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Family Planning Practices of Young Couples in Badagry Local Government Area of Lagos State

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Abstract

The study determined family planning practices of young couples in Badagry Local Government Area (LGA) of Lagos State. The study adopted a descriptive survey design. The population for the study was 2,655 young couples. Validated questionnaire was used for data collection. Data collected were analyzed using mean. Findings revealed that young couples adopt different family planning methods including condom use, withdrawal method, use of oral pills, hormonal injections, among others. Respondents' sources of information on family planning services include television, radio, antenatal and postnatal clinics. Eleven benefits of family planning methods were expressed by couples, including prevention of unwanted pregnancies, couples having desired family size and improvement of maternal health. Seven reasons for not adopting family planning methods, including having unnecessary weight gain, excessive bleeding in some women, religious beliefs were identified. It was recommended amongst others that there is need for more family planning units in Badagry Local Government area of Lagos State where couples can go for consultation and advice on family planning procedures.

Keywords: Family, Planning, Practices, Information, Young couples, Badagry.

Introduction

One of the major problems of our time is the rapid growth of population, especially in developing countries where the population growth matters. It has enormous impact on human life. It would be wrong to say that, the most urgent conflict facing the society today is not between the state and ideologist but between the pace of growth of the human race and the disproportionate increase in the production of resources necessary to support mankind in peace and dignity. Family Planning according to United Nations Population Fund

Activities (UNPFA, 2018) is a recognized basic human right which enables individuals and couples to determine the number and spacing of their children. Family planning can be described as an act of deciding the number and spacing of children, through the use of contraception such as abstinence, natural planning or hormonal control. It allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. This is achieved through use of contraceptive methods (World Health Organization, 2013). Approved methods of family planning include condom, oral contraceptive pills, IUD, vasectomy, hormonal injections, and the likes.

In developing nations like Nigeria, children are valued as they do not only demonstrate the masculinity of the men but equally provide the extra useful hand in communities where agriculture is the major source of income. Besides, aged parents and extended family relations depend on their children for maintenance at old age. Hence, they are reluctant to limit birth. It has now been universally recognized that a massive population size, its rapid growth rate, and its uncontrolled transfer of population from rural area to the city can create pressure on the resources of a country and adversely affect the economy prosperity.

Use of family planning methods can contribute to a substantial reduction in fertility and reduce the proportion of unwanted pregnancies as well as maternal deaths. Advocates of birth control see population to be intricately intertwined with international economic imbalances and environmental degradation that none of its problem can be solved without the improvement of the others. It is therefore necessary to stabilize the population growth in order to achieve common goal of human survival. However, fear of contraceptive side effects and associated treatment costs, cultural barriers and low male involvement may hamper effective use of family planning services in developing countries like Nigeria. Lack of knowledge of where to obtain family planning services, certain restraining factors (such as inconvenience of method, denial from spouse/family member, lack of knowledge among more), absence of awareness on sources of family planning information and services are key barriers that affects accessibility and utilization of family planning methods in Africa (Stephen, Joseph and Elizabeth, 2018).

In Nigeria, demographic matters have gained prime importance because of an unprecedented large increase in its population. This gigantic increase in population has emerged as a matter of great public concern because it is undermining the efforts to raise the living standard of the populace. The population of Badagry LGA was projected to be 327,400 in 2016 according to National Population Commission of Nigeria (2006). The population of other parts of Lagos and Nigeria in general were also projected to increase in an alarming rate. This could be detrimental to the development of the nation and wellbeing of her citizens. It is true that due to the mechanized agriculture, output has increased and considered industries are also expanding. However, the country is not showing sufficient signs of development because progress made by Nigeria is being nullified by its rapid growth of population (Frank, 2012). Due to this population explosion, Nigeria is least able to provide large addition of youngsters with food, clothing and education and young adult with jobs, housing and other consumers' essentials, while trying to break out the vicious circle of poverty. To check the population growth rate, it is germane to determine the factors that create such conditions in a given cultural set-up. Due to the above situation, unregulated fertility leads to population explosion. The study therefore determined the family planning practices of young couples in Badagry Local Government Area of Lagos State.

Purpose of the Study

The major purpose of the study was to investigate the family planning practices adopted by young couples in Badagry local government area (LGA) of Lagos State. Specifically, the study determined the:

1. methods of family planning adopted by young couples in Badagry LGA
2. sources of information on family planning services available to the couples
3. benefits of family planning expressed by couples
4. reasons for not adopting family planning methods by some young couples

Research Questions

The following research questions were raised to guide the study;

1. What are the family planning methods adopted by young couples?
2. What are the young couples' sources of information on family planning services?
3. What are the perceived benefits of family planning to couples?
4. What are the reasons for not adopting family planning methods by some young couples?

Methodology

Design of the Study: The study adopted a descriptive survey design.

Area of Study: The study was carried out in Badagry Local Government Area (LGA) of Lagos State. Badagry is a coastal town located between the city of Lagos and borders with Seme and the Republic of Benin and behind its southern boarders lies the Atlantic ocean. The Badagry sub-region forms a major part of Lagos State which is estimated to be growing in population at a rate of 3.5% per annum. Badagry is situated in the Lagos West Senatorial District.

Population for the study: The population for this study was two thousand, six hundred and fifty-five (2655) young couples residing in Badagry LGA (Source: Badagry Local Govt Records Office,2015). Young couples in this study referred to couples whose marriage has not exceeded ten (10) years. This population comprised of all the young couples in five (5) communities in Badagry Local Government Area of Lagos State. The communities are Age-Mowo, Alakoto-Meji, Morogbo, Ibereko and Ilado.

Sample for the Study: The sample size for the study was One hundred and thirty-five (135). This comprised of 135 young couples in Age-Mowo, Alakoto-Meji, Morogbo, Ibereko and Ilado communities in Badagry Local government area of Lagos State. Twenty-seven (27) couples were drawn from each community. Nine couples were selected from each of the three organizations (Mosque, Church and Health centres) used for the study. "Taro Yamen" statistical method of determining sample size was used in calculating the sample size of the young couples' population.

Instrument for Data Collection: Questionnaire and Focus group discussion guide (FGD) were used for data collection. The questionnaire was titled "Family Planning Practices of Young Couples (FPPYC). This was used to elicit data from the young couples based on the purposes of the study. The questionnaire was divided into two sections. Section A sought for demographic information while section B was based on the research questions. Section B was drawn on a four point scale rating: SA as Strongly Agreed, A as Agreed, D as Disagreed and SD as Strongly Disagreed.

The focus group discussion was done in three batches with nine participants from each of the organizations in the five communities used for the study. The discussions were guided with the purposes of the study. The discussions were recorded and comments noted. The comments, discussions and suggestions were used for buttressing the findings of the study. Five Home Economics experts validated the instruments. Cronbach Alpha method was used in determining the internal consistency of the instruments and it yielded reliability co-efficient of 0.82.

Method of Data Collection: One hundred and thirty-five (135) copies of the questionnaires were distributed to young couples whose marriage has not exceeded 10 years. Efforts were made to ensure that the items were filled correctly without omitting any of the needed information. All (100%) distributed questionnaires were returned showing 100% return rate.

For the focus group discussion, the participants were grouped into nine (9) for each batch. Each of the communities had three batches for the group discussions. Mosques, Churches and Health centres were utilized for the focus group discussion after seeking permission from the authorities of each organization used. Three research assistants helped the researchers in taking notes, recording and videoing while the researchers moderated the discussions.

Method of Data Analysis: Data were analyzed using mean. Mean ratings from 2.5 and above were considered as agreed upon while mean ratings of 2.49 and below were considered as disagreed upon. The responses of the participants were recorded, summarized and used to corroborate the findings of the study.

Results of the Study

Demographic Data of the Respondents

1. Majority (62%) of the respondents are female while the male respondents are 38%
2. Majority (73%) of the respondents are married, 16% are divorced while 11% of the respondents are single
3. The age range of the respondents are 15-25 (16%), 26-45(55%), 36-45 (23%) and 45 and above (6%). This means that majority of the respondents are within 26 years to 45 years.
4. Educational background of the respondents revealed that only 6% of them do not have formal education, 11% have First School Leaving Certificate (FSLC), 28% have NCE/ND, 42% possess BSC/HND, 12% have MSC while only 1% has Ph.D. This implies that majority of the respondents are learned.
5. Occupations of the respondents include Civil Servant (49%), trading (23%), full time house wife (11%), schooling and other jobs (17%).
6. Majority of the respondents are Yoruba's (50%), 20% are Igbo's, 11% are Hausas while other tribes are 19%
7. Religion of the respondents revealed that majority (57%) are Christians while 33% are Muslims.

Family Planning Methods Adopted

Table 1: Mean Responses on Family Planning Methods Adopted by Young Couples

S/N	Family Planning Methods Adopted by Young Couples	X	Remarks
1	Male condom	3.23	AD
2	Female condom	2.89	AD
3	Oral Pills	2.83	AD
4	Withdrawal method	3.03	AD
5	Diaphragm	2.61	AD
6	Cervical cap	2.10	NA
7	Intrauterine device (IUD)	2.28	NA
8	Spermicide	2.47	NA
9	Sterilization	2.41	NA
10	Local herbs	2.56	AD
11	Homemade sponge	2.51	AD
12	Sponge used with spermicide	2.39	NA
13	Hormonal injections	2.57	AD
14	Use of copper D	2.49	NA
15	Use of Loop	2.60	AD
16	Use of Implants	2.48	NA
17	Breast feeding for six months	2.74	AD

AD= Adopted; NA= Not Adopted

Table 1 shows the different family planning methods adopted by the young couples. The family planning methods mostly used is male condom (X=3.23) followed by withdrawal method (X=3.03). Other family planning methods used are female condom, oral pills, diaphragm, IUD, local herbs, homemade sponge, hormonal injections, use of loop and breast feeding for six months. However, the respondents disagreed with the use of cervical cap, spermicide, sterilization, sponge with sterilization, copper D and use of implants.

Findings from the focus group discussion revealed the following methods of family planning among young couples: condom use, withdrawal method, hormonal injection and local herbs.

Sources of information on family planning services

Table 2: Mean Responses on Sources of Information on Family Planning Services

S/N	Sources of Information for Family Planning Services	X	Remarks
1	Television	3.50	S
2	Radio	3.23	S
3	Computer (Internet)	3.05	S
4	Social Media	2.94	S
5	Newspaper	2.96	S
6	Magazines	2.72	S
7	Fliers	2.43	NS
8	Charts	2.42	NS
9	Posters	2.52	S
10	Handbills	2.63	S
11	Billboards	2.73	S
12	Hospital Personnel	2.91	S
13	In antenatal clinics	2.93	S

S= Sources; NS= Not Sources

Table 2 reveals the different sources of information for family planning services; these sources include television, radio, internet, social media, newspaper, magazines, posters, handbills, billboards, hospital personnel and antenatal clinics. However, the respondents disagreed that they do not get information on family planning services through fliers and charts.

Findings from the focus group discussion revealed that the respondents sources of family planning awareness are majorly television, radio and health centres.

Table 3: Mean Responses on Expressed Benefits of Family Planning

S/N	Benefits of Family Planning to Couples	X	Remark
1	It helps couples to have desired family size	3.45	B
2	It helps to prevent unwanted pregnancies	3.32	B
3	It enables couples have enough children that they can afford to maintain	3.25	B
4	It enables couples have children by choice and not by chance	2.83	B
5	It encourages child spacing	3.01	B
6	It helps to improve mothers reproductive health	2.63	B
7	Child spacing protects the health of the mothers	2.84	B
8	Family planning helps a woman to regain her strength before next pregnancy	2.92	B
9	Child spacing protects the health of children	2.87	B
10	A woman who has too many children is often tired, stressed and worm out	2.81	B
11	Effective family planning would help improve a family's standard of living	2.89	B
12	Family planning causes loss of trust between couples	2.30	NB

B= Benefits; NB= Not Benefit

Table 3 shows that the respondents agreed with all the listed benefits of family planning. They all had mean of 2.50 and above except item 12 which stated that family planning causes loss of trust between couples (mean =2.30).

Findings from the focus group discussion revealed that the benefits of family planning expressed by young couples include improved maternal reproductive health, to have planned number of children and brings about good living standard for families.

Table 4: Mean Responses on Reasons for not Adopting Family Planning

S/N	Reasons for not adopting family planning methods	X	Remarks
1	Pills results in heavy bleeding during menstruation	3.04	AG
2	Pills and injections results in unnecessary weight gain	3.16	AG
3	Cause infertility	2.88	AG
4	IUD causes swelling of the breasts	2.54	AG
5	Hormonal drugs and injections makes a woman feel nauseous	2.61	AG
6	Religious beliefs	2.80	AG
7	Loops causes pains during sexual intercourse	2.85	AG
8	It causes excessive bleeding in some women	3.12	AG
9	Pills causes numbness of arms and legs	2.81	AG
10	Damage uterus	2.73	AG
11	Promotes sexual promiscuity	2.65	AG
12	Causes diseases/conditions such as fistula, cancer and urine retention	2.87	AG
13	Encourage multiple sexual partners	3.04	AG
14	Injections and sterilization processes could lead to complications or even death	3.06	AG

AG=Agreed

Table 4 shows that all the items listed were agreed upon as reasons for not adopting family planning methods. They all have mean responses above 2.50.

Findings from the focus group discussion revealed that people are not interested in the use of contraceptives and other family planning methods due to some reasons such as their religious belief not conforming with family planning; it brings about excessive weight gain; bleeding; and secondary infertility.

Discussion of Findings

Findings revealed that there are different family planning methods adopted by the young couples. The family planning methods mostly used is male condom (mean=3.23) followed by withdrawal method (mean =3.03). Other family planning methods are female condom, oral pills, diaphragm, IUD, local herbs, homemade sponge, hormonal injections, use of loop and breastfeeding for six months. Findings from the focus group discussion revealed that majority of the respondents use condom, withdrawal method, hormonal injection and local herbs for family planning. This could be attributed to the affordability, accessibility and easy use of condoms without having any side effects attached. However, the respondents disagreed with the use of cervical cap, spermicide, sterilization, copper D and use of implants. This implied that the young couples are aware of family planning methods and that they are using such. This aligned with the demographic data of the respondents, since majority (96%) are learned, they are more enlightened on the importance of family planning methods. This finding is in contrary opinion with Nwosu, Eke and Chigbu (2011) that knowledge/awareness of modern family planning methods did not guarantee high level practice of family planning. Nwosu *et. al* (2011) explained that the reasons for not using family planning could be that mere provision of family planning units at health facilities did not motivate utilization by young couples who though aware of the benefits, are reluctant to use it. Also in line with this, Abiodu and Balogun (2009) mentioned that educated mothers are more likely to be gainfully employed and have enough money to purchase family planning commodities and even avail themselves of services at the health facilities. They stressed further that literate mothers are likely to appreciate the benefits of family planning more than the illiterate mothers. Findings from the focus group discussion revealed that majority of the respondents use condom, withdrawal method, hormonal injection and local herbs for family planning.

Inferring from Table 2, the respondents' sources of information for family planning services include television, radio, internet, social media, newspapers, magazines, posters, handbills, billboards, hospital personnel and antenatal clinics. This showed that viable information about the family planning methods can easily reach the masses through the media such as radio, television and the health workers. This corroborates Reshma (2015) that the media source added to women's knowledge as majority of them gets their family planning information from the radio/television, while others get information from newspapers and health attendants. This showed the leading role of the mass media (Television and Radio) in the campaign of family planning cannot be overemphasized. This is because Television and radio brings the message of family planning to the people in their language and in a way that is appealing to the listener. Findings from the focus group discussion revealed that the respondents sources of family planning awareness are majorly television, radio and health centres. This means that the mass media and health centres constitute the major sources of family planning awareness. Effective dissemination of population problems can promote awareness among couples and prospective couples. Awareness encompasses incorporating knowledge of contemporary issues affecting nature locally and beyond, discovering which actions can make a difference in one's health and life in general (Bocher, 2015).

Inferring from Table 3, the benefits of family planning expressed by couples include prevention of unwanted pregnancies, having desired number of children, ensuring appropriate child spacing and enables couple have children by choice and not by chance. This agrees with Nworah, Sunday, Joseph, Monday and Josephat (2012), that family planning enable couples enjoy sex more because they do not have to worry about getting pregnant. Aside from pregnancy prevention, family planning protects and enhances maternal productive health. This is in line with the opinion of Kirby, Rolleri and Wilson (2013) that some family planning methods have other benefits apart from prevention of unwanted pregnancies. According to them, condoms protect against sexually transmitted infections, including HIV/AIDS. Hormonal methods can help with irregular menstruation and pain during monthly bleeding. From the focus group discussion, the respondents affirmed that family planning brings about improved maternal reproductive health, having planned number of children and brings about good living standard for families. Family planning services are the right of all couples and individuals which enables them to decide freely and responsibly the number and spacing of their children and to have the information and means to do so. Indeed, family planning services (FPS) are regarded as a basic human right to attain the highest standard of sexual and reproductive health, free of discrimination, coercion and violence. Globally, family planning services are an essential element of reproductive health care and have saved the lives and protected the health of millions of women and children (United Nations Population Fund [UNFPA], 2018).

