated by three experts in the Vocational Teacher Education Department, University of Nigeria, Nsukka. Their suggestions were used to improve the final copy of questionnaire that was utilized to collect data for the study. Cronbach Alpha method was adopted to determine the internal consistency of the questionnaire items. A coefficient of 0.85 was obtained.

***Method of Data Collection*:** 264 copies of questionnaire were administered on the farmers in the three agricultural zones by the researcher with help of 9 extension agents of Agricultural Development Project (ADP). The 264 copies of the questionnaire distributed among the 9 extension workers, that is, three extension workers from each agricultural zone to administer the questionnaire. Total of 240 copies of the questionnaire were retrieved out of the 264 copies administered given a retrieval rate of 90.9%.

***Method of Data Analysis*:** Data collected were analysed using mean (X) to answer the research questions while standard deviation (SD) was used to determine the closeness or the departure of the respondents from the Mean. The values attached to the response options of the questionnaire were as follows:

Very highly available (VHA) or Very adequate (VA) = 5, Highly available (HA) or Adequate (A) =4, Moderately available (MA) or Moderately Adequate (MA) = 3, Poorly available (PA) or Inadequate (IA) = 2 and Not available (NA) or Very Inadequate (VIA) = 1.

3.00 was used as cut off point, any item with a Mean of 3.00 or above was regarded as available or adequate. While any item with a Mean value less than 3.00 was regarded as unavailable or inadequate. Any item with a low standard deviation indicates that the respondents were not too far from the Mean and from one another in their responses and it added reliability to the value of the Mean. But any item with a high standard deviation indicates that the response were far from the Mean in their responses.

Findings of the Study

The following findings were made:

(a) Available Agrochemicals supplied to farmers by AISA: Findings are summarized in table 1.

Table of Results

Table 1: Mean ratings of the responses of farmers on the available of Agro-chemicals supplied by AISA.

N = 240

S/No	Farm Inputs Supplied by AISA	Mean ($\overline{X}$)	Standard Deviation (SD)	Remarks
A	**Agrochemicals**			
1	Livestock drugs	3.71	1.00	Moderately Available
2	Herbicides	4.09	0.75	Highly Available
3	Fungicides	4.01	0.84	,, ,,
4	Insecticides	3.98	0.83	Moderately Available
5	Storage chemicals	4.03	0.78	Highly Available
B	**Fertilizers**			
6	NPK	4.14	0.83	,, ,,
7	SSP	3.65	0.99	Moderately available
8	Urea	3.75	0.96	,, ,,

Table 1 above reveals that the eight farm inputs items (agro-chemicals) had their Means ranged from 3.65 to 4.14 and were all above the cut-off point of 3.00 on 5 – point rating scale. This implied that all the eight items (agro-chemicals) were made available by AISA for farmers use in their agricultural production in Ekiti State. The standard deviation of the eight agro-chemical items ranged from 0.75 to 1.00 and were low. This indicated that the respondents (farmers) were not too far from the Mean and from one another in their responses.

(b) Available Feed stuff, improved seeds and farm tools supplied to farmers by AISA: Findings are summarized in table 2

Table 2: Mean ratings of the responses farmers on the availability of feedstuff, improved seeds and farm tools supplied to farmers by AISA.

N = 240

S/No	Farm Inputs Supplied by AISA	Mean ($\overline{X}$)	Standard Deviation (SD)	Remarks
A	**Feed stuff**			
1	Broiler starter	3.92	1.02	Moderately Available
2	Growers mash	3.84	0.92	,, ,,
3	Layers mash	3.79	0.95	,, ,,
B	**Improved seeds**			
4	Maize seed	3.92	1.04	Moderately available
5	Beans seed	3.52	1.12	,, ,,
6	Rice seed	3.54	1.09	,, ,,
7	Vegetable seed	3.41	1.15	,, ,,

8	Cassava cutting	3.15	1.26	,,	,,
C	**Farm tools**				
9	Cutlass	3.92	1.02	Moderately available	
10	Hoes	3.51	1.21	,,	,,
11	Files	3.65	1.14	,,	,,

Table 2 above reveals that the eleven farm inputs items had their Means ranged from 3.15 to 3.92 and were all above the cut-off point of 3.00 on 5 – points rating scale. This implied that all the eleven farm inputs items were made available by AISA for farmer's use in their Agricultural production in Ekiti state. The standard deviation of the eleven items farm inputs ranged from 0.92 and 1.26 and were low. This indicated that the respondents (farmers) were not very far from the Mean and from one another in their responses.

(c) Adequacy of storage services made available to farmers by AISA: findings are summarized in table 3.

Table 3: Mean ratings of the responses farmers on the adequacy of the storage services of AISA available for use by farmers in Ekiti State.

N = 240

S/No	Farm Inputs Supplied by AISA	Mean ($\bar{X}$)	Standard Deviation (SD)	Remarks
1	Refrigeration services	2.69	1.68	Inadequate
2	Silo services	2.53	1.37	,,
3	Barn services	2.55	1.43	,,
4	Crib services	2.66	1.36	,,
5	Chemical treatment services	2.87	1.37	,,

Table 3 above reveals that the five item storage services of AISA had their Means ranged from 2.53 to 2.87 and were all below the cut-off point of 3.00 on 5-point rating scale. This implied that all the five items storage services of AISA were inadequate for use by farmers in Ekiti State. The standard deviation of the five items storage services of AISA ranged from 1.36 to 1.68 and were low. This indicated that the respondents (farmers) were not very far from the Mean and from one another in their responses.

Discussion of Findings

The result of the study revealed that the farm inputs items (such as agro-chemicals, livestock feeds, improved seed, fertilizers and farm tools) were made available by AISA for the use of farmers in their agricultural production. The finding was in agreement with the findings of Ochu (1991) in a study carried out on the assessment of the impact of Agricultural Development project and National Root crops center on food production in Imo state where it was found out that the two programmes

made fertilizers, seed and seedlings available for the use of farmer in their crop production.

It was also found out by this study that the storage services of Agricultural Input Supply Agency (AISA) were inadequate for use by farmers in Ekiti State. This finding was in consonance with the finding of Banjo (2001) in a study carried out on the assessment of farmers participation in on-farm Adaptive Research (OFAR) on cassava/maize technologies of the Ogun state Agriculture Development Programme (OGADEP) where it was fund out that. The storage services of (OGADEP) were inadequate and this led to low involvement of farmers in the use of their storage services.

Conclusion

Ekiti state was privilege to be able to produce varieties of crops and animals. But, the farming community in the state were faced with problem of wastage of agricultural produce due to pest and disease invasion. The state government established Agricultural Inputs Supply Agency (AISA) and was saddled with the responsibility of supplying farm inputs such as agro-chemical, storage facilities, tools) to combat the wastage of agricultural produce in the state. It is necessary to assess the performance of AISA in achieving its objectives in the state. The study therefore found out that farm inputs such as agro-chemicals, livestock feeds, fertilizers, farm tools and improved seeds were made available by AISA for the use of farmers in their agricultural production. But, the storage services of AISA were grossly inadequate.

Recommendations

Based on the findings of this study, it was recommended that:

1. Ekiti state government and administrator of AISA should improve the storage service of AISA to reduce problem of wastage of Agricultural production in the state.
2. Administrators of AISA should procure more farm inputs in order to increase the level of their availability to farmers.

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Effect of Storage on the Quality of Sachet Water Consumed by Households in Nsukka Zone

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Abstract

The purpose of this study was to investigate the effect of storage on the quality of sachet water consumed by households in Nsukka zone of Enugu State. Two Research Questions guided the study. Experimental design was used. Four brands of sachet water were randomly selected by balloting from seventeen brands of sachet water identified in the zone. The duration and storage environment included day one as the control, 2 weeks, 5 weeks and 8 weeks and refrigeration and outdoor storage environment. The sensory and microbial evaluations were conducted using 9- point hedonic rating scale and multiple number counts (MPN). The findings indicated that all brands of sachet water had *E.coli* at day one. Refrigerated water had the best taste and odour at 2 weeks and very minute microbial content at 8week of storage. It was recommended that, for the safety of sachet water consumers, the storage duration should not exceed fourteen (14) days of production.

Keywords: Storage, Quality, Sachet, water, Packaged

Introduction

Water is a clear, colorless, tasteless and odourless liquid, which is very important to both plants and animals. It is a simple substance containing two atoms of hydrogen and one atom of oxygen (H_2O). Though, it has no calorific value, still everybody cell, tissues, organs and all life sustaining body process needs water to function. Ekairia and Iroanya, (2005) noted that water is critical for the sustenance of human life and a vital constituent of all forms of life. It occupies about 70% of the earth's surface. Water, according to World Health Organization (WHO 2003) is a basic nutrient of the human body and is critical to human life. Without water, life cannot be sustained beyond a few days. Okeke (2009) also observed that water is a vital constituent of the body, forming about 72% of fat free weight, is a medium in which virtually all body processes take place. It is a neutral substance that permits ionization of most materials.

Water is essential to sustain life. A satisfactory (adequate, safe, and accessible) supply must be available to all as it helps in maintaining the normal physiological activities of the body such as enzymatic and chemical reactions, lubrication of joints, regulation of hometasis and body weight, proper functioning of cells and tissues as well as some therapeutic values (Onigbinde, 2005). Improving access to safe or potable drinking water can therefore result in tangible benefits to health (WHO, 2004). Nwachukwu and Emeruem (2007) noted that potable water is a transparent liquid without colour, taste or odour, but when infected with organisms, loose its qualities and instead becomes harmful to both human and animal populations. Water Quality, according to Ekpo and Eddy (2005) refers to those chemical, physical and biological characteristics, by which the user evaluates the acceptability of the water. WHO (2000) advanced some standard for quality of drinking water and its safety. This standard for potable drinking water borders on microbial factors as: total coliform of 100ml should be zero; *E.coli* of CPU/100ml is zero; *Streptococcus Faecalis* of 50ml is zero; Total plate count of CPU/100ml is zero (WHO 2006). Standard Organization of Nigeria (SON 2003) also has its standard on packaged and unpackaged water as:

coliform is nil; *E.coli* is nil; *Faecalis Streptococci* is nil; Spore of sulphide –reducing *clostridia* is also nil.

Packaged water also called sachet water is one of the local interventions to make drinking water accessible to rural and urban populace. It is widely available in both developed and developing countries (Dada, 2008). Nwachukwu and Emeruem (2007) defined sachet or packaged water as any water that is in sealed plastic, distributed or offered for sale for human consumption. Bennie (2007) stated that the plastic in which the water is packaged for the market contained micro pores which rendered it susceptible to the invasion of micro organisms when exposed to the sun. Water, if kept enclosed for a prolong period allows anaerobic algae and other microbes to grow in it making the water unsafe and unfit for potable use (Adofo, 2009).

Method of storage of a product impacts not only its quality, but also its safety. According to Egwari and Aboaba, (2002), sachet water is unreliable. The quality of 'Pure water' is still questionable because many who are engaged in its production do not follow strictly the standards set by National Agency for Food, Drug Administration and Control (NAFDAC), WHO and SON for safe drinking water (Okpako, Osuagwu, Duke and Ntui (2008). Bennie also explained that, sachet water as a product has specific temperature conditions under which it must be kept and failure to do so can cause serious health problems. Water is one of the vehicles for transmission of pathogenic organisms (Ejima, 2005). The National Health Management Information System Enugu State (2010 unpublished) stated that an approximate of 30,815 patients was affected of different types of water borne diseases in the zone from

January to July 2010. To determine the effect of storage on a product, the product is exposed to a controlled environment in which one or more storage conditions such as temperature, humidity, atmosphere, or light are maintained at a higher than normal level, resulting in a shorter than normal time for product failure (Giese, 2000). Sachet water is one of the sources of drinking water for the people of Nsukka zone, hence the need to study, the effect of storage on the quality of sachet water. The findings of this study will be of immense benefit to humanity, most especially to parents, children, home makers, teachers of home economics, community members, students and the entire populace of the nation, as this will provide them with information that will help them in the storage or keeping of sachet water.

Purpose of the Study

The major purpose of the study was to investigate the effect of storage on the quality of various sachet water consumed by households in Nsukka zone. Specifically, the study sought to:

1. determine the effect of storage on odour and taste of the four brands of sachet water, consumed by households in Nsukka zone.
2. identify the effect of handling practice on the microbial content of the four brands of sachet water, consumed by households in Nsukka zone.

Research Questions

The study sought answers to the following research questions

1. What is the effect of storage on the odour and taste of the four brands of sachet water, consumed by households in Nsukka zone?
2. What is the effect of handling on the micro-organisms content of the four brands of sachet water, consumed by households in Nsukka zone?

Methodology

***Area of the study*:** The study was carried out in Nsukka zone of Enugu state of Nigeria. Four brands of sachet water were used for the study, which include MC table water, Jives table water, De Occasion table water, Ecaison table water.

***Design of the study*:** The study was conducted using experimental research design which involves both sensory evaluation and laboratory-based in-vitro studies. This Laboratory-Based In-vitro Studies enables the researcher to examine the presence of specific variables (micro organisms: coliform and mould) in the sachet water samples using reagents under controlled environment. Also the study made use of sensory evaluation to carry out the sensory test such as taste and odour which cannot be carried out in the laboratory.

***Population for the study*:** The population of the study involved the seventeen (17) brands of sachet water identified in the zone. The water brands include MC table water, Jives table water, De Occasion table water, Ecaison table water, Lion table water, Assured table water. Aqua Rapha table water, Ngene table water, Trans table water,

O'gala table water, Kachel table water, Zeroth table water, Mount Calvary table water, Fidema table water, Pat Blessed table water, Rock Tama table water, and Add More table water. Aqua Rapha table water, Ngene table water, Trans table water, and zeroth table water are produced outside the zone, while all others are produced within the zone. The four brands of sachet water selected from the seventeen (17) brands include: MC table water, Jives table water, De Occasion table water and Ecaison table water. These brands were coded MCW, JIW, DOW, ETW.

***Sample for the study*:** A random sampling technique was used to select four brands of sachet water and this was done by balloting from the seventeen brands of sachet water available in the zone. Fourty-two (42) samples of sachet water were collected from each of the four brands selected for the experiment, bringing the samples to one hundred and sixty-eight (168) samples.

***Instrument for data collection*:** The following instruments were used for data collection. For the physical properties, odour and taste were observed through sensory evaluation by a ten (10) man trained panel using 9-point hedonic scale rating score sheet.

A 9- point hedonic rating scale was formulated in two categories for odour and taste as follows:

Taste

Tasteless 9; Slightly tasty 8; Moderately tasty 7; Very tasty 6; Extremely tasty 5; Slightly sour 4; Moderately sour 3; Very sour 2; Extremely sour 1.

Odour

Odourless 9; Slightly pleasing 8; Moderately Pleasing 7; Very pleasing 6; Extremely Pleasing 5; Slightly offensive 4; Moderately offensive 3; Very offensive 2; Extremely offensive 1;

B. The microbial properties were done using the most probable number (MPN) count of coliform organisms in samples. The MPN procedure is a multiple-tube dilution method using nutrient-rich media which is applicable to all types of microbiological organisms. The organisms looked out for were: Coliform test (*E.coli*), Mould count (f*ungi*). In this MPN method the examination starts with the presumptive *coliform* test, in which measured volumes (10ml or more) of the samples are inoculated into a series of five or more tubes containing a suitable liquid differential medium of lactose. After incubation for 37^{o}C for an appropriate time of 48hours, the tubes are examined for acid and / or gas production. The presence of acid or gas indicates positive reaction caused by some other organism or combination of organisms. The presumption that the positive reaction is caused by *coliform* organisms will therefore be confirmed by additional test with differential media, incubating at a temperature of 35-44^{o}C for 48hours.

***Data collection Technique*:** The twenty-four (24) water samples were initially tested for control (A) and then the rest (144) water samples were divided into two storage environments namely: (i) outdoor (that is kept at the corridor); (ii) refrigerating storage. Subsequently, the

water samples from the various storage environments were tested at 2weeks (B); 5weeks (C) and 8weeks (D) formed the experimental group. Forty-eight (48) samples (6 each from the four brands) from the two storage environments are used at each experimental period for both sensory and microbiological examination.

For the sensory evaluation: Thirty-two (32) samples (4 each from the four brands) from the two storage environments are used at each experimental period for the sensory examination by the ten (10) man panel using the 9- point hedonic rating scale designed above.

***For microbial evaluation*:** The microbiological examination of water was conducted on Coliform *(E.coli*) and Mould organisms in the samples. The MPN procedure used is a multiple- tube dilution method using nutrient rich media and the media used are MacConkey Agar and Ssbourand 4% Glucose Agar.

Media Preparation for coliform and total viable count determination

Sabourand Agar Preparation: Sabourand 4% Glucose Agar was prepared according to the manufacturer's prescription, which says 65g of Sabourand glucose agar should be added to 1litre of distilled water. Since 40mls of the agar media is to used for each sample of water, therefore 40mls x 12samples = 480mls of media.

- Thus 32.5g Sabourand glucose agar was added to 500ml of distilled water.
- Then the media was put into the autoclave to heat to a temperature of 121^{o}c and then allowed to remain in the autoclave for 15minutes.
- Then the media is allowed to cool (warm state).

For colform determination:

Coliform determination was done using 40ml prepared sabour and agar and 0.1ml of water sample was poured into a petri dish and then incubated at 37^{o}c for 24 hrs and then, the colonies were counted on completion of the incubation period. This was done for the four brands of water samples at the experimental period.

Media Preparation for mould count determination

MacConkey Agar Preparation: Mac Conkey agar was also prepared according to the manufacturer's prescription, which says 52g of Mac Conkey agar should be added to 1litre of distilled water. Since 40mls of the agar media will be used for each sample of water, therefore 40mls x 12samples = 480mls of media.

- Thus 26g of Mac Conkey agar was added to 500ml of distilled water.
- Then, the media was put into the autoclave to heat to a temperature of 121^{o}c and then allowed to remain in the autoclave for 15minutes.
- Then the media is allowed to cool (warm state).

For mould (fungi) determination:

The mould determination was also done using 40ml prepared MacConkey agar media and 0.1ml of water sample was

poured into a Petri dish and then incubated at 35oc for 48hrs in an incubator. The colonies were counted on completion of the incubation period. This was also done for the four brands of water samples at the experimental period.

Data Analysis Technique: Mean was used for answering research questions 1 and 2. The mean of the data was compared using Least Significance Difference (LSD) at 0.05 level of significant. Mean was expressed as Mean ±SD, where SD is the standard deviation.

Findings

The following findings were made

1. Effect of storage on odour and taste of the four brands of sachet water is as follows in table 1 and 2.

Table 1: Sensory Evaluation Scores on Effect of Storage on odour (Hedonic Scale) of Sachet water

Storage methods	Time	Brands MCW	JIW	DOW	ETW
Outdoor	A	6.9±2.13	7.5±2.42*b	7.2±1.93c	7.9±1.66d
	B	6.3±2.16	7.8±1.81*b	6.4±3.03c	6.2±2.78
	C	6.0±2.31	6.8±2.30b	6.1±2.56c	6.7±1.83
	D	5.9±1.73	5.5±1.96*b	5.4±2.37c	5.8±1.75*d
Refrigeration	A	6.9±2.13a	7.5±2.42	7.2±1.93	7.9±1.66
	B	8.2±1.23*	7.9±1.66	8.2±1.62	8.3±0.82
	C	3.8±2.44*	3.8± 2.04*	3.7±1.83*	3.4±2.68*
	D	2.4±2.07*	1.8±1.23*	1.6±0.97*	1.7±0.95*

*. The mean difference is significant at the 0.05 level; MCW= M.C water; JIW = Jives table water; DOW= De Occasion table water; ETW= Ecaison table water

Table 1 shows that there were significant differences ($p<0.05$) between the odour of ETW and JIW at A and D, B and D in JIW only. No significant difference ($p<0.05$) was shown in table 1 between the odour of DOW when stored at the four specified durations outdoor. In the refrigerated samples, there were also significant differences ($p<0.05$) between the odour of MCW at A and C, A and D, B and C, and B and D. For the other brands of water sampled, there was no significant difference ($p<0.05$) only between A and B at refrigerating storage environment.

Table 2: Sensory Evaluation Scores on Effect of Storage on Taste (Hedonic Scale) of Sachet water

Storage environment	Time duration	Brand MCW	JIW	DOW	ETW
Outdoor	A	7.4±1.65[a]	7.8±1.55[b]	7.9±0.99[c]	7.9±0.88[d]
	B	6.7±1.64[a]	7.7±0.95*[b]	7.1±0.99[c]	7.3±1.56[d]
	C	6.4±1.27[a]	6.6±1.17*[b]	6.3±2.06*[c]	6.7±1.34[d]

	D	6.3±1.34[a]	5.2±1.75*[b]	5.9±1.73*[c]	5.8±1.69*[d]
Refrigeration	A	7.4±1.65	7.8±1.55	7.9±0.99	7.9±0.88
	B	6.9±1.97	7.5±0.97	7.1±2.02	7.9±0.99
	C	4.6±1.90*	5.7± 1.95*	5.5±2.17*	4.5±2.75*
	D	3.0±1.41*	2.9±1.66*	2.9±1.79*	2.7±1.83*

* The mean difference is significant at the 0.05 level. MCW – Mc table water, JIW – jives table water, DOW – De occasion table water, and ETW – Ecaison table water.

Table 2: No significant difference ($p<0.05$) was observed in Table 2 between the taste of MCW samples stored outdoor at the four specified time duration. There were significant differences in the taste of JIW and ETW stored for A and D, B and D, and C and D in JIW only. Significant differences ($p<0.05$) were only observed between the taste of DOW stored for A and C, 3. :

and A and D at outdoor. For all the brands in refrigeration in **table 2**, the tastes of the water were slightly bad in the C and D of storage, and for all the brands sampled only water stored for A and B showed no significant difference ($p<0.05$) in taste.

2. Effect of storage on micro-organisms are as follow in tables 3 and 4 below

T**able 3: Effect of Storage on micro-organism (COLIFORM) Count**

Storage Environment	Time duration	Brand MCW	JIW	DOW	ETW
Outdoor	A	6.0±0.00[a]	6.0±2.83b	5.0±0.00c	4.0±2.83d
	B	8.0±0.00[a]	14.0±0.83*b	12.0± 0.00*c	14.0±0.00*d
	C	12.0±0.00*[a]	19.0±1.41*b	20.0±0.00*c	16.0±2.83*d
	D	34.0±2.83*[a]	32.0±0.00*b	22.0±0.00*c	28.0±2.83*d
Refrigeration	A	6.0±0.00*	6.0±0.00*	5.0±0.00*	14.0±0.00*
	B	0.0±0.00[a]	0.0±0.00[b]	0.0± 0.00[c]	0.0±0.00[d]
	C	2.0±0.00*	7.0±0.00*	0.0±0.00[c]	3.0±1.41*
	D	5.0±1.41*	16.0±0.00*	7.0±1.41*	7.0±0.00*

*The mean difference is Significance at 0.05 level. MCW – Mc table water, JIW – jives table water, DOW – De occasion table water, ETW – Ecaison table water.

Table 3: There were significant difference ($p<0.05$) in the mean coliform values of MCW, JIW and ETW at A, C and D of outdoor storage **in table 3**, while significant differences ($p<0.05$) were noticed in DOW at all the storage time except for C and D in outdoor. Significant differences at ($p<0.05$) were also observed in table 3 in the mean *coliform* of MCW, JIW, DOW and ETW stored for A, B, C and D respectively at the refrigerating environment.

Table 4: Effect of Storage on micro-organisms (MOULD) of Sachet water

Storage Environment	Time duration	Brand MCW	JIW	DOW	ETW
Outdoor	A	0.0±0.00[a]	0.0±0.00[b]	0.0±0.00[c]	0.0±0.00[d]
	B	0.0±0.00[a]	3.0±0.00[b]	6.0± 1.41[c]	0.0±0.00[d]
	C	12.0±5.66*[a]	12.0±0.00*[b]	16.0±2.83*[c]	0.0±0.00[d]
	D	16.0±2.83*[a]	14.0±2.83*[b]	20.0±0.00*[c]	6.0±2.83*[d]
Refrigeration	A	0.0±0.00[a]	0.0±0.00[b]	0.0±0.00[c]	0.0±0.00[d]
	B	0.0±0.00[a]	0.0±0.00[b]	2.0± 0.00*	0.0±0.00[d]
	C	6.0±2.83*	0.0±0.00[b]	4.0±1.41*	0.0±0.00[d]
	D	7.5±0.70*	2.0±1.41*	8.0±1.41*	10.0±2.83*

*. The mean difference is significant at the 0.05 level. MCW – Mc table water, JIW – jives table water, DOW – De occasion table water and ETW – Ecaison table water.

Table 4: All the brands of water sampled and stored outdoor showed no mould count at day one in table 4. No significant differences were observed between the mould count of JIW and DOW at A and B, and C and D respectively in table 4, while MCW had significant difference between mean mould count on A, C, and D of outdoor storage. ETW had no mould count until the eight week of outdoor storage. No mould count was observed in A for all the brands of water sampled and stored in refrigerating environment. At B of storage in Table 4, mould count was only observed in DOW and the number doubled as the storage time increased. For MCW, mould growth was observed from C of storage and this increased slightly in the D of storage. JIW and ETW had mould growth only at the D of storage in refrigeration.

Discussion

In outdoor samples, the odour of water sampled was observed to have deteriorated moderately, at eight weeks of storage in all the four brands of sachet water. When outdoor mean values were compared with refrigeration mean values. It was also observed that, at the first two weeks, the water was still very good, but at five weeks the water samples had slightly deteriorated, while at eight weeks it became moderately deteriorated, which agreed with Bennie (2007) that, the plastic in which the water is packaged for the market contained micro pores which rendered it susceptible to the invasion of micro organisms. Each water brand at 8weeks rated very low indicating that the odour of the water samples had deteriorated. Likewise the outdoor samples experienced tremendous decrease in taste in all the brands of the four sachet water, because at eight weeks the taste of water samples had deteriorated. This observation agreed with Giese (2000) who noted that small temperature change can have large effects on product keeping quality. When the mean values of outdoor storage were compared with mean values of refrigeration environment, it was observed to be similar to odour, which all the brands had deteriorated in taste at 5wks of storage. This observation agreed with

Okeke (2009), who noted that long term storage is best achieved by cooling at constant temperature. This revealed why the sachet water samples in refrigeration environment were bad at five weeks of storage.

All brands of water sampled had coliform from day one. This result corresponded with the study conducted by Dibua, Esimone and Ndianefo (2007) which noted that the bacteriological indices of contamination detected from the majority of sachet water samples are neither indication that the 'pure water' available in the university environment do not meet the NAFDAC (2004) nor the WHO (2003) standard and so may not be suitable for drinking purposes. Coliform count also showed progressive increase in all brands in outdoor storage. On comparison of the two storage environments, it was noticed that all brands of water sampled in refrigeration environment had a very low coliform count at eight week of storage.

With the mould count, all brands of water sampled as control were free of mould contamination at day one (A). However, as the storage duration continued *cladosporium sphaerosperum spp, curvularia lunata spp*, and *cladosporium macrocarpum spp.* were found in the two storage environments of the sampled water brands. Thus, comparing the two storage environments, it was noted that refrigeration environment had the least mould infestation at four specified time duration. The involvement of mould in this water samples may have occurred as a result of long keeping time, which agreed with Adofo (2009), that water kept enclosed for a prolonged period allows anaerobic algae and other microbes to grow in it, thereby making it unsafe and unfit for potable use. Similarly, Wright (2009) also stated that, it is only when a product is kept at a constant temperature that has no extremely highs or lows, that would keep its quality. Swiss Association for Nutrition (2009) also opined that, refrigeration occurs at temperature between -1^{o}C to + 8^{o} C, reactions leading to product spoilage are slowed down under refrigerating temperature and microbial proliferation is reduced. Finally, Weaser (2010) noted that fridges contain hydrofluorocarbon (HFC) gases as coolants and gases such as chlorofluorocarbons escapes to the environment in normal use and maintenance of fridges and these gases depletes the ozone layer. If these gases can deplete the ozone layer gradually, it then means, that the gases can react with any biological product in the fridge, thereby affecting its organoleptic and physical characteristics when kept for prolong period.

Conclusion

The analysis of result showed that at $p<0.05$, refrigeration environment had significant effect on microbial content, and at 2weeks taste and odour over outdoor storage in all the brands of sachet water considered in this study. Refrigeration environment had greater advantage over outdoor in micro-organisms content of the four brands of sachet water at three specified time durations. However, outdoor also had

advantage over refrigerating in terms of odour and taste at two specified time durations (5weeks and 8weeks) respectively.

Recommendation

- For the safety of sachet water consumers, the storage duration should not exceed fourteen (14) days of production at all levels of storage.
- Home Economics programmes with particular reference to Foods and Nutrition Curriculum should incorporate the ideal storage practices of sachet water into the secondary school curriculum. This is because water is food and needs all the attentions required to keep it safe for consumption in order to avoid contamination.
- Ideal storage practices should be taught to the people concerned with sachet water production, distribution and consumption in the zone and the nation at large. This can be done by organizing seminars and workshops to both sachet water producers, distributors and consumers on the ethics of production, best ways of storage (having a well ventilated warehouse and not under the sun or just any space outside the factor by producers and distributors)
- Research on Home Economics Education (especially Foods and Nutrition) should also focus attention on water storage and consumption, as water borne diseases are transmitted through the consumption and utilization of water in the home. This happen when contaminated water is taken or used for bathing and other domestic chores.

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Strategies for the Provision of Safe Clothing for Infants in Imo State

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Abstract

This study identified the strategies for the provision of safe clothing for infants in Imo State. It answered two research questions and tested two null hypotheses. The Area of the study was Imo State. Population was made up of 354 literate and 400 non-literate mothers of child-bearing age from three senatorial zones of Imo State. The instrument for data collection was questionnaire. Data were analyzed using mean, standard deviation and t-test. The findings of the study include 14 problems mothers encounter in the provision of safe clothing for their infants and 13 enhancement strategies for the provision of infants clothing. Based on the findings, recommendations were made, including establishing programmes for helping mothers acquire knowledge on the safe clothing provision strategies for their infants.

Keywords: Strategies, Provision, Safe clothing, Infant.

Introduction

Infants need clothing to provide physical protection against cold, sun, rain and other external environmental hazards as well as for adornment. Ukpore (2006) considered warmth, comfort and neatness as the major factors to consider when providing clothing for infants. Other factors include age, weather, family standards, income, maintenance cost, cuts and fits of clothing, safety, durability, texture and activities. Clothing for the infants should be soft, light weight and easy to maintain (Anyakoha and Eluwa, 2008). Such clothing should have the capacity to absorb heat, should be cool and not irritating to the skin, simple to put on and take off. Selecting appropriate clothing for infants at all times enhances the comfort, health and protection needed by infants for physical and mental development. This is especially important with infants of 0-3 years old whose skins are very tender.

An infant is a young person of either sex existing in a family and can be influenced by family norms, values and practices (Olaitan and Akpan, 2003). Provision of clothing for infants (0-3 years) requires a great knowledge and skills in planning and purchasing, this is because the infant's skin is very tender and is prone to infections from dirty clothes. The bones and muscles are newly formed and develop as the infant grows. Sakina (2004) is of the opinion that everything that comes in contact

with the infant must be carefully chosen since the slightest harshness might cause rashes on the infant's tender skin. Lack of Safety and Size appropriateness consideration expose infants to danger. These can harm them physically, psychologically and can even lead to death (Claire, 2005). Suitable clothing is the basic necessity that must be provided for the infants by mothers.

Mothers are often responsible for providing clothing for infants. Brown (2005) remarked that mothers should consider the infants special needs and family lifestyle when providing for infants clothing. Providing for the infants needs early in life is an interesting infant-care activity that should be preferred to all other activities in the home. Failure to meet and provide for the infants' needs quite early in life causes the infant to mistrust the world. This therefore, affects his emotional stability and relationship with others.