Findings on Table 4 revealed that the reasons against the use of family planning include unnecessary weight gain, causing heavy bleeding during menstruation, religious beliefs, damaging uterus and swelling of the breast. These findings corroborate the assertions of Oni, Prinsloo, Nortje ad Jirbert (2015) that the main reason against the use of family planning is that religious and political authorities do not believe women should decide for themselves, decide when and how to use family planning methods. Findings from the focus group discussion revealed that people are not interested in the use of contraceptives and other family planning methods due to some reasons such as their religious belief not conforming with family planning; it brings about excessive weight gain; bleeding; and infertility. In line with this, Nwosu, Eke and Chigbu (2011) identified some of the underlying factors that can hamper the practice of contraception to include: ignorance about the benefits of modern family planning, husbands negative attitude to modern family planning, quest for lacking gender in family and religious beliefs. Creed in support of this finding, Nworah *et al.* (2012) highlighted some illusory fears about the side effects of modern family planning: that it causes infertility, ill-health, damage to reproductive system, excessive bleeding during menstruation and delayed menstrual return. Other reasons mentioned for not using family planning were related to misconceptions about family planning methods. Misconceptions about family planning methods are potential barriers to utilization and may lead young couples to avoid use of available family planning methods and predispose themselves to the risk of reproductive tract illnesses, including HIV/AIDS (Oni *et al*, 2015., Abiodun and Balogun, 2009).

Conclusion

The study determined family planning practices of young couples in Badagry LGA of Lagos State. Family planning method mostly used is condom followed by withdrawal method. This could be attributed to the affordability and accessibility of condoms in our society. The respondents' major sources of information on family planning services include television, radio, and health centres. This could be due to the fact that information regarding family planning are disseminated through English and local languages on the television, radio and health centres, thus, making information conveyed more interesting and understandable to the audience. Benefits of family planning expressed by young couples include prevention of unwanted pregnancies; helps couples achieve desired number of children; enable couples have children they can cater for; and that it encourages child spacing. Some the reasons for not adopting family planning methods among young couples include unnecessary weight gain, causing heavy bleeding during menstruations, religious beliefs, damaging uterus and swelling of the breast. The study showed that effective family planning practice would improve maternal reproductive life.

Recommendations

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

1. There is need for more family planning units in Badagry LGA where couples can go for consultation and advice on family planning procedures.
2. The government should therefore emphasize more on modern methods of family planning to complement the traditional methods
3. Frequent awareness must be created through media campaign. Television is a strong medium which should be used to convey the message of the importance of family planning to both men and women. Information about the availability of contraceptives and services should be given to the masses through television
4. Family planning programmes should include orientation workshop for religious leaders to inculcate positive approach to birth control.

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Perception of Female Undergraduates and issues relating to utilization of Cosmetics: A Case Study of the University of Nigeria

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Abstract

The general purpose of the study was to investigate issues relating to utilization of cosmetics by female undergraduates. Specifically the study: identified types of cosmetics used by female undergraduates; determined their reasons for usage of cosmetics, and their perceived health effects of the cosmetics. The research design was descriptive survey. It was a case study. Population of the study consisted of female undergraduates from University of Nigeria, Nsukka. A total of 150 female undergraduates were randomly drawn for the study. Instrument for data collection was questionnaire. Percentage, frequency distribution, mean and standard deviation were employed for data analysis. Result of the study showed: 17 types of cosmetics used by undergraduates; 11 reasons for their use of cosmetics, and 10 health risks associated with the use of these cosmetics include: mercury poisoning, acne, skin damage, skin allergies to certain creams or lotions, allergic reactions to strong chemicals, long term anaemia, glucose intolerance, damage of weak skin, exposure to skin bleaching and dermatological diseases. Based on the result of the study, six recommendations were made.

Keywords: Cosmetics, Utilization, Female, Undergraduate, Health, Effects

Introduction

Individuals are often concerned about their outward appearance. This concern which was mostly attributed to the female folk is now being increasingly noticed among the males. In the quest for good looks, people have evolved many ways of caring for the body through the use of different items found in his immediate environment. These items were often targeted towards enhancing the sheen of the hair, the glow of the skin and in recent times, facial make-up. The sum of all products used to care for and enhance the looks of the hair, the skin and the nails are referred to as cosmetics.

The use of cosmetics is now a norm as it has become a part of daily grooming habit of individuals. Etymologically, the word cosmetic was derived from the Greek word "*kosm tikos*" meaning having the power, arrange, skill in decorating (Shivanand, Nilam & Viral, 2010). It refers to mixtures of natural or synthetic chemical compounds used to improve the appearance or smell of the human body (Schneider, Gohla, Schreiber, Kaden & Schonrock, 2001). For Martin (2002; in Dibaba, Yadesa, Legesse, Zewdneh and Birhanemeskel, 2013), cosmetics are articles meant to be rubbed, poured, sprinkled, sprayed, and applied to the human body for the purpose of cleansing, beautifying, promoting or altering the appearance. They are substances or products used to enhance or alter the appearance or fragrance of the body (Samson, Philip, Arjun & Varadan, 2017). The purpose of a cosmetic product is to be applied externally. They include but are not limited to products that can be applied to the face: skin-care creams, lipsticks, eye and facial makeup and colored contact lenses; to the body: perfumes, deodorants, lotions, powders; to the hands/nails: fingernail and toe nail polish, and hand sanitizer; to the hair: hair dyes, hair sprays, and hair gels among others (Philip, Samson, Ebenezer and Prabhakar, 2014; Ugbe, 2017).

Cosmetics are of different types accessible in the market. The various types of cosmetics available for usage are categorized based on the area of the body which it is meant to be applied. Cosmetic manufacturers in production, differentiate cosmetics by the basic purpose for which it is meant for. Ugbe (2017) outlines that manufacturers of cosmetics distinguish between "decorative" and "care" cosmetics. The author went on to state that cosmetics are categorised according to the following parameters namely; area of the body intended for application (facial cosmetics, skin care lotions, enhancers etc.); purpose for application (skin care, skin enhancement, improved appearance); chemical composition of the cosmetic product (natural, mineral or synthetic) and physical composition of the cosmetic product (liquid, powders both pressed and loose, creams, paste, and sticks).

Studies have shown that the use of cosmetics is particularly high among the fashion following groups especially young females who are in higher institutions (Eyob & Yenet, 2007; Dibaba *et. al*., 2013). This demographic essentially is the focus of this study. In this day and age of information explosion, where information is attainable at the snap of the fingers, the mass and social media act as the go – to source of information for the young adult undergraduate. The media which acts as a mirror of the cultural definition of a society, presents models for the young adult. Cosmetic manufacturers design advertising encouraging them to buy more products by encouraging women to feel dissatisfied with their appearance (Ugbe, 2017).

Models and celebrities are presented through mediums such as on the television, in commercials, magazines, on billboards, fashion shows, in the streets and even at school. The flawlessness of these models and celebrities is, in fact, an illusion created by makeup artists, photographers, and photo editors, with each image being painstakingly worked over: teeth and eyeballs are bleached white and such 'imperfections' as; skin blemishes, wrinkles, and stray hairs are airbrushed away (Jason, 2012). As Kilbourne (2016) pointed out, young adults are particularly vulnerable because they are new and inexperienced consumers and are the prime targets of many advertisements. This repeated exposure to ideal beauty as portrayed by the media has caused detrimental effects in individuals (Sharp, Tiggemann & Mattiske, 2014; Hoffmann, 2016).

As a result of this influence, many female undergraduates, wear makeup partly due to their concern for their complexion and how they feel about themselves when they look at a blemish on their skin. Cosmetics are believed to enhance the best features and cover the blemishes on the person wearing them (Shalom, Dominic, Victor, Emeka, Israel, Chidi, Olubanke & Solomon, 2013). For the authors, a blemish on the skin can lead to embarrassment, humiliation or other negative body image experiences which in turn can diminish self-esteem. Hence, the use of cosmetics acts as a booster for the female's sense of confidence in her appearance, thus making her more self-assured overall. Irrespective of the fact that cosmetics could be a confidence boost, Hartwig (2012) is of the opinion that it shouldn't be the sole source. For the author, "there is a line between liking to wear makeup and needing to wear makeup." This need to wear makeup can lead to several psychological problems for the female undergraduate. This ultimately leads to a feeling of low self-esteem when no cosmetics is used (Ohmura, Kojura, Nakata & Sawamiya, 2015). Female undergraduates rely so much on cosmetics without much consideration as regards the attendant health effects of chemicals used in production of such cosmetics over time. Thorough examination of relevant literature on the chemical composition of makeup products has shown that many chemicals used in the manufacture of certain cosmetic products render it unsafe for use.

Several health effects have been outlined many authors as the negative health effects of makeup on the individual. Some of these effects include:

- ❖ Respiratory disease can be led by lip cares, lip balms and lipsticks. Lipsticks can cause long term anemia and even glucose intolerance, if they contain much aluminum. Also, "products contain chemicals like zinc oxide, BHA, barium sulphate etc. are very harmful for body and may result in many organ failures like that of kidney and liver" (Al-Saleh & Al-Enazi, 2011; Verma, 2014);
- ❖ Overexposure to lead and mercury which wreak havoc on the central nervous system, while overexposure to other elements severely affects immune response and cardiovascular function (Buegeler, 2015; Huang, Liou, Ho, Chiang, Huang & Wang, 2012;

Tejal, Nishad, Amisha, Umesh, Desai. & Bansal, 2013);

- Decrease in lung function for women who use personal care products such as scented body lotions, lipstick, eye makeup, and perfume, with lower lung function coupled with increased product use (Dales, 2013);
- Lipstick is known to contain trace amounts of lead in many brands and products, with other heavy metals such as cadmium, chromium, and aluminum regularly comprising other makeup products (Buegeler, 2015);
- Damaging the weak skin and destroying the health (Eccles, 2011; Tejal *et. al,* 2013);
- Skin allergies may be allergy to certain kind of lotions or creams, and breathing allergies are damage to nose and nasal passage due to intake cosmetics by mistake or even deliberate" (Adepoju-Bello, Oguntibeju, Adebisi, Okpala & Coker, 2012; Verma, 2014);
- Adverse effects on the skin and kidneys have been reported to be associated with the persistent use of skin lightening creams such as contact dermatoses, exogenous ochronosis, contact leukoderma, regional dermatoses. Others include nail dyschromia and nephrotic syndrome (Adebajo, 2002; Kuffour, Dartey, Owusu & Dabuoh, 2014).
- Allergic reactions to strong chemicals in eye shadows, kohl pencils, mascaras and makeup removers" (Eccles, 2011; Nnorom, Igwe & Oji-Nnorom, 2005; Sainio, Jolanki, Hakala & Kanerva, 2000; Volpe, Nazzaro, Coppola, Rapuano & Aquino, 2012)
- "Mercury is toxic and rapidly absorbed through the skin and can affect people neurologically, causing blurred vision or trouble walking. Severe mercury poisoning can shut down organs and lead to death" (Olumide, Akinkugbe, Altraide, Mohammed, Ahamefule, Ayanlowo…, 2008; Adepoju – Bello *et. al.,* 2012). Mercury is often used in skin whiteners because the metal inhibits the body's secretion of melanin – the hormone responsible for hair and skin pigmentation (Adepoju – Bello *et. al.,* 2012).

In Nigeria, although makeup is widely used, no government parastatal or advocacy group, question the safety of cosmetic products especially make up which is the most widely used. The National Agency for Food and Drug Administration and Control (NAFDAC), the government agency pays no serious mind to the regulation of cosmetics and Nigerian females face adverse health effects due to the reactions stemming from the several types of personal care products they make use of daily. Researchers and scientists the world over, have proven that certain makeup products are unsafe for use. Safety concerns center around the presence of toxic ingredients in cosmetics which are capable of penetrating the skin and causing illness. This concern however eludes the female undergraduate in their considerations towards the purchase and use of cosmetics.

An improved look and appearance, serves as the motivation for use of cosmetics by female undergraduates. This is because most times adolescents and young adults are known to feel dissatisfied with their bodies (Wan, Ansons, Chattopadhyay & Leboe, 2013; Ohmura *et. al.*, 2015). Female undergraduates in South Eastern Nigeria, are not left out as they are part of this demographic identified (i.e. adolescents and young adults). They resort to indiscriminate use of cosmetic products which may lead to health challenges. Having outlined some of the health effects of cosmetic use, it is unequivocal to state that there is need to identify the perception of female undergraduates on the health effects of cosmetic use and the attendant impact it makes in the life of the female undergraduate in a bid to suggest possible solutions. This need forms the general purpose of this research study as well as the motivation for the study.

Purpose of the Study

The general purpose of the study was to investigate issues relating to utilization of cosmetics by female undergraduates.

Specifically, the study:

1. identified types of cosmetics used by female undergraduates of University of Nigeria, Nsukka;
2. determined reasons for usage of cosmetics by female undergraduates; and
3. determined perceived health effects of the use of cosmetics by female undergraduates

Methodology

***Research Design*: -** The study adopted a descriptive survey research design. The survey was targeted at eliciting information from female undergraduate students in University of Nigeria.

***Area of the Study*:** The area of the study was University of Nigeria, Nsukka in Enugu State. The university has 16 Faculties and 102 academic departments. It offers 82 undergraduate programs and 211 postgraduate program mes. The University of Nigeria has four campuses – Nsukka (University of Nigeria, Nsukka, UNN), Enugu (University of Nigeria Enugu campus, UNEC), and Ituku-Ozalla (University of Nigeria Teaching Hospital, UNTH). The University of Nigeria was chosen for the study as they have female undergraduate populations which were needed for the study.

***Population*: -** The population of the study consisted of female undergraduates of the University of Nigeria. Female undergraduate students are young adults who are engaged in academic degree programs of universities or any other tertiary institution of higher learning. They are usually within the ages of 18-27; an age bracket often referred to as the age of "emerging adulthood" (Arnett, 2000). According to information gotten from the Academic Planning Unit of the University of Nigeria, there are

13,763 female undergraduates in the University of Nigeria.

***Sampling and Sampling Technique*: -** Sampling occurred in two (2) stages. Simple random sampling technique was used to select five (5) faculties out of the sixteen (16) faculties in the University of Nigeria. The names of faculties were written down and folded in papers. The faculties selected randomly are; Arts, Biological Sciences, Vocational & Technical Education, Business Administration and Health Sciences. In each of the selected faculties, convenience sampling technique was used to select thirty female undergraduates. The sample size was determined using Cohen, Manion and Morrison's sample size chart (Cohen, Manion & Morrison, 2011). Hence, a total of one hundred and fifty (150) female undergraduates made up of thirty (30) students from each of the five (5) faculties were the respondents for the study. The sample was selected using convenience sampling technique based on accessibility and willingness of the female undergraduates to participate in the study. Female undergraduates were the focus of this study because they are the ones that are directly affected by the health effects of the wrongful use of the cosmetics.

***Instrument for Data Collection*: -** Questionnaire was used to collect data. It was developed based on extensive literature review in line with the purposes of the study. The questionnaire comprised of items which corresponded with the specific objectives of the study. The questionnaire was made up of three clusters. Cluster A elicited information from the respondents on the types of cosmetics used by female undergraduates. In the second cluster (Cluster B), information on the reasons for usage of cosmetics by female undergraduates; and Cluster C identified the perceived health effects of the use of cosmetics by female undergraduates. In Cluster A, response categories of 'Yes' or 'No' was utilized. In Clusters 'B' and 'C', a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) was adopted.

Data Collection and Analysis Technique: - One hundred and fifty (150) copies of the questionnaire were distributed to the female undergraduates. All the copies of the questionnaire were filled and collected giving it a 100% return rate. Based on a four-point rating scale of 4, 3, 2, 1 adopted in the instrument, a mean rating of 2.50 and above was regarded as accepted or agreed while mean less than 2.50 was regarded as rejected or disagreed.

Findings of the Study

The following findings were made:

Types of Cosmetics Used by Female Undergraduates

Table 1: Frequency and Percentage Distribution on Types of Cosmetics Used by Female Undergraduates

S/N	The types of cosmetics used by female undergraduates	*Yes(F (%)*	*No (F (%)*
1.	Make up Remover	111(74)	39(26)
2.	Bronzer	102(68)	48(32)
3.	Mascara	102(68)	48(32)
4.	Eye Shadow	69(46)	81(54)
5.	Eye Liner	102(68)	48(32)
6.	Rouge, Blush, or Blusher	69(46)	81(54)
7.	Contour Powders	90(60)	60(40)
8.	Primers	66(44)	84(56)
9.	Lip Cosmetic Products	102(68)	48(32)
10.	Concealers	90(60)	60(40)
11.	Foundation	120(80)	30(20)
12.	Face Powder	108(72)	42(28)
13.	Eyebrow pencils	126(84)	24(16)
14.	Nail Polish	84(56)	66(44)
15.	Setting Spray/ Powder	84(56)	66(44)
16.	False Eyelashes	66(44)	84(56)
17.	Highlights	66(44)	84(56)

Key: Yes = frequency distribution of the users, No = frequency distribution of non-users, (%) = Percentage of Undergraduate Female users, (%) = Percentage of Undergraduate female non-users

The result in Table 1 revealed that all the items recorded different percentages of usage among female undergraduates. This shows that the respondents agreed that those are the types of cosmetics used by the female undergraduates.

Reasons for Usage of Cosmetics by Female Undergraduates

Table 2: Mean Responses and Standard Deviation on the Reasons for Usage of Cosmetics by Female Undergraduates

S/N	Reasons for Usage of Cosmetics by Female Undergraduates	$\bar{x}_1$	SD	Remark
1.	For improvement of self-image	3.92	0.27	Agree
2.	Quality of the cosmetic product	3.04	0.19	Agree
3.	To imitate the look of celebrity idols	3.08	0.79	Agree
4.	For skin care	3.28	0.45	Agree
5.	To be trendy	3.36	0.55	Agree
6.	Need for belonging or acceptance within society	3.20	0.40	Agree
7.	Advertisements	3.28	0.60	Agree
8.	Brand of the cosmetic	2.40	0.94	Agree
9.	To boost their self-esteem and/or confidence	3.00	0.80	Agree
10.	For fun	2.40	0.94	Disagree
11.	To establish a sense of individuality	3.00	0.80	Agree
12.	To fit in among their peers	2.80	1.06	Agree
13.	Natural looks aren't socially acceptable	3.00	0.80	Agree
14.	For skin enhancement	3.88	0.32	Agree

Key: $\bar{x}_1$=Mean responses of Undergraduate Females, SD=Standard Deviation of the responses

Table 2 reveals that all the items recorded means above the criterion level of acceptance except item #10. This shows that the respondents agreed that those are the reasons for cosmetics usage by the female undergraduates except item 10.

The Perceived Health Effects of the Use of Cosmetics on Female Undergraduates.

Table 3: Mean Responses and Standard Deviation on the perceived health effects of the use of cosmetics on female undergraduates.

S/N	The Perceived Health Effects of the Use of Cosmetics on Female Undergraduates.	$\overline{X}_1$	SD	Remark
1.	Allergic reactions to strong chemicals in eye shadows, kohl pencils, mascaras and makeup removers	2.64	0.84	Agree
2.	Lipsticks can cause long term anaemia and even glucose intolerance, if they contain much aluminum.	3.08	0.39	Agree
3.	Some of the body moisturizers can cause trouble to endocrine system and disturb the thyroid content of body as well	2.52	0.64	Agree
4.	Damage of weak skin and the destruction of health.	2.92	0.93	Agree
5.	Pimples and rashes on the face.			Agree
6.	Mercury Poisoning	2.72	0.66	Agree
7.	Acne (Black spots all over the face)	3.74	0.34	Agree
8.	It damages the skin	3.04	0.34	Agree
9.	Skin allergies to certain creams or lotions	3.44	0.63	Agree
10.	Skin Damage due to skin bleaching	3.84	0.36	Agree

Key: $\overline{X}$ = Mean responses of Undergraduate Females, SD = Standard Deviation of the responses

Table 3 shows that all the perceived health effects listed in items one (1) to ten (10) were agreed on by the female undergraduates to be health effects of cosmetics. This shows clearly in their mean values, which were above 2.50

Discussion of Findings

The findings of the study revealed that there are about ten (10) types of cosmetics used by most female undergraduate students. The types of cosmetics mostly used by female undergraduate students include Make up Remover, Bronzer, Mascara, Eye Shadow, Eye Liner, Contour Powders, Lip Cosmetic Products, Concealers, Foundation, Face Powder and eyebrow pencils. This is in line with Saidi, Janat & Ali (2013) and Ugbe (2017)'s suggestion that the different types of cosmetics, most frequently used by young adults. The findings in this study also agree with these studies that cosmetic products used by young adults are mostly facial cosmetics.

The reasons for the use of cosmetics by female undergraduate students as discovered in the study have also been identified in other studies. The findings of this study as regards reasons for the use of cosmetics by female undergraduate students as identified in other studies include; for improvement of self-image (Wan *et. al*., 2013), quality of the cosmetic product (Tejal *et. al.,* 2013), to imitate the look of celebrity idols (Ingavale, 2016), for skin care, to be trendy, need for belonging or acceptance within society (Amaidas & Chiweshe, 2015), advertisements (Sharp *et. al*., 2014), brand of the cosmetic (Hosany & Martin, 2015), to boost their self-esteem and/or confidence (Ohmura et. al., 2015), for fun, to establish a sense of individuality (Hardon, Idrus & Hymans, 2013), to fit in among their peers, natural looks aren't socially acceptable (Wan *et. al*., 2013), and for skin enhancement. These findings suggest that the respondents identify with the views of Hartwig (2012), Shalom *et al*. (2013) and Ohmura *et al*. (2015) as regards the reasons why teenagers use cosmetics.

Finally, the perceived health effects of use of cosmetics by female undergraduates as identified by other studies of which the present study agrees with include; allergic reactions to strong chemicals eg. nickel cosmetic products (Siti, Sharifah & Praveena, 2015); cosmetics can cause disruption to endocrine system and disturb the thyroid content of body as well (Nicolopoulou-Stamati, Hens & Sasco, 2015; Huang *et. al*., 2012); damage of weak skin (Boissieux, Kiss, Thalmann, Kalra, 2000); pimples and rashes on the face; skin damage due to skin bleaching (Kuffour, Dartey, Owusu & Dabuoh, 2014); mercury poisoning (Olumide *et. al.,* 2008), acne (Black spots all over the face) (Tejal *et. al*., 2013); it damages the skin due to skin allergies to certain creams or lotions (Adepoju-Bello *et. al*., 2012). As have been discussed, these findings on health risks associated with cosmetic usage are also in line with the view of other several authors whom have written on risks associated with use of cosmetics. Such scholars include; Adebajo (2002), Eccles (2011), Dales (2013), Verma, (2014), and Buegeler (2015).

Conclusion

The study revealed the perception of female undergraduates on cosmetics as regards types of cosmetics used by female undergraduates, the reasons for usage of these cosmetics and the perceived health risks of cosmetics use. The study has shown that female adolescents choose to wear makeup to imitate their celebrity idols, fulfill the need for belonging or acceptance within society, and also because natural looks aren't socially acceptable.

Of all these reasons, societal perception of natural looks stands out. This societal trend often encourages the use of make-up use as individuals always want to feel a certain sense of belonging to their peers. The application of different cosmetic products has made a lot of young females, to equate a part of their self-worth with appearance. Due to this, adolescents and young adults (which are part of this study's demographic) become of the opinion that their natural looks aren't socially acceptable and that they should strive to enhance themselves through the use constant use of cosmetic products. Sadly, it is not a thing of concern to these teenagers that some of these cosmetics have health implications.

From the study, it can be inferred that female undergraduates rely so much on cosmetics without much consideration as regards the health effects of the chemicals used in production of such cosmetics over time. Thorough examination of relevant literature on the chemical composition of makeup products has shown that many chemicals used in the manufacture of certain cosmetic products render it unsafe for use. This information, although alarming, lends a voice to the great need for female undergraduates and females in general to be wary of the cosmetic products they use. It is therefore important that the right cosmetics should be used by female undergraduates in order to avoid the unhealthy effects of the use of certain cosmetic products.

Recommendations

- ❖ Female undergraduates are encouraged to read labels of cosmetic products to ensure that they do not contain harmful chemicals.
- ❖ Female undergraduates should desist from use of any cosmetic product once any health-related symptom is discovered while using the product.
- ❖ Female undergraduates and women should be educated through conferences, workshops and seminars to enable them become aware of the health implications/effects in use of all cosmetic products.
- ❖ Parents should educate and train their teenage daughters against the abuse and wrong use of cosmetics. Parents should also teach their undergraduate daughters to readjust their attitudes and expectations towards use of cosmetic products.
- ❖ Government should ensure the reorientation of government parastatals or agencies charged with the maintaining of safety of cosmetic products especially make up which the most widely used. The National Agency for Food and Drug Administration and Control (NAFDAC) as an agency should be strengthened to ensure that the regulation of cosmetics is faced with all seriousness.
- ❖ Curriculum planners (National Universities Commission (N.U.C.), Nigerian Educational Research and Development Council (NERDC) should utilize the types, reasons for usage and perceived health effects of cosmetics to review and update the current Cosmetology component of Home Economics program.

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Functional Properties and Proximate Composition of Stiff-Porridge Developed from Cooking Banana Flour

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Abstract

The study investigated the functional and proximate composition of stiff-porridge developed from cooking banana (*musaacuminata*). Unripe cooking banana was purchased and processed into flour. Flour samples were formulated in proportions of I00%. Functional properties of flour samples and proximate composition of the stiff-porridge products were determined. Samples were significantly different ($p<0.05$) from that of the 100% plantain flour. Water absorption capacity (WAC) of the samples ranged from 1.342 in sample (GCBF) per-gelatinized cooking banana flour to 3.401% in sample (GPPF). For packed bulk density, sample (RPPF) raw processed cooking banana flour had the highest value. The result followed the same pattern for swollen power. Raw processed cooking banana flour was more soluble than all other samples. Sample GPPF was highest for (LGC) least gelation capacity. Sample RPCB had higher moisture content than sample (RPPF) raw processed plantain flour, (HWBP) hot water blanched plantain flour had the highest value for ash content. There was no significant difference ($P>0.05$) in the fat content of all the samples. GPCB differ significantly ($P<0.05$) from all the samples in carbohydrate and protein content. The study showed that cooking banana can be used for such products for which plantain flour is used. The flour is desirable in terms of functional properties and proximate composition.

Keywords: Functional, Properties, Proximate, Composition, Cooking Banana, Stiff-porridge.

Introduction

Growing apprehension about rising food cost particularly, plantain *(Musa-Paradisiacal)* flour, and whole wheat meal flour produced from wheat, used for stiff-porridge, demands that prompt consideration be given to the usefulness of other local food resources, as well as reassessment and diversification of the methods in which these food crops are used in households. Request for plantain and whole wheat meal flour for stiff-porridge has significantly increased due to increase utilization by households and allied industries in Africa, especially Nigeria. A major task to meeting this growing demand has necessitated sourcing for local substitute. With climate uncertainty, there is an urgent need to diversify indigenous food crops especially, *Musa* species and cooking banana in particular for greater system resilience. Cooking banana is native to Southeast Asia (Scot, Randy and Kepler, 2006). The variety within banana is enormous ranging from sweet to savory, banana contain minerals such as phosphorus, calcium and potassium, vitamins A and C Cooking banana grows up to 6 meters (20 feet) (International Institute of Tropical Agriculture IITA 2014). Cooking is mainly cooked and eaten with palm oil with no secondary economic value, if diversified, cooking banana may meet dietary needs of households, since it is in abundance, accessible, cheap, safe and nutritious and readily available.

Food availability addresses supply side of the food security and expects sufficient quantities of quality food from domestic agriculture production or import. Indicators of food security for this dimension include food production, population growth, harvesting time, food storage and utilization etc. (FAO, 2013). Food utilization depends on availability, access, processing and preservation of food resources .Utilization is a scope of food security, it is vital to recognize if the food available in a given period of time had been accessed and well utilized by households. Komolafe (2014), defined household as a group of people living together in a common residence as consuming units in a physical environment. Household makes choices on what food to eat and how to apportion food. Appropriate food consumption is therefore important for the nutritional status of family members. Consumption is a process in which the substance of a thing is completely used, combined or converted into something new. Consumption of goods and services is the amount of them used in a particular time (Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) 2004).

To ensure sustainable food consumption in household, hence, the need to utilize available food resources. Cooking banana is designated by some as food for the poor and one of the underutilized food crop in most households in Nigeria. However, cooking banana if harnessed, may play an important role in stemming the tide of hunger and dangerous decline in bio-diversity. To underscore this fact, Adewale, Oso, Talbi, Ogunmodede, Ajiboye, Ojo, Onikanni and Adewumi (2012), stated that cooking banana contains about 65% water, vitamins A, B, C (about 400mg/100g) ,it is cholesterol free and low in sodium. Other popular flours utilized by households for stiff-porridge are expensive or imported.

Concept of Stiff porridge: Stiff porridge is a dish made by boiling ground, crushed starchy plants usually grains, roots, tubers and fruits in water. It is made with a greater amount of flour so as to attain thicker stability similar to dough. Stiff-porridge can be made with different flour such as, yam, cassava, cocoyam, water yam, plantain whole wheat meal etc., and is a major staple food for most households. In order to ensure sustainable consumption of stiff-porridge in household.Hence, the needs to seek for alternative flour using underutilized food crop like cooking banana.

Flour is a powder made by grinding cereal grains, seeds, roots, fruits etc. (Eke-Ejiofor and Owuno, 2012). However the application of flours in food product formulation is primarily governed by their functional properties and proximate composition.

Concept of Functional properties: Functional properties are physicochemical properties of food that determine their behaviour during processing, they include water and oil absorption capacity, bulk density, swelling capacity, solubility and least gelation concentration. **Concept of Proximate composition:** Proximate composition refers to the six components of food nutrients which include; nitrogen free extract, moisture, crude protein, crude fat, crude fiber, crude ash, and expressed as the content percentage. The key focus of this study is that cooking banana is available and underutilized by most households at this time of food scarcity. Its availability in some region is a privilege for households to guard against food scarcity and ensuring food security to meet SDGs 2 (Zero Hunger). Cooking banana produces fruit all year-round. However, it is perishable in nature and records high rate of post-harvest losses (Ayo-Omogie & Ogunsakin, 2013).To extend the shelf life and reduce post –harvest losses, adding value to the crop becomes imperative hence, the need to process cooking banana into a more storable form (flour) using three processing methods (raw, blanch and pre-gelatinized) to increase its utilization and improve its market potential.

Purpose of the study

General objective

The main purpose of this study was to establish functional properties and proximate composition stiff-porridge developed from cooking banana flour. Specifically, the study;

1. produced flour from unripe cooking banana using three processing methods;
2. prepared stiff- porridge using three flour samples;
3 determined the functional properties of the flour samples;
5 determined the proximate composition of the stiff-porridge products from the three flour samples.

Materials and Methods

Design of the study: The study used experimental research design

Materials**:** freshly harvested cooking banana organically produced were collected from a local farm in Ula-Upata community in Ahoada-East Local Government Area of Rivers State. Other laboratory materials and chemicals were collected from the analytical laboratory of the Rivers State University, Nkpolu, Port-Harcourt.

Methods

Preparation of flour: unripe cooking banana was washed peeled, cut into thin slices and divided into three equal portion and processed using three processing methods (raw, blanched and gelatinized) The pre-gelatinized was mashed and oven dried at 60°C for 24 hours .milled in a dry milling machine, sieved through a 50mm mesh size and packed in an air tight plastic container for further investigation. Unripe plantain was used as the control.

Preparation of samples:

Recipe: For all the samples

flour 200g

↓

Water20ml

Procedure for preparation of stiff-porridge samples

Raw processed cooking banana flour stiff-porridge: Put 20ml of water into the sauce pan, allow to boil, add 200g of flour into the boiling water, bring down and stir vigorously, bring back to fire, until light, serve with soup

Blanched processed cooking banana flour stiff-porridge: Put 20ml of water into sauce pan, allow to boil, add the 200g of flour into the boiling water bring down and stir vigorously, bring it back to fire, when it becomes light it's ready for consumption. Serve with soup

Pre-gelatinized cooking banana flour stiff-porridge: Put 20ml water in a sauce pan, allow to boil, Pour the boiled water into a bowl, add 200g of flour, stir vigorously, and serve with soup (Instant stiff-porridge).

Determination of Functional properties: Water and oil absorption capacity of the flour was determined using the method described by Onwuka and Onwuka (2005). Swelling power and solubility was done using the method of Upabi and Ndimele (1996) while Bulk density was determined by the method of Narasinga-Rao (1982).

Chemical/Proximate composition: The method of A. O. A. C. (2006) was used to determine Moisture content, Ash content, Crude fat, Crude Protein ,Crude fibre Total carbohydrate content was determined by difference (100-%moisture-%ash-%fat-%protein-%crude fibre).

Statistical Analysis: All experiments and analysis were carried out in duplicates, the means and standard deviation were calculated. Data were subjected to analysis of variance and means separated using Turkey's Multiple comparison test and significance accepted at $P<0.05$ level. MINITAB 16 computer programme was used.