Wright (2003) mentioned some of the factors that will guide both literate and non-literate mothers in the choice of infant clothing. These include geographical conditions, occasion of what the clothes will be used for, age, size of the infant, texture, colour, economy, wear ability and wash ability of the clothing. No matter the geographical location of mothers, they should be sound and knowledgeable enough to select and provide appropriate clothing for their infants.

Strategy is a well planned series of actions mapped out for achieving an aim (Olaitan, 2003). Strategies for the provision of safe infant clothing are those plans that will involve appropriate selection of clothing by all mothers to see that the safety of the infant is protected towards provision of right type of clothing for the infants in Imo State.

Clothing provision strategies of any given individual especially that of mothers in other words, is the way mothers make available the infants clothing needs for his healthy survival, growth and development, which Olusanya and Eyisi (1990) include the following: effective planning and purchasing, recycling, redesigning, home dyeing, renovation, fabric construction, self made clothing, developing a wardrobe plan for infants clothing, care, handling down clothes and evaluating clothing selection. There is no doubt that the decrease in the nation's economy affects resources for meeting these basic human needs. This makes it difficult for mothers to provide for the clothing needs of their infants. This difficulty is more with mothers with large number of children and families that live in rural areas.

According to Anyakoha and Eluwa ,(2008) many families have meager income to provide adequate clothing for infants. The inability to satisfy these basic needs as well as others is a threat to the survival of the family now that the needs and wants of the families are on the increase with limited resources to meet them. Presently, the clothing provision of infants are faced with a multitude of problems such as finance, attitude of mothers towards planning, family members attitude towards provision of clothing, lack of skill and

knowledge in selecting appropriate clothing for infants. Drake (2004) stated that mothers should be well enlightened on the need for acquiring sewing skill with the use of sewing machine as this will help to save cost. Creating opportunities for sufficient clothing construction skill to achieve effectiveness and adequate knowledge for maintain infant clothing will go a long way in assisting mothers to provide appropriate and save clothing for their infants.

Therefore, there is obvious need to evolve appropriate strategies to enhance practices adopted by mothers in the provision of safe clothing for infants in Imo State.

Purpose of Study

The main purpose of this study was to investigate the strategies adopted by mothers in the provision of safe clothing for their infants in Imo State with a view to evolving ways of enhancing such strategies. Specifically, the study:

1. Identified the problems mothers encounter in the provision of clothing for their infants in Imo State.
2. Determined the strategies for enhancing the practices adopted by mothers in the provision of safe infant closing for their infants in Imo State.

Research Questions

The study sought answer to the following research questions

1. What are the problems mothers' encounters in the provision of safe clothing for their infants in Imo State?
2. What are the ways of enhancing the strategies adopted by mothers in the provision of safe clothing for their infants in Imo State?

Hypotheses

The following Hypotheses were tested at 0.05 level of significance.

$H0_1$ There is no significant difference between the mean responses of the literate and non-literate mothers on the financial problems encountered in the provision of safe clothing for infants in Imo State

$H0_2$ There is no significant difference in the mean responses of literate and non-literate mothers on the strategies adopted by mothers in the provision of safe clothing for infants in Imo State.

Methodology

Design and Area of the study: The survey research design was adopted in this study. It was conducted in Imo State, the eastern part of Nigeria. People of Imo State are of Igbo tribe with different dialects. They are mostly farmers, civil servants, business men and travellers. The survey approach was adopted because it provided the researcher the opportunity to sample the opinions of large representative sample of population.

Population of the study: This comprised all literate and non-literate mothers of child bearing age (20-50 years) residing in both rural and urban areas of the twenty seven Local Government Area of Imo State. They engage in various occupations that enable them earn income for the upkeep

of the family. The population was estimated to be 15,080 out of the 1,902,613 of females in Imo State (2006, National Population Commission).

Samples for the study: A systematic random sampling technique was used to obtain a representative sample of 754 respondents. These were sampled from three senatorial Zones of Imo State. A total of four Local Areas were chosen from each zone. Then 354 literate and 400 non-literate mothers who are civil servants and business women were chosen from the selected Local Government Areas(754 respondents representing 5% of the population) .

Instrument for Data Collection: The instrument used was a structured questionnaire which was developed based on the purpose of the study and extensive literature review. It was based on a five point scale and validated by three Clothing and Textile Lecturers. Reliability of the instrument was established using test-retest reliability method. Twenty [20] copies of questionnaire were administered on twenty mothers who were not part of the population. To establish and the reliability of the instrument, Pearson product moment correlation was used. The responses were used to calculate the Pearson product moment correlation of two sections (F-G] and were found to be 0.81 and 0.96.

Data Collection Analysis Technique: A total of 750 copies of the questionnaire were distributed to 354 literate mothers and 400 non literate mothers by hand with the help of trained assistants. All the 745 copies were properly completed and the questionnaire recorded 100% return rate. Mean and t-test at 0.05 level of significance were used for data analysis and a cut off point of 3.5 mean was used for decision making.

Findings:

The following Findings were made by this study:

1. Fourteen (14) problems (socio-economic and mother related problems) mothers encounter in the provision of safe clothing for their infants were identified.
2. Thirteen strategies for enhancing the practices adopted by mothers in the provision of safe clothing for their infants were also identified.

Table 1: Mean responses and t-test result on socio-economic problems mothers encounter in the provision of safe clothing for their infants encountered in the provision of safe clothing for their infants encountered in the provision of safe clothing for their infants.

S/N	Problems mothers face In the provision of Infants clothing	$\overline{X}_1$ (N=300)	$\overline{X}_2$ (N=400)	$\overline{X}$ g	SD	t-cal	Remarks
1	Standard of living	4.55	4.56	4.55	0.947	0.844	NS
2	Inability to adhere to Family budget	4.46	4.44	4.45	.759	0.813	NS
3	Irregular income	4.77	4.78	4.775	.415	0.746	NS
4	Decrease in national Economy	4.62	4.61	4.615	.488	0.825	NS

5 High cost of clothing Article	4.84	4.83	4.835	.371	0.847	NS
6. Family members attitude	3.87	3.89	3.88	.873	0.782	NS
7 Intricacies of self made Dresses	4.77	4.78	4.775	.415	0.746	NS
8 Inadequate skills for Maintaining infants clothing	4.17	4.16	4.105	.415	0.897	NS
9 Poor planning/knowledge Of clothing articles	4.39	4.39	4.39	.765	0.957	NS
10 Family location/size	4.77	4.78	4.775	.488	0.746	NS
11 Educational level of mother	5.00	5.00	5.00	.415	0.748	NS
12 Inadequate times due to Household chores	4.32	4.33	4.325	.000	0.760	NS
13 Inability to conduct inventory Before buying	4.39	4.38	4.385	.470	0.862	NS
14 Lack of good storage Facilities	4.62	4.61	4.615	.830	0.825	NS

Xx_1 = Mean response of literate mothers, S= Significant Xg = Grand Mean, DF = Degree of freedom = 752, X_2 = Mean responses of grand mean, t-cal = calculated, SD = standard deviation of grand mean, T-value of each item t-tab = 1.96, NS = Not significant, N = No of respondents (Literate) = 300 Level of significant = 0.05, N = Number of respondents (non-literate) = 400

Table 1 shows Socio-economic problems and Mother related problems. Under the Socio-economic problems, all the 7 items got mean ratings of above 3.50. This implies that the respondents agree with the seven items on the Socio-economic problems encountered by mothers in the provision of safe clothing for their infants. The value of the estimated deviation ranged from .371 to .873, revealing that the opinions of the respondents are not far from each other. Under the mother related problems had their mean values above the cut off points of 3.50. The mean ranges from4.15 to 5.00 indicating that respondents accepted all the items and agreed that these are mother-related problems in the provision of safe clothing for their infants. The values of the standard deviation also showed that the opinions of the respondents do not vary from each other.

Table 2: Mean responses and t-test results of ways of enhancing the practices adopted by mothers in the provision of safe clothing for their infants.

S/N	Ways of enhancing the practices mother adopted in the provision of infant clothing	$\overline{X}$	$\overline{X}$	$\overline{X}$ g	SD	t-cal	Remarks
1	Enlightening mothers on manner of proper clothing for infants	4.56	4.54	4.55	.488	0.762	NS
2	Creating awareness through seminar to improve on their	4.39	4.39	4.39	.497	0.912	NS

	knowledge and skills						
3	Consumer education in clothing articles	3.94	3.93	3.935	.488	0.823	NS
4	Getting mothers well informed with multiplicity of modern technology	4.61	4.61	4.61	.622	0.912	NS
5	Appropriate management of limited resources in providing clothing for infants	4.00	4.00	4.00	.488	0.840	NS
6	providing infants clothing on environmental base criteria	4.17	4.16	4.165	.000	0.831	NS
7	Selecting appropriate clothing for infants	4.33	4.32	4.325	.763	0.814	NS
8	Care label on the fabrics must be clearly stated and followed	4.55	4.54	4.545	.820	.865	NS
9	Gift of clothing items	4.61	4.61	4.61	.498	0.988	NS
10	Good bargaining	4.22	4.23	4.225	.487	0.891	NS
11	Effective use of laundry machine	4.44	4.46	4.45	.790	0.702	NS
12	Up to date information	4.44	4.61	4.252	.497	0.002	NS
13	Adequate wardrobe planning	4.17	4.16	4.165	.699	0.831	NS

Table 2 show the mean rating of opinions of mothers on strategies for enhancing the provision of safe clothing for infants in Imo State. The analysis data revealed that all the items got means above 3.50. It then means that almost all the items on strategies for enhancement of infants clothing were agreed upon by the respondents. Therefore, these strategies if adopted will enhance the provision of safe clothing for infants in Imo State. The values of the standard deviation ranged from 3.94 to 4.62. This indicated that all the 13 items are the enhancement strategies mothers adopt in the provision of safe clothing for infants in Imo state.

Results of t-test on HO_1 (Table1) reveal no significant in the mean responses of the literate and non-literate mothers. This implies that education has no significant influence on the strategies to adopt in the Provision of Safe Clothing for Infants in Imo State.

Similarly t-test results on HO_2 (Table 2) reveal no significant difference in the mean responses of literate and non-literate mother on the financial problems encountered in the provision of self clothing for infants. Adequate finance invariably may lead to better standard of living which may promote healthy lifestyle.

However the result of the study showed that education and finance have no significant influence on the strategies to adopt in the provision of safe clothing for the infants in Imo state.

Discussion of findings

The findings of the study on table 1 identified that mothers encounter many problems in the provision of safe clothing for their infants. These problems include Socio-economic and

mother-related problems. These findings are in line with the views of Anyakola (2009) who opined that many families have meagre income to provide adequate clothing for infants. This she further stated that mothers especially those in the rural areas are constantly faced with the challenges of clothing their infants. These challenges hinged on a number of factors such as attitudes of mothers towards planning for infants clothing, influence of older siblings, poor knowledge of clothing articles and negligence on the part of the husband.

Ahupa and Dimka (2002) further opined that mothers may be able to have the clothing they need with the limited money through wise planning. According to Drake (2004) mothers should be well enlightened on the need for acquiring sewing skill with the use of sewing machines as this will help to save costs. In line with this Drake (2004) found out the mothers fail to cloth their children properly due to lack of skill and time providing opportunities for sufficient clothing construction skill to achieve effectiveness and adequate knowledge for maintaining infants clothing will help the mothers is providing appropriate and safe clothing for their infants.

The findings as summarized in table 2 showed that enhancement strategies for clothing provision practices of mother to ensure safety are considered very important. These can easily be facilitated through assisting mothers in making clothing into more representational forms such as construction. Making and repairs of simple garments, use of washing machines and workshop to educate mothers on how to care, launder and store infants clothing. This is in line with Sakina (2000) who stressed the importance of comfort to infants clothing. According to him, children are very active and their clothes should be made in such a way that it will not discomfort them while playing or sleeping. The result also revealed that, opportunities for redesigning and recycling clothing could be of benefits to mothers in the provision of adequate clothing for infants. These views were held by (Igbo and Oluah, 2008) that these processes extend the life span of infant clothing as well as conserving scare resources for other needs in the family. Mothers therefore, should be well enlightened on how to redesign and recycle clothing for their infants

Conclusion

Mothers in Imo State especially mothers in the rural areas are faced with problems of inadequate income for the provision of adequate clothing for their infants. Families should diversify their sources of income to be able to provide for the clothing needs of their infants and meet other family obligations.

It is also necessary to note that improper care and in adequate provision of clothing for infants may be harmful to infants' healthy development. This is due to the fact that most mothers in Imo State lack enough knowledge and skill to provide the appropriate clothing for their infants. There could be an improvement in the ways mothers provide clothing for their

infants if mothers can adopt the strategies identified by this study.

Recommendations

The following recommendations were proffered based on the findings of the study.

1. Appropriate bodies should establish special sponsored retaining programmes on the provision of safe clothing for infants to enable Home Economics teachers to acquire knowledge which will help them teach mothers on the safe clothing provision strategies.
2. Mothers and Homemakers should be enlightened on the need to redesign and recycle clothing for their infants as well as laundering second hand clothing adequately to get rid of numerous microbes that may constitute danger to the health of the infants.
3. The findings of the study are also recommended to literate mothers through mass media with consumer education as regarding clothing to provide the required information, knowledge, attitudes and skill needed in the provision of safe clothing for infants.
4. Family literacy programmes and services should be organized and home makers for teaching new skills and guideline for provision of safe clothing infants.

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Intrinsic and Extrinsic Attributes of Locally Produced and Imported Garments

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Abstract

The study determined the intrinsic and extrinsic quality attributes of garments. It was carried out in Abeokuta among consumers and registered tailors who reside in Obantoko community. The population of the study was 268 registered tailors. A sample of 50 tailors was selected from the tailors' association register. Fifty assessors were purposively selected among the consumers who reside in this community. Questionnaire was used to collect the data. The result reveals that tailors in this community were producing average quality garments. The study recommends a town and gown partnership between the academia and practitioners for cross pollination of ideas to improve the skills of the tailors.

Keywords: Intrinsic, Extrinsic, attributes, garments, quality, tailor

Introduction

Globally, consumers are becoming increasingly demanding in what they look for in clothing textile products and increasingly discerning what they find acceptable (Kadolph, 1998:12). Zeithami, (1988), defines quality as superiority or excellence of consumer's judgment about a product to satisfy a need. Quality of a product can be measured either from producers' perspective or consumer's perspective or both (Crosby, 1972). Producers based quality can be measured objectively from conformance to standard specification, performance, workmanship, durability and serviceability standards, while consumers measurement of quality is based on perceived quality features, sensory, and emotional/expressive aspects, (Flore and Damhorst,1992; Abraham-Murali and Littrel,1995; Hines and O'Neal, 1995). Perceived quality focuses on inferences reached on the basis of evidence or reasoning. These include product familiarity, prior experience with a specific product or brand, product price, consumer's level of education and personal values. A consumer- based approach to quality is more subjective and not easily verified (Zeithami, 1988). Consumers and product developers may define quality differently (Morgan, 1985). Quality is always a compromise; any customer has in mind a set of requirements for a product. A good quality product is one that exactly meets the agreed requirements of the customer, delivered on time and in sound condition (Chuter,

2002). Many times, products meeting specification may not fully satisfy the consumers' notion of quality product resulting to a mismatch between producers and consumers perception of the product (Flore and Damhort, 1992). According to King, (1993), most consumers rate products from developing country as lower in quality than those manufactured in a developed country. Consequently, there is need to improve the quality rating of locally produced garment to meet international standards.

Different attributes are used by consumers to measure the quality of a clothing item/apparel. Attributes of clothing/apparel are categorized into intrinsic and extrinsic cues (Olson and Jacoby, 1972). Intrinsic attributes involve the physical composition of the product which cannot be changed without altering the nature of the product itself while extrinsic attributes are product related but not part of the physical product itself. These include price, brand name, level of advertising, country of origin and store image (Olson and Jacoby, 1972). Performance features also form part of the intrinsic attributes and determine what standards the product can meet and how this benefits the consumer. Attractiveness is described as aesthetic performance which usually satisfies the emotional needs of a consumer and includes the design elements, design principles and the current fashion trends (Retief and M de Klerk, 2003). Functional performance refers to the product's utility and durability. Utility is the usefulness of the product and how well it conforms to end use standards (Brown and Rice, 1998:39). Features representing utility include garment fit, comfort, ease of maintenance and appropriate functioning for the intended end use, (Retief and M de Klerk, 2003). Durability is seen as serviceability or the ability of a product to retain its structure and appearance after wear and care. A garment's durability is determined by the abrasion, resistance, tear resistance/seam strength, dimensional stability (Shrink resistance) and colour fastness (Retief and M de Klerk, 2003).

Quality is defined as the extent to which the clothing textile product satisfies the consumer's expectations and includes both physical and performance features of the product, (Retief and M de Klerk, 2003). Brown and Rice (1998), describe the physical features of a garment as its tangible form and composition. These include the design (garment plan), all the materials and other components used to produce the garment, the construction (stitches and seams used) and any wet processing used to finish the garment. All these physical features form part of the intrinsic attributes which cannot be altered without changing the product itself (Retief and M de Klerk, 2003). The problem of this study is the observed low quality production of garments among tailors in Obantoko community of Abeokuta. This study assesses the quality attributes of a garment produced by local tailors and compare with imported garments.

Purpose of the study

The major purpose of the study was to investigate the intrinsic and extrinsic attributes of locally made and imported garments. Specifically, the study determined:

1. intrinsic attributes of locally produced garments.
2. intrinsic attributes of imported garments.
3. extrinsic attributes of locally produced garments.
4. extrinsic attributes of imported garments.

Research Questions

This study provides answers to the following research questions:

1. What are the intrinsic attributes of locally produced garments?
2. What are the intrinsic attributes of imported garments?
3. What are the extrinsic attributes of locally produced garments?
4. What are the extrinsic attributes of imported garments?

Methodology

Research Design: Descriptive survey research design was used for the study

***Area of the study*:** The study was carried out in Obantoko, Abeokuta, Ogun State among tailors and consumers who operate and reside in Odeda Local Government Area of the state.

***Population for Study*:** The study population is 268 male and female tailors representing the total number of registered tailors in Obantoko community. These tailors operate in shops in various areas of the community (Fajol, Ebenezer, Somorin, Gbonagun and Odo-Eran). The tailors acquired the skill through apprenticeship training-this is an informal arrangement to enable individual acquire self-employable skills in production of garments and household articles. These tailors specialise in traditional, ceremonial and corporate styles for either male or female consumers. They sew clothes based on the choice of styles selected by their customers. These tailors are creative and have the skills to blend various fabrics and colours to produce beautiful styles of garments. No tailor produces ready to wear garment.

Sample for the study: Systematic sampling technique was used to select the tailors using the association's register. In a systematic sample, the elements of the population are put into a list and then every *k*th element in the list is chosen systematically for inclusion in the sample (Crossman, 2013). Ten tailors were selected from the register in each area (Fajol, Ebenezer, Somorin, Gbonagun and Odo-Eran) making a total of fifty tailors used for the study. Similarly, 50 assessors were purposively selected among the consumers within the ages of 25 years and above. It was decided to focus on female consumers who have strong confidence with a strong interest in personal appearance and who enjoys shopping for clothes (Shim and Kotsiopulos, 1993; Shim and Koh, 1997).

***Instrument for data collection*:** The data was collected through the use of questionnaire on a five point scale of Excellent, Good, Average, Fair and Poor construction process/quality attributes.

The intrinsic quality attributes used for the study are physical and performance features. These include: stitches, seams, openings, fastenings, sleeve, hem, facing, interfacing, design, material, finishing, aesthetic, durability and comfort while extrinsic attributes include price, brand, image, label and packaging. The assessors are to rate the locally produced and imported garments based on the intrinsic and extrinsic attributes- style, collar, hem, pocket, sewing accessories, interfacing, etc.

***Data collection techniques*:** the following steps were used to collect the data

1. Tailors in Obantoko community were contacted through the Executives of their association to solicit for their co-operation. A focus group discussion with the registered tailors was conducted by presenting a scenario for the tailors to produce creatively design skirt suit suitable for international market as ready to wear garment with a price tag and other extrinsic attributes. The tailors were informed that the garments produced would be assessed by consumers for quality. Fifty (50) tailors were randomly selected and each produced a garment sample.
2. Ten samples of imported ready to wear garments were purchased from various stores within and outside the state. The high cost of the garments limited the quantity purchased.
3. Fifty garments samples were collected from the tailors and presented to 50 assessors for quality rating. These assessors were purposively selected among consumers within the ages of 25 years and above. These consumers were contacted in their offices, shops and schools. Some of these assessors play a dual role as both consumers and professionals in the field.
4. A guide of the meaning of both intrinsic and extrinsic attributes on the garments to give better form to the appearance of the finished garment was presented to the assessors to aid their objective scoring. A sample garment was given to each assessor for rating of quality features on the garment produced locally.
5. Similarly, samples of the purchased imported ready to wear garments were presented to the consumers/assessors to identify quality features and make comparison. A sample of purchased imported garment was presented to an average of 5 assessors for rating

Findings of the Study

Table 1: Assessors rating of intrinsic attributes of locally produced garments

Intrinsic Attributes	Excellent Freq. (%)	Good Freq. (%)	Average Freq. (%)	Fair Freq. (%)	Poor Freq. (%)	Total	Mean	Decision
Style of garment	2 (4.0)	31(62.0)	17 (34.0)	0 (0.0)	0 (0.0)	185	3.70	Good
Stitches	1 (2.0)	3 (6.0)	17 (34.0)	19 (38.0)	10 (20.0)	116	2.32	Fair
Collar	1 (2.0)	2 (4.0)	15 (30.0)	25 (50.0)	7 (14.0)	115	2.30	Fair

Pocket	0 (0.0)	6 (12.0)	14 (28.0)	22 (44.0)	8 (16.0)	118	2.36	Fair
Opening	0 (0.0)	8 (16.0)	21 (42.0)	14 (28.0)	7 (14.0)	130	2.60	Average
Fastening	1 (2.0)	9 (18.0)	24 (48.0)	9 (18.0)	7 (14.0)	138	2.76	Average
Sleeve	2 (4.0)	11(22.0)	22 (44.0)	7 (14.0)	8 (16.0)	142	2.84	Average
Interfacing	4 (8.0)	14(28.0)	11 (22.0)	16 (32.0)	5 (10.0)	146	2.92	Average
Sewing accessories	3 (6.0)	31(62.0)	7 (14.0)	6 (12.0)	3 (6.0)	175	3.50	Good
Fabric Design	2 (4.0)	18(36.0)	15 (30.0)	11 (22.0)	4 (8.0)	153	3.06	Average
Durability	0 (0.0)	8 (16.0)	12 (24.0)	23 (46.0)	7 (14.0)	121	2.42	Fair
Texture	1 (2.0)	6 (12.0)	13 (26.0)	28 (56.0)	2 (4.0)	126	2.52	Average
Hem	3 (6.0)	7 (14.0)	16 (32.0)	21 (42.0)	3 (6.0)	136	2.72	Average
Seam	4 (8.0)	3 (6.0)	15 (30.0)	21 (42.0)	9 (18.0)	128	2.56	Average
Comfort	2 (4.0)	29(58.0)	11 (22.0)	4 (8.0)	4 (8.0)	171	3.42	Average
Finishing	4 (8.0)	9 (18.0)	27 (54.0)	8 (16.0)	2 (4.0)	155	3.10	Average
TOTAL						**2255**	**45.1**	

Overall Quality Assessment of the Garments Produced locally = Total Mean/Number of Intrinsic Attributes; 45.1/16 = 2.818 (Average)

Table 1 shows the rating of intrinsic attributes of locally produced garments. From this table, the style of the garment and sewing accessories used by local tailors received good rating having a Mean Score of 3.70 and 3.50 respectively. The opening, fastening, sleeve, seams and finishing of the garments were rated average having a Mean Score of 2.60, 2.76, 2.84, 2.56 and 3.10 respectively, while the stitches, collar, pocket and durability have fair rating of Mean Score 2.32, 2.30, 2.36 and 2.42 respectively. It can however be argued that the local tailors are good in designing of styles of garments and choice of suitable sewing accessories but their garment construction process needs great improvement. The Overall Quality Assessment of the garments produced locally has a score of 2.818, indicating that the locally produced garments are of average intrinsic quality.

Table 2: Assessors rating of intrinsic attributes of imported garments

Intrinsic Attributes	Excellent Freq. (%)	Good Freq. (%)	Average Freq. (%)	Fair Freq. (%)	Poor Freq. (%)	Total	Mean	Decision
Style of garment	5 (10.0)	38 (76.0)	7 (14.0)	0 (0.0)	0 (0.0)	198	3.96	Good
Stitches	35 (70.0)	9 (18.0)	6 (12.0)	0 (0.0)	0 (0.0)	229	4.58	Excellent
Collar	22 (44.0)	13 (26.0)	11 (22.0)	4 (8.0)	0 (0.0)	203	4.06	Good
Pocket	17 (34.0)	29 (58.0)	3 (6.0)	1 (2.0)	0 (0.0)	212	4.24	Good
Opening	7 (14.0)	3 (6.0)	11 (22.0)	27(54.0)	2 (4.0)	136	2.72	Average
Fastening	14 (28.0)	8 (16.0)	23 (46.0)	5 (10.0)	0 (0.0)	189	3.78	Good
Sleeve	9 (18.0)	33 (66.0)	4 (8.0)	4 (8.0)	0 (0.0)	197	3.94	Good
Interfacing	6 (12.0)	17 (34.0)	11 (22.0)	13(26.0)	3 (6.0)	160	3.20	Average

Sewing accessories	4 (8.0)	28 (56.0)	10 (20.0)	8(16.00)	0 (0.0)	178	3.56	Good
Fabric Design	16 (32.0)	12 (24.0)	14 (28.0)	6 (12.0)	2 (4.0)	184	3.68	Good
Durability	8 (16.0)	12 (24.0)	16 (32.0)	10(20.0)	4 (8.0)	160	3.20	Average
Texture	5 (10.0)	16 (32.0)	18 (36.0)	9 (18.0)	2 (4.0)	163	3.26	Average
Hem	28 (56.0)	18 (36.0)	3 (9.0)	1 (2.00)	0 (0.0)	223	4.46	Excellent
Seam	32 (64.0)	11 (22.0)	7 (14.0)	0 (0.0)	0 (0.0)	225	4.50	Excellent
Comfort	7 (14.0)	23 (46.0)	10 (20.0)	8 (16.0)	2 (4.0)	175	3.50	Good
Finishing	16 (32.0)	18 (36.0)	8 (16.0)	6 (12.0)	2 (4.0)	190	3.80	Good
TOTAL						**3022**	**60.44**	

Overall Quality Assessment of the Imported Garments Purchased = Total Mean/Number of Intrinsic Attributes; 60.44 / 16 = 3.7777 (Good)

Table 2 shows the rating of intrinsic attributes of the imported garments. From the table, the style of the garments and sewing accessories used on imported garments received good rating having a Mean Score of 3.96 and 3.56 respectively. Comparing these attributes with locally produced garments, it can be deduced that both local and international tailors have a good style of garment design and make good choice of sewing accessories. There are other intrinsic attributes that has similar rating as the local garments. These include, opening, interfacing and the texture of the garments which are rated as average with a Mean Score of 2.72, 3.20 and 3.26 respectively. On the other hand, the stitches, hem and seams were rated excellent with a Mean Score of 4.58, 4.46 and 4.50 respectively. The Overall Quality Assessment of the imported garments has a score of 3.777, indicating that the imported garments are of good intrinsic quality.

Table 3: Assessors rating of extrinsic attributes of locally produced garments

Extrinsic Attributes	Excellent Freq. (%)	Good Freq. (%)	Average Freq. (%)	Fair Freq. (%)	Poor Freq. (%)	Total	Mean	Decision
Price tag	0 (0.0)	12(24.0)	25(50.0)	13(26.0)	0(0.0)	149	2.98	Good
Brand (Home made garment)	2 (4.0)	18(36.0)	27(54.0)	3 (6.0)	0(0.0)	169	3.38	Average
Image	12 (24.0)	24(48.0)	14(28.0)	0 (0.0)	0(0.0)	198	3.96	Good
Label	2 (4.0)	8 (16.0)	23(46.0)	11(22.0)	6(12.0)	139	2.78	Average
Packaging	14 (28.0)	29 (58)	7(14.0)	0(0.0)	0(0.0)	207	4.14	Good
TOTAL						**862**	**17.24**	

Overall Quality Assessment of the Garments Produced locally = Total Mean/Number of Extrinsic Attributes; 17.24 / 5 = 3.448 (Average)

Table 3 shows the rating of extrinsic attributes of locally produced garments. The image and packaging were scored good with a Mean Score of 3.96 and 4.14 respectively while other extrinsic attributes : price tag, brand and label were rated average with a Mean Score of 2.98, 3.38 and 2.78 respectively. However, the overall quality assessment of locally produced garments has a Mean Score of 3.448. This implies that, the local garments are of average extrinsic quality.

Table 4: Assessors rating of extrinsic attributes of imported garments

Extrinsic Attributes	Excellent Freq. (%)	Good Freq. (%)	Average Freq. (%)	Fair Freq. (%)	Poor Freq. (%)	Total	Mean	Decision
Price tag	0 (0.00)	18(36.0)	28(56.0)	4 (8.0)	0 (0.0)	168	3.36	Average
Brand (Imported garment)	7 (14.0)	22 (44.0)	15(30.0)	6(12.0)	0 (0.0)	180	3.60	Good
Image	18(36.0)	25(50.0)	7(14.0)	0(0.0)	0 (0.0)	211	4.22	Good
Label	16(32.0)	23(46.0)	9(18.0)	2(4.0)	0 (0.0)	203	4.06	Good
Packaging	17(34.0)	31(62.0)	2(4.0)	0(0.0)	0 (0.0)	215	4.30	Good
TOTAL						**977**	**19.54**	

Overall Quality Assessment of the Imported Garments Purchased = Total Mean/Number of Extrinsic Attributes; 19.54 / 5 = 3.908 (Good)

Table 4 shows the scoring of extrinsic attributes of the imported garments. The image and packaging of the imported garments received good score having a Mean Score of 4.22 and 4.30 respectively. Comparing these attributes with locally produced garments, it can be argued that both local and international garment producers project a good image and well package product for commercial purpose. Similarly, price tag attributes of the imported garments has the same rating of average (3.36) as the local garments (2.98). It can then be argued that the price tag of either the imported garments or locally produced garments used for this study is satisfactory to the consumers. The Overall Quality Assessment of locally produced garment has a Mean Score of 3.908 indicating that the imported garments are of good extrinsic quality.

Discussion of Findings

Users assess quality by looking at the intrinsic and extrinsic nature of the attributes or based on the knowledge that they have of different attributes (Siddiqi, 2005; Mottaleb, 2009). Intrinsic attributes are characteristics directly linked to the product and which cannot be changed (such as shape, taste, production system used, etc.). Extrinsic attributes are not directly linked to the product and can be modified externally, for example price, brand, packing etc (FAO, 2005). Consequently, if the tailors are to compete favorably with imported ready to wear garments, there is need to pay attention to both intrinsic and

extrinsic quality features of a garment in order to achieve the standard of quality expected by the consumers for purchase and repurchase intension. This is in line with (Ko, etal, 2010), intrinsic and extrinsic cues influence consumers' perceived value and repurchase intention The local tailors need to improve their skills in order to make progressive sales, attract more customers and expand their business by producing quality ready to wear garments.

Secondly, the practitioners need to embrace advance skills in learning. According to Bazan and Navas-Aleman (2004), opportunities for continuous learning are built in to operation within the global commodity chain, and it is up to local suppliers, such as garment manufacturers whether they learn advanced skills and know-how. The local practitioners should therefore partner with highly educated and experienced garment entrepreneurs and researchers for transference of creative ideas, knowledge and skills for the growth and development of this sector of Nigerian economy.

Conclusion

The garment industry is very competitive and innovative, in order to increase demand of garments by consumers, and remain competitive in the local and global markets, quality of garments play vital role in current fashion. The tailors in Obantoko community should engage town and gown partnership between the academia and experienced practitioners for cross pollination of ideas to improve their skills through continuous training and re-training programmes.