Results

Functional properties

Table 1: Functional properties cooking banana and plantain samples

Sample	H20 Abs (g/g)	Oil Abs (g/g)	Bulk Density (g/ml)		Swelling Power (g/g)	Solubility (%)	List Gelation Capacity (%)
			Loose Density	Pack Density			
RPPF	1.761^{cd}	1.501^{b}	0.397^{c}	0.709^{a}	8.979^{a}	8.691^{e}	2.000^{b}
RPCB	1.992^{c}	1.847^{b}	0.331^{d}	0.210^{bc}	7.608^{bc}	16.060^{a}	2.000^{b}
GPPF	3.401^{a}	1.588^{b}	0.581^{b}	0.129^{c}	6.655^{cd}	14.340^{b}	4.000^{a}
GCBF	1.342^{d}	3.126^{a}	0.665^{a}	0.183^{bc}	6.571^{cd}	12.644^{c}	2.000^{b}
HWBP	2.113^{c}	1.682^{b}	0.416^{c}	0.372^{b}	8.825^{ab}	10.180^{d}	2.000^{b}
HWBC	2.844^{b}	1.620^{b}	0.568^{b}	0.187^{bc}	5.650^{d}	12.415^{c}	2.000^{b}

Means values bearing different superscripts in the same column differ bearing significantly at ($P< 0.05$)

RPPF =100%Raw processed plantain flour, RPCB =100%Raw processed cooking banana flour, GPPF =100% Gelatinized processed plantain flour, GPCB = 100% Gelatinized processed cooking banana flour, HWBP = 100%Hot water blanched plantain flour and HWBC= 100% Hot water blanched cooking banana.

The functional properties of cooking banana and plantain flour are presented in Table 4.1. The water absorption capacity of the samples ranged from 1.342 in sample GBCF to 3.401 % in sample GPPF respectively. Value for oil absorption ranged from1.501 in sample RPPF to 3.126 in sample GPCB. Packed density ranged from 0.129 in sample GPPF to 0.709 in sample RPPF. Value for swollen power ranged from 5.650 in sample HWBC to 8.979 in sample RPPF with value for solubility ranging from8.69 in sample RPPF to 16.606 in sample RPCB. Value for least gelation capacity ranging from 2.000 in sample RPPF to 4,000 in sample GPPF.

Proximate composition

Table 2: Proximate composition of cooking banana and plantain flour stiff-porridge samples

Sample	Moisture (%)	Ash (%)	Fat (%)	CHO (%)	Crude Protein (%)
RPPF	73.305^{cd}	0.698^{a}	0.260^{a}	25.993^{a}	1.763^{ab}
RPCB	78.093^{a}	0.404^{b}	0.108^{a}	19.765^{c}	1.067^{c}
GPPF	76.124^{ab}	0.417^{b}	0.118^{a}	21.881^{bc}	1.550^{b}
GPCF	71.458^{d}	0.513^{ab}	0.198^{a}	20.965^{c}	1.867^{a}
HWBP	74.333^{bc}	0.679^{a}	0.204^{a}	24.540^{ab}	0.245^{d}
HWBC	76.322^{ab}	0.579^{ab}	0.235^{a}	21.800^{bc}	1.065^{c}

Means values bearing different superscripts in the same column differ bearing significantly at ($P< 0.05$).

RPPF =100%Raw processed plantain flour, RPCB =100%Raw processed cooking banana flour, GPPF =100% Pre- Gelatinized processed plantain flour, GPCB = 100% Pre-Gelatinized processed cooking banana flour. HWBP = 100%Hot water blanched plantain flour and HWBC= 100% Hot water blanched cooking banana.

Proximate composition of stiff-porridges are presented in Table 2. Values for moisture content ranged from 71.458% in sample GCBF to 78.093% in sample RPCB. Ash content ranged from 0.404% in sample RPCB to 0.698 % in sample RPPF with values for fat ranging from 0.108% in sample RPCB to 0.260% in sample RPPF Protein ranged from 0.245% in sample HWBP to 1.867 % in sample GCBF. Carbohydrate ranged from 19.765% in sample RPCB to 25.965% in sample GCBF with values for crude fibre was 0. 000% in all the samples.

Discussion of findings

Table I shows the functional properties of cooking banana flours. Water absorption capacity of the samples ranged from 1.342 to 3.401 % respectively, with sample. GCBF as the least and GPPF as the highest. Water absorption capacity is the ability of flour particles to entrap large amount of water such that exudation is averted. Oviri (2014), noted that water absorption is important in determining the quality and texture of some food products because it stabilizes them against effects such as syneresis which sometimes occur during retorting and freezing .The increase in water absorption capacity of GPPF implies high digestibility of the starch. Falola, Olatidoye, Adesala and Daramola (2015), noted that, high water absorption capacity of the flour would be useful in bakery products where hydration to improve handling is desired,

Oil absorption ranged from 1.501 to 3.126 g/g, with sample RPPF as the least and GCBF the highest. Based on this results it showed that, pre-gelatinized cooking banana flour has high oil absorption capacity as a result of the hydrophobic character of protein in the flour. The result is in accordance with the report of (Oluwalana, Oluwamukomi, Fagbemi, and Oluwafemi, 2011), on proximate composition of stiff-porridges produced from plantain and cooking banana that were processed using three different processing methods. This result is also in agreement with the result reported by Ohizua, *et al* (2017), on some quality attributes of unripe cooking banana. Bulk density is the space the sample occupies in a given volume. The bulk density is generally affected by the particle size and the density of the flour. Confectioneries and food ingredients such as thickeners will require starch with higher WAC while products such as batter for frying and mayonnaise will require starch with appropriate Oil Absorption Capacity. The bulk density (g/cm^3) of flour is the density measured without the influence of any compression. Packed Bulk Density ranged from 0.129 GPPF to 0.709 (g/cm^3) with sample GPPF recording the least value and RPPF the highest. The bulk density is generally affected by the particle size and the density of the flour. Packed bulk density is very important in determining the packaging requirement, material handling and application in wet processing in food industry (Ganiyat, *et al, 2017*).

Swelling power ranged from 5.650 to 8.979% with sample HWBC as the least and RPPF as the highest. Safo-Kantanka *et al*, cited in Eke-Ejiofor, and Owuno, (2012), stated that the swelling power of a starch based food is an indication of the strength of the hydrogen bonding between the granules. The ratio of swelling power to water absorption capacity is an indication of the reconstitution ability. Solubility ranged from 8.691 to 16.060% with sample RPPF as the least and RPCB as the highest. Solubility is a chemical property referring to the ability for a given substance, the solute, to dissolve in a solvent. There was significant difference (p≤0.05) in the solubility of plantain and cooking banana flour samples. The value ranged from 8.691 to 16.060% with sample RPPF as the least and RPCB as the highest. This result suggests that, the flour will reconstitute easily to fine consistent dough or pudding during mixing.

This result is in line with the result of Falola , *et al* (2011) who reported low solubility value 8.47% of raw processed plantain flour the control compared with lacto-fermented plantain flour sample 12.17% in their study on effect of different processing methods on proximate, functional and pasting properties of plantain flour. The significant difference (P < .05) in the functional properties of the samples indicates that processing methods affected the functionality and application of plantain and cooking banana flour in food systems (Arinola, Ogunbusola& Adebayo, 2016). Least gelation capacity (LGC) measures the minimum amount of flour needed to form a gel in a measured volume of water.It varies from flour to flour depending on the relative ratios of their structural constituents like protein, carbohydrates, and lipids Abbey and Ibeh, in (Ohizua et al (2017) .Value for LGC varied from 2.000 to 4.000% with samples RPPF, RPCB, GPCB, HWBP and HWBC as the least and GPPF as the highest. The higher the LGC, the higher the quantity of flour needed to form a gel and the lower the LGC the better the gelling ability of the flour.

Table 2 shows the proximate composition of stiff-porridge samples. Moisture content of the samples ranged from 71.458 to 78.093 with sample GCBF having the least value and RPCB recording the highest value. Moisture content of food material is important to consider if the food will be suitable for consumption (Arinola, Ogunbusola & Adebayo, 2016). Low moisture foods usually slow down growth of microorganisms hence, the need for analysis and control of food moisture content. The lower moisture content of sample GCBF flour tends to suggest that gelatinization aids in stable shelf life..Ash content ranged from 0.404% to 0.698 % with sample RPCB as the least and RPPF as the highest. The ash content of stiff-porridge prepared from the blanched samples were significantly high ($P < 0.05$) compared to the raw processed plantain and cooking banana stiff-porridge. Increase in temperature does not result in a decrease in the ash content. This result is not in line with the report of Oluwatoyin in, (2017), that, ash content of the blanched plantain samples was significantly lower ($P < 0.05$) than the un-blanched, and that increase in temperature resulted in a decrease in the ash content. The amount of inorganic constituent present as measured by the ash content conveys an impression of the quality of metal ions bound to the raw material (Eke-Ejiofor, and Owuno, 2012). Values for fat range from 0.108% in sample RPCB to 0.260% in sample RPPF. The crude fat content was between 0. 108% and 0260% in RPCB and RPPF, respectively .Fat content usually plays a role in the shelf life stability of flour samples. The relatively low fat content of the samples makes them suitable raw materials in the formulation of a variety of food products for all ages including the elderly (Mills et al., 2015).

Protein ranged from 0.245% to 1.867 % with sample HWBC as the least and GCBF as the highest. . The crude protein content was high in the GCBF stiff-porridge. Protein content of plantain and cooking banana flour stiff-porridge samples subjected to hot water blanching was at decrease at the range of 0. 245-1.065%. The crude protein obtained is comparatively lower than those recorded in literature for some other musa spp. Oduro et al. (2006) reported 1.09% for cooking banana while Onwuka and Onwuka (2005) reported 2.8% for false horn. The protein content of the stiff-porridge made with hot water blanched plantain and cooking banana samples were generally lower than that of the raw and gelatinized stiff-porridge. The higher the blanching temperature, the lower the protein content of the flour. The implication of this according to Oluwatonyin, (2017), could be that some of the protein is either leached Carbohydrate ranged from 19.765% in sample RPCB to 25.965% in sample GCBF. Differences in carbohydrate content may be attributed to different processing methods and/or conditions of temperature. Starch contributes to textural properties of many foods and is extensively used in food and industrial applications as thickener, stabilizer and gelling agent, with values for crude fibre recording 0.000% for all the samples. The study concluded that cooking banana can be an alternative for plantain and whole wheat meal flour for stiff-porridge and at the same time aid to reduce the problem of wheat importation. This study will bring about better chances for improved utilization of cooking banana in divers' diets in household level. The paper recommends among others nutrition advocacy to improve the poor preference accorded cooking-banana.

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Rural Women Oyster (*Crassostrea Gasia)* Post-Harvest Activities in Kalabari Kingdom of Rivers State, Nigeria

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Abstract

The study focused on rural women's oyster (*Crassostrea gasia*) post-harvest activities in Kalabari kingdom of Rivers State, Nigeria. A total of 90 women were purposively selected from the area. Data were collected through the use of interview schedule. Data were analyzed using frequency, percentage, mean scores, ordinary least square (OLS) multiple regression and cost-revenue ratio. Findings show that majority (35.7%) were between 31 -40years, were married (47.7%), had formal education (76.2%), had an income level between ₦26,000 – ₦39,000 (33.3%), and household size of 5-8 persons(37.3%) and have been in oyster harvesting activities between 11-15 years (33.3%). Levels of women involvement in oyster harvesting were: removing oyster shells and selling ($\bar{X}$=2.93), cutting oysters from mangrove tree ($\bar{X}$=2.82) and roasting of oysters as a means of preservation ($\bar{X}$=2.60). Oyster harvesting from mangrove (whole sale) had highest profit of ₦45, 500 per week. The major constraints to Oyster harvesting were low fund ($\bar{X}$=2.82), water pollution by oil activity ($\bar{X}$=2.92) and water pollution by human activity ($\bar{X}$=2.60). The study recommends that water pollution by oil and human activities should be tackled by the government by monitoring illegal processing of crude oil in the area.

Keywords: Rural, Women, Oyster, Post-harvest, Activities, Revenue.

Introduction

The word oyster is used as a common name for number of different families of salt water clams, bivalve and mollcuses that live in marine or brackish water habitats. In some species, the valves are highly classified, and many are somewhat irregular in shape. Many, but not all, oysters are in the super family asteroidean. Oysters' family is an aquaculture (or Mari culture) practice in which oysters are raised for human consumption. Traditionally, oysters were scraped or tongued off the bottom of a bottom of water from oyster body. Oyster harvesting has been useful to women especially those living at the riverine areas. Through oyster business, women in the area have been empowered financially to contribute to the sustainability of their families and their communities. Women contribution to agricultural production varies from countries to countries and crops to crops (Chesapeak Bay Foundation CBF (2012). Women are the back bone of the development of rural and national economics (Piscinel, 2008; Marziali, 2009).

In Nigeria, women have been observed to participate in capture fisheries as in the case of the Nupe women alone the River Benue axis (Fairy, Danladi, Akande and Mahmod (2007).Damisa, Samnda and Yohanna (2007) also observed that women in the riverine areas were engaged in post-harvest activities like processing, preservation and marketing. When women are empowered and they have access to land, leadership, opportunities and choices, the economics of that state, local government and community grow, food security is enhanced and prospects are improved for current and future generations (Albert and Charles, 2015).Women guarantee livelihood is necessary, especially in the natural areas. As a result of their great efforts in agricultural production, women production helps to guarantee their self-sustenance (Fabiyi, Danladi, Akande and Mahmod, 2007).Harvesting oysters has become an economic saviour for local women in many part of world including women in Kalabari Kingdom. This was buttressed by Marziali, (2009) who stated that women living along the riverline rural areas harvest and trade on seafoods such as oyster. Apart from the economic benefits, it has also contributed to the environmental sustainability of our rural communities. This oyster harvester's business would be encouraged in our rural communities across the nation Nigeria and most especially at Kalabari Kingdom in Rivers State. Kalabari kingdom is a coastal region surrounded by water made up of creeks and estuaries with mangrove trees at the banks of the rivers. These mangrove trees are good and perfect host of oysters, periwinkles, crabs and sea snails (Elenwa and Igbokwe, 2017).

Women development programmes are becoming increasingly unbalanced. They are always on health, nutrition and sanitation and this need to be reviewed for effectiveness and perfection of women's involvement to other areas of empowerment such as businesses/services through which women could be empowered financially for the sustainability of households of which oyster harvesting among women could be considered. There is high demand for seafoods such as oyster and periwinkle among households in Rivers state because of the nutritional content - it serves as a source of protein, calcium and minerals in their stew and soup however, the supply of oyster is low in

Kalabari kingdom and Rivers state in general. Oysters are products women in kalabari use canoe for far distance and on foot for close areas to harvest which has served as a source of livelihood to many. Recently, because of the activities of sea pirates and water pollution, women have declined in harvesting seafoods (oysters) to trading of provisions and cloths thereby leading to scarcity of oyster in our markets. Women's harvesting and fishing activities in many places are very vital to communities' well-being yet governments, aid organizations and churches tend to overlook. Women need to be empowered to effectively carry out the helpmate role God have made them in families and the communities where they live. Therefore there is the need to examine the economic implications of oyster post- harvesting in Kalabari kingdom with the view of ascertaining if women in the area have to be encouraged in the business of oyster harvesting.

Purpose of the study

The general purpose of the study was to examine rural women involvement in Oyster (*Crassostrea Gasia)* post-harvest activities in Kalabari kingdom of Rivers State, Nigeria. Specifically, the study:

1. determined the socio-economic characteristics of the respondents;
2. determined the level of women involvement in oyster post-harvest activities;
3. determined the net revenue of oyster harvesting; and
4. identified the factors inhibiting oyster harvesting activities in the study areas.

Methodology

Design of the study: The study adopted the descriptive research design where the variables influencing the rural women involvement in oyster post-harvest activites in the study were described.

Study Area: The study was carried out in Kalabari kingdom. Kalabari is the tribe of the Ijaw people of Rivers State living in Niger Delta region of Nigeria. They migrated from the Benin fringes of Ijaw land and became a large kingdom of about 35 communities/ settlements including Buguma, Bakana, Abonnema, Tombia, Ke, Suku, Bille, Bukuma, Degema, Obonoma, Sama, Abalama, Ilelema and others. The people were originally fishermen before the coming of the Portuguese to the West African Coastline. Kalabari like most coastline tribes were wealthy as a result of interactions with Europeans. The Kalabaris share similar culture/language to the Okrikas, Bonny, Opobo, Bayelsa Ijaws (Nembe in particular as the language is almost the same), Delta Ijaws, Ondo Ijaws and some part of Edo state. The kalabaris do bear European names (Briggs, Horsfall, Jack, Harry, West, Braide etc) due to their interracial relations with their slave masters. They were the first to witness the whites in Rivers State alongside Okrika, Andoni, Opobo and Bonny. Many of them do have light skin due to European mixtures. The major economic activity among the people in kalabari Kingdom is fishing and farming. There is a huge potential for fishing that is yet to be fully harnessed. Kalabari has approximately one third of its area covered by water (Rivers and Creeks) of Saline nature. The remaining land masses are thick mangrove forest which is a suitable habitat for shell fish such as Prewinkle (*Tympanotonure fuscatus* Oyster (*Crassostrea gasar)* and Clams (*Tagelus adansonia)*.

Population of the Study: The population of the study was made up of all women into oysters (*Crossostrea gasai*) harvesting and post-harvest activities in Kalabari kingdom of Rivers State.

Sample for the Study: The study employed multi stage sampling technique. Firstly, purposive sampling was used to select nine (9) communities from the three local government areas that made up the Kalabari kingdom based on the extent of oyster harvesting in the area. Three communities from each local government area were selected. Secondly, proportionate random sampling was used to select ten (10) respondents from each of the selected communities in the three LGAs. The selected communities were: Bakana (10), Tombia (7) and Bille (13) for Degema LGA; Asari-Toru local government area, Buguma (10), Abalama (12) and Suku (8) communities were selected in Akuku-Toru local government area, Abonneama (7), ke (14) and Kula (9) communities were selected giving a total of ninety(90) respondents that were used for the study.

***Method of Data Collection*:** Data for the study was collected from primary source. The primary data collection was achieved with the aid of a structured interviewed schedule and questionnaire.

Instrument for Data Collection: The questionnaire was prepared in sections based on the stated objectives. The appropriateness and correctness of the research instruments was validated and confirmed using a pilot study. It was carried out adopting the test-retest approach.

Method of Data Analysis: Descriptive and inferential statistics were used to analyse the data collected. Descriptive statistics involved the use of frequency, percentage and mean.

Cost-Profit ratio was used to determine profitability. Cost- revenue ratio –Profit = Revenue – Cost.

Results

Level of Women Involvement in Oyster Harvesting Activities

Table 1: Level of Women Involvement in Oyster Post-Harvest activities

S/N	Levels of Involvement	DELGA	AKULGA	ASALGA	Grand Mean	Mean $\bar{X}$
1	Involvement in cutting of oyster from mangrove	2.60	2.55	2.55	7.70	2.57*
2	Involved in buying of oysters from harvesters and selling to retailers	2.80	2.85	2.85	8.50	2.83*
3	Retailing oyster (removed) and sell	2.95	2.90	2.95	8.80	2.93*
4	Use for decoration	1.85	1.80	1.85	5.50	1.83
5	Use oyster shells to prepare poultry feed	2.70	2.70	2.75	8.20	2.73*
6	Roasting of oyster as means of preservation	2.60	2.60	2.60	7.80	2.60*
7	Use for casting in building construction	2.25	2.25	2.00	6.50	2.16
8	Use oyster shell to prepare jewelries	2.35	2.45	2.20	7.00	2.33
9	As a labourer	2.00	2.50	2.50	7.00	2.33
10	Distribution of oyster to buyers (marketing)	2.50	2.55	2.50	7.55	2.51*

*> 2.50 = Involved
* **Source**: Field survey, 2016

Table 1 shows that the respondents were involved in the retailing of oyster (removed) and sell ($\bar{X}$=2.90), followed by those buying from harvesters and selling to retailers ($\bar{X}$=2.83) and those using oyster shells for preparation of poultry feeds ($\bar{X}$=2.73). Also, they participate in roasting of oyster as means of preservation ($\bar{X}$=2.60), cutting of oyster from mangrove ($\bar{X}$=2.57) and those who are distributing oyster to buyers (marketing) ($\bar{X}$=2.51).

Cost – Revenue Ratio of Oyster Business

Table 2: Cost-Profit Ratio for Oyster Harvesting

Average Variable Cost For Harvesting- Wholesale	
Average for Hiring of canoe	₦1750
Average for Hiring of cutlass	₦500
Average for Hiring of paddle	₦250
Total variable cost for harvesting from the mangrove	₦2500
Revenue	
Average sale of oyster for full Canoe	₦9000
Profit = Revenue – Variable cost = ₦9000 – ₦2500	₦6500 per day
₦6500 X 7 (one week)	₦45500 per week

Average Variable Cost For Middlemen	
Cost for one basin of oyster	₦1600
Revenue	
Price per bunch	₦500
8 bunches from a basin = ₦500 X 8	₦4000
Profit = Revenue – Cost = ₦4000 – ₦1600	₦2, 400 X 7 (one week) =₦16, 800 for one week
Average Variable Cost For Retailer	
Cost for bunch of oyster	₦500
8 bunches	₦4000
8 bunches produces	25 cups
A cup of oyster	₦250
250 X 25 cups	₦6250
Profit = Revenue – cost =₦ 6250 – ₦ 4000	₦2, 250 per day
₦ 2,250 X 7 (one week)	₦15, 750 in a week.

Source: Field survey, 2016

From the results in Table 2, those harvesting oyster from mangrove (wholesale) had high profit of ₦6500 per day and ₦45,500 per week, followed by the middlemen with a profit margin of ₦2400 per day and ₦16,800 for a week, and the retailers' profit were ₦2,250 per day and ₦15,750 in a week.

Constraints to Oyster Harvesting

Table 3: Mean Distribution of Constraints to Oyster Harvesting in the study area

S/N	Constraints	DELGA	AKULGA	ASALGA	Grand Mean	Mean ($\bar{X}$)
1	High cost of oyster gears	2.60	2.55	2.55	7.70	2.22
2	Poor storage facilities for oyster	2.80	2.85	2.85	8.50	*2.61
3	Poor mobility to improve distant creek	2.95	2.90	2.95	8.80	*2.81
4	Low technology for improved catch	1.85	1.80	1.85	5.50	*2.52
5	Lack of modern equipment for oyster harvesting	2.70	2.70	2.75	8.20	*2.60
6	Low fund for expansion	2.60	2.60	2.60	7.80	*2.82
7	Lack of extension service	2.25	2.25	2.00	6.50	*2.51
8	Water pollution by human activity	2.35	2.45	2.20	7.00	*2.60
9	Water pollution by oil activity	2.00	2.50	2.50	7.00	*2.92
10	Sea pirates	2.50	2.55	2.50	7.55	*2.50

*≥ 2.50 = Great Constraint; < 2.50= Less constraint
*__Source__: Field survey, 2016

Table 3 shows that women in oyster harvesting are faced with high pressure exerted by manifold coastal activity such as water pollution by oil activities ($\bar{X}$=2.92), lack of modern equipment for oyster harvesting ($\bar{X}$=2.60), low fund for expansion ($\bar{X}$=2.82),activities of sea pirates ($\bar{X}$=2.50), poor storage facility ($\bar{X}$=2.61), water pollution by human activities ($\bar{X}$=2.60), lack of extension service ($\bar{X}$=2.51), and poor mobility to improve distance creek ($\bar{X}$=2.81) were the constraints to oyster harvesting in the study area.

Table 4: Level of Involvement in Oyster Post-Harvest activities among LGAs

Source of Variation	*SS*	*df*	*MS*	*F cal.*	*P-value*	*F tab.*
Involvement	705.6	1	235.2	6.798	0.001961	5.318
Communities in LGA	276.8	9	34.6			
Total	982.4	10				

**PV=0.001961*< 0.05

***Source**: Field survey, 2016

Table 4 indicates that level of women involvement had a calculated F-value of 20.39306 and a corresponding probability value (PV) of 0.001961; this PV is less than 0.05 level of significance.

Discussion

The mean age of respondent was 41 years implying that the women are active, vibrant women who are in their productive age, married (50.0%) indicating that they are women who have family to care for and therefore require more income. Majority (77.24%) can read and write and so would want to adopt skills that will improve their income in oyster harvesting. The mean year of experience is 17 years. This means that women in oyster harvesting have experience of 17 years. Experience is the act of gaining knowledge through practices of skill which brings about specialization. Therefore they would know the profitability, status and challenges of oyster harvesting. Albert and Charles (2015) observed that long years of experience in farming activities enable participants to have deeper knowledge of the business and how to overcome challenges. The mean household size is 5persons which indicate a high household size. Large household size offers free and cheap labour for the oyster harvesting households (Albert, 2013). The mean income is ₦23, 877.8 per month meaning that respondents earn above minimum wage of₦18, 000 earned by civil servants in the country. This shows that oyster harvesting is economically rewarding and could be used to tackle poverty among rural women in the study area.

The respondents were involved in the retailing of oyster (removed) and sell ($\bar{X}$=2.90), followed by those buying from harvesters and selling to retailers ($\bar{X}$=2.83) and those using oyster shells for preparation of poultry feeds

($\bar{X}$=2.73). Also, they participate in roasting of oyster as means of preservation ($\bar{X}$=2.60), cutting of oyster from mangrove ($\bar{X}$=2.57) and those who are distributing oyster to buyers (marketing) ($\bar{X}$=2.51). This connotes that majority of the respondents (women) actively participated in oyster harvesting activity such as marketing, retailing and harvesting from the mangrove in the study area. Those harvesting oyster from mangrove (wholesale) had high profit of ₦6500 per day and ₦45,500 per week, followed by the middlemen with a profit margin of ₦2400 per day and ₦16,800 for a week, and the retailers' profit were ₦2,250 per day and ₦15,750 in a week. The wholesale harvesters make more profits than the retailers and middlemen. This is contrary to Elenwa, Isife and Nkoro (2019) who observed that middlemen make more profit than retailers and wholesale traders in seafoods trading.

Women in oyster harvesting are faced with high pressure exerted by manifold coastal activity such as water pollution by oil activities ($\bar{X}$=2.92), lack of modern equipment for oyster harvesting ($\bar{X}$=2.60), low fund for expansion ($\bar{X}$=2.82),activities of sea pirates ($\bar{X}$=2.50), poor storage facility ($\bar{X}$=2.61), water pollution by human activities ($\bar{X}$=2.60), lack of extension service ($\bar{X}$=2.51), and poor mobility to improve distance creek ($\bar{X}$=2.81) were the constraints to oyster harvesting in the study area. This implies that pollution by human and oil activities, lack of fund, among others, are constraints to oyster harvesting. This confirms Albert and Ekine (2012) and Albert, Nwiisitor and Gangan (2012), who in their work on red mangrove and *Rizohora Racemosa* business observed that lack of funding was the major constraints to sea food harvesting including oyster, while Ofuoku and Albert (2014); Emodi and Albert (2016) identified poor storage facilities as a constraints to agricultural produce.

The level of women involvement had a calculated F-value of 20.39306 and a corresponding probability value (PV) of 0.001961; this PV is less than 0.05 level of significance, thus the researcher rejects the null hypothesis and concludes that level of women involvement in oyster harvesting was significantly different among the various communities studied in the three local government areas. Conventionally**,** since $P<0.05$**:** $PV<0.05$, the null hypothesis is rejected and the alternative is accepted, thus the initial decision was upheld

Conclusion

Oyster harvesting has contributed immensely to the financial empowerment of rural women in the study areas by providing means of livelihood. It is a profitable venture. However, water pollution by oil and gas spillage, poor mobility to improve distant creek, low technology, and low fund for expansion were major problems faced by the respondents in the study area.

Recommendations

The study recommends that women involved in oyster harvesting activities should be empowered financially by giving loans without collateral and interest. This will help in improving oyster productivity of women in the rural area. Also, there is need to create awareness for new innovations and technologies for the women to adopt in order to improve and increase oyster production in the state. Finally, local government should provide better means of mobility that will enable oyster harvester venture into distant creeks for better harvest.

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Feeding and Toilet Training Practices adopted by Caregivers in Crèches in selected Local Government Areas (LGAs) in Lagos State

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Abstract

The study determined the feeding and toilet training practices of caregivers in the crèches in two selected LGAs in Lagos state. The population for the study consisted of 257 caregivers in 240 crèches in the area. A sample of 237 was used for the study. Questionnaire was used for data collection. Data were analyzed using means, standard deviation and t-test testing for hypotheses at $p < 0.05$. The study identified 17 feeding practices and 20 toilet training practices adopted by the caregivers in the crèches. Feeding practices include that caregivers wash their hands thoroughly before feeding the children. The toilet training practices include maintaining adequate toilet hygiene and handle toilet accidents gently. Finding on hypotheses showed that there were significant differences in the mean responses for feeding practices of caregivers based on their educational qualification at 0.05 level of significance. There were however, significant differences in mean responses based on educational qualifications for five of the toilet training practices at 0.05 level of significance. Caregivers in the crèches actually ensure that children are properly fed and toilet trained, thereby contributing their quota in producing healthy adults who realize their full potentials in the society.

Keywords: Feeding, Toilet, Training, Practices, Caregivers, Crèches.

Introduction

Involvement of young mothers in paid employment has long become a welcome social change but it has its challenges. Working mothers of young children find it difficult to combine daytime childcare with their jobs. This has led to families seeking alternative care arrangements for their infants. The crèche or daycare is one of the most common non-maternal child care options adopted by working mothers.

A crèche is a childcare center where infants, toddlers, and young children aged 3 to 5 years of age, are cared for in a safe and stimulating surrounding (Didonet, 2008). It is also referred to a facility, other than a private residence, approved and licensed by a state or other applicable local authority where a caregiver, other than a relative or guardian, is compensated to provide care and supervision for 4 or more children under 7 years of age for less than 24 hours a day (US Institute for Building Sciences, 2018).

Caregivers in crèches have very vital roles to play towards optimal development of the children in their care, given the fact that they have the children in their care for greater part of the day (Robertson, 1998). The caregivers are responsible for the provision of children's daily needs especially good nutrition, hence feeding is an indispensable part of child care (Anuna, 2005). All over the globe, more than 9 million children under 5 years of age die each year as result of malnutrition, 70% of which occur in the first year of life (Helz, Soekarjo, Wilson, Maclaine & Sibson, 2010). According to 2013 *Nigeria Demographic and Health Survey*, 37% of Nigerian children under five years of age are stunted (National Population Commission [NPC], 2014). Many factors contribute to malnutrition in children but inadequate feeding practices by caregivers has been recognized as a major cause (Nankumbi, Muliira & Kabahenda, 2012). The feeding practices adopted by the caregivers during the first two years of life are significant because children at this stage are developing physically and intellectually (Nankumbi et al, 2012). The practices directly impact on child survival as well as his or her adjustment in other areas of life such as toileting.

Toileting is a mechanism through which humans pass out waste. It is an essential everyday task for everyone. Independence in toilet training is one of the major developmental milestones that is important both for the child and caregivers (American Academy of Family Physicians, 2019). One of the roles of a caregiver is to train children so they can achieve bowel and bladder control. Toilet training practices of a caregiver involves diapering of babies, helping older children to use the toilet or potty, handling toilet accidents as well as modelling toilet hygiene. Toilet training or potty training is not only a physical milestone for children but also affects their social and emotional development (Polaha, Warzak & Dittmer-Memahon, 2002).

The ability of the child to gain control of his bowel and bladder depends on physical maturity as well as adequate motivation (Anuna, 2005). It is important for caregivers to understand how children develop with regards to toileting training and use the signs of readiness which usually manifest around 15-18 months of age (Douglas, 2002; Polaha et al, 2002). Specific toileting readiness signs include children staying dry for up to 2 hours, being aware of soiled or wet diapers and signifying the need to ease themselves (Schum, Kolb, Mcauliffe et al., 2002). Toilet training can take months or years to complete in a particular child according to Gavin (2019), therefore caregivers should make it an encouraging experience by acknowledging success and handling toilet accidents patiently (Borkowski, Ramey & Bristol-Power, 2002). The way caregivers handle toilet training plays an important part of the foundation of teaching the child cleanliness and lack of it can cause very bad hygienic habit. Psycho-sexual theory of Sigmund Freud states that the result of the fixation of this stage could be extreme orderliness, hoarding, stubbornness or stinginess. This is described as anal-retentive personality (Kimball, 2003). Inadequate methods of toilet training, in addition to affecting the individual's personality, has been linked to urinary dysfunctional problems such as bedwetting and urge syndrome in later years (Bakker & Wyndaele, 2000).

In a documented interview by Agbonkhese and Aganbi (2016) on mothers concerning child care practices in crèches in Lagos state, various harmful practices were reported such as the use of untreated water in mixing infant food, not changing babies' diaper as and when due causing persistent diaper rash, among other safety issues. The government of Lagos state, earlier in 2016 set to overhaul the childcare sector and establish a strong database of daycare centres in the states and ensure that caregivers are properly supervised. However, not much has been witnessed to that effect (Agbonkhese & Aganbi, 2016). From the foregoing therefore, it is important that caregiving practices especially the aspect of feeding and toilet training practices of caregivers in crèches investigated as their roles in the overall development of children cannot be overlooked.

Purpose of the study: The broad objective of the study was to investigate the feeding and toilet training practices of child caregivers in the crèches in two selected Local Government Areas (LGAs) in Lagos state.

Specifically, the study determined: (1) the feeding practices of the care-givers; (2) toilet training practices of the care-givers.