Recommendations

1. There should be a town and gown partnership between the practitioners and academia/researchers in the field of clothing and textiles for cross pollination of ideas and skills to improve this sector of Nigerian economy.
2. The government should create advisory service units to counsel practitioners in the start up, growth and development of their business.
3. The government should establish export promotion centers, educate the practitioners on international business procedure and encourage them to export their products.

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Strategies for Promoting Healthy Lifestyles in Families

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Abstract

This paper establishes the connection between lifestyle and family living as well as proposes some of the strategies for improving healthy life in every home. This exposition is done under critical analysis of the factors affecting lifestyle including but not limited to the following parent's working lifestyle, parent's social lifestyle, family feeding habits and environmental practices. Also, the paper examined some of the challenges to healthy lifestyles in families which include family cultural background, poor feeding habit, lack of quality time spent together as a family and influence of technology and mass media. Conclusions were reached that healthy lifestyle promotes healthy family living once necessary precautions are taken based on established standard as discussed in the paper. Based on these conclusions, it was recommended that families should improve on their concerns for health and well being, need for greater awareness and components of health and wellness should be highlighted on a greater scale in all the levels of schooling, from the primary to the tertiary institutions.

Key Words: Family, Lifestyle, Health, Parenting, Environmental practices and food habits.

Introduction

Lifestyle is the habit, attitude, tastes, moral standards, and economic level that together constitute the mode of living of an individual or group. Lifestyle can also be defined as a way of living of individuals, families (households), and societies, which may manifest in coping with their physical, psychological, social, and economic environments on a day-to-day basis. The concept is expressed in both work and leisure behavior patterns and in activities, attitudes, interests, opinions, values, and allocation of income (Usoroh and Ekpu, 2011). It also reflects people's self concept, perception and beliefs, especially as seen by other people.

It is an established fact that parental practices and styles have a direct impact on personal and family lifestyle. According to Kembe, (2005), the family is the most important group in which parents provide children with different types of stimulating interactions for child upbringing. Good upbringing is all about training a child to be a good citizen and an asset to society. Mgboro in Igba and Igba (2010) stated that if parents care enough to inculcate in their children the virtues of discipline, honesty, hard work, and Godly living, there will be minimal cases of corruption in Nigeria. The individual and family lifestyle or behaviour can influence his state of health and on the other hand, individual state of health can influence lifestyle choices. Thus, families that adopt healthy lifestyles can build and develop positive behaviors and good self-concept.

Healthy lifestyles consist of good nutrition and good feeding habit, Observance good sanitation practices and safety habit, regular exercise, non-smoking, non-alcohol consumption, safe drug use, avoidance of casual and unprotected sex and upholding positive traditional values.

In the recent past, there is gradual disintegration of the family system. This seemingly trend has given rise to unhealthy lifestyles which has manifested into anti- social behavior that are impediment to National cohesion and development. According to Okafor,(2005) and Igbo, (2005), drug and alcohol abuse, violence and delinquent behavior, lack of respect for elders and human life, casual and unprotected sex, internet influence (face book, twitters,), rape, kidnapping and poor eating habits are some of these behaviors that are worrisome to families and the society in general.

There are many parenting theories which have been developed to improve a healthy family life when adopted by families. One among them is "parenting theory" by Dobson . His theory stressed on the importance of unconditional love among the family members. Like many authors from the 1970s and '80s, he believes that there are three broad strands of parent style: (1) The authoritarian: Where children's wishes are not consulted and parents expect them to do without discussion. (2) The authoritative: Parents and children listen to each other, and the parents offer firm guidelines and boundaries, but with flexibility. (3) The permissive: Where children do as they like and the parents don't take much notice). He proposes that the authoritative style is the healthiest. Furthermore, Okorodudu, (2010) stated that the most unhappy and anti-social teens and adults come from extremely permissive homes, followed by those from strict authoritarian homes.

This paper therefore focuses on:

1. Relationship between lifestyle and family living.
2. Challenges of achieving positive and healthy lifestyles in family.
3. Ways of promoting positive lifestyle in family.

Relationship between lifestyle and family living

In general, there is a close relationship between family living and lifestyle. According to Okafor (2005) those lifestyles which are essential for increasing quality and years of life of individuals are healthy while, those negative health behaviours that have been scientifically proven to be harmful to one's health are the unhealthy lifestyle. Lifestyles are behaviour of choice, which affect ones health status (Adaramju, Adenubi, & Nwabueze, 2010).These ranges from smoking, poor feeding habit, inactivity, alcoholism, drug abuse, poor sanitation practices and participation in unprotected sexual relationship.

Adaramju *et al*. (2010) are of the opinion that individuals with healthy lifestyles tend to live longer than those with unhealthy lifestyle.

Lifestyle and health cannot be discussed in isolation without the parameters amongst several other factors that determine lifestyle whether healthy and unhealthy. Some of these determinants are not limited to only the following, but for the purpose of this discourse, the following considerations are made:

a. Parental work.
b. Social lifestyle.
c. Family feeding habit.
d. Family health practices.

Parental work

The contemporary family is faced with a busy lifestyle. The input from the father cannot satisfy all the needs of the family. As a result, both parents engage themselves in work outside the home. Kalango in Nwankwo (2005) reported that the number of women taking employment outside the home have increased rapidly. The new trend where some parents stay far from home for a long period ranging from two weeks to one month seems to be a socio-economic evolution which has influenced parent child-interaction and relationship negatively. The consequence of the above situation is that children's moral and social developments are influenced negatively since the child may learn from house helps, peer group, pornography books and internet. In this situation, parents are no longer acting as a role model. Moreover, Achalu, (2004) pointed out that the absence of parents especially the mothers can lead to family problems such as child abuse and neglect, broken homes and lower academic performance of the children and in extreme cases school dropouts, truancy and indiscipline among youths.

Studies of Hoffman in Uduchukwu (2006) revealed that children with employed parents show more negative effect in conduct behaviour and exhibits all sorts of anti -social behaviors such as robbery, dishonesty, examination misconduct, drug abuse, smoking, illegal sexual activities and other juvenile delinquencies in society. These parents are also categorized as absentee parents who spend long hours of the day at work, come home when the children are at bed and leave for work when they children are still sleeping. Parent- child interaction and relationship is at the barest minimum in such families and with this scenario,

children may engage in all sorts of anti-social behavior.

Moreover, the challenges of dual career parents may lead to stress and conflict, (Ima- Osagie 1994).Thus, economic hardship undermines parenting and has affected the family structure and lifestyle. Women have deviated from the traditional roles to seek education, occupation, and remunerated work to establish some degree of economic security in the home. Recently, it has been found that parents work especially mothers work has a positive outcome for child development. Kembe (2005) revealed that income from mother's work have contributed to the academic achievement of school age children, in addition, quality time spent with children by educated mothers have significantly affected school outcomes positively. Therefore, there must be a balance between work and parenting for a positive and healthy lifestyle.

Parents' social life

Parent's social life is one of the contributory factors on family standard of living. Spio-Gerbral (2000) stated that the stability and well being of any nation depends on the individual families and the social life of the parents. The society today is experiencing a lot of social problems as a result of individual lifestyle choices. Health of family members is structured to a greater extent around their lifestyle choices. Sugh (2007) pointed out that family institution has the responsibility of inculcating traditional Nigeria family values such as humility, respect, honesty, chastity, decent dressing, justice and moral behaviour to their children. Nestle (2010) however emphasized that healthy lifestyle should be free from the clutches of alcoholism and drug abuse that harm the body and cause social ills. Leisure and how parents spend their leisure determines the social lifestyle of individuals and families.

Hornby (2005) defined leisure as time that is spent doing what one enjoys when he or she is not working or studying. Anyakoha and Eluwa (1999) revealed that leisure or free time is a period of time spent out of working and studying and essential domestic activities especially before or after compulsory activities such as eating, sleeping, going to work, house hold chores and day to day activities. Leisure and recreation are crucial components of balanced and healthy lifestyle. It has the potential of cultivating physical, social, emotional, psychological and mental succor to individuals, thus contributes to physical wellbeing, improve body tone, Increase stamina, develop body coordination, and increase one's ability to resist disease.

According to Cross (2004), leisure and recreation contributes to social cohesion by allowing people to connect and network with others. Involvement in leisure and recreation activities add meaning to individual, family and community life and contributes to peoples overall quality of life (Horris, 2005). Most interestingly, leisure and recreation also contributes to family bonding when families do things together in their leisure time.

Family feeding practices

The family feeding habit may affect the health of individuals in the family. Onyesome, Onyesome, Ofili, Anyanwu and Uzogbu. (2008) in their study found out that feeding habit affect the standard of family living. In certain areas of India, a child may not be fed milk curds, because of a superstitious belief that they inhibit growth. In Nigeria, there are cultural and social inhibitions that prohibit the consumption of certain types of foods by certain groups of people. Ajala, (2006) reported that good nutrition affects the level of physical and social wellbeing of individuals. A family member who lacks essential nutrients may develop deficiency diseases because adequate diet is the first defense against numerous disease and illness. This situation can lead to malnutrition which is one of the most public health problems in Nigeria and a leading cause of infant and child morbidity and mortality, with wasting being the most severe form (Ihenekhien, Obasogie, and Egbealue, 2009). In adult it may lead to chronic disease such as diabetes, high blood pressure and stroke in later life. Corbin, Lindsey & Corbin, (2002) added that behaviour such as increase in dietary fiber intake, reduction in fat consumption, increase in fruits and vegetables are good dietary practices that should be adopted by families.

Environmental Practices

The health of family members depends, to a large extent, on sanitary condition of the home, personal and food hygiene practices, (Anyakoha & Eluwa, 1999). Poor sanitation could result in diseases through the contamination of food and drinking water. Unhygienic practices can place an additional financial and health burden on families as well as lead to exposure and increased risks to diseases such as diarrhea, intestinal infections, polio, typhoid, bilharzias, malaria, worms, eye infections, skin diseases, increased risk for bacterial infections and disease for people with reduced immune systems due to HIV/ AIDS (Nancy & Nimish, 2005) .

Environmental problems associated with unsafe hygienic practices include dispersed and diffuse Pollution of water sources resulting in the water and fecal disease cycle for communities with untreated Water supplies. Poor knowledge and practice of and attitudes to personal hygiene such as hand washing play major roles in the high incidence of communicable diseases and therefore has positive consequences for a child's long term overall development. The hands are probably the single most important route for transmission of infection in the home and community, as they are often in direct contact with the mouth, nose and eyes.

Challenges for promoting healthy lifestyles

The under listed factors impose challenges on achieving healthy living in the family.

1. Family cultural background
2. Lack of quality time spent together as a family.
3. Influence of technologies and media

Family cultural background

Cultural back ground and feeding habit of the family impose great challenges in achieving healthy lifestyle for the family members. Every nation, tribe, tongue, people or group has a culture which includes its arts, customs, languages, knowledge and religious beliefs. What is perfectly acceptable in one culture may be seen as unacceptable in another. Loromeke (1997) reports that most often parents bring up their children according to the training they also received from their own parents. Therefore, there is a cycle of the same cultural mistakes being repeated from one generation to another. Gidden (2006) also revealed that cultural explanations emphasize the importance of individual lifestyle, for instance what a person chooses to eat can reflect that person's taste and culture. Moreover, parental feeding habits, attitude and behaviour pertaining food preparation, cooking, processing, service, choice and consumption toward certain foods has great effect on individual choices and family health status.

Lack of quality time spent together as a family

Most families are faced with time consuming activities that prevent family members from sharing their feelings and activities together and inculcating positive values and healthy lifestyles. Finding time to spend together in a family is difficult because both parents and the children are busy in work and in school. In many households, parents have to go to work, which limits the time they have to spend with their children.

In addition, children are involved in school and other activities, only recently, some schools have developed afternoon school lessons, keeping the children after close of school for extra lessons. Furthermore, Okechukwu, (2012) observed that parents spend little or no time at home to assist in the upbringing of the children. If parents have to fulfil their responsibility of socialization of the young, it means adequate time is needed to be with their children for proper upbringing. Women by biological constitution have been recognized as mothers and nurturer of children. They plan and cook meals and take care of house, thus they occupy a central position in determining the quality of life for the house hold and community (Titilayo 2000). Okechukwu, (2012) in his research revealed that many mothers now lack quality time to hear, talk, work, read, cook and play with their children.

Influence of technology and Mass media

Technology and mass media have brought changes to our cultural values. Social networking website (face book, twitters and to-go) is popular especially, among the youths. The use of internet, a global system of interconnectivity provides information to every happening around the world and exposes individuals and families to relationship and social networking among a wide range of diverse individuals. Initially, it was university based facilities to get more current, up-to date information to enhance students'

knowledge but with spread of home-based computers, the internet gradually found its way into household. Teenagers instead of upholding African values, they imitate and build their characters from what they see on the internet.

The use of internet has become a trend; users give importance to the network of face book friends, rather than family members. The consequences of the use of internet on the health of individuals, families, and the nation at large are quite enormous. Cyber crime and national integrity is popping up in the news now more than ever. Murder, fraud and money laundering are some of the reports that are linked to different social media sites. Recently, a 24 year old lady who had been chatting with some new "friends" on face book was robbed and strangled to death by her face book friend on 22nd of July 2012 (http://news.naij.com/6002.ml.)

Youths are exposed to all sorts of immoral act through the use of these social media. The negative effect of internet are obvious; opening up one's computer may expose an individual's bank statements, passwords or any other sensitive information on the home computer. Face book does not allow individual to care about his or her surroundings instead it makes one to have less interaction. Researchers have revealed the health implication of spending so much time on the internet, showing cases of obesity, reduces the time for study, leads to conflict and above all makes the user have less concern in the family. Websites provide information about face book addiction disorder (FAD) with the aim of helping those that are suffering from face book addiction disorder or those that are moving towards this behaviour. Parents should be aware and work hard to perform their duties of proper socialization to build a healthy home.

Strategies for Promoting Positive lifestyles in the Family

Healthy lifestyles can be promoted through several measures. These include;

1. Good Nutrition and feeding habit
2. Observance of good environmental practices and safety habit
3. Re-orientation of Unhealthy Values.

Maintaining healthy family and Nation starts with good nutrition and feeding habit. This is achieved through a meticulous and systematic programme of adequate meal provision.

Ihensekien *et al* (2009) and Kavitha (2009) reported that indigenous food processing methods enhance the nutritive value of staple foods that are readily available. Corbin et-al (2002) added that behaviour such as increase in dietary fibre intake, reduction in fat consumption, increase in fruits and vegetables intake are good food habits that should be adopted because of their importance to health. They further revealed that good nutrition is a prime entry point to ending poverty and a milestone to achieving better quality of life, (Ihensekien, Obasigie, and Egbealue, 2009). Environmental sanitation practices encouraged through health education has been associated with low prevalence of communicable diseases in school children. To buttress

this, Pruss, Stun, Bos, Gore and Bartram (2008) in their study on safer water and better health, found out that globally, 2.4 million deaths (4.2% of all deaths) could be prevented annually if everyone practice appropriate sanitation and have good, reliable drinking water.

Re-orientation of Unhealthy Values and Lifestyle in families is also an important way of ensuring a positive lifestyle. Reorientation according Isiakpere (2005), is a process of changing the old and inappropriate values of individuals to enable them appreciate and acquire a new set of values that are appropriate for good citizenship, Nation building, political and family stability.

Conclusion

This paper has shown that for a family to be healthy the family especially the parents who act as role models must possess a healthy lifestyle. It revealed the lapses in parental upbringing and the changing roles of family which has contributed immensely on the present social ill and the menace confronting individuals, families and the society at large. It concludes by stating that the family still remains the bedrock of society and should show concern on the changes that affects it negatively. Recommendations were made on the strategies of promoting healthy family living through good nutrition/feeding habit, Observance of good sanitation and safety habits, Re-orientation of Unhealthy Values and Lifestyle in Families.

Recommendation

Based on the discussions above, the following recommendations were made:

1. Families should show concern about health challenges and healthy lifestyle and work toward minimizing such problems through its change in lifestyle.
2. Home Economics and other family related professions especially those in extension services, should create awareness for appropriate lifestyle which will promote healthy living in families and inform them on the risk of adopting unhealthy lifestyle.
3. Healthy lifestyle concept can be integrated into primary, secondary, and tertiary school curriculum to sensitize individuals on the importance of healthy lifestyle.

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The Issue of Sub-Standard Ready-to-Wear Garments in Fashion Marketing: A Challenge Facing the Fashion Industry in Nigerian Economy

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Abstract

This paper examines the issue of sub-standard ready-to-wear garments in fashion marketing: a challenge facing the fashion industry in Nigerian economy. Fashion is a global activity with a lot of stiff or hyper-competition. The manufacturers therefore have to strive to maintain standards of quality products to meet the market target. Unfortunately, the Nigerian fashion industry is unable to compete in terms of quality with the foreign ready-to-wear garments produced, especially in the developed nations of the world. This has lead to serious challenges in the fashion industry and consequently affecting the national economy negatively. This paper highlights these challenges and recommends ways of eradicating them.

Key words: Sub-standard, Ready-to-wear, Garments, Fashion marketing, Fashion industry

Introduction

The term, ready-to-wear, describes garments made in standardized sizes and usually produced in factories (Dickerson, 2003). Substandard ready-to-wear therefore, refers to factory produced garments that are of low quality. According to (Kotler, Bowen and Makens, 2006), a quality is the totality of feature and characteristics of a product that bear on its ability to meet customer needs. It can be briefly defined as, "freedom from defects". They further explain that quality has a direct impact on product or service performance. This is closely linked to customer value and satisfaction. Quality begins with customer's needs and ends with customer satisfaction.

Jones (2006), reports that fashion manufacturing falls within the market sector of the economy. According to

Easy (2009), fashion marketing exists only for one reason, the CONSUMER. He argues that the primary objective in gaining greater understanding of the nature of fashion products and the process, is to satisfy some of the basic needs within a society. Commercially, when consumer's needs are not satisfactorily met, it results in increase customer loyalty and trust in what is being offered by the organization, and consequently in sales performance and productivity.

The word fashion, may be defined as a prevailing style. According to Dickerson (2003), fashion is always based on a specific style, and that style however, does not become a fashion until it gains consumer acceptance. It implies that it is the consumers that provide the momentum to make things happen in the fashion industry. A fashion industry is a complex enterprise that is concerned with the design, production and marketing of men's, women's, children's apparels and other related items. Fashion generally is a global activity. The fashion industry has always been very competitive because of the large number of companies competing for the same business.

In Nigeria today, there is a craving for foreign ready-to-wear garments, instead of the domestically produced ones, especially by the upper and middle group of the society. This is due to the inability of the domestic fashion manufacturers to satisfy the Nigerian fashion consumers in terms of quality. Most of the domestic ready-to-wear garments are substandard, resulting in low patronage in fashion marketing, and thus, posing a challenge to the fashion industry in Nigeria economy. This paper believes that the success and failure of the fashion industry, depends on the consumers' purchases of its products. It emphasizes that consumer spending will occur at a healthy pace, only when the ready-to-wear fashion products are of standard.

The paper therefore discusses the following sub-headings:

- What is Fashion?
- What is Marketing?
- Fashion Marketing
- The Responsibility of Fashion Marketers
- Historical Development of Ready-to-wear garments
- Causes of Sub-standard Ready-to-Wear Garments in Nigeria
- Conclusion
- Recommendations

What is Fashion?

The word, fashion implies different things to different people. According to Easy (2009), fashion means, to construct, mould, or make. It involves creating change and is defined as a succession of short-term trends or fad. This he argues to be due to the fact that industry must continually create new products and so change is intrinsic to fashion. Explaining further, he reports that fashion is the exercise of creative design skills, involving design component. Rogers and Gamans (1983), regard fashion as any form, custom or style. To Weber (2000), fashion is anything that is currently "in" vogue. In addition, he states that fashion usually means

clothes, but that there are fashions in hair styles, in home decoration and in the foods that are eaten. Rouse (1989), perceives fashion, not only referring to clothes and styles of appearance, but that there are "fashions" in other aspects of intellectual and social life, such as architecture, dancing, cooking, sociology and philosophy. She emphasizes that the expectation of change which characterize approaches to clothing styles pervade many aspects of man's social and intellectual life. Rath (1994), considers fashion as "a look or style of clothing" worn at a particular time by a particular group of people. In Sprole's (1981) view, "fashion is a temporary cyclical phenomena adopted by consumers for a particular time and situation".

All the above definitions of fashion stress two key features: change and acceptance. According to Jones (2006), it is the fact of change which produces so many problems for clothing manufacturer, while Easy (1995), emphasizes that the role of change in fashion marketing is crucial.

In Nigeria, the fashion manufacturers are always in a hurry to make money. They lack the patience necessary to create new design, styles or make innovative ideals that would bring about changes. Rather than creating their own designs, they go into imitation of foreign garments or ready-made fashion from other developed nation, which automatically make the Nigerian made garments inferior, lack originality and consequently, affect consumers acceptance negatively.

What is Marketing?

Marketing is a social and managerial process by which people and groups obtain what they need and want, through creating and exchanging products and value with others (Kotler, Bowen and Makens, 2006).

According to Kotler and Keller (2006), marketing deals with identifying and meeting human and social needs. Reported further was the American Marketing Association definition which is as followings: Marketing is an organizational function and a set of processes for creating, communicating and delivering value to customers and for managing customer relationship in ways that benefit the organization and its stake holders. They emphasis that one of shortest definitions of marketing is "meeting needs profitably". In Easy's (2009) view, Marketing is a business philosophy or way of thinking about the firm from the perspective of the customer or the potential customer. Marketing is a management process concerned with anticipating, identifying and satisfying customer needs in order to meet the long-term goals of the organization Etzel, Walker and Stanton (2001), opine that marketing can occur any time a person or organization strives to exchange something of value with another person or organization. Thus, the essence of marketing is a transaction or exchange. In this broad sense, marketing consists of activities designed to generate and facilitate exchanges intended to satisfy human or organizational needs or wants.

For consumers' satisfaction and effective marketing of Nigerian ready-

to-wear garments, there is need for the manufacturers to look into the consumers desires or tastes from time to time and produce accordingly.

Fashion Marketing

Fashion involves continual change, which has to do with the exercise of creative design skills, resulting in variety of products. One thing is for an industry to respond to the need for change, another thing is to be able to identify products that the customer needs and will buy. This is where marketing is essential to the fashion industry. Marketing provides the skills needed to ensure that the creative component is used to the best advantage, and profitably, bringing about business growth and success. According to Easy (2009), fashion marketing is the applicable of a range of techniques and a business philosophy that centres upon the customer and potential customer of clothing and related products and services in order to meet the long-term goals of the organization.

The Responsibility of Fashion Marketers

Fashion marketers perform a lot of responsibilities in ensuring that the marketing process gets to the final consumers. Their responsibilities according to Easey (2009), are outlined as follows:

- Fashion promotion
- Fashion distribution
- Fashion product positioning and pricing
- Fashion product management
- Fashion marketing research

Easey (2009), further explains the various responsibilities of the fashion marketers as follows:

Fashion Promotion: One of the functions of the fashion marketer is to promote or enhance the interest and desire of potential customers by using the right skills and strategies to stimulate their desires.

Fashion Distribution: The marketer must ensure that the products are well distributed to the various market places, using the right distribution outlets.

Product Positioning and Pricing: A fashion marketing decision must be made about the product position and pricing, taking into consideration, the strategic goals of the company as well as the price sensitivity of its customers.

Product Management: The fashion marketer must have knowledge and awareness of the company's cost of production, to enable him perform his marketing role.

Researching: A fashion marketer is involved in the investigation of the market shares of competitors and trends in those shares. This is done with the purpose of assessing the potential consumers.

Historical Development of Ready-To-Wear Fashion Products

According to Dickerson (2003), ready-to-wear fashion industry started with clothing for men in United States. It began in early 1800s, almost half a century before women's ready-to-wear had its beginning. It all started with the efforts of some enterprising individuals

who saw the need and proceeded to fill it. In some port cities such as, New Bedford, New York, Philadelphia and Baltimore, a few venture some tailoring shops conceived the idea of producing and selling cheap ready-to-wear trousers, jackets, and shirts for sailors who needed to replenish their wardrobes inexpensively and immediately during their brief stops in port. These clothes wear poorly made in low-quality fabrics. The cutting was done in the dealer's shops, and the garments were then sent to local women for hand sewing. This early ready-made-clothing were referred to as "slops", a term from which the word sloppy developed.

Kidwell and Christian (1974), report that these ready-to-wear garments could be readily recognized about as far as the wearer could be seen. Consequently, there was a sort of shame in the purchase and wearer of such clothing, and it was considered almost disreputable to wear it. It was seen as a reflection or a supposed indication of poverty. Nevertheless, the market for ready-to-wear clothing soon expanded to serve bachelors who had no one at home to sew for them and plantation owners who needed cheap clothing for their slaves. Because there were no firms then existed that produced clothing for others to sell, these early shops functioned as retailers and manufacturers. Some of the proprietors were custom tailors who produced ready-to-wear clothing garments for cheaper grades of cloths in addition to carrying on their primary business of made-to-measure clothing.

As industrialization developed in the nineteenth century, cities grew, and a new mass market began to emerge among middle-class or white-collar city dwellers. To attract these customers, some of the more resourceful shop owners offered higher-priced and better-made garments. The quality of ready-to-wear cloths improved, and their acceptance increased.

Dickerson (2003), reports that the manufacturer of ready-to-wear is based on standardized sizes in sufficient variety so that almost any figure can be accommodated by one of them. This account relates that in the early years of the industry, each manufacturer worked out its own set of sizes and made garments to its own specifications, hoping to fit as many people possible. The fit of these early garments was far from perfect. When the U.S. government ordered for soldiers' uniform during the Civil War, because hand sewing would not keep pace with the Army's need, factories had to be built and equipped with the then-new sewing machines. In order to facilitate the production of its uniforms, the Army surveyed the heights and chest measurements of more than a million recruits, and thus provided the first mass of statistical data on the form and build of American men. After the war, the results of the Army study were made available to producers of men's civilian clothing. This put the sizing of men's ready-to-wear on a scientific basis and, by making improved fit possible, hastened the change from homemade and custom-made to factory-made garments.

Causes of the Production of Sub-standard Ready-to-Wear Garments in Nigeria

The causes of sub-standard ready-to-wear garments in Nigeria include the following:

1. ***Low Quality Fabric:*** Most Nigerian manufacturers use low quality fabrics which affect the durability of the ready-to-wear garments. Unlike other developed nations, such as London, where producer searches for fabrics that will evoke such response that will ultimately be acceptable to the consuming public (Waddell, 2004).
2. ***Poor use of Colour:*** The colour combinations most times are so poor compare to those of the foreign garments. Fashion decision in the primary market begins with colour. Gray and Williams (2006), opine that colour is a sensation, a mood, and one of its attributes is that, it helps to sell clothing. There lies failure or success of fashion marketing.
3. ***Poor Garment Assembly:*** This is either due to lack of focus during process or sewing production, or lack of skilled man-power, resulting in imperfect fit.
4. ***Poor Design:*** The skill of any good design lies in maximizing the value that can be added to a set of basic raw material. It is therefore dependent on the quality of the original design, its suitability for the market and the way it is made to meet customer's perceptions. Design in the fashion industry is crucial to its success (Easey 2006).
5. ***Poor Packaging System:*** Jones (2006), states that although the main function of packaging is that of protection, packaging has become intrinsic to the overall offering of the garment and its status. Packaging helps to reinforce the image with the customer when properly done, but this is not the case with most of our domestic garments.
6. ***Poor Finishing:*** Finishing according to Waddell (2004), is very necessary and can done by hand although is now mechanised with technical innovations in the developed nations. However, in Nigeria, most garment workers do not trim loose threads before the garments are sent to the market, making customers or consumers to view them as inferior.
7. ***Lack of Pressing:*** In some manufacturing companies, pressing takes place during assembling and is called, 'under pressing' although the usual practice is to press the finished garment and pasted by the quality controller and package ready for distribution (Waddell, 2004). In Nigeria, most of the garments are not even pressed to gain a pleasing appearance to customers, who will view finished items.
8. ***Wrong Labelling of Sizes:*** There is wrong labelling of sizes which result in garments not having good fit.

All these problems result in mad rush for foreign garments, making Nigeria to lose foreign earnings, and consequently, affecting our economy, negatively.

Conclusion

The paper concludes that the domestic Fashion Industry can contribute immensely to Nigerian economy, if the recommendations made below are implemented in other to upgrade the standard of the ready-to-wear garments in fashion marketing.

Recommendations

Based on the problems associated with the ready-to-wear garments produced in Nigeria, the following recommendations are hereby made:

1. The fashion industry should put quality control mechanism in place, both in-line and final inspection, to ensure that finished garments meet quality standards.
2. New computer technologies should be incorporated into virtually most aspects of the industry to improve efficiency and produce value for the consumer.
3. Regular training programmes should be organized for the fashion designers as most of them are not skilful due to limited literacy. Government should encourage the fashion industry by sending some of the designers overseas for training or bring very efficient resource persons to train them, in order to upgrade their literacy level in the area of creative design skills.
4. There should be re-orientation of the entire public on the need to patronize domestic ready-to-wear garments.
5. Manufacturers who handle all production processes, ranging from designing to sewing and assembling of garments parts, who are not ready for further training in other to enhance their creating skills for effectiveness should stop, as this result in sub-standard production.
6. Government and corporate bodies should encourage and sponsor periodical trade shows for manufacturers to show-case their lines, in order to promote the fashion industry and create competition within the manufacturers. As this is done, manufacturers will strive to maintain standard, and thus attract buyers from every part of the world including those Nigerian consumers who have disregard for them.
7. The manufacturers should learn to appreciate consumer's perception of the products and respond accordingly as the success or failure of the industry depends on their purchases.
8. The fashion firms should be encouraged to set up cooperative societies to enable them attract government attention and recognition in terms of policy reforms on importation of foreign fashion products.

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Effects of Extraction Methods and Mordants on Colorfastness of Cotton Fabric Treated with Dyes Extracted from Beetroot Plant

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Abstract

Effects of extraction methods and mordant on the colorfastness of cotton fabric treated with dyes extracted from beetroot (Beta vulgaris) indigenous plant was studied. Research and Development (R and D) design was adopted in the study and was carried out at the University of Nigeria, Nsukka, Enugu State and at the International Textiles Industries (ITI), Limited, Lagos, Nigeria. The colorfastness tests were done at the ITI, Lagos according to the International Standard Organization (ISO, 105/A03; 1993) specification. The extent of color fade or staining was rated using Gray Scale and recorded with Fastness Test Rating Scale (FTRS). Data were analyzed using general linear model for factorial experiments and descriptive statistics. Analysis of Variance (ANOVA) was used to test a null hypothesis and Scheffe's post hoc test compared the treatment mean at 0.05 probability level. Findings include among others; prototype samples were fast to alkali perspiration (3.00± .14) and dry rubbing (3.00 ±84). There were no significant differences ($P>0.05$) in the mean effects of dye extraction methods but differences exist ($P<0.05$) in mordant effects on the colorfastness of the prototypes. Based on the above findings, recommendations were made.

Key words: Beetroot Dye, Dye Extraction, Mordant, Fabric, Colorfastness, Clothing and Textiles Education.

Introduction

Dye is an organic chemical compound which imparts permanent colour to other materials. Dye is generally described as a coloured substance that has affinity to the substrate which it is being applied (Kolender, 2003). Dye is used in the wood, food, paper, photography, leather and leather product, clothing and textiles industries as well as in educational institutions and at homes. In textiles and clothing industries, dyes are used to impart colors to give aesthetic finishes to fabrics either at the fibre, yarn, fabric or garment stages. In educational

institutions, dyes are very essential instructional materials for teaching and learning and for skill acquisition in Home Economics Art and craft related courses such as clothing and textiles, allied and advanced allied craft courses among others.

Dyes are obtained from synthetic or natural sources. Synthetic dyes are prepared in the laboratory from aromatic compounds or chemical reagents while natural dyes are extracted from animals, minerals and from different parts of plants including roots, stems, bark, leaves, flowers, calyces, seeds and resins. Both synthetic and natural dyes are classified based on how they are applied to the fibre in the dyeing process and include inter alia; acidic, basic, direct, substantive, sulphur, vat, reactive, disperse, azoic and mordant dyes (Finar, 1973). Of interest to this study was natural dye, specifically, plant dye and more emphasis was placed on mordant dye as most natural dyes are classified as mordant dyes, that is, dyes that require mordants to be fixed or firmly attached to the fibre or material to be dyed. A mordant is a chemical element that quickens the rate of chemical reaction taking place between for instance, a natural dye and a fibre. Mordants help to open up the fabric fibre to enable the dye get absorbed. They not only deepen the shade of the dye but can completely change the final colour significantly giving rise to a new colour (Llewellyn, 2000). Aluminum sulphate (alum), citric acid, ferrous sulphate, stannous chloride, chromic acid, tannic acid among others are some examples of mordants that can be used in natural dyeing.

For any sustenance to be called a dye, it must be soluble in water or dispersible in solvent and transferable to the substrate by the process of absorption or exhaustion (Grollier, 1999). A good dye on fabric must be colorfast and organoleptically acceptable. Colorfastness is the ability of a dye to resist fading due to external and environmental stressors such as sunlight, washing, acid rain or gases in the air, perspiration, abrasion and crocking or rubbing (Marshal, Jackson, Stanley, Kefgen & Tonchie-Speeht, 2000). A single dye may not be colorfast in all circumstances. Weber (1990), stressed that what matters is that the dye remains viable and gracefully ages with the product. Color fastness is a measure of how well the dye is attached to the fibre and a characteristic that makes a textile product serviceable over a long period of time. The colorfastness of a dye depends on the dye, fibre and the method of applying the dye to the fabric (Johnson & Foster, 1990). Dye extraction method such as boiling, steeping or solvent have also been put forward as a contributing factor to the colorfastness of a dye on fabric since fabric comprises of different elements.

Fabric refers to a flexible material made up of a network of natural and synthetic fibres formed by any of weaving, knitting or other fabrication methods (Vanderhoff, Frank & Campbell, 1985). Cotton, linen, silk and wool are the major natural fibre while synthetic fibre fabrics are polyester, nylon, acrylics and so on. Finar (1973)

emphasized that natural dyes work well in natural fibres whereas synthetic dyes perform better in synthetic fibres. For this reason, cotton fabric was selected for this study to determine the colorfastness of beetroot plant dye for Clothing and Textiles Education.

Clothing and Textiles Education is a component of Home Economics Education that equips students with relevant knowledge, attitude and skill in clothing and textiles programme. The clothing component deals with the knowledge attitude and skills needed to design and construct garment while the textile aspect is concerned with the knowledge of different fibres, fabrics, clothing selection and maintenance (Igbo, 1989). Clothing and textiles programme offers career opportunities to students upon graduation. Instructions in many curricular components of Clothing and Textiles Education including fabric and garment printing and dyeing coloration utilize dyes.

It has been observed that dyes are scarce and synthetic dyes imported into the country are not easily available. Presently, in Nigeria, funding for many schools is a great challenge and the inability of the schools to purchase instructional materials and consumables such as dyes in sustainable supply poses threat to practical work. Inadequate supply of instructional materials is a major constraint to practical programmes in Home Economics Programmes (Anyakoha, 1992). Practical exercises are often skipped or stalled and students will not acquire the necessary skills that promote entrepreneurship in Home Economics Education. Consequently, students may graduate without acquiring the needed practical skills in Fabric coloration techniques which could launch them into relevant entrepreneurial activities. It thus becomes necessary to explore dyes locally. This will not only ensure sustainable supply of dyes for teaching and learning and for skill acquisition on fabric coloration but will boost the quantity of dyes for textiles and clothing products in the nation's textile and clothing industries for economic empowerment of both the individuals and the nation at large.

Abundant species of dye yielding plants are locally available. Jansen & Cardon (2005), made a comprehensive list of 43 unexplored dye yielding plants including not exhaustive; beetroot, roselle, cuberoot, oil palm, oil bean, that are locally available. Natural dyes are presently gaining worldwide interest because they are less polluting, biodegradable and eco friendly, less toxic and non carcinogenic unlike their synthetic counterparts (Jothi, 2008., Lao Silk & Craft 2009., Apparel Search Company., 2009). Natural dyes are readily available. They offer economic, health and pharmacological benefits and can give an array of interesting colours. It thus becomes necessary to explore (*Beta vulgaris*) beetroot indigenous plant for dye extraction. Beta vulgaris has many varieties including garden beet which evolved by continuous selection and inter-crossing. The garden beet specie which is the cultivar with deep red roots are the most valuable and were used for this study. Beetroot are

notable for their large pigment content. It contains 3-8percent sugar. Boiled roots are also eaten as a cooked vegetable either plain, fried or served with sauces while the tender leaves are sometimes used as a pot herb (Purse, 1991). Plant dyes are usually extracted by mechanical processes such as grinding, crushing, steeping, boiling or simmering, chopping, pounding or squeezing. More recent development in liquid extraction from plant flowers, gum, calyces, resins leaves and other parts that cannot be extracted by other means is the use of organic solvents (Douglas, 2010).

Purpose of the Study

The main purpose of the study was to study the dye potentials, effects of extraction methods and mordants on the colorfastness of dyes extracted from beetroot (*Beta vulgaris*) indigenous plant for Clothing and Textiles Education in Enugu State. Specifically, the study;

- extracted dyes from beetroot plant using boiling, steeping and solvent techniques.
- applied the extracted dyes to samples of cotton fabric mordanted with alum, citric acid, tannic acid and no-mordant sample (control)
- tested the colorfastness of the dyes to sunlight, washing, perspiration (acid and alkali) and crocking or rubbing.

Hypothesis: One null hypothesis was tested by the study at 0.05 level of significance.

H_O1: There is no significant difference in the mean rating effects of extraction methods and mordant on the colorfastness of alum, citric acid, tannic acid and no-mordant (control) samples of cotton fabric treated with beetroot dye extracted by boiling, steeping and solvent techniques.

Methodology

***Design of the Study*:** The study adopted Research and development (R and D) design model of Gall, Gall and Borg (2003). R and D design is an industry based development model in which the findings of research are used to design new products and procedures which then are systematically field tested, evaluated and refined until they meet the required criteria of effectiveness, quality or similar standards (Gall, Gall & Borg, 2007). The R & D model of Gall et al (2003) which has seven steps was more appropriate for product development of this nature. The activities within the stages of dye extraction, application and colorfastness stages of the study were built into three major phases of the cycle and include;

- Specific objectives and criteria for product development.
- Development of prototype based on scientific evidence available for pertinent research findings.
- Conducting a main field test of the product.

***Area of the Study* :** Dye extraction, application and analysis of data were done at the University of Nigeria, Nsukka, Enugu State while the colorfastness tests of the treated cotton fabric samples (prototypes)
were conducted at the ITI, Limited, Lagos State, Nigeria.

***Materials*:** Materials used include; beetroot plant, Cotton fabric (100%), aluminum sulphate (Alum), citric acid and tannic acid mordant, stainless steel, dyeing pots, weighing scales, buckets, thermometer, mixing bowl, ferrous sulphate, heater, protective, washing soda (Sal soda), ethanol solvent, distilled water, gloves, towel, un chipped enamel dyeing pot, goggle, cap and hand gloves protective.

Instrument for Data Collection Two types of instruments were used for data collection. They include:

- ***Gray Scale:*** Gray scale is a standard scale for checking off the extent of fade or staining of adjacent fabric (colorfastness) of a sample of colored fabric to sunlight or other source of light, washing, perspiration or crocking. The calibration on the scale range from 2, 2/3, 3, 3/4 , 4, 4/5 and 5. In the scale, 5 indicates no fade or staining and high fastness. 3 is the average and minimum acceptable range while 2 indicates poor fastness according to ISO standards.
- ***Fastness Test Rating Scale (FTRS):*** This scale was developed and used to record the triplicate results of the colorfastness tests with the Gray Scale. The points in the scale range from 5 to 1 where 5 indicate no change or stain, 4 indicate very slight change, 3-slight change, 2-much change and 1 excessive change or stain in colour. In this scale,3 was the minimum acceptable range or cut off.

***Method of Data Collection*:** Data were collected in three phases. *Phase 1* deals with dye extraction from beetroot plant using boiling, steeping and solvent techniques. .

Procedure: Fresh beetroot (40g) were washed, peeled and wet milled in two different portions separately. One portion was heated with water in the ratio of 1:2 weight per volume (w/v) of the plant ie 40g beetroot: 80ml distilled water at a temperature range 80oC – 90oC for 30 minutes. It was allowed to cool. The second portion was steeped in distilled water in the same ratio and allowed to stand overweight while the third portion (50g) was dissolved in 98% ethanol (absolute) in the ratio of 1.2.25. It was shaken to mix properly to allow extraction in an air tight container and allowed to stand for 24hours. The heated and steeped portions were filtered with 0.5 mesh (Particle size) to collect the dye liquor while the ethanol extracted portion was filtered with cheese cloth and dried. The three dyes extracted were labeled as follows: BDB – Beetroot dye extracted by boiling, BDST-Beetroot dye extracted by steeping and BDSV-Beetroot dye extracted by solvent.

Phase II was the mordanting and application of the BDB, BDST and BDSV on mordanted samples of cotton fabric (prototype Development). Samples of cotton fabric (8" x 8") were scoured in warm water with detergent to remove all finishes. Four samples each of the cotton fabric were heated in a solution containing 500ml distilled water, 0.1g sodium carbonate (sal soda) and each of alum, citric and tannic acid mordants 1hour at a temperature 80^{o}C . The last four samples were scoured without mordanting (control). Each of the alum, citric and tannic acid mordanted

samples plus control sample was treated with each of the three dyes and replicated in triplicates to produce 36 dyed samples (Prototypes) using contemporary plain dyeing method. The colour of the dyed samples were modified with 0.5g ferrous sulphate for each sample. Samples were taken out and dried under a shade for fastness tests after completion of dyeing.

In *Phase iii,* the following colorfastness tests of the prototypes were conducted at the ITI, Limited, Lagos;

- *Fastness to Sunlight :* Each of the strips of 36 prototype samples (2" x 5") was subjected to fastness to sunlight using the ITI controlled manual method according to ISO/AO3: 1993). The samples were prepared and exposed to normal day light for 72hours. Gray scale and FTRS instrument were used to check and record the extent of fade for analysis.
- *Fastness to Washing:* Each of the prototype samples (2" x 5") was covered with plain white fabrics, tightly tied and fed into the 4-rack testing pots inside the Shirely Development Limited (SDL) Auto Wash Electronic Washing Machine bit by bit. The temperature of the machine was set at 32± 2^{o}C for 45minutes. The samples were brought out, allowed to cool and untied. Using the Gray scale, the extent of staining or bleeding was checked off and recorded with FTRS for data analysis.

Fastness to perspiration (Acid and Alkali)

- *Acid Perspiration Test:* For this test,5.5g sodium chloride was dissolved into a solution of 1litre distilled water and 5g disodium hydrogen orthophosphate dodecahydrate ($Na_2HPO_{12}0_20$) with 5g histidine. O.IN acetic acid was dissolved into the solution to bring the acidic P^{H} to 5.5. The different prototype samples (2" x 5" each) were dipped into the solution, allowed to dry and covered with plain white fabric and tied strongly as in washfastness tests. They were fed into the oven and allowed to stay for 4hours at the temperature 32 ± 2^{o}C. The prototypes were allowed to cool; untied and the extent of fade or staining were checked off with Gray scale and recorded with FTRS for analysis.
- *Alkali Perspiration Test :*The materials and procedures were same with acidic perspiration test except that alkaline medium was obtained by dissolving O.IN Sodium hydroxide in 1litre of distilled water to bring the solution to P^{H} = 8.0. The prototype samples were treated as in acidic perspiration test, rated and recorded with FTRS.
- *Fastness to Crocking/Dry Rubbing :* The prototype samples (2" x 5") each were covered with plain white test cloth, tightly tied and fed into the nozzles of the electronic crock meter machine which scrubbed each sample 15 times for 5minutues. The samples were brought out, untied and the extent of fade or staining were checked off and recorded.

***Method of Data Analysis*:** The data generated from the colorfastness tests were analyzed using descriptive statistics and general linear model for factorial experiment of the SPSS version 16.0. Any sample with mean score 3 or above was regarded as a colorfast sample where as any sample with score below mean 3 was regarded as a non-fast sample according to ISO standard. Analysis of variance (ANOVA) was used to test a null hypothesis while Scheffe's test compared the treatment mean at 0.05 probability level.

Findings

- Three types of dyes and 36 prototype samples were produced (Table I).
- The grand mean colorfastness of the prototype samples was established. Prototype samples were fast to alkali perspiration and crocking but non-fast to sunlight, washing and acid perspiration fastness (Table 2).
- There were no significant differences in the mean rating effects of dye extraction method but significant differences exist in the mean effects of mordants at 0.05 level of significance. Null hypothesis was accepted in six instances but rejected in four instances for mordant effects (Table 3).
- Tannic acid and alum were the source of differences. They had comparable positive effects on the colorfastness of the prototypes more than citric acid and non-mordanted samples (Table 4).
- All tannic acid mordanted prototype samples changed completely to black different from the common brown shades of others.

Table 1: Dyes Extracted from Beetroot Plant and Dyed Cotton Fabric Samples Mordanted with Alum, Citric acid, Tannic acid and No Mordant (Prototype samples)

Fabric	Mordant	BDB	BDST	BDSV
Cotton	Alum	BDB – AC	BDST – AC	BDSV – AC
	Citric	BDST – CC	BDST – CC	BDSV – CC
	N (control)	BDST – NC	BDST – NC	BDSV – NC
	Tannic	BDST – TC	BDST – TC	BDSV – TC

Table 1 shows different dyes extracted by boiling, steeping and solvent techniques and the samples of mordanted cotton fabric developed from the dye. Each of the three dyes extracted was used to dye three mordanted and one non-mordanted (control) samples of cotton, fabric making a total of twelve. These include: Beetroot dye extracted by;

- boiling on alum mordanted cotton (BDB-AC)
- boiling on citric acid mordanted cotton fabric (BDB-CC)
- boiling on non-mordanted cotton fabric (BDB-NC)
- boiling on tannic acid mordanted cotton (BDB-TC)
- steeping on alum mordanted cotton (BDST-AC)

- steeping on citric acid mordanted cotton (BDST-CC)
- steeping on non-mordanted cotton. (BDST-NC)
- steeping on tannic acid mordanted cotton (BDST-TC)
- solvent on alum cotton. (BDSV-AC)
- solvent on citric acid mordanted cotton (BDSV-CC)
- solvent on non-mordanted cotton. (BDSV-NC)
- solvent tannic acid mordanted cotton (BDSV-TC)

The 12 prototype samples were replicated in triplicates making a total of 36 samples for colorfastness tests.

Table 2: Mean Ratings of the Colorfastness Potentials of the Alum, Citric Acid, Non-mordanted and Tannic Acid Mordanted Samples of Cotton Fabric Treated with Beetroot Dyes Extracted by Boiling, Steeping and Solvent Techniques

Colorfastness	Dye	Mordant	N	$\overline{X}$	SD	Remark
Sunlight	BDB	Alum	3	3.000	.000	F
		Citric	3	3.000	.000	F
		Control	3	2.000	.000	NF
		Tannic	3	4.000	.000	F
	BDST	Alum	3	3.333	.577	F
		Citric	3	2.667	.577	NF
		Control	3	2.000	.000	NF
		Tannic	3	3.667	.577	F
	BDSV	Alum	3	3.333	.577	F
		Citric	3	3.000	.000	F
		Control	3	2.000	.000	NF
		Tannic	3	3.333	.577	F
		Total	36	2.944	.240	NF
Washfastness	BDB	Alum	3	3.333	.577	F
		Citric	3	2.000	.000	NF
		Control	3	2.000	.000	NF
		Tannic	3	3.333	.577	F
	BDST	Alum	3	3.000	.000	F
		Citric	3	2.333	.577	NF
		Control	3	2.333	.577	NF
		Tannic	3	3.000	.000	F
	BDSV	Alum	3	3.333	.577	F
		Citric	3	2.667	.577	NF
		Control	3	3.333	.577	NF
		Tannic	3	3.333	.577	F
		Total	36	2.69	.336	NF
Acid Perspiration	BDB	Alum	3	4.000	.000	F
		Citric	3	2.000	.000	NF
		Control	3	2.000	.000	NF

		Tannic	3	3.000	.000	F
	BDST	Alum	3	4.000	.000	F
		Citric	3	2.000	.000	NF
		Control	3	2.000	.000	NF
		Tannic	3	3.000	.000	F
	BDSV	Alum	3	4.000	.000	F
		Citric	3	2.000	.000	NF
		Control	3	2.000	.000	NF
		Tannic	3	3.000	.000	F
		Total	36	2.750	.000	NF
Alkali Perspiration	BDB	Alum	3	3.000	.000	F
		Citric	3	3.000	.000	F
		Control	3	1.667	.577	NF
		Tannic	3	4.333	.557	F
	BDST	Alum	3	3.000	.000	F
		Citric	3	2.667	.577	NF
		Control	3	2.00	.000	NF
		Tannic	3	4.000	.000	F
	BDSV	Alum	3	3.000	.000	F
		Citric	3	3.000	.000	F
		Control	3	2.000	.000	NF
		Tannic	3	4.000	.000	F
		Total	36	3.000	.144	F
Dry Rubbing or Crocking	BDB	Alum	3	3.667	.577	F
		Citric	3	3.333	.577	F
		Control	3	3.000	.000	F
		Tannic	3	3.667	.577	F
	BDST	Alum	3	3.667	.577	F
		Citric	3	3.333	.577	F
		Control	3	3.000	.000	F
		Tannic	3	3.667	.577	F
	BDSV	Alum	3	4.000	.577	F
		Citric	3	3.667	.577	F
		Control	3	3.000	.000	F
		Tannic	3	4.000	.000	F
		Total	36	3.000	.384	F

Key: $\overline{X}$ – Mean, F – Fast, SD – Standard deviation, NF – Non-fast, N – Number of samples.

Data in table 1 above reveal that of the five colorfastness tests, prototypes showed slight fade or stain in colour in fastness to alkali perspiration and crocking/rubbing. This is seen by their grand mean rating of 3.00 each respectively indicating moderate fastness. For fastness to sunlight washing and acid perspiration, it was observed that though the grand mean were not up to the acceptable points for sunlight ($\overline{X}$ 2.94), washing ($\overline{X}$ 2.69) and

acid perspiration ($\overline{X}$ 2.75) eight of the prototypes out of twelve were rated highly ranging from mean 3 to 4, eight to washing and five to acid perspiration. Mean 3 and 4 indicate slight and very slight fade or stain in colour meaning moderate to high fastness in colour.

It could also be observed from the same table that alum and tannic acid mordanted samples of cotton fabric treated with the beetroot dye extracted in the different media (prototypes) rated higher in all the fastness tests than citric acid and non-mordanted samples.

Hypothesis I: There is no significant difference in the mean rating effects of extraction methods and mordants on the colorfastness of the alum, citric acid, tannic acid and non-mordanted samples of cotton fabric treated with beetroot dyes extracted by boiling, steeping and solvent techniques.

Table 3: Univariate Analysis of Variance (ANOVA) Results of the effects of Extraction Methods and Mordants on the Colorfastness of Cotton Fabric Prototypes

Fastness	Source	Type III Sum		Mean Square	F-Value	P-Value	Sig.
Sunlight	Mordant	13.444	3	4.481	32.267	.000	S
	Dye	.058	2	.028	.200	.820	NS
Washing	Mordant	9.222	3	3.074	15.810	.000	S
	Dye	.722	2	.361	1.857	.178	NS
Acid Perspiration	Mordant	24.750	3	8.250	-	-	NS
	Dye	.000	2	.000	-	-	NS
Alkali Perspiration	Mordant	22.306	3	7.435	89.222	.000	S
	Dye	.056	2	.028	.333	.720	NS
Rubbing/Crocking	Mordant	3.667	3	1.222	6.286	.003	S
	Dye	.500	2	.250	1.286	.295	NS

ANOVA results in table 2 above show that there are significant differences ($P<0.05$) in the mean rating effect of mordants on the colorfastness to sunlight ($F = 0.00$), washing ($F=0.00$) alkali perspiration ($F=0.00$) and rubbing/crocking ($F=0.003$) of the prototype samples. The null hypothesis stating that there are no significant differences are therefore rejected in these instances. The Scheffe's post hoc tests revealed the source of differences as presented in table 4.

On the other hand, the ANOVA results on same table indicate that there is no significant difference ($P >0.05$) in the mean effect of extraction methods used on the lightfastness ($F=.82$), washfastness ($F=.18$), alkali perspiration ($F=.72$) and rubbing ($F=.3$) of the prototypes. Both mordant and dye extraction method F and P values of acid perspiration fastness could not be computed with alpha = 0.05 since all values are same. The null hypothesis which states that there is no significant difference ($P>0.05$) in the mean effect of extraction methods on the fastness of the prototype samples is accepted in these instances.

Table 4: Scheffe's Post Hoc Test Homogenous Subsets.
Mordant Interaction Main Effects

Fastness	Mordant	No	Subsets		
			1	2	3
Sunlight	Control	9	2.00[c]		
	Citric	9		2.89b	
	Alum	9		3.22ab	3.22ab
	Tannic	9			3.67a
	Sig.				.122
Washing	Control	9	2.11[b]		
	Citric	9	2.33[b]		
	Alum	9		3.22[a]	
	Tannic	9		3.22[a]	
	Sig		.768	1.000	
Alkali Perspiration	Control	9	1.89[C]		
	Citric	9		2.89[b]	
	Alum	9		3.00[b]	
	Tannic	9			4.11[a]
	Sig.		1.000	.880	1.000
Rubbing/Crocking	Control	9	3.00[b]		
	Citric	9	3.44[ab]	3.44[ab]	
	Alum	9		3.78[a]	
	Tannic	9		3.78[a]	
	Sig.		.234	.477	

Key: Means for groups in homogenous subsets are displayed. Values are means of triplicate determination. Means in the same column with same superscript letter grades are not significantly different from each other at P ≤ = 0.05 probability level using Scheffe's test.

The Scheff's post hoc mordant interaction main effect in table 3 above reveals that tannic acid is the source of the difference. It had exceptional positive effects which is not significantly different from those of alum on the lightfastness, washfastness and rubbing/crocking fastness of the prototype samples but are significantly different from those of citric acid and control in their mean effect. For alkali perspiration fastness, tannic acid effect is significantly different from those of alum, citric acid and control at 0.05 level of significance.

Discussion

The Research question 1 asked question on the dyes that could be produced using boiling steeping and solvent extraction methods. Nine different dyes were produced and 36 prototype fabrics also yielded dye potentials, effects of boiling, steeping and solvent extraction techniques and alum, citric and tannic acid mordants and no mordant on the colorfastness of cotton fabric samples treated with beetroot dyes were studied.

Three beetroot dyes and 36 prototypes were produced (table 1).

Regarding the colorfastness of the extracted dyes, the prototypes were fast to alkali perspiration and crocking/rubbing as seen in table 2 by their grand mean scores of 3.00 each. Though the grand mean scores were not up to the mean cut off, majority of the prototypes were fast to sunlight, washing and acid perspiration (table 2). This finding confirms Jansen and Cardon (2005) observation that beetroot plant could yield dye and supports Jothi (2008), Lao Silk and Craft (2009) and Apparel Search Company (2009) that many plants including beetroot yield natural dyes which are useful for the coloration of textiles and fabrics. This finding also agrees with Weber (1990) that a single dye may not be colorfast in all situations.

The study finding revealed that there were no significant differences in the mean effects of extraction methods (boiling, steeping and solvent) on the colorfastness of the prototypes as shown in table 3 by the ANOVA F and P values. The null hypothesis stating that there was no significant difference was accepted in this instance. This implies that any of the extraction method used following the standard procedure would produce quality dyes. However, the same ANOVA table showed that there were significant differences in the mean ratings effect of mordants on the colorfastness of the prototypes to sunlight, washing, alkali perspiration and rubbing. Scheffe's post hoc multiple comparison mordant interaction main effect showed that the source of the difference was tannic acid which had the greatest positive effect followed by alum. An interesting finding on tannic acid mordanted prototype samples was a sudden change to black different from the common brown shades produced by alum, citric acid and non-mordanted samples. This finding supports Llewellyn (2000) who stressed on the action of mordants and emphasized that some mordants can change the colour of the dyes completely giving rise to a new colour. Though the beetroot dye turned to black in tannic acid mordanted samples, prototypes were fast to sunlight, washing, acid and alkali perspiration as well as crocking. This has implication to Clothing and Textiles Education. Citric acid mordanted samples were not as strong as alum but more effective than non-mordanted samples which were the weakest in boosting the colorfastness of the prototype samples. This finding agrees with Naomi (2010) and Kulkarni (2011), that mordants play very essential role in natural dyeing as dye fixatives since without mordants most natural dyes will either change or loose colour instantly to chemicals or photochemical attack or bleed away in washing water.

Conclusion

This present study finding shows that beetroot dyes can be used as dyes. The extraction methods used did not have significant difference in their effects on the colorfastness of the dyes on cotton fabric. As natural dye fixative, tannic acid and alum mordants had comparative positive effects in improving the light, wash, acid and

alkali perspiration as well as rubbing/crocking fastness of cotton fabric treated with beetroot dyes. Tannic acid changed the colour of the beetroot dye completely to black different from brown colour yielded by alum, citric and non-mordanted samples of cotton fabric with beetroot dyes.

Recommendation

Based on the findings of the study, the following recommendations were made:

- Home Economics Lecturers and teachers at all levels of education should encourage their students to explore and utilize beetroot in their environment through classroom experiments and research development efforts. This should form part of their continuous assessment scores for semester or termly examinations.
- Textiles and Clothing Industries should find ways of sourcing, improving the quality and utilizing beetroot dyes through their textile chemists.
- Home makers or individuals who practice dyeing should be educated through seminars, workshops, conferences on the need to explore plant dyes including beetroot. Rather than wasting the stalk after boiling, the pigment should be used for fabric or garment dyeing or renovation.

Suggestion for Further Studies

- Organoleptic attributes of the dyes on cotton fabric should be studied.
- Sublimation properties of the dyes on cotton fabric should be studied.
- Other plants in the immediate environment should be explored for dye extraction and utilization for fabric coloration.

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Familial Determinants of Elder Abuse in the context of family Care giving in Akwa Ibom State, Nigeria

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Abstract

The study investigated the familial determinants of elder abuse in the context of family care giving in Akwa Ibom State, Nigeria. Two research questions guided the study. The population consisted of all male and female elderly aged 70 and above. Multi – stage sampling technique was used to select a sample size of 5,600 elderly people for the study. Structured questionnaire was the instrument used for data collection. Data collected were analysed using frequency counts, percentages and mean scores. Findings of the study revealed that emotional/psychological abuse is the most common form of abuse experienced by the elderly in the study, closely followed by financial/material abuse and neglect/abandonment, followed by physical abuse while sexual abuse is the least experienced form of abuse. The familial factors contributing to elder abuse in order of importance as revealed in the study are accusing the elderly of witchcraft, unemployment, intergenerational transfer of abuse, emotional and financial dependence on the victim, family's social isolation, retaliation of childhood abuse, physical stress and burdens of care giving, lack of social support from secondary caregivers and other family members; and poverty. Based on the findings of the study, recommendations were made to improve the care of the elderly in families and reduce the rates of all forms of elder abuse in Ibom Akwa State.

Key Words: Abuse, elderly, family, care giving, poverty, stress.

Introduction

Elder abuse is increasingly being acknowledged as a social problem globally. Elder abuse is any voluntary – i.e. non-accidental acts that harm or may harm an elderly person or any omission that deprives an elderly person of the care they need for their well-being, as well as any violation of their right (Iborra, 2009). It encompasses any act of commission or omission that results in harm or threatened harm to the health and welfare of an older adult (Sellas and Krouse, 2009).

Demographic reports around the world indicate that the global population is ageing. Population ageing implies an increase in the proportion of older people aged, sixty-five and above. Shaefer (2005) reveals that around the world, there are more than 442 million people aged 65 and above, representing

about 7 percent of the world's population. Hurme (2002) also opines that the changed and changing demographics around the world also point to an increased potential for abuse.

Care giving consists of informal and unpaid care provided to a dependent person by family members, other relatives, or friends (Maiconis, 2003). Family members hold the responsibility of fulfilling filial obligations to the elderly by providing food, shelter, clothing, drugs and other necessities. Frail elderly in particular need assistance in carrying out activities of daily living. In Nigeria, majority of the elderly are solely cared for within the family since it is the traditional role of children to support their parents in old age. Sijuwade (2008) maintains that both in developing and developed countries, the elderly as well as their caregivers prefer that they be taken care within the family. Walker (2002) also confirms that, in most industrial and pre-industrial societies, the family has been the main providers of care to their elderly relatives. Since the elderly in Nigeria are not institutionalized but typically live with their families, it is often assumed that they are well taken care of and therefore not subjected to any form of abuse. Sijuwade (2008) posits that to abuse, neglect and abandon the elderly are all typologies of poor quality care for the elderly. In the case of abuse, the caregiver actively harms the elderly, in the case of neglect, the caregiver is passive, insensitive, lacks empathy and ignores the care of the elderly; while totally abdicating the responsibilities of taking care of the elderly constitute abandonment. Bonnie and Wallace (2003) maintain that failure by a caregiver to satisfy elders' basic needs or to protect the elder from harm constitute mistreatment.

Elder abuse could take many forms, including physical, financial, psychological, sexual abuse and neglect (WHO, 2010). Other forms of abuse are violation of basic human rights and medication abuse; and in Nigeria abuse may include witchcraft accusations, lack of respect, etc. Physical abuse is the use of physical force for causing discomfort, which may or may not result in body injury, physical pain, or impairment (Peri, Fanslow, Hand, & Parsons, 2008). The American psychological Association (2010) asserts that when a caregiver or other person uses enough force to cause unnecessary pain or injury, even if the reason is to help the older persons, the behaviour can be regarded as abuse. Financial abuse is the misuse of an older person's funds or property through fraud, trickery, theft or force, including frauds, swindles, misuse of money or property, convincing an older person to buy a product or give away money, stealing money or possessions, misusing bank or credit cards, misusing joint banking accounts, forging a signature on pension cheques or legal documents and misusing a power of attorney amongst others. Emotional or Psychological abuse involves verbal assaults (such as name calling, humiliation (being treated as a child), and intimidation. Sexual abuse include inappropriate touching, photographing the person in suggestive poses, forcing the person to look at pornography,

forcing sexual contact with a third party, or any unwanted sexual behaviour, such as rape, sodomy, or coerced nudity (American Psychological Association, 2010). Neglect is intentional or unintentional failure by children or relatives to fulfil care giving obligations to the elderly, which may results in lack of food, medication, health care, or in the elderly person being left alone or isolated. Sijuwade (2008) asserts that when caregiver is neglectful, it means there are lapses in the quality of care and in carrying out the responsibility, while totally abdicating the responsibilities of taking care of the elderly constitute abandonment. It is possible that some elderly people may suffer more than one type of abuse at the same time.

Several risk factors result in elder abuse. Based on the Applied Ecological Model, Peri *et al*. (2008) categorized risk factors, into, individual risk factors, family level risk factors, community – level risk factors and society-level risk factors. Some of the family level risk factors which is the crux of this paper include dependency, psychopathology of the abuser, caregiver stress, history of domestic violence in the home, or spousal abuse, poverty/financial problems in the family, family social isolation, stressful family events, lack of support from other potential caregivers, etc.