Hypotheses: Two null hypotheses were tested in this study. There are no significant differences between the mean responses of two groups of care-givers, based on their educational qualifications, with regard to their:

Ho_1.Feeding practices.

Ho_2. Toilet training practices.

Methodology

***Area of the study*:** The study was conducted in Lagos state. Lagos state lies in Southwestern Nigeria. It is a huge metropolis and the most populous conurbation in Nigeria with 9,013,534 inhabitants (NPC, 2006). It has a population density of 7,941/km2 and is currently experiencing population increase of about 275,000 persons per annum. Lagos is Nigeria's most prosperous city and much of the nation's wealth and economic activity are concentrated in the state. 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 enroll their infants in crèches while they are at work.

***Population for the Study*:** The population was made up of all the 257 caregivers in the 240 registered crèches in Mushin and Oshodi/Isolo Local

Government Areas in Lagos state (Ministry of Women Affairs and Poverty Alleviation, 2013). Their age ranged from 20 to 65 years of age. 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 degree holders. The caregivers with GCE or its equivalent and below were regarded as less qualified caregivers. They are usually in charge of the baby or infant group of the children in crèches, while those with NCE and above were regarded as highly qualified caregivers by this study. They take care of the toddler group which is also regarded as the foundation class, reception class or the play group.

***Sample for the study*:** The two Local Government Areas (LGAs) have a total of 240 registered crèches and 257 caregivers. Two caregivers were randomly selected from each crèche giving a total number of 240 caregivers.

***Instrument for Data Collection*:** Data for the study were collected using structured questionnaire. It was developed based on reviewed literature. The instrument was validated by three child development experts to ensure that the questionnaire items are representative of all the research questions. The reliability of the instrument was established from the responses of ten respondents who were not part of the study sample. The internal consistency of the instrument was calculated using the Cronbach Alpha reliability index which yielded reliability co-efficient of 0.987.

***Methods of Data Collection and Analysis*:** Two hundred and forty (240) copies of the questionnaire were distributed by hand with the help of two trained research assistants. A total of 237 copies were successfully completed and retrieved after a week. These 237 respondents then became the actual sample for the study. A four-point scale was used in rating the questions with 2.5 as the cut-off point for acceptability. Data were presented as mean and standard deviation while t-test was used to analyze the two null hypotheses at 0.05 level of significance.

Findings of the Study

Table 1: Mean responses of caregivers on the adopted feeding practices and t-test analysis of the null hypothesis 1.

S/N	Feeding practices	$\bar{X}_1$	SD_1	$\bar{X}_2$	SD_2	t-cal	Rmks
1.	Mothers are allowed to come in and breastfeed their babies.	2.79	1.26	2.62	1.16	0.59	NS
2.	Those who cannot come are encouraged to express breast milk for their babies.	2.75	1.38	2.95	1.05	-0.07	NS
3.	Expressed milk is stored in the refrigerator till feeding time.	2.64	1.34	2.81	1.17	-0.60	NS
4.	Left over breast milk is thrown away immediately.	2.71	1.36	2.78	1.20	-0.23	NS
5.	Caregivers wash their hands and the feeding bottles with soap and water before preparing babies' foods.	3.39	0.26	3.62	0.72	-1.82	NS
6.	Caregivers use bottle water and not tap water to mix babies' food.	3.75	0.59	3.41	0.90	1.60	NS
7.	The milk formula are prepared according to manufacturer's instruction.	3.57	0.88	3.49	0.77	0.35	NS
8.	Babies' foods are made soft and smooth.	3.54	0.84	3.43	0.80	0.48	NS
9.	Babies are fed according to their demand.	3.79	0.42	3.46	0.84	1.69	NS
10.	Caregivers do not reheat babies' food more than once.	1.71	1.01	1.65	1.22	0.64	NS
11.	Caregivers ensure that parents provide balanced meals for the children.	3.61	0.79	3.35	0.89	1.14	NS
12.	They ensure that children's meals are stored in good food containers.	3.82	0.42	3.81	0.57	0.06	NS
13.	Children's meals are served attractively at suitable temperature.	3.71	0.60	3.81	0.90	1.17	NS
14.	Children are be taught good table manners.	3.39	0.92	3.19	1.05	0.81	NS
15.	Caregivers ensure that parents vary the children's meals daily.	3.36	0.83	3.14	0.85	0.96	NS
16.	Older children are encouraged to feed themselves.	3.79	0.63	3.51	0.69	1.57	NS
17.	Foods that are too hard or too sweet e.g groundnuts and candies should not be given to children.	3.36	0.69	2.29	1.09	1.55	NS
18.	Caregivers do not force children to eat what they do not want.	2.01	0.94	1.84	1.12	1.22	NS

$\bar{X}_1$= mean responses of higher qualified caregivers, SD_1= standard deviation of the responses of more qualified caregivers, X_2; mean responses of less qualified caregivers, SD_2 = Standard deviation of the responses of less qualified caregivers, t-cal= t-calculated t-tab = 1.96 at P = 0.05 NS= Not significant, S = Significant. Caregivers N= 237; Higher qualified caregivers N = 141; Less qualified caregivers N=96

Table 1 shows that the caregivers in the crèches practice 17 out of the 18 items with the mean ratings ranging from 2.68 to 3.85 which are above the acceptance point of 2.50. Item 18 had a low mean rating of 2.05 which showed that caregivers do force children to eat when then they do not want to eat.

The Table also shows that educational qualification of the caregivers makes no difference on their feeding practices. The calculated t-values for all the items are less than the tabulated t-value of 1.96 at 0.05 alpha level. The null hypothesis 1 (HO_1) is therefore not rejected.

Table 2: Mean Responses of Caregivers on the Toilet Training Practices that are adopted by the Caregivers in Crèches

S/N	Changing diapers/nappies	$\bar{X}_1$	SD_1	$\bar{X}$	SD_2	t-cal	Rmk
1.	Caregivers do change babies' diapers/nappies as and when due.	4.00	0.00	3.76	0.55	1.97	S
2.	Caregivers ensure that the surfaces for changing diapers/nappies are safe.	3.93	0.38	3.81	0.52	0.72	NS
3.	Caregivers play with babies when changing their diapers/nappies.	3.39	0.74	3.38	0.52	0.04	NS
4.	Caregivers watch out for the children's signs of toileting and respond promptly	3.79	0.57	3.62	0.48	0.93	NS
5.	The caregivers teach the children words for urinating and defecating.	3.82	0.72	3.81	0.52	0.05	NS
6.	Caregivers include regular but flexible toilet times in the daily routine	3.00	1.02	3.16	0.90	-0.65	NS
7.	They ensure that the toilet/potties are easily accessible to the children.	3.54	0.84	3.76	0.55	-1.04	NS
8.	Caregivers provide sufficient and comfortable potties for the children	3.86	0.45	3.78	0.54	0.46	NS
9.	Babies are put on potties during nappy change to encourage the use.	2.61	1.20	2.68	1.27	-0.25	NS
10.	Caregivers ensure that children's clothes are easy to pull off when they feel pressed.	3.79	0.57	3.21	1.03	2.65	S
11.	The children are supervised when they use the toilet/potty	3.71	0.60	3.81	0.40	-0.56	NS
12.	Caregivers commend them when they use the potties successfully.	3.07	0.90	3.78	0.60	-3.23	S
13.	Caregivers teach older children how to clean their buttocks with toilet paper/water	3.29	0.96	3.00	1.15	1.13	NS
14.	They show them how to dispose of used toilet papers.	3.27	1.32	2.32	1.12	3.42	S
15.	Caregivers model proper hand washing to the children	3.79	0.42	3.89	0.46	-0.60	NS
16.	They ensure that the toilet and potties are washed and disinfected regularly.	3.64	0.83	3.92	0.28	-1.45	NS
17.	Used diapers are disposed of in an outdoor refuse bin	3.79	0.63	3.62	0.86	0.79	NS
18.	Soiled nappies are washed off immediately.	2.69	1.20	2.84	1.24	-0.43	
19.	Caregivers do not beat children who urinate or defecate in their clothes	2.93	0.96	2.64	1.07	0.28	NS
20.	The children are not shamed using song or gestures	3.00	0.90	2.49	1.10	2.05	S

$\bar{X}_1$= mean responses of higher qualified caregivers, SD_1= standard deviation of the responses of more qualified caregivers, X_2 = mean responses of less qualified caregivers,

SD_2 = Standard deviation of the responses of less qualified caregivers, t-cal= t-calculated, t-tab = 1.96 at P = 0.05, NS= Not significant, S = Significant, Caregivers N = 257, Higher qualified Caregivers N =141, Lower qualified caregivers N = 96.

Table 2 shows that the caregivers carry out all the toilet training practices with the means ranging from 2.53 to 3.89. It also shows that the mean responses of higher qualified and the less qualified do not differ significantly in the toilet training practices adopted by caregivers in 17 out of the 20 items. The calculated t values for the 17 items are less than the tabulated t value of 1.96 at 0.05 alpha level. The null hypothesis 1 (HO_1) is therefore not rejected except in items 1,10, 12, 14 and 20 which have the t-cal values of 1.97, 2.65, 3.23, 3.42, and 2.05 respectively.

Discussion of findings

The findings of the study showed that the caregivers in the crèches appear to understand the importance of their care practices towards the wellbeing of the children in their care. They adopt most of the feeding and toilet training practices recommended by child care specialists. Caregivers' feeding practices included supporting breastfeeding and complementary feeding of children. As found in this study, they support breastfeeding mothers by ensuring that babies are fed breast milk even in the absence of the mother. This ensures that babies can continue being exclusively breastfed even when mothers resume work. By so doing, the children in care centres benefit from breastfeeding which according to WHO (2019), ensures healthy growth and development of infants. These findings agree with the recommendations of Moore, Nelson, Marshal and Cooper, (2007) on ways that caregivers can assist nursing mothers in ensuring that babies continue to breastfeed even when they are in non-maternal care settings. The finding is also consistent with the views of Blum (2000), that breast feeding children in care centres is of benefit both to the baby and to the caregivers because he or she is less likely to fall sick than bottle fed babies.

The findings also revealed that caregivers maintain proper hygiene and use treated water when preparing children's feeds. This finding is contrary to the documented interview by Agbonkhese and Aganbi (2016) which highlighted the use of untreated water (borehole) in mixing baby foods. The finding is in line with the view of U.S Academy of Nutrition and Dietetics (2019) that caregivers can have a vital role to play in safe feeding of children by ensuring proper hygiene practices and following preparation guidelines. From the findings, the caregivers also train older children to develop independence in eating. This agrees with the views of Robertson (1998) who indicated that caregivers play a significant role in nutritional well-being of children. However, from the study, the caregivers forcefully feed children who are not willing to eat contrary to the recommendations of Essa (1999). The findings on the overall findings of the study supports the assertion of Pérez-Escamilla, Segura-Pérez and Lott (2017) that healthy feeding of infants and toddlers promote healthy growth and all round development, hence caregivers play a role what young children should eat, as well as creating the right environment for children to learn healthy eating.

The finding of the study upheld the null hypothesis that educational qualifications has no significant difference in the feeding practices of caregivers and support the views of Anuna (2005) that food is the most basic of all human needs and is a must in every care giving institution, therefore caregivers endeavor to adopt adequate feeding practices irrespective of their educational qualification

Furthermore, the study showed that caregivers properly handle the toilet training of the children in crèches. They ensure that babies and older children transition smoothly from using diapers to using the potty/toilet while modelling toilet hygiene. The caregivers, in line with the recommendations of Gavin (2019), use signs of readiness to initiate toilet training, they make potties accessible to the children and also commend successful use of the potties by the children. They also handle toilet accidents without punishments as recommended by Port (2019). The findings on toilet training practices of caregivers are in line with the views of Polaha, Warzak and Dittmer-Memahon (2002) that toilet training is not only a physical milestone for children, but also affects their social and emotional development; and also agree with the views of Kimball (2003) that the child is able to develop positive attitude towards toilet training only if the caregivers are responsive and understanding, employing frequent explanation, use words of encouragement, praise and rarely resort to punishment.

The findings of the null hypothesis showed that the educational qualification of the caregivers does not significantly affect the mean responses on most of their toilet training practices. This hypothesis was rejected only in five out of the twenty toilet training practices. The variability observed in mean ratings of few of the toilet training practices could be as a result of the caregivers' experiences in the care-giving job or their personal disposition towards the issue of toilet training and not necessarily due to educational qualification. The findings agrees with the views of American Academy of Family Physicians (2019) that independence in toilet training is one of the major developmental milestones that is important both for the child and caregivers.

Conclusion

The importance of child caregivers in the development of children cannot be overemphasized. The increasing number of young mothers in paid employment has made the role of caregivers in crèches more significant than ever before. Feeding and toileting are very fundamental in the lives of children hence, it is noteworthy that caregivers adopt practices that optimize the values associated with these basic needs. Caregivers who ensure that children are properly fed and toilet trained, contribute their quota in producing healthy adults who realize their full potentials in the society.

Recommendations

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

- Working mothers of young children should complement the efforts of the caregivers in ensuring that young children do not suffer any negative effect of their employment.
- Management of crèches should also provide the necessary physical and socio-emotional environment for childcare so that caregivers can continue to carry out their duties without distractions.
- The government through the Ministry of Women Affairs and Poverty Alleviation should also ensure constant supervision of crèches so as to maintain and improve on the quality of childcare being offered by the caregivers

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Validation of a Developed Self Instructional Manual for Learning Patchwork and Quilting Craft by Home Economics Students in Colleges of Education, South East Nigeria

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Abstract

The purpose of the study is to validate a developed self-instructional manual for learning patchwork and quilting crafts by Home Economics students in South East Nigeria. Two research questions and one hypothesis guided the study. Six colleges of education, three of them federal-owned and three state-owned, where Home Economics was offered were used for the study. For the testing of the hypothesis on the effectiveness of the self instructional manual, two colleges of education were sampled. Final year Home Economics students of Federal College of Education, Eha-Amufu, Enugu State made use of the self instructional manual, while the final year Home Economics students of Enugu State College of Education, Enugu did not. Two findings were made by the study (1) the lecturers and craftsmen who assessed the self instruction manual found it very appropriate (ii) students who made use of the self instructional manual performed better in a multiple choice test than students who did not. Hence, the null hypothesis was rejected. Based on the findings it was recommended that the self instructional manual be widely used by Home Economics students to supplement the lecturers and practicals given to them at school.

Keywords: Patchwork, Quilting, Craft, Self-instructional, Manual, Validation.

Introduction

Home Economics is an important field of study offered in colleges of education. The areas covered in Home Economics include; Clothing and Textiles, Food and Nutrition, Child Development, Home Management, and Consumer Education. It is a skill oriented subject which aims at providing employment to school leavers at all levels. According to Anyakoha (2006), Home Economics aims at equipping individuals with skills and attributes that will lead to lifelong effective performance in paid and unpaid employment.

Clothing and Textiles is an aspect of Home Economics which prepares individuals for employment opportunities in occupations relating to clothing. Advanced clothing is a major aspect of Clothing and Textiles curriculum in Colleges of Education for final year Home Economics students. One of the difficult topics in clothing and textiles is patchwork and quilting crafts.

Craft is an activity that involves a special skills at making things using hand tools. Example, are traditional crafts like wood working, metal working, cloth weaving, and basket making. Patchwork and quilting are special crafts in the area of clothing and textiles. Saward (2007) defined craft as a job or activity in which people make things with their hands and in which they need skills in order to perform. Clothing and textile crafts include, dyeing techniques, folding, twisting, knotting, marbling, batik, fabric printing, patchwork and quilting (Ombugadu, 2017).

Patchwork is a form of needlework that involves sewing together pieces of fabrics into a larger design. The larger design is usually based on repeat patterns built up with different fabric shapes which can be different colors. These shapes are carefully measured and cut into basic geometric shapes making them easy to piece together (Page, 2003). Patchwork can be used to produce quilt.

Quilt is a multi-layered textile, composed of three layers of fibres, a woven cloth top, a layer of fibres, a layer of batting or wadding, and a woven back combined using the technique of quilting. The process of sewing the three layers together is known as quilting (Cella, 2003).

Patchwork is the process of cutting shapes from different fabrics and piecing them together into a geometric design. While quilting is the process of securing together the patchwork with a filler (called wadding), and backing the fabric with simple running stitch (Cella, 2003). The beautiful designs in patchwork can be combined in quilts to produce bedcovers, cushion cover, among others.

Patchwork and quilting craft can be learnt through self instruction. Self instruction can be defined as the ability of one to cognitively plan, organize, direct, reinforce, and evaluate one's own independent learning without teacher's prompting (Corner, 2004). Benson (2001), view it as a long learning project instigated, planned, and carried out by the learner alone, without teacher intervention. Self instruction could require a self instructional manual.