When the caregiver is dependent financially on an impaired older person, there may be financial exploitation or abuse, but when the impaired older person is completely dependent on the caregiver, the caregiver may experience resentment that leads to abusive behaviour (American Psychological Association, 2010). Psychopathology Theory of abuse also holds that personalities of the abuser, psychopathology, alcoholism, drug abuse, psychiatric illness, cognitive impairment or dementia are major factors that contribute to abuse (Kurrle, 2004).

On caregivers stress, the American Psychological Association (2010) observes that when caregivers are thrust into the demands of daily care for an elder without appropriate training, and without information about how to balance the needs of the older person with their own needs, they frequently experience intense frustration and anger that can lead to a range of abusive behaviours. In addition, intergenerational and marital (spousal) violence can persist into old age and become factors in elder abuse (American Psychological Association, 2010). Sometimes, a woman who has been abused for years may turn her rage on her husband when his health fails (American Psychological Association, 2010). Social learning theory rise to the hypothesis that when individuals experience violence behaviour from parent or other role models in childhood, they tend to revert to these learned behaviours when provoked as adults (Bonnie and Wallace, 2003).

Moreover, poverty in the family can predispose the older person to the risk of abuse. Several studies have identified poverty as one of the contextual factors contributing to abuse (Jamuna, 2003; Mupila, 2008). Ferreira (2004) maintains

that poverty and scarcity compound a lack of resources for adequate care and independence of older persons. Some studies also suggest that perpetrators, who have problems with their social relations, are more isolated and lack social support (Munoz, 2004), making it easier for an abuser to exploit, neglect or abuse an older person. Other factors such as stressful family events, death of a loved one, unemployment, etc, are all risk factors in elder abuse. Ferreira (2004) explains that widespread unemployment and a lack of income impact on intergenerational relations and family harmony.

Most of the studies on elder abuse generally are conducted in advanced countries, and selected African countries. Studies on elder abuse in Nigeria are generally scanty. The few research studies conducted have considered the prevalence of elder abuse in different parts of the country such as Sijuwade (2008) in a Lagos study, and Igbokwe and Asogwa (2010) in a study of the prevalence of abuse of the elderly in domestic setting in Enugu State. Family members hold the responsibility of providing filial responsibility to elderly parents and relatives, while many families have performed this function with passion; research has shown that family members in the course of care giving perpetrate the majority of the reported cases of abuse of the elderly. There is therefore a need to provide empirical data on the familial factors contributing to elder abuse in Akwa Ibom state.

Purpose of the study

The main purpose of the study was to investigate the familial determinants of elder abuse in the context of family care giving in Akwa Ibom State, Nigeria. Specifically the study:

1. Identified forms of abuse common among the elderly in Akwa Ibom State.
2. Determined the familial factors contributing to elder abuse in Akwa Ibom state.

Research Questions

1. What are the forms of abuse common among the elderly in Akwa Ibom state?
2. What are familial factors contributing to elder abuse in Akwa Ibom state?

Methodology

Area of the Study: The study area was Akwa Ibom State, one of the 36 states in Nigeria with 31 Local Government Areas, and Uyo as the State Capital. The state is located on the coastal south southern part of the country, lying between latitudes $4^{0}321$ and $5^{0}331$ North, and Longitudes $7^{0}251$ and $8^{0}251$ East of the Meridian, and occupies a total landmass of 7245939Sqkm^{2}. It is bordered on the east by Cross River State, on the west by Rivers State, Abia State to the north and on the south by Atlantic Ocean (AK-SEEDS, 2004; Nigeriagalleria.com, 2010). The major ethnic groupings in the state are Ibibio, Annang and Oron. Ibibio language is the major language spoken in the state with a few dialectical differences. The people are predominantly of the Christian faith, with a few practising

native African religion. The state is a predominantly civil service state with the Government being the major engine of growth. Others outside the public sphere are mainly farmers and fishermen in the riverine areas, with a few involved in local crafts such as raffia work, pottery, etc. Akwa Ibom is also a major crude oil producing state (AK-SEEDS, 2004).

Population for the study: The population for the study consisted of all male and female elderly persons aged 70 years and above from two senatorial districts in Akwa Ibom State. The population of the elderly within the scope for this study was 56,000 (National Population Commission, 2009). This constitutes the "old-old", and the 'oldest old' (age 85 and older) segments of the elderly population in the state.

Sample for the study: Multi-stage sampling technique was adopted to select a sample size of 5,600 elderly. In the first stage, two senatorial zones out of the three in Akwa Ibom State were randomly selected, and used for the study. The second stage involved proportionate distribution of the sample size into all the 21 local government areas that make up the selected senatorial zones. Twenty 20 villages including the local government headquarters were thereafter purposively selected from each of the local government areas. The last stage involved accessible and snowball sampling of respondents from each of the selected villages to give the total of 5,600 respondents.

Instrument for data collection: Structured questionnaire was used for the study. The structured questionnaire contained three sections: Section A, was multiple choice questions designed to obtain socio demographic data from the elderly. Section B which was adapted and reviewed from Acierno, Hernandez-Tejada, Wendy – Muzzy & Kenneth – Steve (2009) elicited information from the elderly with respect to the forms of abuse; while section C was designed to ascertain the familial determinants of elder abuse. The section contained a 4 point Likert scale questions with strongly Agree (SA), Agree (A), Disagree (D) Strongly Disagree (SD) response categories, scored 4, 3, 2, 1 respectively. The instrument was validated by two lecturers in the Department of Home Economics, Michael Okpara University of Agriculture, Umudike. The reliability of the instrument was ascertained using Cronbach's alpha co-efficient, and a reliability index, $\alpha = .86$ was obtained showing that the instrument was highly reliable.

Data collection and Analyses Techniques: The researcher administered copies of the instrument by hand with the help of 12 assistants, 10 of whom were primary health workers in different local government areas. The respondents were guided to complete and return the instrument on the spot, and administration of the instrument lasted 10 weeks. The researcher and assistants interpreted the questions into local dialect to non – literate respondents, and their responses were marked in the appropriate

columns in the instrument. Data collected from the questionnaire were analysed using frequency counts, percentages and weighted mean scores. A mean score of 2.5 and above was accepted as agreed response, while any means score below 2.5 was unacceptable or rejected.

Findings of the study

The following findings were made:

(1) Four common forms of abuse among the elderly in Akwa Ibom State (See Table 1).

(2) Ten familial factors contributing to elder abuse in Akwa Ibom State (See Table 2).

Table 1: Frequency and Percentage Distribution on the forms of abuse common among the elderly in Akwa Ibom State

Forms of Abuse	Frequency	Percentage**
Emotional/Psychological abuse	3164	56.5
Physical Abuse	1055	18.8
Sexual Abuse	532	9.5
Financial Abuse	2927	52.3
Neglect and Abandonment	2268	40.5

** Multiple responses

Table 1 shows four common forms of abuse among the elderly in Akwa Ibom State, with emotional abuse coming topmost, closely followed by financial/material abuse, and neglect/abandonment, while physical and sexual abuse are not very common.

Table 2: Mean responses of the elderly on the familial factors contributing to elder abuse in Akwa Ibom State

S/N	Items		Decision **
1.	Many abusers are dependent emotionally or financially on the victim.	3.21	Agreed
2.	Abusers of the elderly are alcohol or/and drug abusers.	2.70	Agreed
3.	Abusers have a history of mental illness or other psychological problems.	1.83	Disagreed
4.	Caregivers abuse because of physical stress and burden of care giving.	2.73	Agreed
5.	Children neglect their elderly parents in retaliation of their childhood neglect.	2.76	Agreed
6.	Abuse victims have a history of spousal abuse or domestic violence grown old.	2.41	Disagreed
7.	Younger women who had been abused for years turn their rage on their aging husband.	2.21	Disagreed
8.	Abusers learnt to abuse by watching abusive		

	behaviours from parents (intergenerational transfer).	3.31	Agreed
9.	Some children abuse their parents because of poverty or lack of resources.	2.57	Agreed
10.	Social isolation from family and friends heightens the potential for abuse,	2.86	Agreed
11.	Unemployment could cause some children to neglect /abandon their elderly parents.	3.42	Agreed
12.	Primary caregivers abuse the elderly because of lack of support from other children of the elderly/family members.	2.63	Agreed
13.	Elderly people accused of witchcraft are usually doned by their children and family members	3.55	Agreed

Table 2 shows that the respondents agreed to ten items out of the thirteen identified as familial factors contributing to elder abuse in Akwa Ibom state with a mean score of 2.5 and above. The items agreed to were 1 (3.21), 2(2.70), 4(2.73), 5(2.76), 8(3.31), 9(2.57), 10(2.86), 11(3.42), 12(2.63) and 13(3.55), while the items disagreed to were 3(1.83), 6(2.41), and 7(2.21).

Discussion

Table 1 show that emotional/psychological abuse is the top-most form of abuse common among the elderly in Akwa Ibom State (56.5%), followed by financial/material abuse (52.3%), neglect/abandonment (40.5) and physical abuse (18.8), while sexual abuse is the least (9.5). The finding is consistent with others which found emotional abuse to be the most commonly reported (Iborra, 2009; Acierno *et al.*, 2009), but inconsistent with others which found financial abuse and neglect to be the most common form (Dimah and Dimah, 2002). The finding that sexual abuse is the least common is in tandem with other studies which also revealed low rates of sexual abuse (Acierno *et al*., 2009; Mowlam *et al*. (2007). The revelation that physical abuse is less common in the study is not surprising as there is a general belief on the lethal curses attached to physical attack on the elderly persons in the area. Many young people fear that the elderly might invoke curses on them, and especially women who they fear would 'beat their breasts' for such a young person who would dare to inflict on them physical assaults, which is believed to result in calamity and untimely deaths. Ajomale (2007) also argues that due to the level of respect accorded the elderly in Nigeria, it is uncommon to have cases of beatings and deliberate infliction of injury on the elderly.

Findings from Table 2 revealed the familial factors contributing to elder abuse in Akwa Ibom State by scoring mean scores of 2.5 and above. These include in order of importance accusing the elderly of witchcraft, unemployment, intergenerational

transfer of abuse, emotional and financial dependence on the victim, family's social isolation, retaliation of childhood abuse, physical stress and burdens of care giving, lack of social support from secondary caregivers and other family members; and poverty. Accusing the elderly of witchcraft by family members being identified as the most salient familial factors in elder abuse in the study is not in any way surprising as the problem of witchcraft concerns has gradually taken a centre stage in all spheres of discussions in Akwa Ibom State, and which is in tandem with the submission by the WHO (2010) that in some traditional societies, isolated older women are accused of witchcraft. The finding also corroborates Ferreira (2004) who found allegations of witchcraft against frail and vulnerable older women as a factor for abuse in South Africa.

That unemployment ranks high (3.42) among the familial level determinants identified by the respondents in the study is also not surprising, as it has been isolated as the cause of many social vices in the country. This is also in agreement with Jamuna (2003); Ferreira (2004) and Ajomale (2007), who also identified unemployment of family members as contributing to elder abuse. The finding of the study has revealed that adult children learnt to be abusers by watching abusive behaviours from parents, thus supporting the Social Learning Theory or Intergenerational Transmission Theory. The finding lends credence to others which also support the Social learning theory that family members who abuse the elderly learnt the culture of abuse from their families. (Bonnie and Wallace, 2003: Jones *et al*., 2010).

Emotional and financial dependence of the abuser on the victim has also been identified as a familial factor in elder abuse (Table 2). This supports the findings from several studies which suggest that perpetrators and family members tend to be dependent on the individual they are mistreating (Bonnie and Wallace, 2003), thus upholding the Social Exchange or Dependency Theory. Results from Table 2 also revealed that the respondents agreed that some children abuse their elderly parents in retaliation of childhood neglect. This is consistent with Volz (2010) who suggested that adults who were abused as children may retaliate against their aging parents.

The findings revealed that the respondents agreed to the fact that stress and burden of providing care for the elderly contribute to elder abuse at the familial level in Akwa Ibom State. The finding supports others who established a possible correlation between stresses of care giving and abuse (Volz, 2010). This finding is not supported by some research studies (Philips, 2000). The argument is that stress may not be a sufficient explanation for caregivers to mistreat elderly people as most other people who experience it do not exhibit violent reactions toward the elderly.

Table 2 also revealed that the respondents identified alcohol and drug abuse as familial factors in elder abuse, implying that family members who abuse the elderly are likely to be alcohol

and drug abusers. This is in consonance with Bonnie and Wallace (2003) who suggested that abusers are more likely than other caregivers to be dependent on alcohol or other drugs, and that the role of alcohol abuse will differ by abuse type. An earlier study by Reay and Browne (2001) found that alcohol abuse by the caregiver occurred in seven out of ten physical abuse cases, but only one of the neglect cases.

The respondents identified lack of social support to the primary care givers from secondary caregivers, other family members or government as contributing to abuse at the familial level. This may be so because many families abandon their elderly parents or relatives to the care of only one family member, while others might receive very little from other secondary caregivers. Moreover, caregivers for the elderly in the country do not receive any form of incentive from government in the form of tax rebate or allowance as practised in some advanced countries. The finding supports the WHO (2002) observation that the family and community networks in many developing countries that had formerly provided support to the older generation have been weakened, and destroyed by rapid social and economic change.

Results in Table 2 have advanced poverty as a familial determinant of elder abuse in Akwa Ibom State. That poverty is being identified as a familial determinant of elder abuse in Akwa Ibom State is not surprising considering the poverty profile of the state where 39% are classified as moderately poor and 33.4% are classified as extremely poor (AK SEEDS, 2004). This finding agrees with other studies with similar finding Jamuna, 2003; Ferreira, 2004). Mupila (2008) supports that elderly people abuse is closely linked to poverty that attacking the cause of poverty could greatly improve the security of older people.

Conclusion

Family members hold the responsibility of providing filial responsibility to elderly parents and relatives; it is also known that family members in the course of care giving perpetrate the majority of the reported cases of abuse of the elderly. The study investigated the familial determinants of elder abuse in the context of family care giving in Akwa Ibom State, Nigeria. Findings of the study revealed that emotional/psychological abuse is the most common form of abuse experienced by the elderly in the study, closely followed by financial/material abuse and neglect/abandonment, followed by physical abuse while sexual abuse is the least experienced form of abuse. The familial factors contributing to elder abuse in order of importance as revealed in the study are accusing the elderly of witchcraft, unemployment, intergenerational transfer of abuse, emotional and financial dependence on the victim, family's social isolation, retaliation of childhood abuse, physical stress and burdens of care giving, lack of social support from secondary caregivers and other family members; and poverty.

Recommendations

Based on the findings of the study the following recommendations are made:

- Families overburdened with care of the elderly should explore the integration and support of other volunteer caregivers such as friends and neighbours to help ameliorate the burdens of care giving.
- Public awareness programmes and public education campaigns that define elder abuse should be organised, to raise the publics' awareness on the growing problem of elder abuse in order to reduce the prevalence of abuse in Akwa Ibom State.
- Churches, NGOs, and health institutions, should establish homes for the elderly to take care of elderly people during work or business hours in the absence of primary caregivers.
- The state Government should also establish old people's home in Akwa Ibom State as a matter of urgency to cater for the needs of those who might require such homes for the placement of their aged parents in case of role conflicts or by geographical separation arising from employment.

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Strengthening Vocational Technical Education Pedagogy for Knowledge Economy

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Abstract

The study determined the implications of knowledge economy on pedagogy, learning process and enhancement of VTE programmes in Nigeria. It adopted descriptive survey research design. The study was conducted in universities, in south eastern Nigeria. The population for the study consisted of 127 lecturers in vocational technical education in the Universities. A 43-item questionnaire was used for data collection. Out of 127 copies of the questionnaire administered, 118 copies were returned and analyzed using mean and standard deviation. The study found that educators should make adequate use of ICT, simulation and experiential facilities/exercises in instructional delivry while learning should be based on knowledge creation and application. It was also found from the study that collegiality and collaborative exchange between VTE institutions should be promoted for programme enhancement.

Keywords: Knowledge, Knowledge Economy, Education, Vocational Technical Education, and Human Capital Development

Introduction

Knowledge economy is the creation, dissemination and usage of knowledge for production, processing, distribution and marketing of goods and services more effectively by organizations as well as countries for greater and sustainable development. Drucker (1969) referred to knowledge economy as the application of knowledge from any field or source, new or old to spur economic development. The emergence of knowledge-based economies has spawned a new notion for workplace literacy and the changing relationship between employees and employers (Mba, 2011). The term knowledge economy also connotes the rise in knowledge intensity of economic affairs and the increasing globalization of economic activities (Velez, 2006). Guile (2010) emphasized that a knowledge-

based economy is one in which the generation and exploitation of knowledge play the predominant part in the creation of wealth.

Education and human capital development are paramount for a knowledge-based economy with knowledge replacing physical and natural resources as the key ingredient in economic development. Human capital development, according to Onah (2008), is the formal, informal and semi-formal education, training and on-the-job learning embodied in the workforce of a nation. Education is generally aimed at equipping individuals with knowledge, skills, values and attitudes that will help them to solve their social, economic and political problems. Since knowledge economy is driven by information, skill and know how, nations are better off when they possess adequate pool of skilled labour and leadership with special skill in distilling information (Nweze, 2009). Island Business (2003) emphasized that the world is already globalized and knowledge intensive, and that countries that are doing well economically are those that have high levels of higher education where industries are being driven more by knowledge and brain power than natural resources. Eaglesisland Technologies (2012) also maintained that the economic growth of a country largely depends on technological improvements, and on the scientific and technical skills of its manpower. Education, especially vocational technical education plays a key role in the ability of a country to absorb modern technologies and to develop the human capacity for sustainable growth and development (Todaro and Smith, 2009).

Vocational technical education is the aspect of general education which trains an individual in technologies and related sciences for the acquisition of practical skills, attitudes, understanding and knowledge related to occupations in various sectors of the economy (Federal Republic of Nigeria (FRN), 2004). Vocational technical education programme develops in a learner the practical skills, knowledge, attitudes and habits that make the recipient creative, innovative and resourceful for self-reliance. Osuala (2009) posited that the need to create, develop and apply knowledge and skills for sustainable national economy is the major driving force for vocational technical education. Eneyoh, Thomas and Ekeng (2012) stated that vocational technical education leads to human capital development by empowering people with knowledge and skills, and strengthening them for economic prosperity.

The capacity of a developing country to take advantage of the knowledge– economy depends largely on how quick it can become a learning economy. Nigeria as a developing nation should build her strength for competitiveness and plan for appropriate investments in human capital development by developing effective institutions, relevant technologies, innovative and competitive enterprises through functional vocational technical education programmes. Barney (1995)

described human capital as all the experiences, skills, judgment, abilities, knowledge, contacts, risk-taking and wisdom of individuals within an organization or a nation. The implications of knowledge economy for Nigeria is, therefore, for its education and training programmes to undergo substantial transformation by investing proactively in human capital development to produce graduates with relevant knowledge, critical skills and proper attitudes for globalized activities. This is because only countries with optimal investment in education in the 21st century can be globally competitive and sustainably developed (Ekpu, 2009). The challenge for developing countries including Nigeria is to provide the appropriate structures and incentives for higher education to create cultures that support the further spilling–over of extant epistemic cultures into more sections of the economy (Guile, 2010). The promotion and reorganization of vocational technical education for industrialization, economic development, wealth creation and poverty eradication, according to Eaglesisland Technologies (2012), demands for policies and strategies that would address the cross-cutting issues of quality and relevance of training, employability, collaboration between training institutions and employers. However, because of ineffective and inadequately equipped vocational technical education institutions and programmes, Nigeria suffers from low productivity (Dike, 2005). Vocational technical education curricula in Nigeria as Eneyoh, *et al* (2012) posited, is yet to emphasize entrepreneurial training, and Information and Communication Technology (ICT) as courses to prepare the youths for the current technological needs of society. It is, therefore, imperative to determine the implications of knowledge economy on vocational technical education programme for human capital development in Nigeria.

Purpose of the Study

The major purpose of the study was to determine the implications of knowledge economy on vocational technical education (VTE) programme for human capital development in Nigeria. Specifically, the study sought to ascertain the learning, pedagogy and enhancement implications of knowledge economy on VTE programmes for human capital development in Nigeria.

Research Questions

The following research questions guided the study:

What are the implications of knowledge economy on

1. Pedagogy of vocational technical education for human capital development in contemporary Nigeria?
2. Learning process of vocational technical education for human capital development in contemporary Nigeria?
3. Enhancement of vocational technical education programmes for human capital ij8development in contemporary Nigeria**?**

Methodology

Design and area of the Study: Descriptive survey design was adopted for this study. Area of study was Southeastern Nigeria.

Population of the Study: The population for the study consists of 127 Vocational Technical Education lecturers in the universities used for the study in South Eastern Nigeria. The entire population was studied because it was manageable

Instrument for Data Collection: A 43-item structured questionnaire was developed and used for the study. It had a five-point scale of "Strongly Agree", "Agree", "Slightly Agree", "Disagree" and "Strongly Disagree", with values of 5, 4, 3, 2 and I respectively. The questionnaire was subjected to face-validation by three experts from the Department of Vocational Teacher Education, University of Nigeria, Nsukka. A reliability coefficient of 0.78 was obtained from Cronbach Alpha reliability technique to ascertain the internal consistency of the items of the questionnaire.

Method of Data Collection: One hundred and twenty-seven (127) copies of the questionnaire were administered to the respondents by the researchers with the help of three research assistants. However, 118 copies of the questionnaire were returned and analyzed.

Method of Data Analysis: Mean and standard deviation of responses were used to answer the research questions. The real limit of the Mean was applied in answering the research questions.

Result

Table 1: Mean Ratings and Standard Deviation of Responses on Implications of Knowledge Economy on Pedagogy of Vocational Technical Education for Human Capital Development.

S/N	**Implications for Pedagogy**	$\overline{X}$	SD	Remarks
1.	Adequate use of ICT in instructional service delivery	4.24	0.89	Agree
2.	Use of face-to-face, distance, mixed and blended delivery model for instruction	4.15	0.76	Agree
3.	Use of simulation and experiential exercises for teaching	4.08	0.92	Agree
4.	Demand and supple factors to guide teaching and delivery systems	3.79	0.68	Agree
5.	Educators to collaborate with colleagues to increase their knowledge, expertise and share insight for teaching and strategies.	4.16	0.84	Agree
6.	Use of individualized and graded instructional method for special students and slow learners	4.35	0.97	Agree
7.	Use of online and offline delivery methods to teach students	3.88	0.58	Agree
8.	Use of standard-based assessment strategies to evaluate student learning	3.64	0.76	Agree
9.	Creation of virtual classrooms to aid teaching and learning	4.06	0.81	Agree

10.	Sufficient use of real and improvised resources in instructional delivery	4.11	0.90	Agree
11.	Use of online resources for course remediation, enrichment and credit recovery	4.27	0.83	Agree
12.	Tracking and monitoring students' progress online	3.92	0.65	Agree
13.	Provision of justified feedback on learners online performances	4.05	0.89	Agree
14.	Regular analysis, review and update of instructional methods in line with new technologies	4.36	0.78	Agree
*	Overall	4.08	0.80	Agree

$\overline{X}$ = Mean, SD = Standard Deviation

Table 1 above revealed that all the items are necessary implications of knowledge economy on pedagogy of vocational technical education programmes for human capital development in Nigeria. The Mean of the items ranged from 3.64 to 4.36. The standard deviation of responses ranged from 0.58 – 0.97 which implied that all the respondents were similar in their opinions that all the items are important implications for pedagogy of vocational technical education programmes in a knowledge-based economy.

Table 2: Mean Ratings and Standard Deviation of Responses of Lecturers on the implication of knowledge Economy on the Learning Process of Vocational Technical Education Programmes for Human Capital Development

S/N	**Implications for Learning Process**	$\overline{X}$	SD	Remarks
1	Learning should be based on knowledge creation and application	4.33	0.87	Agree
2	Individual learning plans as well as teamwork and collaborative learning should be encouraged	4.37	0.66	Agree
3	Just –in – time learning opportunities and approaches should be provided	3.98	0.91	Agree
4	Students to learn with a variety of learning models	4.01	0.78	Agree
5	Learning should be initiative-based	4.18	0.88	Agree
6	Students' learning should be adequately motivated with incentives	4.36	0.72	Agree
7	Life-long learning activities and opportunities to be encouraged	4.22	0.69	Agree
8	Course learning materials and contents to be standard-based	4.20	0.81	Agree
9	Sufficient time and resources to be made available for learning	4.25	0.84	Agree
10	Assessment of students learning to be based on set standards	4.06	0.77	Agree
*	Overall	4.20	0.79	Agree

$\overline{X}$ = Mean, SD = Standard Deviation

The Mean of each item listed in Table 2 as well as the overall Mean ranged from 3.98 to 4.37 which implied that all the respondents agreed on each of the items. The low standard deviation of the responses which ranged from 0.66 to 0.91 also implied that the respondents have similar opinions about the items in the Table.

Table 3: Mean Ratings and Standard Deviation of Respondents on the Implications of Knowledge Economy on Enhancement of Vocational Technical education Programmes for Human Capital Development

S/N	Implications for Enhancement	$\overline{X}$	SD	Remarks
1	Enhancing the efficiency and quality of VTE programmes through input – output analysis and curriculum evaluation	3.86	0.59	Agree
2	Spurling vocational training by providing more incentives such as tax credits, individual accounts and part-time study to staff and students	2.73	0.64	Agree
3	Implementing the occupational standards and qualification systems by which work skills and training can be tested and certified	3.94	0.89	Agree
4	Establishing and strengthening linkages between training supply and market through employers' participation in course design and training.	4.17	0.68	Agree
5	Increasing the role of the private sector in the financing of vocational technical education	4.14	0.93	Agree
6	Cross – sectional coordination of relevant agencies in vocational education	4.08	0.95	Agree
7	Harnessing the power of e-learning and distance learning in programme service delivery.	4.12	0.73	Agree
8	Empowering educators for research and development			
9	Strengthening students industrial work experience scheme (SIWES)	4.21	0.71	Agree
10	Aligning programme curricula with the objectives of knowledge economy	3.96	0.84	Agree
11	Creation and use of opportunities for creative, innovative and entrepreneurship systems in VTE	4.29	0.80	Agree
12	Promotion of collegiality and collaborative exchange between VTE institutions	3.99	0.75	Agree
13	Basing conferences and workshops on research evidence	4.22	0.56	Agree
14	Education faculty to collaborate with other faculties from arts and sciences to align learning contents with general standard	4.03	0.81	Agree
15	Curriculum inclusion of new types of knowledge and skills required for standard-based reforms	4.42	0.72	Agree
16	Evaluating programme activities with standard based data	3.88	0.84	Agree

	17	Adequate provision and renewal of infrastructural facilities	4.35	0.90	Agree
	18	Periodic organization of capacity building programmes for educators.	4.05	0.68	Agree
	19	Creation of institutional regimes to promote the use of existing and new knowledge for entrepreneurship development	4.33	0.87	Agree
*		Overall	3.88	0.73	Agree

The Mean of all the items in Table 3 above ranged from 3.73 – 4.42 which implied that all the respondents agreed that all the items are the necessary requirements for the enhancement of vocational technical education programmes for human capital development in Nigeria. The low standard deviation of responses which ranged from 0.56 to 0.95 showed that the respondents were similar in their opinions that all the strategies listed in the Table would assist VTE programmes to develop the human capital that are congruent for a knowledge-based economy.

Discussion of Result

The result of the study revealed that educators should facilitate and improve their pedagogies in vocational technical education to produce the needed human capital that will be competitive and knowledgeable in this period of globalization and ICT. The educators' pedagogies should improve to include: the use of ICT, simulation and experimental activities in instructional delivery as well as the adoption of graded instructional methods for special students. The instructional methods of educators/facilitators should be guided by the demand and supply factors in vocational technical educational and by their collaborating with colleagues to share insights and increase their knowledge. This result is in line with Chen and Magaji (2011) that educators/facilitators should increase and create more opportunities for modern VTE through networking with colleagues.

The result of the study further revealed that the learning process of vocational technical education should be based on knowledge creation and application, and that lifelong learning activities with variety of learning models should be provided for students. Learning should also be collaborative and initiative-based with just-in-time learning opportunities made available to all students. This result is in consonance with UNESCO (2004) that technologies provide open learning environment where students collaborate in a team to increase their knowledge through lifelong learning activities.

The findings of the study also showed that knowledge economy has a lot of implications for the enhancement of vocational technical education in the development of human capital that is indispensable for global competition and productivity. The implications include that VTE should be enhanced through input and output analysis, curriculum evaluation, creation and

strengthening of the linkages between training, supply and market (Onah,2008). Cross-sectional coordination of relevant agencies in vocational technical education is also important for the promotion of the role of outside sectors in financing development and promotion of vocational technical education. The creation of collegiality and collaborative exchange between VTE institutions would also help to enhance vocational technical education for human capital development. This result support the assertion that education faculty should collaborate with other faculties from arts and sciences to align learning contents with general standard (Lauer, Dean, Martin and Asenio; 2005).

Conclusions

The creation and application of knowledge powered by technologies and globalization have changed the focus of nations from resource to knowledge-based economy. Knowledge economy implies that countries of the world and productive institutions should be restructured to transform towards the creation and use of new knowledge that would lead to creative, innovative, competitive and entrepreneurship systems. The implications of knowledge economy on vocational technical education programmes for human capital development in Nigeria include that the pedagogy and learning process of the programme should be redirected to match with the standards and objectives of knowledge economy.

Recommendations

The following recommendations were made based on the findings of the study:

- Government and administrators of vocational technical education institutions should regularly organize capacity-building programmes for educators and instructors to improve their knowledge and skills.
- Authorities of vocational technical education institutions in collaboration with employers should regularly review and update their curriculum to include the skills, knowledge and attitudes which are expected of graduates by industries in this era of globalization, knowledge creation and application.
- Government in consultation with managers of education and employers of labour should formulate policies and strategies that will enhance the quality of training of graduates of vocational technical education for their employability and entrepreneurship.
- Government in linkage with educational administrators, managers of industries, non-governmental organizations and other good spirited individuals in the society should provide adequate facilities, materials, equipment and infrastructures required for teaching and learning of vocational technical education to match with the demands of knowledge economy.
- Educators should be sufficiently empowered for practical research and development that are creative and innovative for new knowledge and skills which are imperatives for global

competitiveness in a knowledge-based economy.

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Evolving Policy Measures for Promoting Agricultural Education in Tertiary Institution in North-Eastern Nigeria to Reduce Youth Restiveness

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Abstract

The study was carried out to find out how policies for promoting Agricultural education in tertiary institutions can help in reducing youth restiveness in North-eastern Nigeria. The sample size for the study was 52 directors from the ministry of education and 88 extension agents. A structured questionnaire was used for collecting data from the respondents and the data collected were analyzed using weighted mean to answer the research questions and t-test to test the hypotheses at 0.05 level of significant. It was found out that all the items identified were government policy measures that promote agricultural education towards reducing youth restiveness. It was therefore recommended that the four measures identified in this study be considered by government as guidelines for reducing youth restiveness in tertiary institution in North Eastern Nigeria.

Introduction

Policy is a plan of action undertaking by government, persons or groups to enable them accomplish an objective. It is a principle or rules to guide decision and achieve rational outcome. The term is not normally used to denote what is actually done; this is normally referred to as either procedure or protocol. Policies are generally adopted by the board of or senior governance body within an organization where as procedures or protocols would be developed and adopted by senior executive officers. Policies can assist in both subjective and objective decision making. Policies to assist in subjective decision making must consider the relative merits of a number of factors before making decisions and as a result are often hard to objectively test e.g. work life balance policy. In contrast policies to assist in objective decision making are usually operational in nature and can be objectively tested. Policy as explained by Olaitan (1998) is

sometimes referred to as a government programme of actions; it stands for various degrees of goal articulation and normative relations of government activities, what government intent to do or achieve (goal) and how it tends to implement it. In line with the above, a government without a definite plan of action is like a traveler without a destination. He may cover many kilometers and yet not be able to say where he is going or how far he has gone. Policy in the context of this study can be regarded as measures that are clearly stated and directed to serve as a binding guide from the government in reducing youth restiveness.

Measures in the view of Olaitan (2001) are the abilities to do things according to one's plan without being directed. It could be seen as initial action that ignites an action. Also Rundell in Onu (2006) stated that measures are important new plan or process that has been stated in order to achieve particular aim or solve a particular problem. Measures in the context of this study is new meaningful plan mapped out by the government in the area of finance, training, monitoring/evaluation and risk bearing as a biding guide to promote agricultural education towards reducing youth restiveness among students.

The youths are one of the greatest assets that any community can posses. They constitute the most important investment for a society's sustainable development and future. But where they are misdirected, will mean a serious risk for the future of such a society. In the recent past, youth restiveness has become a phenomenon in Nigeria. Looking at the sporadic exploits of the thirsty Sharia zealots of the North West and North Central, to the incessant display of violence by the angry mafia of the Niger Delta Region, and from the armed bandits that rule the highways of the North East, to the hired assassins that paint the political landscape in the South East with blood, and from the hot headed ethnic militia known as the OPC in the South West and MASSOB in the South East, to the murderous secret cultists in nearly all the universities and polytechnics. In fact youth restiveness is a combination of any action, conduct or act that constitutes unwholesome socially unacceptable and unworthwhile activities engaged in by the youths in any community. Such actions and activities include vandalization, drug abuse, weapon carrying, malpractices, school violence, bullying, cultism, truancy among others. That has been the problem we have with the students in universities within North-Eastern Nigeria. It was observed by the researchers through focus discussion with some of the students in Agric Education unit in some of the North-Eastern State Universities that, they have a lot of free periods while because all their teachings were mainly theoretical; they do not go to farm for practical as expected. They therefore have enough time for their studies and use extra time to engage in vices and crimes outside their school work. What they teach them does not involve skill acquisition of any kind. Agricultural education has failed in producing

graduates with relevant work-skill requirement in contemporary Nigeria. As noted by Olaitan (1997) and Okorie (2000) graduates of agricultural education have often not been able to take up paid jobs at the completion of their degree programmed thus deflating the goal of vocationalization; and unless something is done to roll back the wave of juvenile delinquency, have programme that is more tasking, engaging and productive, the prospect of a better, safer and more prosperous society emerging in Nigeria will remain elusive, hence this study.

Purpose of the Study

The major purpose of this study was to investigate policy measures for promoting agricultural education towards reducing youth restiveness of students in North eastern universities in Nigeria. Specifically the study determined government measures on:

i. Finance for promoting Agricultural activities towards reducing youth restiveness.
ii. Training for promoting Agricultural activities towards reducing youth restiveness.
iii. Monitoring/evaluation for promoting Agricultural activities towards reducing youth restiveness.
iv. Risk bearing for promoting Agricultural activities towards reducing youth restiveness.

Research Questions

i. What are possible government policy measures on finance for promoting Agricultural activities towards reducing youth restiveness?
ii. What are possible government policy measures on training for promoting Agricultural activities towards reducing youth restiveness?
iii. What are possible government policy measures on monitoring/evaluation for promoting Agricultural activities towards reducing youth restiveness?
iv. What are possible government policy measures on risk bearing for promoting Agricultural activities towards reducing youth restiveness?

Hypotheses

1. There is no significant difference in the mean ratings of the responses of Directors in Ministry of Education and Extension Agents on government policy initiative on finance for promoting agricultural education towards reducing youth restiveness among students
2. There is no significant difference in the mean ratings of the responses of the Directors in ministry of education and Extension Agents on government policy initiative on training for promoting agricultural education towards reducing youth restiveness among students.
3. There is no significant difference in the mean ratings of directors in ministry of education and Extension Agents on government policy initiatives on monitoring/evaluation for promoting agricultural education towards reducing youth restiveness among students.
4. There is no significant difference in the mean ratings of the responses of the Directors in ministry of

education and Extension Agents on government policy initiative on Risk Bearing for promoting agricultural education towards reducing youth restiveness among students.

Methodology

***Design of the study*:** The study adopted survey research design. Survey research design in the view of Anyakaoha (2009) uses questionnaire, interview, and observation among others in order to determine the opinions, attitude, preferences and perceptions of persons. The design was considered appropriate since the study obtained data from the Directors of Ministry of Education and extension agents through the use of questionnaire.

***Area of the study*:** The study was conducted in north east of Nigeria consisting of Bauchi, Boronu, Gombe and Yobe state. These states are more of Muslims states. The content scope covered youth restiveness, agricultural activities and policy measures.

***Population of the study*:** The target population for this study is 52 directors from ministry of education in all the four states and 88 extension agents. The population is small therefore the entire population was involved in the study, there was no sampling.

***Instrument for data Collection*:** The instrument for data collection was a structured questionnaire made up of 53 items. The questionnaire items were derived from review of related literature. The questionnaire was made up of four sections which addressed the specific purposes of the study. The instruments was subjected to face validation by three validates, one each from Ministry of Education Anambra State, lecturer from Department of Vocational Teacher Education (Agric.) University of Nigeria, Nsukka and Extension Agent from Enugu State Agricultural Development Programme(ADP). The experts were asked to critically examine the items included in the instrument with specific purpose of the study and make useful suggestions to improve the quality of the instrument. Data collected from a trial testing of the instrument were used to calculate the reliability of the instrument using Cronbach alpha reliability coefficient to establish the internal consistency of the instrument. A reliability coefficient of 0.86 was obtained showing that the instrument was reliable.

***Methods of data collection*:** The one hundred and forty (140) copies of the questionnaire were administered by the researcher with the help of four research assistants in the distribution and retrieval of the questionnaire for data analysis.

***Method of Data Analysis*:** The data collected for the study were analyzed using weighted mean and standard deviation to answer the research questions, while t- test statistic was used to test the null hypotheses at 0.05 level of significant. Mean bench mark of 2.50 and above was selected as accepted mean otherwise rejected. The standard deviation was used to determine the closeness or otherwise of the response from the mean. Any item with a standard deviation of 1.96 and below showed that the respondents were close

to the mean. The probability value of p ≥ 0.05 was used as basis for accepting the null hypotheses and otherwise rejected.

Results

The following results were obtained:

1. Possible policy measures on finance for promoting agric education in tertiary institutions: findings are summarized in table 1.
2. Possible policy measures on training for promoting agric education in tertiary institutions: findings are summarized in table 2.
3. Possible policy measures on monitoring/evaluation for promoting agric education in tertiary institutions: findings are summarized in table 3.
4. Possible policy measures on risk bearing for promoting agric education in tertiary institutions: findings are summarized in table 4.

Table 1: Mean Score ($\bar{x}$) and t-test Analysis of the Response of Directors and Extension Agents on Government Policy Initiatives on Finance for Promoting Agricultural Education Towards Reducing Youth Restiveness

S/N	Finance-Related policy measures for promoting agric education in tertiary institutions	$\bar{x}$	$\bar{x}_1$	$\bar{x}_2$	SD	t-cal.	t-tab	Decision
1	Provision of credits to all of agricultural education unit to enable them enhance their production capacity	2.87*	2.44	3.30	0.87	1.20	1.96	NS
2	Provision of agricultural subsidies such as fertilizers and improved seeds in order to motivate them to get into farming proper.	2.72*	2.68	2.76	0.99	1.09	,,	,,
3	Finance their water source for them to have constant water supply which will encourage agricultural production all year round.	3.00*	2.87	3.13	1.08	0.85	,,	,,
4	Improve the welfare of students by providing basic social amenities.	3.69*	3.45	3.92	1.07	0.93	,,	,,
5	Provision of facilities for extra curriculum activities that will always engage them instead of involving themselves in non-peace activities	3.42*	3.68	3.15	0.84	1.16	,,	,,
6	Sponsoring students to field trip and excursions to industries that are related to their area	3.15*	2.97	3.33	0.79	1.10	,,	,,

7	Provisions of farm machine to schools to enable fortify their agricultural production.	3.31*	3.53	3.08	0.77	1.30	,,	,,

$\bar{x}$=Pull Mean, $\bar{x}_1$=Directors from ministry of Education, $\bar{x}_2$=Extension Agents. Unit, *=Agree, NS=Not Significant t

Table 1 shows that all the seven (7) items had their mean ranged from 2.72-3.69. This showed that the means were above 2.50, indicating that they are agreed government policy initiatives on finance for promoting agricultural education towards reducing non-peace activities of students. The standard deviation of all the seven items ranged from 0.77 to 1.o8. Each of them was bellow 1.96 indicating that the respondents were not too far from the mean and from one another in their responses. This added validity to the value of the means of the items.

Table 1 also revealed that each of the 7 items had a calculated t-values ranging from 0.85-1.20 which are less than the table t-value of 1.96 (two tailed test) at p≤ 0.05 level of significance and 138 degree of freedom. This indicated that there was no significant difference in the mean ratings of the responses of Directors in the Ministry of Education and Extension Agents on government policy initiatives on finance for promoting agricultural education towards reducing youth restiveness of students, with this result, the null hypothesis (H_o) of no significance difference was upheld.

Table 2: Mean Score ($\bar{x}$) and t-test Analysis of the Response of Directors in Ministry of Education and Extension Agents on Government Policy Initiatives on Training for Promoting Agricultural Education Towards Youth Restiveness

S/N	Training-Related policy measures for promoting agric education in tertiary institutions:	$\bar{x}$	$\bar{x}_1$	$\bar{x}_2$	SD	t-cal.	t-tab	Decision
1	Engaging students in effective and meaningful learning by academic staff	3.37*	3.42	3.32	0.88	1.03	1.96	NS
2	Hall mangers/workers to be retrained regularly so as to manage rules in the hostel	2.98*	2.58	3.38	0.96	1.01	,,	,,
3	School authority should foster good student teacher relationship in the college.	2.82*	2.63	3.00	0.81	0.77	,,	,,
4	Agricultural science teachers should be promoted as at when due to enable them put in their best.	3.14*	2.85	3.43	1.00	0.66	,,	,,
5	Encourage competitions for non-	3.29*	3.66	2.92	0.45	0.93	,,	,,

	violence among the residents of halls.							
6	Any hall for violence for 10 years should be recognized for incentive naturally and local by the college.	3.28*	3.44	3.11	0.85	1.33	,,	,,
7	Provision should be made for comfortable working offices for agric teachers.	3.29*	2.96	3.62	0.82	1.10	,,	,,
8	Government should sponsor prizes and reward to the best graduating students	3.22*	3.38	3.06	0.76	1.09	,,	,,
9	Sponsoring of educational fields trips relevant to agricultural activities	3.35*	3.29	3.40	0.81	1.21	,,	,,
10	Government should sponsor trainers in specific agricultural project to train members for skills development	2.79*	2.78	2.80	0.74	0.89	,,	,,,
12	Government to sponsor workshops for agricultural education students	2.80*	2.66	2.93	0.96	1.20	,,	,,
13	Government to sponsor opportunities for agricultural education students to train at skills acquisition center in young farmers club.	3.09*	2.68	3.49	0.70	1.03	,,	,,
14	Government to sponsor agricultural education lectures for international conferences/workshops, for their academic development.	3.18*	2.77	3.59	1.10	1.11	,,	,,
15	Government should sponsor inter-school conferences or workshop among members of agricultural education students	3.48 *	3.45	3.51	0.97	1.07	,,	,,
16	Instructors should be sent for workshop, conferences and further training.	3.39 *	3.47	3.31	0.86	1.12	,,	,,

$\bar{x}$=Pull Mean, $\bar{x}$1=Directors from ministry of Education, $\bar{x}$2=Extension Agents. Unit, *=Agree, NS=Not Significant t

Table 2 revealed that all the items had their mean values ranging from 2.79 to 3.48. This indicated that the means were above the cut-off point of 2.50 showing that the respondents agreed to the items as government policy initiatives on training for promoting agricultural education towards reducing non-peace activities of students. Table 2 also showed that the standard deviation was

less than 1.96 (0.45 to 1.10), indicating that the respondents were not too far from the mean and from the opinion of each other in their responses on the government policy initiatives on training for promoting agricultural education towards reducing non-peace activities of students.

Table 2 further revealed that all the fifteen (15) items had their t-calculated value ranging from 0.66-1.33 which is less than t- table value. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondents on government policy initiatives on training for promoting agricultural education towards reducing non-peace activities of students. The null hypothesis of no significant difference was accepted for all the fifteen items.

3. Possible policy measures on monitoring/evaluation for promoting agric education in tertiary institutions: findings are summarized in table 3.

Table 3: Mean scores ($\bar{x}$) and t-test Analysis of the Response of Directors and Extension Agents on Government Policy Initiatives on Monitoring/Evaluation for Promoting Agricultural Education Towards Reducing Youth Restiveness

S/N	Monitoring/Evaluation-Related policy measures for promoting agric education in tertiary institutions	$\bar{x}$	$\bar{x}_1$	$\bar{x}_2$	SD	t-cal.	t-tab
1	Regulating and monitoring of Students time.	3.17*	3.02	3.32	0.85	1.20	1.96
2	Student regulations to be reviewed periodically with inputs from students.	3.51*	3.76	3.26	0.93	1.01	
3	Administration to involve student in dialogue on issues that affect them.	3.24*	2.84	3.64	0.77	1.02	,,
4	Any non-peace activity made by students should be published to the community	2.90*	2.89	2.90	0.81	1.13	,,
5	Lecturers to be encouraged to be more effective and efficient in their teaching.	3.25*	2.86	3.63	1.00	0.66	,,
6	Effective and functional counseling unit should be attached to careers.	3.26*	3.55	2.96	1.02	0.89	,,
7	HOD should know students under his department and be able to guide them properly.	3.31*	3.46	3.15	0.71	1.11	,,
8	Students result to be released as and when due without victimizing the student.	3.08*	2.96	3.20	0.88	1.16	,,
9	Functional college/university PTA where parents can seek their children's result and information should be inaugurated.	3.26*	3.44	3.07	0.93	1.14	,,
10	Government to direct the national security outfit to obtain data information on academic and behavior of each student, making use of modern day technology and	3.12*	3.09	3.15	0.83	1.01	,,

	store them for use in future.						
11	School should create environment that is conducive for academic activities and attractive to students and staff.	2.74*	2.69	2.79	0.89	1.18	,,
12	Facilities and utilities for learning should be adequate and sustainable.	2.74*	2.81	2.66	0.78	0.95	
13	Government should be developing achievable education objectives for agricultural education unit.	2.85*	2.77	2.93	0.94	1.20	,,
14	Student should be engaged with adequate Project and continuous assessment.	2.73*	2.62	3.39	0.71	1.16	,,
15	Curriculum and programmes must be designed to meet the needs of time, thereby producing desired quality and ability in students	2.98*	2.75	3.20	0.84.	1.21	,,
16	Student complaints about the welfare of their staff should be given prompt attention.	3.45*	3.40	3.50	0.92	1.17	,,
17	Students should operate within the land of the university/college.	3.22*	3.14	3.29	0.89	1.22	,,
18	Regulations in the halls of residence should be strictly adhered to especially visitation.	3.39*	3.33	3.45	0.71	0.99	
19	Security operatives in the hall of residence should be made operational and vigorous.	3.39*	3.22	3.56	0.82	0.86	
20	Students should be screened for character before being accommodated in the hall of residence	3.06*	3.67	2.45	0.79	0.96	

$\bar{x}$=Pull Mean, $\bar{x}$1=Directors from ministry of Education, $\bar{x}$2=Extension Agents. Unit, *=Agree, NS=Not Significant t

Table 3 revealed that all the items had their mean values ranging from 2.73 to 3.51. This indicated that the means were above the cut-off point of 2.50 showing that the respondents agreed to the items as government policy initiatives on monitoring/evaluation for promoting agricultural education towards reducing youth restiveness of students. Table 3 also showed that the standard deviation was less than 1.96 (0.71 to 1.02), indicating that the respondents were not too far from the mean and from the opinion of each other in their responses on government policy initiatives on monitoring/evaluation for promoting agricultural education towards reducing youth restiveness in students.

Table 3 further revealed that all the twenty (20) items had their t-calculated values ranging from 0.66 to 1.22 less than t- table value. This indicated that there was no significant difference in the mean ratings of the responses of the two groups of respondents on government

policy measures on monitoring/evaluation for promoting agricultural education towards reducing youth restiveness of students. The null hypothesis of no significant difference was accepted for all the twenty items.

4. Possible policy measures on risk bearing for promoting agric education in tertiary institutions: findings are summarized in table 4.

Table 4: Mean Scores (*x*) and t-test Analysis of the Response of Directors Extension Agents on Government Policy Measures on Risk bearing for Promoting Agricultural Education Towards Reducing Youth Restiveness

S/N	**Risk-Related policy measures for promoting agric education in tertiary institutions**	$\bar{x}$	$\bar{x}_1$	$\bar{x}_2$	SD	t-cal	Decision
1	Fire extinguishers to be made available in farm workshops and hall of resident in case of power outage.	3.66*	3.55	3.76	0.88	0.89	NS
2	Government to construct river banks and dams to supply water for agricultural use so as to avert wastage and other uncertainties.	2.80*	2.69	2.91	0.90	1.12	,,
3	Government should supply agricultural inputs that will promote agricultural activities to increase production and avoid wastage.	3.13*	2.66	3.59	0.81	1.05	,,
4	Mobilization of stakeholders in controlling land degradation	2.90*	2.56	3.24	0.97	1.11	
5	Fire fighters should be made available at the power station.	3.08*	2.76	3.39	1.17	1.01	,,
6	Provision of irrigation facilities to enable students to farm during off season and to avert the risk of drought	3.62*	3.59	3.65	0.82	1.17	,,
7	Provision of drainage facilities to enable channel flood that will tend to destroy the school farm during raining season.	3.39*	3.17	3.61	0.83	1.12	,,
8	Provision of processing and storage facilities to enable student process and store their product during pick period	3.04*	2.55	3.53	0.69	0.78	
9	Government to step up policy that will increase power supply in schools.	2.70*	2.59	2.80	0.68	0.78	
10	Insurance policies against accident and hazard should be provided to all college	3.26*	2.64	3.87	0.77	0.99	

$\bar{x}$=Pull Mean, $\bar{x}$1=Directors from ministry of Education, $\bar{x}$2=Extension Agents. Unit, *=Agree, NS=Not Significant t

Table 4 revealed that the ten (10) government policy initiatives on risk bearing for promoting agricultural education programme towards reducing non-peace activities of student have their mean ranged from 2.70 to 3.66. This indicated that all the items were government policy initiatives measures on risk bearing for promoting agricultural education programme towards reducing non-peace activities of student because their means were above the cut-off point of 2.50. The standard deviation of the items ranged from 0.68 to 1.17. This showed that the respondents were close to one another in their responses and that they were not very far from the mean. This therefore, adds further value to the validity of the means.

Table 4 also revealed that each of the government policy measures on risk bearing items had a calculated t-values ranging from 0.78 to 1.12 which is less than the table t-value of 1.96 (two tailed test) at $p \leq 0.05$ level of significance and 138 degree of freedom. This indicated that there was no significant difference in the mean ratings of the responses of Directors from the Ministry of Education and Extension Agents on government policy initiatives on risk bearing for promoting agricultural education programme towards reducing non-peace activities of student, with this result, the null hypothesis (H_o) of no significance difference was upheld.

Discussion of Findings

The result of this study in Table 1 revealed that all the policy measures on finance could be put in place by the government for a promoting agric education towards reducing youth restiveness. Result of the study in Table 2 also showed that policy initiatives on training/evaluation could be put in place to help promote agric education towards reducing youth restiveness and finally the result in table 3 and 4 revealed that all the policy initiatives on monitoring/evaluation and risk bearing could be put in place to help improve agric education towards reducing youth restiveness in institutions of higher learnings.

These findings are in agreement with the finding of Auta (2009) in a study on policy measures for improving the administration of technical teacher training programme in Nigeria where it was found out that 16 policy initiatives for planning, 7 for coordination, 13 for implementing and 8 for evaluating technical teacher training programme (TTTP) in Nigeria could be put in place to improve the administration of technical teacher training programme in Nigeria. The study is also in conformity with the findings of Olaitn and Alaribe (2011) in a study policy measures for improving teacher effective teaching (TET) on agricultural science in secondary schools in south west Nigeria. The study found out that 10 policy measures could be put in place to enhance teacher effective teaching and sustainability of agric science in schools, 8 policy measures could be put in place to help school administrators and students enhance teacher effective teaching of agricultural science in the schools.

The hypothesis tested by the study revealed that there was no significant difference in the opinion of the two groups of the respondents on government policy initiatives on finance, trainer, monitoring/evaluation and risk bearing for promoting agric education towards reducing youth restiveness of students in higher education.

The findings of this study was also in consonance with the findings of Onu (2006) who in a study on motivational initiatives required from stakeholders for improving enrolment and effective participation of student and staff in young farmers' club activities in secondary schools in Enugu state found out that certain measures could be provide by the stakeholders for improving enrolment and effective participation of students and staff in young farmers club activities by the school principals, fourteen (14) by the PTA members, fourteen (14) measure by the government, thirteen (13) initiatives by the community and fifteen (15) measure by the agro-based companies.

Recommendation

It was therefore recommended that the four measures identified in this study be considered by government as guidelines for reducing youth restiveness in tertiary institution in North West Nigeria.

Conclusion

One of the objectives of Agricultural Science in tertiary institution is to equip students with skilled in agriculture which could help them to impart agricultural principles and method to student in secondary school after graduations. The researcher observed that agricultural science student involved themselves in some of the non-peace activities as a result of the fact that they have enough leisure time since they are not engaged fully in practices activities that could occupy them. The implication of this is that they therefore have enough time to engage in a lot of youth restiveness which could make them not to be useful member of the society. The study therefore attempted to identify Government policy measures on finance, training, monitoring/evaluation and risk bearing which could be put in place by the government for promoting agric education towards reducing youth restiveness of student in higher institutions.

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Level of Awareness on the Nutrient Contents and Utilization of *Moringa Oleifera* in Oyo State, Nigeria

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Abstract

One of the problems of malnutrition is not only having access to the right foods but also knowing the nutrient contents of foods and consumes them in the right proportion. This study assessed the level of awareness on the nutrient contents and utilization of Moringa oleifera among urban dwellers in Ibadan metropolis Oyo State. One hundred and twenty (120) respondents were selected using snowball sampling techniques while information were obtained using interview schedule and structured questionnaire. The result revealed low level of awareness (54.2%) on nutrient contents of Moringa oleifera which consequently influence its utilization. Respondents' level of awareness on nutrient content of Moringa oleifera is significantly related to their utilization of ($r = 0.451$; $p<0.005$).The study concluded that there is low awareness on nutrient contents of Moringa oleifera which subsequently affect its utilization. Adequate awareness of its richness in vitamins, calcium, protein and other essential nutrients and its medicinal properties will increase consumption of Moringa oleifera.

Keywords: Awareness, Vitamin C, Calcium, Protein, Medicinal value, Utilization.

Introduction

Moringa oleifera is a food security and nutrition crop as well as a poverty reduction crop in the sense that it is also a source of income generation when processed in diverse forms. Both rural and urban dwellers often have poor access to nutritious foods, they cannot afford and utilize nutritional foods, and this is often due to low awareness level, which will invariably lead to low level of utilization of foods with high nutritional value, and consequently, resulting in low immunity level of the blood and the rate of combating diseases and infections will be low too.

Food contains nutrients, which constitutes nourishing substances like minerals, protein and vitamins, which help to fight against diseases in the human body, boost immunity and generally aid growth. These nutrients can be obtained from various classes of food like Carbohydrates (rice, yam), which gives energy to the body; Protein (beans, egg), which helps in the repair of worn-out tissues in the body; Vitamins and Minerals (onions, leafy vegetables) which helps to boost the

immunity of the blood against infections; Water, which aids metabolic processes in the body and also helps to excrete waste products in form of sweat and urine; Fats & Oil (coconut, butter, groundnut), which supplies heat and energy to the body and also supplies body fats. Food nutrition, therefore, according to Thesaurus dictionary (2009) is the process of absorbing nutrients from food and processing them in the body in order to keep healthy and also to grow. Getting adequate food implies that, one is able to consume food that contains all the food nutrients in correct proportion, and so we can infer that one is food secure. Food security is defined as 'situation whereby there is access to food, particularly for the poor, food availability, and enhancement of stability of food supplies', (Anderson, 2009). That is to say that, food security is said to exist in a family or household when all members have assured access at all times to adequate food needed for a healthy life. Specifically, adequate utilization of food nutrients will ensure adequate nutrition, be it of a rural or urban dweller. Most people are perceived to consume food generally to avert hunger, grow strong and have energy to do their day-to-day activities only. Often times, they do not know what it means to combine food materials in order to obtain a healthy and adequate diet, they do not understand the different classes of food and they usually end up taking the same classes of food over and over again, which could lead to stunted growth and other health risks in the body.

Scientific research shows that, gram for gram; *Moringa oleifera* leaves contain 7 times the vitamin C in oranges, 4 times the Calcium in milk, 4 times the vitamin A in Carrots, 2 times the protein in milk, and 3 times the potassium in bananas. Moringa *oleifera* leaf Powder, according to research, will give a child the following recommended daily allowances: protein 42%, Calcium 12.5%, Magnesium 61%, Potassium 41%, Iron 71%, Vitamin A 27.2% and Vitamin C 22%. These numbers are particularly outstanding, considering that this nutrition is available when other food sources may be scarce (Donovan, 2007). *Moringa oleifera* leaf boosts one's energy in a natural manner, and is a remarkable source of nutrition. This energy promotion does not happen because of sugar, so it lasts for a long time. Another property of the *Moringa oleifera* leaf is its soothing ability, because it can lower blood pressure and promote good sleep. Until now, various laboratory researches have confirmed that *Moringa oleifera* is a natural energy booster, strengthens the immune system, has antibiotic properties, cures headaches, migraines, asthma, and ulcers, the skin problems are restored, reduces arthritic pains and inflammations, controlled blood pressure, and restricted tumor growths and have stronger defenses against diseases. In the field of medicine, it has been found that *Moringa oleifera* can help to prevent common killer diseases like hypertension and diabetes and has become the poor man's prophylaxis against malaria and some common ailments. *Moringa oleifera* can also detoxify the body given its ability to

purify water by attaching itself to impurities and harmful bacteria and allowing them to be expelled as a waste. It can also purify water since it has a detoxifying effect. Also a coagulant agent, *Moringa oleifera* can attach itself to hazardous bacteria and other materials, a process that is surmised to occur in the body too. The happy outcome is more sustained energy without any over-activity, balanced hormone and gland system, controlled blood pressure and a rested nervous system.

Moringa oleifera leaf has no proven bad effects and is absolutely safe and organic. Because of its tolerant properties, it has often been given to malnourished little babies in Africa. Athletes all over the world often boost their performance abilities by taking huge quantities of the leaf to keep them fit both mentally and physically. Even for senior citizens who are losing their sharpness of mind, the *Moringa oleifera* tree leaf could be a great help. In fact, the powder is suitable for people from any age group. Few foods, like *Moringa oleifera*, are known to contain all essential amino acid, hence, the importance of a complex, rich diet. The 9 essential amino acids are: histidine, isoleucine, leucine, lycine, methonine, phenylalanine, threonine, tryptophan and valine. *Moringa oleifera* 's essential amino acids presence and digestibility scores are more than adequate when measured against the standards of World Health Organization (WHO), Food and Agriculture Organization (FAO) and United Nations Organization (UNO) for small children, the most at-risk population group when it comes to protein in food. Commonly known in the English language as the Ben oil tree, the horseradish tree, or the drumstick tree, *Moringa oleifera* belongs to the plant family *Moringaceae*. In Nigeria, it is called *Ewe igbale*, in Yoruba; *Rimin turawa, Zogale*, or *Zogalla-gandi* in Hausa; and *Odudu oyibo, Okochi egbu, Okughara ite,* Uhe in Ibo.

There is a growing global interest in the use of *Moringa oleifera* to address malnutrition because it is readily available and inexpensive. In Africa, it has become popular as a locally produced nutritional supplement for individuals infected with the Human Immune-Deficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) virus. Nursing mothers have shown to produce far more milk and malnourished children gained more weight after the leaves were added to their diets (Guardian, 2009). However, the awareness and rate of utilization in Nigeria is very low. This is why this study is being carried out, so as to determine the awareness level of *Moringa oleifera* nutrient contents and the rate of its utilization.

Objectives of the study

The general objective of this study was to determine the awareness of the nutrient contents and utilization of *Moringa oleifera* among urban dwellers in Ibadan metropolis.

The study:

1.) identified the personal characteristics of the respondents in the study area

2.) ascertained the awareness of nutrient contents of *Moringa oleifera* among the respondents in

the study area.

3.) determined the utilization of *Moringa oleifera* by the respondents in the study area.

Hypotheses of the study

Ho_1: There is no significant relationship between the personal characteristics of the respondents and utilization of *Moringa oleifera*.

Ho_2: There is no significant relationship between respondent's awareness on nutrient contents of *Moringa oleifera* and utilization.

Methodology

***Design of the study*:** The essence of research design in this study was to provide answers to research questions unambiguously. The steps involved in carrying out this study include:

i. data collection
ii. data analysis
iii. discussion of the results
iv. summary and recommendations

***Area of study*:** This study was carried out in Ibadan, Oyo State and the target population for this study includes all the urban dwelling in Ibadan metropolis. Ọyọ State is an inland state in south-western Nigeria, with its capital at Ibadan. It is bounded in the north by Kwara State, in the east by Osun State, in the south by Ogun State and in the west partly by Ogun State and partly by the Republic of Benin. Oyo State covers approximately an area of 28,454 square kilometers and is ranked 14th by size. The landscape consists of old hard rocks and dome shaped hills, which rise gently from about 500 meters in the southern part and reaching a height of about 1,219 metre above sea level in the northern part. Some principal rivers such as Ogun river, Oba, Oyan, Otin, Ofiki, Sasa, Oni, Erinle and Osun river take their sources from this highland. Oyo State contains a number of natural features including the Old Oyo National Park. The Climate is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year. All kind of crops and trees are grown in Oyo State on subsistence and commercial basis including *moringa oleifera.*

***Population for the study*:** All the urban dwellers in Ibadan metropolis.

***Sample selection for the study*:** One hundred and twenty (120) respondents were sampled using snowball sampling technique, while data were gathered using interview schedule and well-structured questionnaire.

***Instrument for data collection*:** The questionnaire was divided into sections that measured the personal characteristics of the respondents, their awareness on the nutrient contents of *Moringa oleifera* and its utilization.

***Data collection and analysis technique*:** The data generated was analyzed with the use of appropriate statistical tools to give the descriptive statistics of the variables and the significance of relationships between independent and dependent variables. Pearson Product

Moment Correlation and Chi Square were used to test the hypotheses.

Findings of the study

Majority (83.4%) of the respondents fall between the ages of 26 years and 45 years. While, very few fall between the ages of 20 and 24 years (16.7%). This shows that the respondents are still in their active years and could still run around to get this *moringa* planted in their gardens. The table also shows that majority (65.8%) of the respondents are Christians, which indicated as the prominent religion among them. While thirty-four percent are Muslims. About 72.5% were married and very few were single. This is an indication that the respondents will be interested in anything that will improve the health status of the family members. Seventy percent of the respondents had one form of formal education or the other. The prominent occupations among the respondents were government employed (37.5%) and privately employed workers (35%) while very few of them are into business (19.2%) and farming (8.3%).