A self instructional manual is a written document which provides a planned and logical organization of practical content, objectives, instructional process designed to meet the given educational goal. Miller and Rose (2005) affirm that one of the most important contributions of instructional manual is the specification of how the elements of the practical contents are to be learnt. It lays emphasis on key elements of the practical content and is effective in presenting information and concepts.

Self-instructional manual contains step-by-step information of carrying out practical skills which contain brief explanation and pictorial illustrations of performance of particular skills. It requires the user to perform each step before going the next (Dangana, 2010). Self instructional manual is a guide that provides series of instructions aimed at teaching and learning (Shilong, 2015). It is a book or booklet of instructions, designed to improve the quality of performed tasks (Alpha, 2013). Self instructional manual, therefore, is a book of planned activities which specifies or describes the resources and strategies employed in achievement of objectives. A self-instructional manual once developed, needs to be validated.

Validity relates to quality and truthfulness. It is the extent to which a test or an instrument is capable of measuring accurately the qualities it is intended to measure (Okoro, 2006). To validate, therefore, means to determine if a test or instrument is capable of serving effectively the purpose for which it was developed. The validity of a self instructional manual is the degree to which the manual is effective in contributing to self instruction and learning on the part of the individuals using the instrument.

There are three types of validity relevant to the present study. These are: Face validity, Content validity and, Predictive validity

Face validity is a superficial type of validity. According to Uzoagulu (2008), face validity judges at face value the appropriateness of a test or an instrument. Face validity is interested in the appearance and general quality of an instrument.

Content validity is more difficult to establish. It attempts to determine the extent the content of a test or instrument are appropriate, and adequately cover the various content areas that the instrument is supposed to cover. Nkpa (2007) stresses that content validity should ensure that the items in the instruments are representative of content and behavior specified by the theoretical concepts being covered. In the case of a self instructional manual, the content covered by the manual should adequately cover the content areas necessary in any thorough study of the subject area covered by the manual.

Predictive validity is the ability of an instrument to predict some future event or events (Uzoagulu, 2008). With respect to self instructional manual, predictive validity attempts to predict the effect of the use of the self instructional manual. It will, in other words, try to answer the question, will those who make use of the self instructional manual do better than those who do not? Is there any positive relationship between use of the manual and high quality performance.

Self-instructional manual on patchwork and quilting craft was developed by Ugwu (2018). This was because patchwork and quilting crafts are not properly taught in colleges of education. In many cases, it tends to be covered in theory only. This is because students in their third year of study (when patchwork and quilting are taught) also have to contend with a long six months teaching practice. There is not enough time to do all that should be done. Patchwork is often given to students as projects to be submitted at the end of the course. The developed self instructional manual will enable students to continue to study patchwork and quilting even when they are on teaching practice.

Purpose of the Study

The main purpose of the study was to validate a self-instructional manual for learning patchwork and quilting crafts in Colleges of Education in South East, Nigeria (Ugwu, 2018). Specifically, the study was designed to:

1. validate the developed self-instructional manual for learning patchwork and quilting craft
2. determine the effectiveness of the self-instructional manual based on the performance of Home Economics students in colleges of education.

Hypothesis

One null hypothesis was tested by the study at 0.05 level of significance. There is no significant difference in the practical skill achievement of Home Economics students who used the self instructional manual and those who did not use it.

Methodology

Area of the study: This was South East zone of Nigeria. The zone is made up of five states. It has three Federal Colleges of Education and three State Colleges of Education that offer Home Economics.

Population of the study: This was made up of sixty three Home Economics lecturers that teach in those colleges of education, seven Master craftsmen, and 304 final year Home Economics students in the various colleges of education involved in the study.

Sample for the study: There were two samples for the study. They were sample for the validation of the self-instruction manual, and sample for a comparative study to determine the effectiveness of the self-instruction manual. The sample for the validation of the self instruction manual consisted of entire 63 Home Economics lecturers and seven master craftsmen. These people were required to complete and return validation instrument on the self instructional manual.

The second sample, used for a comparative study on the effectiveness of the self-instructional manual, consisted of 43 final year students of Federal College of Education, Eha-Amufu and 62 final year students of Enugu State College of Education (2016/2017 session).

Instruments for data collection: were (a) a validation questionnaire for those validating the self-instructional manual and (b) a 50 item multiple choice test developed by the developer of the self-instructional manual and which was administered to the two groups, namely those who made use of the self instructional manual and those who did not.

Data Collection: Two sets of data were collected, first the validation data and the data for establishment of effectiveness of manual. Seventy copies of the assessment instrument were distributed to 63 lecturers and seven master craftsmen, and later collected back after two week. It was 100 percent return.

For the second set of data, 43 final year students of Federal College of Education were given copies of the self instructional manual and allowed to use it in addition to their regular classroom lectures on patchwork and quilting in the college. The final year students of Enugu State College of Education had no access to the self instructional manual. They depended only on the lectures received from their lecturers on patchwork and quilting craft. A 50-item multiple choice test was later administered to the two groups of students.

Data Analysis Technique: The data for validation was analyzed using means. Based on the response options given in the validation decisions were made using the mean as follows:

1.00	- 1.49	Very Inappropriate
1.50	- 2.49	Inappropriate
2.50	- 3.49	Appropriate
3.50	- 4.00	Very Appropriate

The hypothesis on the effectiveness of the self instructional manual was tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

The pre-test was administered to final year Home Economics students before the interaction with the self instructional manual. The post-test was administered after the interaction with the self instructional manual.

Findings of the Study

The findings are presented in Tables 1, 2, and 3.

Table 1: Mean validation of Responses of Home Economics Lecturers and Master Craftsmen on Self-Instructional Manual (N = 70)

S/N	Items to be evaluated	$\overline{X}$	SD	Remarks
A	**Objectives of patchwork and quilting craft**			
1	Introducing tasks to be learnt	3.71	0.48	Very Appropriate
a	Task 1: design	3.28	0.75	Appropriate
b	Task 2: Preparation of templates	3.57	0.53	Very Appropriate
c	Tasks 3: Cutting of fabrics	3.57	0.53	Very Appropriate
d	Task 4: Joining the patches	3.71	0.48	Very Appropriate
e	Task 5: Lining	3.28	0.48	Appropriate
2	Level of students that are learning the task	3.28	0.48	Appropriate
3	Listing the tools and equipment for learning the tasks	3.14	0.37	Appropriate

4	Listing the materials (consumables) for learning the tasks	3.00	0.00	Appropriate
5	Step by step listing of instructions to be followed in performing the tasks	3.28	0.48	Appropriate
6	Learners applying skills listed in the tasks	3.85	0.37	Very Appropriate
7	Evaluating task performance using self-assessment	3.71	0.48	Very Appropriate
B	**Content of the Self-Instructional Manual**			
8	Comprehensiveness of the self-Instructional manual	4.00	0.00	Very Appropriate
9	Specificity of instructions	4.00	0.00	Very Appropriate
10	Accuracy of information in the self-instructional manual	3.85	0.37	Very Appropriate
11	Readability of the self-instructional manual	3.85	0.37	Very Appropriate
12	Acceptability of the resources listed in the self-instructional Manual	3.85	0.37	Very Appropriate
C	**Format of the Self-Instructional Manual**			
13	Overall design of the self-instructional manual	3.14	0.69	Appropriate
14	Appearance of the self-instructional Manual	3.28	0.48	Appropriate
15	Length of the self-instructional manual	3.14	0.37	Appropriate
16	Format appeal of the self-instructional manual	3.28	0.48	Appropriate
D	**Utility of the Self-Instructional Manual**			
17	Home Economics Lecturers	4.00	0.00	Very Appropriate
18	Home Economics Students	4.00	0.00	Very Appropriate
19	Master Craftsmen	4.00	0.00	Very Appropriate
20	Apprentices in dressmaking/tailoring	4.00	0.00	Very Appropriate
21	Home makers	4.00	0.00	Very Appropriate
22	Individuals who are interested in making patchwork and quilting craft	4.00	0.00	Very Appropriate

Table 1 shows mean responses of items 22 items on how Home Economics lecturers and master craftsmen rated the developed self-instructional manual. The table revealed that all the items evaluated had mean value that ranged from 3.00 – 4.00, with Standard Deviation of 3.14 – 0.00. This implies that the raters agreed that the self-instructional manual was appropriate and relevant.

Table 2: Practical Skill Achievement of Home Economics Students who used the Developed Self-Instructional Manual for Learning Patchwork and Quilting Craft and those who did not make use of it to learn Patchwork and Quilting Craft

Treatments		Pre test	Post test	Mean gain
Conventional Method	Mean $\bar{X}_1$	16.1613	26.6613	10.5000
	N_1	62	62	
	Std. Deviation	3.44128	7.89676	
Instructional Manual	Mean $\bar{X}_2$	21.6744	47.4419	25.7665
	N_2	43	43	
	Std. Deviation	5.24958	3.19451	

$\bar{X}$ = Means for conventional method; $\bar{X}_2$ = mean for self-instructional manual; N_1= Number of respondents for conventional method; N_2 = Number of respondents for self-instructional manual

Table 2 compares the scores of both the students that made use of the self-instructional manual and those who did not make use of the self-instructional manual. The scores of both groups before and after interaction with the self instructional manual were clearly stated. The result however, indicated a significant effect of the use of the self-Instructional manual, implying that the manual is effective on Home Economics students of Federal College of Education, Eha-Amufu.

Hypothesis

1.There is no significant difference in the mean rating of the practical skills achievement test of Home Economics students who used the self-Instructional Manual and those who depended on what was taught to them at school.

Table 3: Shows the test on students' achievement/performance for those that learnt with Self-instructional Manual and those that depended on what was taught to them at school using ANCOVA

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11007.458[a]	2	5503.729	133.998	.000
Intercept	7956.540	1	7956.540	193.717	.000
Pre test	43.035	1	43.035	1.048	.308
Treatment	8409.828	1	8409.828	204.753	.000
Error	4189.457	102	41.073		
Total	145085.000	105			
Corrected Total	15196.914	104			

The data presented in Table 3 shows the F-calculated for mean scores of those with the self instructional manual and those learnt with the conventional method in the mean achievement in the use of self-instructional manual. The F-calculated for the group is 204.753 with a significance of F at 0.000 which is less than 0.05, implying that the null hypothesis is rejected at 0.05 level of significance. This shows that those who made use of the self-instructional manual performed significantly better than those who depended only on what was taught to them at school.

Discussion

The self instructional manual validated by Home Economics lecturers on the developed self-instructional manual presented in table 10 showed the overall mean ratings of respondents that rated the self instructional manual as very appropriate. All the 23 validation items were all appropriate.

There is significant difference in the mean response of Home Economics students who interacted with the developed self instructional manual, and those who used the conventional method. Therefore, the self instructional manual developed in this study was effective on Home Economics students at Federal College of Education, Eha-Amufu, Enugu State.

Finding of this study is in agreement with Anyakoha (2006) who indicated that Home Economics is a field of study that offers numerous occupations for individuals. Nwankwo (2004) also noted that as a skill oriented course, it possesses the capability for equipping individuals with salable skills that make for self-employment, self reliance and wealth creation.

Therefore, the developed self-instructional manual for learning patchwork and quilting craft could be a means of preparing students for useful business venture that will lead to self employment and self reliance.

Conclusion

The self instructional manual developed in this study has been found effective in increasing student's acquisition of practical skills. In a trial use of self instructional manual, students that made use of the self-instructional manual performed significantly better than students who did not make use of the manual. It is therefore concluded that the manual is useful and should be widely used in increasing college of education student's acquisition of skills in patchwork and quilting craft.

Recommendations

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

1. The self instructional manual developed in this study has been found to be useful in increasing students learning of patchwork and quilting craft and therefore should be widely used by students of Home Economics in Colleges of Education.
2. Students should use the manual individually or in groups to gain further information or acquire extra skills on topics treated by lecturers in the classroom.
3. The manual developed in this study could also be used by Home Economics students in

polytechnics and universities to increase their acquisition of practical skills in patchwork and quilting craft.

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Objectives for Peace Education Curriculum for Integration into Senior Secondary School Home Management Programme in Rivers State

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Abstract

The main purpose of this study was to determine objectives of peace education curriculum for possible integration into senior secondary school Home management programme in Rivers State. One research question and one null hypothesis guided the study. The study was carried out in Rivers State. It was a survey study. Population for the study was made up of Home economics lecturers and students, senior staff of Ministry of Women Affairs and Youth Development, and teachers in public secondary schools in the area of study. A 4-point questionnaire was used for data collection. Mean was used to analyze the research question data, while Analysis of Variance was used to test the null hypothesis at 0.05 level of significance. Forty two objectives were identified for peace education curriculum. Findings on the hypothesis showed that there is no significant difference in the mean responses of the respondents on the objectives selected for peace education curriculum. Based on the findings, it was recommended that peace education curriculum should be planned for integration into senior secondary school Home Management programme in Rivers State. Also, the 42 identified objectives should be used when planning for peace education curriculum.

Keywords: Objectives, Peace, Education, Curriculum, Integration, Home, Management,

Introduction

Peace is a state of tranquility, calmness, harmony and freedom from fear of violent conflicts among people. Peace is an important attribute to development process and successful living. Johnson (2011) opined that there cannot be progress without peace. Despite the role of peace in the social, economic and political development of the society, there have been series of reports of anti-social activities resulting from youth restiveness in all parts of Nigeria. Such problems as kidnapping, bomb blasts, ritual killings, raping, robbery, vandalization of pipe lines, etc., are reported almost daily in the media. The South-South states generally and Rivers State in particular, are noted for kidnapping, raping, killing, vandalization of oil pipe lines and robbery in the recent time. These problems have impacted negatively on the social, economic and political development of the state. It has also been noted that, the perpetrators are often the youths who are the hope of tomorrow and who are looked upon as the future leaders. Federal and state governments, oil companies, non-governmental organizations and individuals have tried in many ways to curb these problems through skills acquisition programmes, amnesty programmes, employment, etc., yet their strategies seem not to create positive impacts. There is, therefore need to adopt a different approach using peace education. Egbule (2011) also viewed education as a means through which the entire individual is developed so as to be able to live successfully in the society. Tajudeen (2011) noted that education is the key element in the development of any nation whether politically, socially, economically, culturally and technologically.

Peace education is the type of study that essentially inculcates discipline in people. It also teaches the expectation of citizen in general, and more especially, roles, obligations, activities of individuals, leaders and followers (Odejobi and Adesina, 2009). Peace education simply means helping the learner to develop knowledge, attitudes, skills that are necessary for achieving understanding, tolerances, goodwill, and value diversity. For peace education to be a part of the school subjects there is need for a peace education curriculum.

Nnaji (2009) defined curriculum as a guiding programme for effective teaching and learning. Curriculum includes a planned and unplanned experience which learners receive in the process of their formal education. Curriculum is an essential means of education (Danladi, 2006). Without curriculum teaching and learning will be un-coordinated for the achievement of desired and meaningful outcomes (Azikiwe, 2009). However, in planning any curriculum, there are certain elements to consider which include objectives, contents, learning experiences and evaluation.

Rao (2007) opined that the first concern of any curriculum must be the educational objectives the school has for its children. Amadi and Obiefuna (2011) posited that, when curriculum planners make statements of expected performance and changes in behaviour patterns of learners *vis-a-vis* knowledge, skills, attitudes, feelings resulting from planned educative process, they are stating educational objectives. Maduewesi (2000) asserted that, a statement of objective is useful to the extent that it specifies what the learner must be able to do or perform when he is demonstrating his mastering of the objectives. Offorma (2004) pointed out that, the main purpose of objective is to guide in making curriculum decisions on what to teach, how to teach what, what area to emphasize and what to evaluate. Samuel and Alamina (2007) asserted that specific objectives help in the selection of appropriate content and methods that, once objectives are clearly stated, evaluation will be properly directed. Singh (2008) observed that, objectives are central to both learning experiences and evaluation. The most characteristic of a useful objective is that it identifies the kind of performance which will be accepted as evidence that the learner has achieved the objective (Maduewesi, 2000). Tyler (1949) opined that, these educational objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and examination are prepared. Offorma (1994), however noted that, objectives are not selected in isolation, that there are certain considerations born in mind while selecting curriculum objectives. These are: the learner, the contemporary society, the subject specialist. These three, according to Offorma (1994), are screened psychologically and philosophically to ensure that they conform to the developmental needs of the learner and the philosophy of the society for which the curriculum is being planned.

The learner and the society seem to be the most important in the selection of the objectives. The reason is that when the objectives are achieved by the learner resulting to a change in his behaviour, it will impact positively on the society. With the present insecurity situation in Nigeria at large and in Rivers State in particular as a result of youth restiveness, there is need for peace education curriculum for senior secondary school which must have objectives to be achieved by the learners. Senior secondary school is the post primary level of education. This level of education is very important because crucial decisions for ones' career and future life are taken at this level. This is the point in life of an individual when peers pressure is at the peak. It is the stage of adolescence with its attendant problems. It is a critical stage of lives of individuals. This is the level of education where peace education is necessary in order to shape, direct and guide the mindsets of the students for peaceful living and successful citizenship. Rivers State needs peace in order to attain a sustainable development. If peace education is planned for integration into senior secondary school programme, there will be hope for a better future society. Hence, this study aimed at identifying objectives for peace education for integration into senior secondary school Home Management programme in Rivers State.