Table 1 Distribution of Respondents by their awareness of nutritional content of *Moringa*

S/N	Nutritional content of *Moringa*	Aware		Not aware	
		Freq	%	Freq	%
1.	*Moringa* contains 42% protein	28	23.3	92	76.7
2.	*Moringa* has 12.5% calcium	55	45.8	65	54.2
3.	*Moringa* contains 41% of potassium	68	56.7	52	43.3
4.	*Moringa* is rich in iron as high as 71%	50	41.7	70	58.3
5.	*Moringa* contains 22% Vitamin C	62	51.7	58	48.3
6.	*Moringa* contains 27.2% Vitamin A	15	12.5	105	87.5

Table 1 shows that more than half (56.7%) of the respondents were aware that *moringa oleifera* contains potassium, 51 percent were aware that *moringa oleifera* contains vitamin C. less than half (45%) of the respondents were aware that *moringa* contains calcium. An inference can be made that a larger percentage (76.7%) of the respondents are not adequately aware of the protein content of *moringa*. High percentage (87.5%) was not aware that *moringa* contain vitamin A. These high numbers that lack the knowledge may not want to consume *moringa* in any form. However, it is also possible for some to consume *moringa* without knowing the nutritional content. People who are adequately aware of *moringa* are likely to be well educated and cared to know the nutritional content of the food substances they consume or people who have one ailment or the other and are adequately aware of the healing properties of *Moringa*. Majority (54.2%) of the respondents had low level of awareness on the nutritional content of *moringa oleifera*. Few (25%) and (20%) of the respondents had average and high level awareness respectively. This is an

indication that awareness campaign on the nutrition value of *moringa oleifera* is crucial.

Table 2: Distribution of Respondents' by their usage of *Moringa*

Reason Utilization of *Moringa*	Yes		No	
	Freq	**%**	**Freq**	**%**
Consumption for food	38	31.7	82	68.3
Consumption for medicinal	29	24.3	91	75.8

Table 2 shows that majority (68.3%) of the respondents neither consume *moringa* as food nor for medicinal purpose (75.8%). These are set of people who are not aware of *moringa* as a food substance or are not aware of its rich nutritional content. The low percentage (31.7%) of the respondents indicated that they eat *moringa* are likely to be those who are adequately aware of nutrition contents *moringa* and while very few (24.2%) respondents also use *moringa* for medicinal purpose.

Hypotheses Testing

Ho 1. There is no significant relationship between the personal characteristics of the respondents and awareness of *Moringa oleifera*.

Table 3 PPMC Analysis between age and educational background of respondents' and their awareness of nutritional content of *Moringa*

Variables	r	P	Decision
Age	0.068	0.362	Not significant
Educational background	1.99	0.004	Significant

Level of significance p < 0.05 (significant)

Table 3 shows that there is no significant relationship between age (r = 0.068; p = 0.362) of respondents and their awareness of nutritional contents of *moringa* meaning that their age do not influence their awareness. There is a significant relationship (r = 1.99; p = 0.004) with their educational background which implies that the higher the level of education the more aware are the respondents on nutritional contents of *moringa*. The more educated ones have access to information than the less educated ones; they could have come across information on *moringa* through the internets, magazines and newspapers. It also implies that the more educated ones cares to know the nutritional contents of the food they consume which is of no importance to the less educated ones.

Table 4: Relationship between respondent's personal characteristics and their awareness of nutritional content of *Moringa*

Variables	Df	x^2 value	P-value	Decision rule
Sex	1	15.04	0.38	Not Significant
Marital Status	2	14.06	0.99	Not Significant
Occupation	3	15.63	0.34	Not Significant

Table 4 shows that there is no significant relationship between respondents' sex, marital status and occupation, and their awareness of nutritional content of *Moringa* as shown in this result (x^2 = 15.04, p =0.38), (x^2 = 14.06, p=0.99), (x^2 =15.63, p=0.34) respectively. This implies that sex, marital status of respondents and their occupation do not influences respondents' awareness of nutritional content of *moringa.*

Table 5: Correlation between respondents' awareness of nutritional contents of *Moringa* and their utilization

Variables	r-value	p-value	Decision
Respondents' awareness of nutritional content and utilization of *moringa*	0.4518	0.001	Significant

*significant p < 0.05

Table 5 indicates that the respondents' level of awareness of nutritional content is significantly correlated to their utilization of *moringa oleifera* (r = 0.451; p<0.001). This suggests that the utilization of *Moringa* by respondents is dependent upon their level of awareness of the various forms of nutritional contents of *moringa*. Hence, the more their awareness about the nutritional contents of *Moringa,* the more the consumption of *moringa*. Therefore, further efforts should endeavor to include creating more awareness about the nutritional contents of *moringa oleifera*.

Discussion of findings

The result revealed that majority (83.4%) of the respondents fall between the ages of 26 and 45 years. This indicates that the respondents are still in their active years and could still run around to get this moringa planted in their gardens, it also implies that the consumption will be sustained. Majority (65.8%) of the respondents are Christians, which indicated as the prominent religion among them, while others (34%) are Muslims. Majority (72.5%) of the respondents were married and very few were single. This is an indication that the respondents will be interested in anything that will improve the health status of the family members. Seventy percent of the respondents had one form

of formal education or the other. The prominent occupations among the respondents were government employed (37.5%) and privately employed workers (35%) while very few of them are into business (19.2%) and farming (8.3%).

More than half (56.7%) of the respondents were aware that *moringa oleifera* contains potassium, 51 percent were aware that *moringa oleifera* contains vitamin C. less than half (45%) of the respondents were aware that *moringa* contains calcium. An inference can be made that a larger percentage (76.7%) of the respondents are not adequately aware of the protein content of *moringa*. High percentage (87.5%) was not aware that *moringa* contain vitamin A. These high numbers that lack the knowledge may not want to consume *moringa* in any form. People who are adequately aware of *moringa* are likely to be well educated and cared to know the nutritional content of the food substances they consume or people who have one ailment or the other and are adequately aware of the healing properties of *Moringa*. However, majority (54.2%) of the respondents had low level of awareness on the nutritional content of *moringa oleifera*. Few (25%) and (20%) of the respondents had average and high level awareness respectively. This is an indication that awareness campaign on the nutrition value of *moringa oleifera* is crucial.

Conclusion

The study concluded that there is low awareness on the nutritional value of *moringa oleifera* which subsequently affected its utilization. Adequate awareness of its richness in vitamins, minerals, protein, essential nutrients and its medicinal properties will increase consumption of *moringa oleifera* for nutritional security. This will in no doubt grant an impetus to the nation's drive towards achieving the health–related Millennium Development Goals (MDG) for food and nutrition security and also increase source of income of people as there will be increase in cultivation of *moringa* which will also help to reduce the menace of poverty and malnutrition.

Recommendations

- Awareness should be created on the nutritional and medicinal contents of *Moringa oleifera* among rural and urban dwellers to increase its level of utilization.
- People should be encouraged to use *Moringa oleifera*, irrespective of their ages, educational and/ or marital status for sustainable food and nutrition security.

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Nutrient, Anti-nutrient and Phytochemical Composition of Bread fruit (*artocarpus communis*) Pulp

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Abstract

The study assessed the nutrient, phytochemical and anti-nutrient composition of breadfruit (*artocarpus communis*). Chemical analysis was carried out on raw breadfruit pulp using standard procedures. Some of the nutrients analysed such as carbohydrates (24.05), protein (1.35%), fat (0.95%), moisture (71%), fibre (1.2%), ash (1.0%) B-carotene (0.07mg), calcium (0.5mg) and iron (0.87mg) had values which compared favourably with that from other cultivars, while vitamin C (3.90mg), niacin (0.05mg) and zinc (0.04) values were low. The breadfruit contained some anti-nutrients such as oxalate (2.18mg) phytate (1.3mg) and tannin (4.0mg) as well as phytochemicals which include flavonoids (8.0mg) Alikaloids (25.5mg) and saponin (23.0mg). It is recommended that more research should be carried out to identify best processing techniques that can eliminate the ant- nutrients present in breadfruit before its consumption can be encouraged for maximum benefit.

Introduction

Households are food secure when they have year round access to the amount and variety of safe foods their members need to lead active and healthy life (Food and Agricultural Organization (FAO), 2010). In most developing countries like Nigeria, food shortage has become quite evident as a result of population growth, competition for fertile land and poverty. The diet of many rural and urban dwellers is deficient in protein and high in carbohydrates. The implication is high incidence of malnutrition and increased dietary disease, a situation in which children and especially pregnant and lactation women are most vulnerable (Sadik, 1991).

It is often stated that only a few staple crop produce the majority of the food supply. This is quite true; however, the important contribution of many minor species should not be under estimated. Agricultural research has traditionally focused on these staples such as cassava, corn and yam while relatively little attention has been given to minor (or underutilized or neglected crop, particularly by scientists in developing countries (Rayone, 1997). One of such underutilized and neglected crop particularly in

southeastern Nigeria is breadfruit *(Artocarpus communis).*

Artocarpus communis belongs to the family of *moraceae.* It is a tropical fruit, native of Malasia and it is an important food in these areas (Taylor and Tuia, 2007). *Artocarpus communis* was derived from the Greek word Artos, bread and karpus which refers to its bread like quality when baked. It has both seeded and seedless varieties. The seeded variety is known as breadnut while the seedless variety is commonly referred to as breadfruit (*ukwa oyibo or ukwa bekee).* The tree has a great productive ability with an average sized tree producing 400-600 fruits per year (National Tropical Botanical Garden (NTBG), 2009). It has been reported that breadfruit yields in terms of food are superior to other starchy stapes such as cassava and yam (Singh, 2009).

Breadfruit pulp can be made into various dishes. In countries such as Sri-lanka, it is either cooked as a curry using coconut milk and spices, consumed after boiling or made into fritter. In Seychelles, it is traditionally eaten as a substitute to rice as an accompaniment to the main meal. It is either consumed boiled or grilled. In Nigeria, Amusa, Kehinde and Ashaye (2002) observed that it can be fried, boiled or mashed to make porridges or ground into flour and used in breads and biscuit making. According to Adepeju, Gbadumosi, Ademiran and Omobuwajo (2011), the fruits are boiled, pounded and eaten with soups just like pounded yam.

Limitation imposed on the use of bread fruit have been attributed to anti-nutritional factors such as tannin, oxalate, phytate, heamagglutinin and trypsin inhibitor. Anti-nutrients are substances in foods that interfere with the absorption of nutrients. According to Helminstine (2012), Lecitins and tryipsin inhibitor interfere with digestion, tannins chelate and reduce iron and zinc absorption, while phytate chelates zinc iron, calcium and many other metals. On the other hand, studies have shown that breadfruit contains some photochemicals such as flavonoids and saponin (Ajayi, Ajibade and Oderinde, 2011). These phytochemicals are non-nutritive plant chemicals that have protective or disease preventing properties. Some of the well known phytochemicals are lycopene in tomtoes, iIsoflavones in soy and flavonoids in fruits.

Some studies on breadfruit have been carried out in southwestern Nigeria where its consumption has gained some grounds. Oladunjoye, Ologhobo and Olaniyi (2010), studied the nutrient composition, energy value and residual anti-nutrient factors in differently processed breadfruit meal. Amusa, Kehide an Ashaye (2012), looked at the bio-deterioration of breadfruit in storage and its effects on the nutrient composition. Adepeju, Gbadamosi, Adeniran and Omobuwajo (2011), studied the functional and pasting characteristics of breadfruit flour. In the southeast Nigeria, Okorie (2010) assessed the chemical composition of breadfruit seed flour as affected by processing (boiling and roasting). Information on the nutritive, photochemical and anti-nutrient composition of raw bread fruit found in

south eastern Nigeria is quite scanty. Such baseline information will serve as a major tool that nutrition educators can use to advocate for an increased cultivation and consumption of this quite neglected food crop, hence the importance of this study.

Objectives

The general objective of the study was to assess the nutritional, physiochemical and anti-nutrient composition of breadfruit. Specifically, the study determined the:

1) proximate, vitamin and mineral content of breadfruit.
2) anti-nutrient content of breadfruit
3) photochemical composition of breadfruit

Research questions

1) What is the proximate, vitamin and mineral values of breadfruit?
2) What is the anti-nutrient content of breadfruit?
3) What is the photochemical composition of breadfruit?

Materials and methods

***Area and design of the study*:** The area of the study was Nsukka Local Government Area. Gross underutilization of bread fruit (*artcarpus communis*) made it quite uncommon in the study area. The study adopted an experimental design. The following procedures were followed: procurement of the material (bread fruit), sample preparation, nutrient, photochemical and ant-nutrient analysis.

***Procurement of sample*:** Freshly harvested ripe breadfruit was purchased from a breadfruit tree owner in the study area.

***Sample preparation*:** The breadfruit was washed, peeled, cored and washed again to obtain a clean sample. This sample was sent to the Department of Home Science, Nutrition and Dietetics, University of Nigeria Nsukka, analytical laboratory for nutrient phytochemical and anti-nutrient analysis.

***Nutrient analysis*:** The proximate value of the sample was determined using standard procedure. Moisture content of the sample was determined by hot air oven method of Pearson (1976). The sample was dried at 100^{o}c and the dry weight was subtracted from the sample's initial weight.

Fat was determined using the soxholet extraction method as described by AOAC (1995). Crude protein content was determined using the Micro-kjedahl method of AOAC, (1995). This involved digestion, distillation and titration. The acid hydrolysis method of AOAC (1995) was used for crude fibre determination. Ashing was also done in a hot air oven at 100^{o}c as described by AOAC (1995). The dish plus the sample was place in a cool muffle furnace and the temperature of the furnace was maintained until its content (residue) appeared grayish white. This was cooled and weighed. The percentage total ash content of the sample was then calculated. Carbohydrate was determined by difference that is 100-(c,b,d,e). where a = % moisture, b= % fat c-% protein, d= % fibre and e = % ash.

For the vitamins and mineral content determination, the samples were prepared using the method described by

Pearson (1976). After the preparation, the exact wave length for each sample was used to measure absorbence in a spectrophotometer. For β-carotene, vitamin C, thiamin, riboflavin, niacin, iron, phosphorus, calcium, sodium and zinc absorbence were measured at 328m, 420nm, 360nm, 510nm, 420nm, 500nm, 470nm, 425nm and 420nm respectively.

***Anti-nutrient Analysis*:** Oxalate, phytate and tannin were determined by photometric method of Pearson (1976), Lata and Eskin (1980), and Van-Burden and Robineson (1981) respectively. Readings were then taken in a spectrophotometer at 490nm for Oxalate, 500nm for phytate and 720nm for tannin.

***Photochemical Analysis*:** For alkaloid determination, Harborne, (2000) method was used. Five grams of the sample was weighed and 10% oxalate in ethanol was added. It was filtered and concentrated. Ammouium hydroxide was added drop wise until precipitation was complete. The precipitate was collected washed and the residue filtered.

The method used for saponin determination was described by Obadoni and Ochuko (2001`). Twenty grams of the sample was weighed and heated at 55^0c. The mixture was filtered and the residue extracted. About 20ml of diethyl ether was added to the concentrate and shaken vigorously. The aqueous layer was recovered and n-butanol added. It was then washed and heated. After evaporation, the sample was dried in the oven to a constant weight.

The total flavonoid content was determined using the method of Pearson, (1976). The sample was diluted, mixed with reagents and allowed to incubate at room temperature for 30 minutes. Aborbence of the mixture was measured at 415nm in a spectrophotometer.

Result presentation

Table 1: Proximate, vitamin and mineral content of breadfruit pulp

Proximate (%)					
Carbohydrate	protein	fat	moisture	fibre	ash
24.0	1.35	0.95	71.5	1.2	1.0
Vitamins (mg)					
vitamin C	β-carotene	Thiamin	niacin	Riboflavin	
3.90	0.07	0.2	0.05	0.56	
Mineral (mg)					
calcium	phosphorus	iron	zinc	sodium	
0.52	0.08	0.87	0.04	0.14	

Table 1 shows that the moisture content of breadfruit was high (71.5%). Carbohydrate was 24% while protein was only 1.33%. Breadfruit contains 3.90mg of vitamin C, 0.07, 0.2, 0.05 and 0.56mg of β-carotene, thiamin niacin and riboflavin respectively. Iron content of the breadfruit was 0.87mg. Calcium, phosphorus, zinc and sodium values

were 0.05, 0.08, 0.04, and 0.14mg respectively.

Table 2 Anti-nutrient content of breadfruit pulp (mg/100g)

Oxalate	2.18
Phytate	1.3
Tannin	4.0

Table 2 reveal that breadfruit contains some anti-nutrients in varying concentration such as oxalate (2.18 mg), phytate (1.3mg) and tannin (4.0mg).

Table 3: Phytochemical composition of breadfruit pulp (mg/100g)

Flavonoids	8.0
Alkaloids	25.5
Saponin	23.0

Table 3 shows that photochemical analysis of breadfruit revealed the presence of Flavonoids (8.0mg), Alkaloids (25.5mg) and Saponin (23.0mg).

Discussion

The carbohydrate, protein, fat, moisture, fibre and ash values of the raw breadfruit were 24.0, 1.35, 0.95, 71.5, 1.2 and 1.0 respectively. According to Stadlmayr, Charrondiere, Enujiugha, Bayili, Faghohoun, Samb, Addy, Barikmo, Ouattara, Oshaug, Akinyele, Annor, Bomfeh, Ene-Ogong, Smigh, Thiam, and Burlingane (2012), breadfruit contains about 23.9g of carbohydrates 1.5g of protein, 0.3g of fat, 71.7g moisture, 1g of fibre and 0.9g of ash. The study carried out by Rayone (1997), on different culuvars of breadfruit revealed that the carbohydrate, protein and moisture of the cultivars ranged from 22.8-33.4, 0.7-1.8 and 63.8-74.4g respectively. In another study by Jones, Ragone, Tavane, Bernotus and murch (2011), the carbohydrate content ranged from 21.5-33, protein was 0.6-2.24, fibre 0.9-7.37, fat 0.1-2.36 and ash 0.56-1.20%. These studies have confirmed that the proximate values of breadfruit found in south eastern Nigeria falls within range with those ones found other parts of the world. The β-carotene (90.07mg) thiamin (2mg) and riboflavin (0.056) were high, while vitamin C (3.90mg) and niacin (0.05mg) values were low when compared with the study of Jones *et al*. (2011) which were 0.00-0.01, 0.09-0.15, 0.02-0.05 1.6- 34.4 and 0.75-1.4 mg. All these observed differences could be attributed to environmental influences such as soil on the nutrient composition of food.

The calcium (5.2mg), and iron (0.8mg) values were within the range while sodium (0.14mg) and zinc (0.04mg) were below the minimum values observed by Jones *et al*. (2011). None of the breadfruit mineral values from this study was up to that observed by Stadlmayr *et. al*. (2012). Apart from the influence of soil on nutrient

composition, method of chemical analysis could also have resulted in the above observed differences.

The oxalate, phytate and tannin values were 2.18, 1.30 and 4.0mg respectively. The study by Bello, Falade, Adewusi and Oluwore, (2008) on lesser known Nigerian fruits, revealed phytate and oxalate to range from 0.20-6.65 mg/g and 0.23-1.17g/100g. The oxalate and tannin values were lower while phytate was higher than that of Oladunjoye Ologhobo, And Ama (2010), who observed that the oxalate, phytate and tannin values of raw breadfruit meal were 2.70, 0.58 and 6.05 respectively. In another study by Oladunjoye, Ologhobo and Olaniyi (2010), higher values of oxalate (3.30mg) and tannin (6.70mg) and lower value of phytate (0.75mg) were observed. These differences could be attributed to differences in cultivar, soil type and or method of analysis used.

The study revealed that the breadfruit contained some phytochemicals such as flavonoids (8mg), saponin (23mg) and Alkaloids (25.5mg). This is in agreement with the study done by Ajayi, Ajibade and Oderinde (2011) who isolated flavounoids and saponin from breadfruit seeds. According to Jagtap and Bapat (2010), Artocarpus species are rich in phonelic compounds including flavonoids. American Cancer Society (2013) stated that phytochemicals are found in plant-based foods such as fruits, vegetables, beans and grains. These phytochemcials according to Kush, Doyle, McCullough, Rock, Wahnetfried, Bandera, Gapster, Patel, Andrews and Ganslen (2012), are promoted for the prevention and treatment of many health conditions, including cancer, heart disease, diabetes and high blood pressure. The presence of these photochemical in breadfruit could be the reason why it is used traditionally in Cameroon to treat several ailments including infections and associated diseases (Kuete, Ango, Folso, Kapehe, Dzoyem, Wouking, Ngadjui and Abegaz, 2011).

Conclusion

The proximate, vitamin, mineral and phytochemical constituent of breadfruit obtained in southeastern Nigeria were found to be appreciable. This makes it superior to yam and cassava. It's use should therefore be advocated for to complement the already existing starchy staples.

Recommendations

- Processing methods that can eliminate the anti-nutrients in breadfruit should be identified.
- Sensory evaluation should be carried out on different dishes prepared with breadfruit to ascertain the most acceptable ones.
- The preparation and consumption of such acceptable dishes should be advocated through nutrition education at women gatherings.

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Evaluation of the Organoleptic Attributes and Acceptability of Cotton Fabric Treated with Dyes Extracted from Beetroot (*Betavulgaris*) Indigenous Plant for Fabric Coloration

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Abstract

This study evaluated the organoleptic attributes and acceptability of cotton fabric treated with dyes extracted from beetroot [Beta vulgaris] indigenous plant for fabric coloration. The study design was Research and Development (R and D) and was conducted at the University of Nigeria, Nsukka. The study population comprised 41 evaluators made up of 17 Lecturers and 24 Postgraduate students from University of Nigeria, Nsukka. Organoleptic Attributes and Acceptability Evaluation [OAAE] instrument was used for data collection and data were analyzed using descriptive statistics. t-test statistic tested a null hypothesis at 0.05 Level ofsignificance There were no significant differences(P>0.05) in the mean rating responses of lecturers and postgraduate students on the acceptance of the organoleptic attributes of the beetroot dye on cotton fabric in six instances but difference existed in one instance. The null hypothesis was therefore accepted in six instances and rejected in one instance at 0.05 probability level. Recommendations were made based on the findings.

Key words: Dye, Dye extraction, Mordant, Organoleptic attribute, Cotton fabric.

Introduction

Dye is a coloured substance that imparts permanent colour to other substances. Dye is an indispensable processing chemical used as colorant in the food, wood, photography, paper, leather and leather products, textiles and clothing industries as well as in educational institutions as raw consumables for teaching and learning and at homes for garment and fabric coloration and renovation. For any colored substance to be called a dye, it must be colorfast. This implies that the dye must be capable of being fixed or firmly attached to the fibre or substance resisting removal by

the action of environmental stressors such as sunlight, washing, perspiration, including acids and alkalis and crocking or rubbing(Marshal, Jackson, Stanley, kefgen and Touchie-specht, 2000) A good dye must also have good organoleptic attributes and be acceptable by consumers (Ozougwu and Anyakoha, 2013). Organoleptic attributes of a dye refers to the qualities of the dye that can be seen, touched or felt, perceived or smelt and therefore involves the senses of sight, touch or feel and smell. The organoleptic attributes sought for in a dye include the different dimensions of colour, texture, odour and evenness of shade or level dyeing.

Colour is an aspect of visual experience (Websters Collegiate Encyclopedia, 2000). The colour of a dye plays major role and most often the primary motivation for the purchase of textiles and clothing items and accessories. The dimensions of color include- hue, value, chroma or intensity (Johnson and foster, 1990; Marshal, et al, 2000). Hue from physicist point of view is the wavelength reflected from a material. Different wavelengths indicate different hues and approximately 150 hues can be detected in the visible spectrum (Kolender, 2013). Hue from the artist or dyers' perspective is the name of a color family such as red, blue, green. This study takes cue from the latter's perspective. Color hue is being described as warm or cool. Warm hues are those found in the sun and fire such as red, yellow, orange and cool hues are those found in water including blue, green and violet. The warmth or coolness of a hue carries with it, an illusion of weight. For instance, warm hues are known as advancing hues as they emphasize the body size and contours and make objects, shapes or areas appear larger, more important and closer than others whereas cool hues minimize body size and make objects, areas and shapes appear smaller, less important and farther away than other colors (Johnson and Foster, 1990).

Value describes the lightness or darkness of a color. When the color white is added to a color, a lighter color referred to as tint is obtained while a darker color, shade is obtained when black is added to another color. Whatever color value yielded by a natural dye must be acceptable to consumers. Chroma or intensity describes the purity of a color expressed as the strength or weakness, dullness or brightness or the degree of saturation of a color.High chroma colors are pure, strong, brilliant, saturated colors and areacceptable, but low chroma colors are muted, weak, grayed and dull and unacceptable. Johnson and Foster (1990) emphasized that each hue in the color wheel is presented at its fullest, purest, chroma meaning that the colour is at its greatest saturation, its greatest brightness, its most brilliant and fullest intensity. Texture is a sensory impression involving touch and sight (Marshal et al 2000). Texture absorbs light differently and can change the colour of fabrics. The same dyes applied on different textures produce different colors. The visual aspect of texture is perceived by the eye because of the degree of light absorption and reflection on the surface of the material and can be

hard or soft, rough or smooth, hot or cold. Such impressions are the result of sensory impression understood by sight and other sense organs (Bartley, 1996, Hobbs and Rush,1997). The tactile aspect includes the coarseness, softness or crispness and rigidity. Whatever dye applied to finish a fabric that renders it unusable for purposes for which it should serve is unacceptable.

A good dye should be soluble in water or dispersible in a solvent resulting in evenness of shade or level dyeing in fabric. Crocking is the rubbing off of dyes from fabric, an indication that dye was not well absorbed or firmly attached to the fabric. Grayness or crystals of dyes on fabric's surface produce uneven or un-level dyeing which is unacceptable. Finally, a good dye should have a pleasant odor on fabric. Any dye, synthetic or natural that gives offensive odor to fabric is unacceptable.

Synthetic dyes are prepared in the laboratory from aromatic compounds. Natural dyesaredyes thatare extracted from natural sources from animals, minerals and from the roots, stems bark, leaves, seeds, calyces, fruits and resins of plants. Natural dyes are often referred to as mordant dyes since natural dyes require mordant to be colorfast. A mordant is a chemical element that quickens the rate of chemical reaction taking place between a dye and a fibre. Mordant also helps to open up the fibre for dye absorption and deepen the shade of the dye.

Presently there has been a global interest for exploitation of natural dyes perhaps due to their numerous benefits. Natural dyes are biodegradable and environmental friendly. They are less toxic and non-carcinogenic unlike their synthetic counterparts (Jothi, 2008; Lao Silk and Craft, 2009). Natural dyes have health and economic benefits and are readily locally available but are largely unexplored for utilization either for fabric coloration, skill acquisition or teaching and learning.

Clothing and Textiles is a component of Home Economics Education that equips students with relevant knowledge, attitude and skills in clothing and textile programme. Fabric dyeing and printing coloration are entrepreneurial activities that provide career opportunities to students upon graduation. With paucity supply of dyes, practical exercises in these areas are often skipped and students will not acquire the needed skills. Lack of entrepreneurial skills predisposes graduatesto unemployment or joblessness where white collar jobs are not easily available. As a way of contributing to filling the gap of dye scarcity, Ozougwu and Anyakoha(2013), embarked on an R and D study on dye extraction from beetroot plant and evaluated the effects of three extraction methods (boiling, steeping and solvent) and mordant (alum,citric acid, tannic acid and no mordant(control) on the light, wash, perspiration (acid and alkali) and crocking fastness of cotton fabric treated with dye extracted from beetroot indigenous plant. The study findings showed among others that beetroot dye has dye potential that showed reasonable colorfastness on coton fabric; there was no significant

difference in the effects of extraction methods used but significant differences existed in the effect of mordant on the colorfastness of the dye. Alum and tannic acids exhibited comparable positive improvement on the colorfastness of the dyes more than citric acid and non-mordantedprototypes; tannic acid changed completely all prototypes to black. The study suggested organoleptic attribute evaluation of the beetroot dye among others which was the focus of this present study.

Purpose of the study: The main purpose of the study was to evaluate the organoleptic attributes and acceptability of cotton fabric treated with dye extracted from beetroot(*Beta vulgaris*) indigenous plant for Clothing and Textiles Education. Specifically, the study:

- ❖ extracted dye frombeetroot plant using boiling extraction method
- ❖ applied the extracted dye to samples of cotton fabric mordanted with aluminum sulphate (alum)
- ❖ evaluated the organoleptic attributes and acceptability of the dye on cotton fabric.

Research question: One research question guided the study;

- ❖ What are the organoleptic attributes and acceptability index of the cotton fabric treated with dye extracted from beetroot (*Beta vulgaris*) indigenous plant for Clothing and Textiles Education?

Hypothesis: One null hypothesis was tested by the study at 0.05 significant level.

Ho1: There is no significant difference in the mean responses of Lecturers and Post graduate students on the acceptability of the organoleptic attributes of the cotton fabric treated with dye extracted from beetroot plant for Clothing and Textiles Education.

Methodology

Design of the Study: The study adopted Research and development (R and D) design model of Gall, Gall and Borg (2003). R and D design is an industry based development model in which the findings of research are used to design new products and procedures which then are systematically field tested, evaluated and refined until they meet the required criteria of effectiveness, quality or similar standards (Gall, Gall & Borg, 2007). The R & D model of Gall et al (2003) which has seven steps was more appropriate for product development of this nature. The activities within the stages of dye extraction, application and organoleptic attribute acceptability evaluation stages of the study were built into three major phases of the cycle and include:

- ❖ Specific objectives and criteria for product development.
- ❖ Development of prototype based on scientific evidence available for pertinent research findings.
- ❖ Conducting a main field test of the product.

Area of the Study: The study was carried out at the Clothing and Textiles Laboratory of the Department of Home

Science, Nutrition and Dietetics, University of Nigeria, Nsukka, Enugu State

***Population of the Study*:** The study population was 41 evaluators made up of two categories of evaluators namely; lecturers and Postgraduate students.17 lecturers from different departments of the University of Nigeria who have Home Economics background or have knowledge of either production or utilization of dyes for fabric coloration. They include;

- Seven Home Economics lecturers from VTE department
- Six lecturers from Department of Home Science, Nutrition and Dietetics, UNN.
- Two lecturers from the Department of Pure and Industrial Chemistry, UNN.
- Three lecturers from Fine and Applied Arts Department, UNN.

The second category of judges was 24 Postgraduate (PG) students from the different departments selected for the study. This group was part of the study because many of them teach Home Economics in various tertiary institutions in Enugu state and so will be part of the consumers of the research findings. The details include;

- Twelve PG students from VTE (Home Economics)
- Eight PG students from the department of Home Science, Nutrition and Dietetics, UNN.
- Two PG students from the department of Pure and Industrial Chemistry, UNN.
- Two PG students from the department of Fine and Applied Arts, UNN.

***Instrument for Data Collection*:** Data were collected using the OrganolepticAttributes and Acceptability of the Treated Fabrics Evaluation (OAAE) instrument. The instrument comprised three sections. Section A elicited information on the personal data of the evaluators. Section B collected data on the organoleptic attributes such as colour and its dimensions includingthe degree of warmness or coolness of hue, lightness or darkness of value, brightness or dullness of chroma or intensity; smoothness or roughness of texture (Sight), softness or coarseness of texture (Feel/touch), pleasantness/odorless/offensiveness of odourand dyeing related quality such as level dyeing or even shade of dye on fabric. Sections B and C were rated on 5 point scale. Section C evaluated the acceptability of the organoleptic attributes of the beetroot dyed cotton fabric samples by the judges where 5 indicates very highly accepted (VHA), 4 indicates highly accepted (HA), 3 indicates averagely accepted (AA), 2 indicates unaccepted (UA) and I highly unaccepted (HU) for each of the attributes identified.

***Validity and Reliability of the Evaluation Instrument*:** The instrument was face validated by five experts from the four departments used for the study. Ten copies of the instrument were pretested by four lecturers and six Pg students from the Department of

Human Ecology, University of Uyo, Akwa Ibom State, Nigeria. Cronbach alpha was used to determine the reliability coefficient of specific clusters in the testing protocols and established at 0.713 and 0.875 for sections B and C respectively.

***Method of data Collection*:** Data were collected in three phases.

Phase1 of the study dealt with sourcing of beetroot plant and extraction of dye from the plant.

Materials used include: beetroot plant (collected from the major distributors at NKN No 9 & 10 salad line Ogbete Enugu), Cotton fabric (100%), aluminum sulphate (Alum), stainless steel, dyeing pots, weighing scales, buckets, thermometer, mixing bowl, ferrous sulphate, heater, washing soda (Sal soda), distilled water, gloves, towel, un chipped enamel dyeing pot, goggle, cap and hand gloves protective.

Extraction of dye from beetroot plant was done using boiling method according to Kolender (2003). Fresh beetroot plant (200g) were washed, peeled and wet milled. The milled beetroot was heated with distilled water in the ratio of 1:2 weight per volume (w/v) of the plant, that is, 200g beetroot to 400ml distilled water at the temperature range between 80^0C for 30 minutes. It was allowed to cool and then sieved with .05 mesh (particle size) to collect the dye liquor.

Mordanting of the fabric and application of the dye to cotton fabric was carried out in *Phase ii of the study.* Cotton fabric 25g (40"x40") was scoured thoroughly in warm water with detergent three times to remove all sizing. 1 litre distilled water was heated and 6.25g aluminum sulphate (alum) and 0.5g washing soda (sal soda) were dissolved in. The wet scoured cotton fabric was immersed and gently but thoroughly stirred so that it is opened out in the solution. It was heated at 80^0C for 1 hour and allowed to cool overnight in the solution then squeezed off excess water for dyeing. The mordanted cotton fabric was immersed in the dye bath for 1 hour at a temperature of 80^0C using the contemporary plain dyeing method. The colour was modified with additional 0.25g ferrous sulphate added to the dye bath. The dyed fabric was taken out and dried under a shade.

In Phase iii, the organoleptic attributes and acceptability of the dyed fabric was done by a panel of 41 evaluators using a set of 45 copies of the OAAE instrument. The evaluators' mean rating responses were collated for data analysis and the rating was done in a single session.

Data Analysis: Data collected from the judges were analyzed using descriptive statistics (Mean and standard deviation. Mean 3.00 and above indicate positive and accepted organoleptic attribute whereas mean below 3.00 indicate negative and unaccepted organoleptic attribute. t-test statistic was used to test one null hypothesis at 0.05 probability level.

Summary of Findings

The following findings were made;

- Seven beetroot dye organoleptic attributes were identified.
- Colour hue is brown and fairly warm/cool.
- Colour value is fairly light/light..

- ❖ Colour Chroma is fairly brilliant/dull
- ❖ Texture (Sight) is smooth.
- ❖ Texture (Feel or touch) is soft.
- ❖ Odour is odourless/offensive
- ❖ Shade is even shade.
- ❖ Six beetroot organoleptic attributes were unanimously accepted by both categories of evaluators.
- ❖ There were no significant differences(P>0.05) in the mean rating responses of lecturers and postgraduate students on the acceptance of the organoleptic attributes of the beetroot dye on cotton fabric in six instances but difference existed(P<0.05) in one instance. The null hypothesis was therefore accepted in six instances but rejected in one instance at 0.05 probability level.

Research Question 1: What are the organoleptic attributes and acceptability of cotton fabric treated with dye extracted from beetroot plant?
The answer to research question 1 is presented in tables 1 and 2.

Table 1: Mean Rating Responses of Lecturers and Postgraduate Students on the Organoleptic Attributes of Cotton Fabric Treated with Dyes Extracted from Beetroot Plant.

S/N	Beetroot Organoleptic Attributes	$\bar{x}$i	Ni	SDi	$\bar{x}$ii	Nii	SDii
1	Colour hue (Brown)	3.76	17	.572	2.88	24	.741
2	Colour value	3.65	17	.862	4.00	24	.590
3	Colourchroma	3.47	17	.717	2.83	24	.816
4	Texture (sight)	4.00	17	.791	4.00	24	.590
5	Texture (touch)	4.76	17	.732	4.12	24	.448
6	Odour (smell)	3.53	17	.717	2.92	24	1.018
7	Evenness of shade	3.88	17	.485	3.67	24	.702

Key: $\bar{x}$i - Mean of Lecturers Ni -Number of Lecturers Nii- No of Postgraduate Students SDi-Standard Deviation for Lecturers, SDii-Standard Deviation for Postgraduate Students $\bar{x}$ii-Mean for Postgraduate Students

Table 1 shows that all the organoleptic attributes scored highly above the mean cut off by the lecturers but three out of the seven organoleptic attributes were scored below mean cut offby Pg students. However, while the lecturers agreed that beetroot colour hue, brown, is warm (3.76±.74), the Pg students objected that they are cool (2.88±.74). Colour value was fairly light for lecturers but light for Pg students. The lecturers agreed that the beetroot odour is odorless (3.53±.71), it is offensive for Pgstudents (2.92±1.01). Colourchroma was fairly bright for the lecturers(3.47±71), but dull for the Pg students(2.83±.82). The highest scored attribute by both was texture as it relates to touch (4.76±.73 and 4.12±.448 respectively) followed by texture of visual perception (4.00±.791, 4.00±.590 respectively). The least scored attribute was colourchroma (2.83±.82) showing it is dull for Pg students. Both agreed that the shade of dyed fabric was fairly even.

Table 2: Mean Rating Responses and t-test Results of Lecturers and Postgraduate Students on the Acceptability of the Organoleptic Attributes of Beetroot Dyes on Cotton Fabrics.

Acceptability of the organoleptic attributes.	Xi	Ni	SDi	Xii	SDii	Nii	t/Cal	Df	P-value	Remark
Colour hue (brown)	3.59	17	.712	3.33	.482	24	1.369	39	.179	NS
Colour value	3.53	17	514	3.38	.576	24	.883	39	.382	NS
Colourchroma	3.47	17	.624	3.21	.415	24	1.618	39	.114	NS
Texture (sight)	3.76	17	.562	3.88	.537	24	.636	39	.529	NS
Texture (touch)	3.71	17	.849	3.96	.462	24	-1.23	39	.228	NS
Odour/smell	3.41	17	.712	2.71	.751	24	3.019	39	.004	S
Evenness of shade	4.00	17	.612	3.96	.464	24	.248	39	.805	NS

Key: $\bar{x}$i - Mean of Lecturers Ni -Number of Lecturers Nii- No of Postgraduate Students SDii-Standard Deviation for Postgraduate Students SDi- Standard Deviation for Lecturers t/cal-T calculated ,d/f- Degree of Freedom $\bar{x}$ii- Mean for Postgraduate Students NS -Non Significant, S-Significant

Table 2 on the acceptability of the organoleptic attributes of the dye reveal that all the attributes minus odour of the dye were unanimously accepted by both the lecturers and Pg students as they had ratings between3.33 and 4.00 indicating averagely to highly accepted. Evenness of shade was the most accepted attribute of beetroot by lecturers while odour was the most unaccepted attribute by Pg students.

Discussion

Research question one asked question on the organoleptic attributes and acceptability of beetroot dye on cotton fabric samples by lecturers and Pg students evaluators. Findings from results (Table 1) clearly show that all the organoleptic attributeswere rated highly by the lecturers. Though three of the attributes were scored a little below the mean cut off, others were scored highly by the Pg students.The beetroot dye brown colour hue is fairly warm, (lecturers),colour value is fairly light, chroma is fairly bright, (lecturers) textures are smooth and soft, odour is odorless (lecturers) and fairly even shade. The high mean score on the beetroot dye attributes on samples of cotton fabric reveal that beetroot plant has dye potentials in these aspects and may be accepted by consumers. This finding supports Apparel Search Company, (2009) and Lao Silk and Craft (2009) and Chenghaiah et al (2010), who stressed that natural dyes produce wide range of interesting colours and by using natural plant dyes, natural dyeing experts find beautiful coloursprings from unlikely places and by using traditional recipes with new variations, artisans, individuals and home makers can transform roots, leaves, bark, berries and seeds of plants in their home backyards into natural dyes to produce colours and designs on textiles and garments that appeal to people aesthetically and in fashion.

On the acceptability of the organoleptic attributes of beetroot dyes on cotton fabric, findings in table 2 revealed that all the organoleptic

attributes of beetroot dye on cotton fabric were accepted by all the evaluators except the odour which was rated offensive by the Pg students. The highest accepted organoleptic attribute was evenness of shade by both category of evaluators. Evenness of shade is resultant of level dyeing, an indication of solubility of the dye in the dye bath. This attribute supports the findings of Ozougwu and Anyakoha (2013) on the colorfastness of beetroot dye to crocking and alkali. A dye that is insoluble in water or dispersible in solvent leaves off particles of dyes on the surface of the fabric or substrate being dyed. A dye that is incapable of being fixed, attached or absorbed into the fibre leads to rubbing off or crocking, an undesirable and unacceptable attribute. The exceptionalhigh score on the soft texture of sight and feel of the beetroot dyed cotton fabric confirms Chenghaiah, Rao, Kumar, Alagusundaram and Chetty (2010),observation that natural dyes produce soft texture, feel or "hand" in fabric and give a cooling sensation and are calmitives that revitalize the skin. The findings also supports Ashis and Agarwal (2009), who emphasized that natural dyes produce uncommon soothing and soft shades compared to synthetic dyes.

The null hypothesis stating thatthere is no significant difference (P>.05) in the mean rating responses of lecturers and Pg students on the acceptability of the organoleptic attributes of the beetroot dyed cotton fabric was accepted in six instances for colour hue (P=0.179), value (P=0.382), chroma (P=0.114), texture for sight (P=0.529), texture for feel (P=0.28), evenness of shade (P=0.805), but rejected in one instance for odour (P=0.004) at 0.05 level of significance.The unanimous agreement by both categories of evaluators signifies that beetroot dye qualifyorganoleptically and aesthetically to be called and used as dye for cotton fabric coloration.

Conclusion

This study is a follow-up of the study on "Effects of extraction methods and mordant on the colorfastness of cotton fabrics treated with dyes extracted from beetroot (Beta vulgaris indigenous plant)by Ozougwu and Anyakoha(2013). The study finding showed that beetroot dye has reasonable colorfastness property. This present study also identified seven organoleptic attributes of the dye. Colour hue was brown and warm, value was fairly light, chroma or intensity was fairly bright, textures of visual perception and feel were smooth and soft, odour was between odorless and offensive. All the attributes were unanimously accepted except the odour of the dye.

Recommendation

Based on the findings of the study, the following recommendations were made;

- Home Economics Lecturers and teachers at all levels of education in Nigeria should encourage their students to explore beetroot and other plants in their environment for dye extraction for fabric coloration, skill acquisition in Clothing and Textiles and other allied craft courses.

- Home makers, artisans, individuals and small to medium scale dyeing industries should explore beetroot plant for extraction. Beetroot contains large amount of pigment which are often wasted during boiling for food. Careful and controlled processing of the stalk would be of utmost benefit for fabric or garment coloration or renovation. They should be sensitized through seminars, workshops, women conferences and meetings.
- Textiles and Clothing industries through their textile chemists should find ways of improving the odour of the beetroot dye and other attributes of the dye such as the chroma and value.
- The Nation's Raw Materials and Development Centers (RMDC) should encourage researchers in this area by patronizing research and development efforts in form of stipends to students.

Suggestion for Further Researches

- Sublimation properties of the dye on cotton fabric should be studied.
- The spectrophotometric attribute of the dye should be studied from the physicist point of view.

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Combating Cybercrimes in Federal University Digital Libraries in Nigeria

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Abstract

This study was focused on cybercrimes existing in Federal University Digital Libraries. Questionnaire was used for data collection from 120 librarians working in Federal University Digital Libraries in Nigeria. A survey research design was used for the study. The population of the study was made up of 120 librarians. Mean and percentages were used for data analysis. The major findings include that internet pornography and scam mails were the greatest cybercrimes committed in Federal University Libraries. It also identified major stakeholders in the control of cybercrimes as staff in charge of the computer systems. .It was further revealed that non-coverage of cybercrimes under library laws and regulations constituted critical challenge to the control of cybercrimes. The study recommended among others, the need to entrench stiff penalties against cybercrimes in University laws and regulations so as to instill discipline and sustain relevance of cybercafés in enhancing academic excellence.

Key words: Universities, Academic Libraries, Cybercrimes, Digital Libraries, Stakeholders and Cybercrime control.

Introduction

Many forms of cybercrime exist. Asokhia (2010) notes that cybercrime covers a wide range of illegal activities including financial scam, computer hacking, downloading of pornographic images and virus attack to mention but a few. He further notes that recently young students in tertiary institutions engage in forgery of all kinds ranging from false admission papers to school fees' receipts, certificate racketeering and examination malpractice. Laumbano and Nawe (2004) reported that students in Dar es Salaam University, Tanzania used the internet to view pornography. Ewuuk and Shannon (2009) also note that data theft and malicious break-ins are prevalent among students in Nigerian Universities. Rathinasabapathy and Rajendran (2007) called on library and information professionals especially those working in academic libraries to ensure enough safety and security of their data bases. It has been established by authors such as Longe and Chiemeke (2008) as well as Asokhia (2010) that youths between the ages of 15-30years are the major culprits of cybercrimes. Hence the developmental stage of adolescents that would have been used

to inculcate positive values is spent in cybercrimes to the detriment and the future of the Nigerian state. Boateng et al. (2010) argue that from the perspective of Information and Communication Technology (ICT) for development, that cybercrime has the potential to stall developmental contributions accruable from a well harnessed ICT adoption, diffusion and use. They also argue that cybercrime has the potential to widen the digital divide and affect consumer confidence in online transactions. Cybercriminals capitalize on system vulnerabilities, ignorance and gullibility on the part of users, to perpetrate their crimes. Boateng et al. (2010) noted that financial loses occasioned by cybercrime in the United States of America increased dramatically from S52.5 million in 2006 to S67 million in 2007.

Cybercrime is one of the fastest growing criminal activities in the world among youths. Padhye and Gujar (2012) observe that the total global economic loss due to cybercrime annually, is estimated at $388billion, out of which 114 billion is a result of direct losses in money stolen by cyber tugs and $274 billion losses are due to time lost in dealing with cybercriminals.. In 2008, the Internet Crime Report of the National White Collar Crime Centre ranked Nigeria 3rd in the world and 1st in the African Continent, as the source of fraudulent cyber activities. (National White Collar Crime Centre, 2008). Akuta, Ong'oa and Jones (2011) included Nigeria as one of the countries that served as cybercrime capital of the world. In a bid to control cybercrimes, bodies such as International Police (INTERPOL) and the International Crime Commission have been instituted. The Nigerian Government has set up a number of commissions to combat cybercrime in Nigeria. According to Ehimen and Bola (2010) such commissions include: the Economic and Financial Crime Commission (EFCC) which was established in 2003, the Nigerian Cyber Working Group (NCWA), The Critical Information Infrastructure Protection Bill of 2005 and the Advance Fee Fraud act of 2006. Unfortunately, none of these organs has an office in any Nigerian University. Individually, some commercial and government owned cybercafés install Content Filter software in their computer systems to filter unwanted internet contents such as unsolicited messages. Notices, warning against spamming activities adorn the walls and notice boards of some organizations (Longe and Chiemeke, 2008). Also Curry, Flodin and Matheson (2000) suggested the use of security personnel within libraries to forestall cybercriminal activities.

The challenges of controlling cybercrime are daunting. Longe and Chiemeke (2008) observed that the crime came into existence with the recent emergence of cyber space. This explains the unpreparedness of the global society towards combating them. Boateng et al. (2011) observe that the laws of some nations and institutions (which include libraries) do not cover cybercrime. Wada and Odulaja (2012) posit that presently, there is no law specific to cybercrime in Nigeria.

Cybercrime often involves more than citizens of a nation. This means that to enforce control could demand international cooperation. Unfortunately, cybercrime knows no boundaries, a fact that complicates its investigation.

The evolution of fixed wireless facilities in the Nigerian network landscapes has added another dimension to the cybercrime problem. Longe and Chiemeke (2008) noted that fraudsters, who could afford internet connectivity through fixed wireless lines, operated through the comfort of their homes. Available reports on cybercrime and criminology in Nigeria by several authors including Longe and Chiemeke (2008) Ehimen and Bola (2010), Asokhia (2010) dwelt on cybercrime and criminality in Nigeria, cybercrime in Nigeria; and cybercrime and national development in Nigeria. None of these works or any other, to the best knowledge of the researchers targeted Federal University Digital Libraries. It is in this connection coupled with unfettered spread and unwholesome effects cybercrimes are visiting on society, that this study has been undertaken to fill the gap of finding a panacea to curb the nefarious crimes in Nigerian Federal Universities. In this study, cybercafés and digital libraries were used interchangeably.

Objectives of the Study

The general objective of this study was to examine ways through which Federal University Digital Libraries in Nigeria were combating cybercrimes. Specifically the study

1. Identified forms of cybercrimes that exist in the Federal University Digital Libraries in Nigeria
2. Identified stakeholders involved in controlling cybercrimes in Federal University Digital Libraries in Nigeria.
3. determined strategies used in controlling cybercrimes in Federal University Digital Libraries in Nigeria.
4. determined challenges of controlling cybercrimes in Federal University Digital Libraries in Nigeria.

Research Questions

The following research questions guided the study.

1. What forms of cybercrime exist in Nigerian Federal Universities?
2. Who are the stakeholders in controlling cybercrime in Nigerian federal Universities?
3. What are the challenges of controlling cybercrime in the University Digital Libraries?
4. What are the strategies employed by these Universities in controlling cybercrimes?

Methodology

Design and Area of Study: The study was a descriptive survey. The area of the study is Nigeria.

*Population for the Study***:** Population for the study comprised all the twenty-four Federal Universities listed in Association of Commonwealth Universities (2008). The total population of academic librarians in the twenty-four Federal Universities was 120. All the 120 academic librarians were used

for the study because of the small size of the population. There was no sampling

Instrument for Data Collection: A well structured questionnaire was used for data collection. It was developed through literature review based on the purpose of study. The reliability of the questionnaire was established using Cronbach's alpha formula. It was found to be 0.76. The questionnaire had two sections, sections A and B. Section A was based on respondents' demographic information while section B was based on aspects of cybercrime. Section B had four clusters. Clusters one and two were based on no or yes answer while clusters three and four were based on a four point scale of SA=Strongly Agree; A= Agree; D=Disagree and SD= Strongly Disagree.

Data collection and analysis techniques: One hundred and twenty copies of the questionnaire were administered to librarians working in library cybercafés. The 2012 Nigerian Library Association Annual General Conference held in Abuja offered researchers the opportunity to meet the respondents. During pre-conference lecture, announcements were made in which librarians working in library cybercafés were asked to wait at the Eastern door of the conference room. The researchers addressed the librarians there and appealed to them to help make the research a success by filling copies of the questionnaire. Of the 120 copies of the administered questionnaire, 105 were completely filled and returned. All the 105 copies of the questionnaire were found usable. The 105 copies of the questionnaire were sorted into 6 geo-political zones of the country. Percentages and mean scores were used for data analysis. Percentages of 50 and above were upheld. Also mean scores of 2.5 and above were upheld.

Findings

Characteristics of respondents

All the respondents had MLS as their highest library qualification. It also showed that sixty-six librarians (62.86%) and thirty-nine librarians (37.14%) had 1-5 years and 6-10 years professional experience respectively. Sixty librarians (57.14% and forty-five librarians (42.86%) were librarian 11 and librarian 1 respectively.

Types of cybercrimes

Table 1. Percentage Response on types of Cybercrime Existing in Nigerian Federal University Digital Libraries. N=105

		Geopolitical Zones in Nigeria								
	Types of Cybercrimes	N.W	N.E.	N.C.	S.S.	S.W.	S.E.	Total	%	D
1	Scam mails	13 (12.38%)	9 (8.57%)	28 (26.67%)	15 (14.29%)	14 (13.33%)	18 (17.14%)	97	92.38	U
2	Internet Pornography	13 (12.38%)	10 (9.52%)	27 (25.71%)	17 (16.19%)	12 (11.43%)	19 (18.10%)	98	93.33	U
3	Data Interception	9 (8.57%)	6 (5.71%)	15 (14.29%)	12 (11.43%)	8 (7.62%)	12 (11.43%)	62	59.05	U
4	Data Modification	8 (7.62%)	7 (6.67%)	17 (16.19%)	14 (13.33%)	9 (8.57%)	15 (14.29%)	70	66.67	U
5	Data Theft	13 (12.38%)	10 (9.52%)	21 (20.00%)	17 (16.19%)	9 (8.57%)	16 (15.24%)	86	81.90	U

6	Network Sabotage	11 (10.48%)	6 (5.71%)	17 (16.19%)	12 (11.43%)	6 (5.71%)	14 (13.33%)	66	62.85	U
7	Unauthorized access	10 (9.52%)	8 (7.62%)	17 (16.19%)	13 (12.38%)	9 (8.57%)	18 (17.14%)	75	71.43	U
8	Advance fee fraud	10 (9.52%)	7 (6.67%)	15 (14.29%)	9 (8.57%)	7 (6.67%)	13 (12.38%)	61	58.10	U

Key: N.W= North West Zone: N.E=North East Zone: N.C= North Central Zone: S.S= South South Zone: S.W= South West Zone: S.E= South East Zone: D=Decision; U=Upheld; NU=Not Upheld

Table 1 showed that all the listed cybercrimes existed in Nigerian Federal University Digital Libraries. The list of cybercrimes conforms to that which Lu, Jen and Chou (2006) considered most common across national and cultural boundaries. Rathinasabapathy and Rajendran (2007) also observe that these cybercrimes exist in academic libraries in India.

Findings from Federal University digital libraries in the geo-political zones showed that in North West, scam mails, Internet pornography and data theft ranked first. In North East, Internet pornography and data theft ranked first while in North Central scam mails ranked first. In South South, Internet pornography and data theft ranked first. In South West, scam mails ranked first while in South East, Internet pornography ranked first.

Table 2: Percentage Response on Stakeholders Involved in Controlling Cybercrime in Federal University Digital Libraries N=105

		Geopolitical Zones in Nigeria								
	Stakeholders	**N.W**	**N.E**	**N.C**	**S.S**	**S.W**	**S.E**	**Total**	**%**	**D**
1	Staff in charge of computer systems	13 (12.38%)	10 (9.52%)	28 (26.67%)	17 (16.19%)	14 (13.33%)	16 (15.24%)	98		U
2	University security personnel	7 (6.67%)	6 (5.71%)	18 (17.14%)	9 (8.57%)	6 (5.71%)	12 (11.43%)	58	55.23	U
3	Library Administration	13 (12.38%)	10 (9.52%	25 (23.81%)	16 (15.24%)	11 (10.48%)	13 (12.38%)	88	83.81	U
4	All library workers	9 (8.57%)	4 (3.81%)	12 (11.43%)	6 (5.71%)	8 (7.62%)	8 (7.62%)	47	44.76	NU
5	All users of the cybercafé	7 (6.67%)	5 (4.76%)	10 (9.52%)	6 (5.71%)	7 (6.67%)	7 (6.67%)	42	40.00	NU

Key: N.W.=North West Zone: N.E.= North East Zone; N.C= North Central Zone; S.S= South South Zone; S.W= South West Zone; S.E= South East Zone; U=Upheld; NU=Not Upheld; D=Decision

Table 2 shows that stakeholders who control cybercrime in University digital libraries are staffs in charge of computer systems, security personnel posted to the library and library administration. The finding indicates that there are specific people saddled with the responsibility of controlling cyber-

crimes. This finding contradicts the assertion of Akuta, Ong'oa and Jones (2011), which states that stakeholders in the fight against cybercrime in sub Saharan Africa range from the average man on the street to the president of the particular nation. The respondents' rejection of the option of "all library workers and all cybercafé users" as stakeholders in fighting cybercrime is a further pointer to the fact that the suggestion of Akuta, Ong'oa and Jones (2011) is not based on popular opinion.

Table 3: Mean Response on Strategies Used in Controlling Cybercrimes in Federal University Cybercafés in Nigeria N=105.

		Geopolitical Zones in Nigeria							
	Strategies	$X_{N.W.}$	$X_{N.E.}$	$X_{N.C.}$	$X_{S.S.}$	$X_{S.W.}$	$X_{S.W.}$	X_{g}	Decision
1	Use of bill boards	3.31	3.20	3.68	3.29	3.0	3.24	3.29	Upheld
2	Use of Notice boards	3.54	3.20	3.72	3.12	2.83	3.29	3.28	Upheld
3	Use of electronic gadgets	3.62	3.40	3.66	2.65	2.93	3.38	3.27	Upheld
4	Stationing of Security men in Libraries	3.31	2.70	3.03	2.94	2.93	3.33	3.04	Upheld
5	Use of Content Filter Soft wares	3.54	3.00	3.28	2.82	3.21	3.33	3.20	Upheid

Key: $X_{N.W.}$ = Mean for North West Zone; $X_{N.E.}$ = Mean for North East Zone; $X_{N.C.}$ = Mean for North Central Zone; $X_{S.S.}$ = Mean for South South Zone; $X_{S.W.}$ = Mean for South West Zone; $X_{S.E.}$ = Mean for South East Zone and X_{g}.= Mean of Means/Grand Mean

Table 3 showed that respondents accepted all the items as strategies used for controlling cybercrimes. Use of bill boards topped the list. It had a grand mean of 3.29. It confirms the assertion made in the literature by Longe & Chiemeke (2008) that it is a common thing on Nigerian roads to see bill boards warning cybercriminals of their impending doom. Use of notice boards had a grand mean of 3.28 and was the second highest accepted strategy. Simple observation at University of Nigeria, Nsukka cybercafés reveals that the walls of the cybercafés are donned with notices warning cybercriminals to desist from the act or face the wrought of the Law.

Table 4. Mean Response on Challenges of Controlling Cybercrime in Nigerian University Cybercafés N = 105.

Challenges	**Geopolitical Zones in Nigeria**							
	$X_{N.W.}$	$X_{N.E.}$	$X_{N.C.}$	$X_{S.S.}$	$X_{S.W.}$	$X_{S.W.}$	X_{g}	Decision
1 Library laws and regulations do not cover cybercrimes	3.31	3.00	3.34	3.24	3.20	3.29	3.23	Upheld

2	The workers are not skillful in detecting offenders	3.38	3.20	3.31	3.24	2.87	2.81	3.14	Upheld
3	The offenders are too numerous to be managed	2.77	2.80	2.72	2.76	2.60	2.71	2.73	Upheld
4	There is no fund to procure cybercrime detecting equipment	2.54	3.00	3.41	3.12	3.07	3.29	3.07	Upheld
5	Staffs connive with the offenders to conceal the crime	2.54	2.80	2.44	2.18	2.33	2.14	2.41	Not Upheld

Table 4 showed that respondents accepted non-coverage of cybercrime by library laws and regulations as the greatest challenge in combating cybercrime. The finding is in line with the observation of Akuta, Ong'oa and Jones (2011) which states that existing laws in Nigeria do not cover cybercrime. The laws regarded computers as properties and could only prosecute criminals that were involved in stealing the whole computer system or destruction of the computer but had no jurisdictional powers over information hackers.. . Respondents also agreed that offenders were becoming numerous and intractable. The finding confirms the observation of Lu, Jen and Chou (2006) which state that the number of cybercrime perpetrators among college and graduate students is increasing in geometric progression. Staff connivance with cybercrime offenders was rejected by respondents. This response gives credence to the general belief that librarianship attracts mostly people of humble and caring disposition

Discussion of Findings

Finding from the study shows that types of cybercrimes exist in Federal University Libraries in Nigeria. The highest cybercrime committed in these institutions was internet pornography. This is consistent with the findings of Laumbano and Nawe (2004) in which it was discovered that majority of the students of Dar es Salaam University used internet to view pornography. Lu, Jen and Chou (2006) listed cyber pornography and spreading messages related to sex trading on the internet among five top cybercrime offences that take place in Taiwan every year. Scam mails were the second highest cybercrime. The Internet Crime Report (2008) of National White Collar Crime Centre observed that Nigerian letter fraud constituted 5.2% of the reported total economic loss through cybercrime for the year 2008. Data theft wwas the third highest cybercrime. Ewuuk and Shannon (2009) note that data theft and malicious break-ins are prevalent.

The study identified stakeholders who controlled cybercrime in University digital libraries. This implies that there are specific people saddled with the

responsibility of controlling cybercrimes. . For any action to make a meaningful impact, the responsibility for that action must be vested on a specific individual or group of people. Finding also showed that university security personnel should control crime in the libraries. The finding agrees with Curry, Flodin and Matheson (2000) who opine that mere presence of security personnel within the library acts as an effective deterrent to would- be thieves and vandals.

Use of bill boards was found to be the greatest strategy used in controlling cybercrimes It confirms the assertion made in the literature by Longe & Chiemeke (2008) that it is a common thing on Nigerian roads to see bill boards warning cybercriminals of their impending doom. Akuta, Ong'oa and Jones (2011) opined that EFCC, the body saddled with the responsibility of controlling cybercrime in Nigeria, should use software called Eagle Claw in its operations. The researchers concurred that the software would facilitate sniffing out of fraudulent emails.

The study also found that library laws and regulations did not cover cybercrime. The omissions constitute critical challenge to the control of cybercrimes. The finding is in line with the observation of Akuta, Ong'oa and Jones (2011) which states that existing laws in Nigeria do not cover cybercrime. Boateng, Olumide, Isabalija and Budu (2011) observe also that the laws of many nations do not cover cybercrime. Wada and Odulaja (2012), posit that presently, there is no law specific to cybercrime in Nigeria. Lack of skill of cybercafé workers in detecting cybercriminals constitutes a challenge in controlling cybercrimes. Lack of skill of cyber workers also offers cybercriminals the required opportunity to carry out the heinous act without disturbance. The opportunity theory as stated by Wada and Odulaja (2012) posit that no crime can occur without the physical opportunity and therefore opportunity plays a role in cybercrimes. Lack of funds to procure cybercrime detecting machine was also a challenge. This is expected considering the ongoing global economic recession.

Recommendations

From the findings and conclusion, it is recommended that in order to control upsurge in cybercrimes, Federal University Libraries should:

1. Include and entrench stiff penalties against cybercrime in University laws and regulations.
2. University administration should post security staff routinely to University Library cybercafés to instill discipline.
3. Library administration should as a matter of urgency, procure and install Content filters software and cybercrime detecting equipment in all library and university cybercafés.
4. Bill boards and notice boards should be used as awareness tools to warn people of cybercrimes.
5. Library Administration should guard against anybody feigning ignorance of the law.
6. Closed circuit television and other electronic gadgets should be installed and used to monitor users.

Conclusion

From the findings of the study it is concluded that the greatest cybercrimes committed in Nigerian Federal University digital libraries are internet pornography and scam mails. It can be concluded that in the ranking order, the greatest stakeholders in the control of cybercrimes are the staffs in charge of the computer systems, the library administration and university security personnel who are posted to guard the university cybercafés. It is also concluded in this study that non-coverage of cybercrimes under library laws and regulations constitute critical challenge to the control of cyber- crimes.

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Appendix 1. Universities that participated in the study

	Geopolitical Zones		Number and names of Federal Universities	No of Librarians in each Cybercafé.	
				Respondents	Population
	North Central	1	Federal University of Technology, Minna	5	5
		2	University of Agriculture, Makurdi	5	5
		3	University of Abuja	7	7
		4	University of Jos, Jos	5	5
		5	University of Ilorin, Ilorin	7	7
	North East	6	Abubakar Tafawa Balewa University (ATBU).	3	3
		7	Federal University of Technology, Yola	3	3
		8	University of Maiduguri	4	4
	North West	9	Ahmadu Bello University (ABU)	5	8
		10	Bayero University Kano	4	4
		11	Usman DanFodiyo University, Sokoto	4	4
	South East	12	Federal University of Technology, Owerri	8	8
		13	Nnamdi Azikiwe University, Awka	2	2
		14	University of Agriculture, Umudike - Umuahia	4	4
		15	University of Nigeria, Nsukka	7	10
	South West	16	Federal University of Agriculture, Abeokuta	3	3
		17	Obafemi Awolowo University, Ile- Ife.	2	5
		18	Federal University of Technology, Akure	2	2
		19	University of Ibadan	5	8
		20	University of Lagos, Lagos	3	6
	South South	21	University of Benin	4	4
		22	University of Calabar	4	4
		23	University of Port Harcourt	4	4
		24	University of Uyo	5	5
	SIX GEO-POLITICAL ZONES	**Total**	**24 FEDERAL UNIVERSITIES**	**105**	**120**