Home Management is an area in Home Economics. Anyakoha (2015) viewed Home Management as channeling of effort in a given direction in order to achieve something. Peaceful co-existence and meaningful development can be achieved in Rivers State if objectives are identified for peace education curriculum for integration into senior secondary school Home Management programme.

Purpose of the study

The main purpose of the study was to identify objectives for peace education curriculum for possible integration into senior secondary school Home Management programme in Rivers State. Specifically the study was to:

1. determine instructional objectives of Peace Education curriculum.

Research question

The following research question guided the study:

1. What are the instructional objectives that could be achieved in Peace Education?

Hypothesis

The following null hypothesis was tested at 0.05 level of significance:

$H0_1$.There is no significant difference among the mean responses of Home Economics lecturers, Social Studies lecturers and Senior Staff of Ministry of Women Affairs on objectives of Peace Education.

Methodology

***Design of the study*:** The study adopted survey design because the aim was to solicit information from the respondents on the objectives that could be selected for peace education curriculum.

***Area of the study*:** The study was carried out in Rivers State. Rivers State was chosen for this study because of the peculiar problem of youth restiveness that has made the state very insecure for living and economic development.

***Population for the study*:** The population for the study was 605 respondents. These included all lecturers and students in the departments of Home Economics and Social Studies in Ignatius Ajuru University of Education, Port Harcourt and Federal College of Education (Tech), Omoku, all senior staff in the ministries of Women Affairs, Youth Development and Social and Rehabilitation and all teachers in all the 245 public secondary schools in Rivers State, (Field survey, 2015 and Rivers State Senior Secondary *Schools Management Board, 2015)*

Sample for the study: Sample size for the study was 450 out of 605 respondents. Simple random sampling technique was employed to select samples from various population groups.

Instruments for data collection: A four-point scale questionnaire was used for data collection. It was developed based on the purpose of the study and literature review. It was face-validated by three Home Economics university lecturers. Twenty copies of the questionnaire were administered to 20 respondents who were not involved in the study. Cronbach Alpha reliability method was used to determine the internal consistency of the items. A reliability index of 0.871 was obtained.

***Methods of data collection*:** Five research assistants helped in the administration and retrieval of 450 copies of the questionnaire. With the help of the research assistants, all the 450 copies of the questionnaire administered were retrieved and used for the study.

Data analysis technique: Mean was used to analyze research question. The mean score of 2.50 and above was used for decision-making. ANOVA was used to test the hypothesis at 0.05 level of significance.

Results of the study

Table 1: Mean responses and ANOVA results of Home Economics teachers, Social Studies lecturers and Senior Staff of Ministry of Women Affairs on objectives of Peace Education

S/N	Objectives of Peace Education	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	F-cal	P_{Vol}	Rmk
1	Define Peace Education	3.85	2.81	3.29	12.3	0.05	NS
2	Explain concept of peace education	3.89	3.11	3.40	12.3	0.05	NS
3	Identify element of peace education	3.80	2.50	3.49	12.3	0.05	NS
4	Explain benefit of peaceful co-existence	3.10	2.41	3.21	12.3	0.05	NS
5	Appreciate positive ways of life	3.02	3.92	3.45	12.3	0.05	NS
6	Define conflict	3.03	3.42	3.49	12.3	0.05	NS
7	Identify types of conflict	3.80	3.10	3.75	12.3	0.05	NS
8	Identify causes of conflict	3.82	2.77	3.35	12.3	0.05	NS
9	Identify outcomes of a conflict	3.72	2.08	2.80	12.3	0.05	NS
10	Identify actors in a conflict	3.85	2.86	3.01	12.3	0.05	NS
11	Manage conflicts	3.70	2.87	2.85	12.3	0.05	NS
12	Acquire skills in conflict resolution	3.19	3.00	3.76	12.3	0.05	NS
13	Show respect for the rights of the people	3.88	3.76	2.71	12.3	0.05	NS
14	Appreciate culture of peace	3.94	3.90	3.76	12.3	0.05	NS
15	Develop spirit of oneness	3.18	3.89	3.01	12.3	0.05	NS
16	Develop spirit of tolerance	3.90	3.70	3.02	12.3	0.05	NS
17	Have confidence in themselves	3.87	3.70	3.59	12.3	0.05	NS
18	Show spirit of responsibility	3.50	3.22	3.35	12.3	0.05	NS
19	Cooperate with one another on a voluntary basis	3.52	3.12	2.80	12.3	0.05	NS
20	Create opportunities for social order	3.33	3.98	3.66	12.3	0.05	NS
21	Exhibit spirit of patriotism	3.92	2.56	3.01	12.3	0.05	NS
22	Avoid violet situations	3.46	3.86	3.62	12.3	0.05	NS
23	Avoid actions that can cause acrimony	3.32	2.87	3.76	12.3	0.05	NS
24	Advocate for justice	3.42	3.60	3.64	12.3	0.05	NS
25	Resolve conflicts among themselves	3.92	3.40	3.00	12.3	0.05	NS
26	Appreciate co-existence among people	3.67	3.52	3.65	12.3	0.05	NS
27	Work cooperatively in groups	3.88	3.67	3.50	12.3	0.05	NS
28	Assist each other to solve personal problems	3.92	3.22	3.64	12.3	0.05	NS
29	Assist one another to solve group problems	3.62	3.60	3.80	12.3	0.05	NS
30	Identify roles of a leader	3.66	3.63	3.50	12.3	0.05	NS

31	Obey every rules and regulations of the school	3.32	3.23	3.92	12.3	0.05	NS
32	Exhibit attitudes that enhance interpersonal relationship	3.92	3.42	3.59	12.3	0.05	NS
33	Identify the roles of the led	3.78	2.80	3.60	12.3	0.05	NS
34	Discuss expectations of a good citizen	3.24	2.99	3.99	12.3	0.05	NS
35	Appreciate other people's culture	3.11	2.59	3.65	12.3	0.05	NS
36	Respect other people's culture	3.02	2.89	2.99	12.3	0.05	NS
37	Exhibit attitudes that show respect for life	3.14	3.59	2.87	12.3	0.05	NS
38	Play roles of individuals in the home	3.13	3.11	3.67	12.3	0.05	NS
39	Identify cultural norms	3.20	3.92	3.66	12.3	0.05	NS
40	Show respect for elders	3.20	3.22	3.99	12.3	0.05	NS
41	Show respect for life	3.16	3.89	3.69	12.3	0.05	NS
42	Respect constituted authority	3.77	3.62	3.50	12.3	0.05	NS

Note: $\bar{X}_1$= Means of the Home Economics Lecturers; $\bar{X}_2$ = Means of social studies Lecturers, $\bar{X}_3$ = Mean of senior staff of Ministry of Women Affairs; Fcal = 12.3, Pvalue = 0.05, NS = Not Significant.

Table 1 shows that all the items recorded mean responses ranging from 2.50 -3.99 indicating that all the items were agreed on by the respondents on objectives formulated for Peace Education. All the 42 items in the table had their Fcal of 12.3 and p-values of 0.05 level of significance. This indicated that there were no significant differences in the mean ratings of the responses of the respondents on the objectives of Peace Education. Therefore, the null hypothesis of no significant difference in the mean ratings of the responses was accepted.

Discussion of Findings

The finding of the study as presented in table 1 showed that 42 instructional objectives were identified. This shows the importance of objective in educational programmes which is also in line with the assertions made by experts in curriculum development. The finding is in line with Obiefuna (2009) who asserted that objective is very important in the development of any programme as it guides and directs the selection of other elements of the programme. Obiefuna (2009) also observed that the selection of aims, goals and objectives, desires are detailed educational purposes any school can seek to attain. In Rao's (2007) view, the first concern of any curriculum must be the educational objectives the school has for its children. Amadi and Obiefuna (2011) on the other hand posited that, when curriculum planners make statements of expected performance and changes in behaviour patterns of learners *vis-a-vis* knowledge, skills, attitudes, feelings resulting from planned educative process, they are stating educational objectives. Maduewesi (2000) asserted that, a statement of objective is useful to the extent that it specifies what the learner must be able to do or perform when he is demonstrating his mastering of the objectives. Offorma (2004) pointed out that, the main purpose of objective is to guide in making curriculum decisions on what to teach, how to teach what, what area to emphasize and what to evaluate. Samuel and Alamina (2007) asserted that specific objectives help in the selection of appropriate content and methods that, once objectives are clearly stated, evaluation will be properly directed. Singh (2008) also observed that, objectives are central to both learning experiences and evaluation. Maduewesi (2000) also noted that the most characteristics of a useful objective is that it identifies the kind of performance which will be accepted as evidence that the learner has achieved the objective. Tyler (1949) opined that, these educational objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and examination are prepared.

The finding from the test of hypothesis also showed that there was no significant difference in the mean responses of the respondents on objectives of Peace Education curriculum. This means that the objective of Peace Education will be attained by the students and which will in turn modify the behaviours of the students (future youths) in Rivers State.

Conclusion

Based on the findings of the study it was concluded that the 42 instructional objectives selected for Peace Education curriculum for integration into senior secondary school Home Management programme were appropriate. It was also concluded that, if peace education curriculum is developed, there will be objectives to achieve.

Recommendations

Based on the findings, it was recommended that:

- ❖ Since objectives are identified for peace education that, it is important that peace education curriculum should be planned for integration into senior secondary school Home Management programme in Rivers State.
- ❖ The 42 identified objectives should be used when planning peace education curriculum for integration into senior secondary school Home Management programme in Rivers State. It is believed that 42 objectives are adequate for planning of a curriculum. It is also believed that, if students are able to achieve these 42 objectives, that, it will impact positively on their mindsets which will eventually modify their behaviours, hereby helping them live peacefully with one another.

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Working Mothers' activities with their Children (Birth-5years): A Case of Female Staff of the University of Nigeria, Nsukka Campus, Enugu State

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Abstract

The major purpose of the study was to investigate working mothers' activities with their children (birth-5years). It was a case study of female staff in University of Nigeria, Nsukka. Specifically, the study identified activities mothers engage in with their children and determined the amount of time mothers spend carrying out these activities with their children. The population was made up of 120 mothers who are staff in the nine faculties that make up University of Nigeria, Nsukka campus at the time of the study. Questionnaire was used for data collection. Data were analyzed using frequencies and percentages. Results show that mothers engage in most of the activities with their children, for instance, 98.3% of the mothers watch children's program on TV, 96.7% talk about school and 91.7% make up stories with their children among others. Also, 59.20% of mothers spend 1-3hours a week watching television program; 43.30% spend less than I hour in a week playing outside; and 35.80% of them spend 4-6 hours a week talking about school with their children among others. Generally, mothers engage in most of the activities with children, but times spent on these activities are noticeably low. It is therefore recommended that working mothers should compensate for their labor market activities by sacrificing aspects of their personal and domestic life so that they can spend time with their children. Also, they should trade quantity for quality of childcare time.

Keywords: Working, Mothers, Time, Activities, Children

Introduction

The second half of the twentieth century has seen the unprecedented entry of women with children into the labor market (Hsin & Felfe, 2014). Women in the contemporary society are no longer confined to the domestic sphere; they are presently involved in various professional activities outside their homes (Sultana & Noor, 2012). There is the increasing agreement among scholars that both husband and wife should contribute to the maintenance of the home; but women remain conflicted about the competing roles they play at work place and at home. While people may be willing to accept the idea of career women, they are not willing to excuse them from their duties as mothers (Ering, Akpan & Emma-Echiegu, 2014).

The working mother is an institution in her own right; one who combines a career with child rearing. It is important to understand that both these jobs are demanding, and to do justice to each without neglecting the other is a formidable task. One could define a working mother as a woman with the ability to combine a career with the responsibility of raising a child (Jayita & Murali, 2017). Working mothers refer to those women who have children and work outside the home for income in addition to the work of raising their children and performing other house chores (Heinrich, 2014). A mother may work out of a financial compulsion or a desire to fulfill herself (Jayita & Murali, 2017). A good working mother not only gains economic strength but also prepares a useful element of society at the same time (Farooq, Jamal & Shah, 2018).

Employed mothers are multi-tasking and as a result may be subjected to stress due to heavy responsibilities of household tasks and child care in combination with employment demands (Yeo & Teo, 2013). Stress loads can be quite high amongst working mothers and these may often reflect in their relationships at home. According to Jayita & Murali (2017), women are stressed to reach work on time, to send their children to school and to reach all the children's deadlines on time including food and dress, and she is also pressed for time to look after her home simultaneously. The increase in the maternal employment rate has raised concerns about the impact they might have on child development, in particular through the decline in maternal child-care time. This is shown in a study by Yeo & Teo (2013) which found that working mothers spend a substantially lower amount of time carrying out leisure activities, such as socializing, doing sport or watching TV, with their children.

It is widely theorized that meaningful emotional bonds are established through the time children spend carrying out activities with their mothers (Hsin & Felfe, 2014). However, the demand of home making and paid employment can impose substantial limitations on the amount and quality of time available for leisure activities with children (Heinrich, 2014). A study by Greffe and Roux-Le (2002) showed that spending qualitative time with children, correlates with psychosocial well-being. Yeung, Sandberg, Davis-Kean & Hofferth (2001), distinguished working mothers' time with their children into engagement time and available time. Engagement time refers to the activities mothers engage in with their children while available time refers to the amount of time mothers are available for those activities. Such activities that parents can engage in with their children are categorized as educational activities (studying, doing homework, being read to), structured activities (arts, crafts, music, drama, sports) and unstructured activities (watching television, listening to music) (Hsin &

Felfe, 2014). Activities with children is a cherished part of childhood that offers children important developmental benefits and gives parents the opportunity to fully engage with their children (Gellert, Ziegelmann, Warner & Schwarzer, 2011). When parents join their children in play, they are given a unique opportunity to see the world from their children's point of view (Hamilton, 2010). These shared activities promote close, nurturing relationships that are critical for children's psychological and behavioral adjustment. Parent-child shared time also affords opportunities for parents to monitor their children's activities in order to foster skills and knowledge that are important for children's current and future successes (Davis, *et.al*, 2015).

Developmental hypotheses about the effects of maternal time with their infants are drawn from theories of attachment and early social and cognitive stimulation. According to attachment theory, the infant forms a working model of secure social relationships on the basis of experience with a sensitive, responsive, and predictable attachment figure, usually the mother. (Huston & Aronson, 2015). A limited access to the mother could cause a breach in secure attachment as this bond is dependent upon the physical presence of the mother attaining to the fulfillment of infant's needs including feeding, bathing, changing, and playing. A working woman may not have proper time to spend with her infant in order to fulfill these needs (Kassamali & Rattani, 2014). Early maternal employment may reduce the quality of mother-child interactions by disrupting the formation of crucial mother-child attachments (Farooq, *et.al*, 2018).

The role of a mother in child development cannot be overstressed. Mothers play vital role in the nurturing of their children for a proper and appropriate child development and upbringing (Ering, *et.al*, 2014). A study by Sultana & Noor (2012) support that there are positive impacts of mother's employment on children, especially for economic reasons. The access of mothers to income-generating opportunities impacts positively on the well-being of children by contributing to quality of child care, child nutrition and education (Sultana & Noor, 2012). The result of a study by Yantzi, Rosenberg & Mckeever (2007) showed that working mothers had more positive perceptions and provided more enriching home environments for their children. Despite the economic and social benefits of women's employment to their family, working mothers have challenges in tackling their career as well as their family life. These challenges they face include conflicts in family, lack of time for children, limited activities with children, energy exhaustion and generalized stress (Geoffery, Brown, McBride & Kelly, 2011). Overall, the extensive literature demonstrates that maternal employment has a detrimental effect on children's cognitive development especially when it occurs during their first year of life (Hsin & Felfe, 2014).

There are lots of constraints being faced by women in the academic profession. For instance, it may be out of question for them to participate in out of town conferences and seminars which they require for a successful academic career. Again, the domestic demands of the home, pregnancy and child-care may limit their ability to actively engage in research activities and publication of articles (Omolade, 2017). A study by Jayita & Murali, (2017) noted that women with children published less, had slower self-perceived career progress and were less satisfied with their careers. On the other hand, women's participation in academics may result in lack of time and energy to fulfill their traditional roles as caregivers to their children particularly infants. When mothers fail to fulfill their fundamental responsibilities such as giving their children love, discipline, protection, educating and providing their needs, children becomes at risk of developing antisocial behaviors (Geoffery, *et al*., 2011). Therefore, it became important to look into the activities mothers engage in with their children and the amount of time they spend carrying out these activities with their children. This is important in order to properly educate working mothers on the importance of spending quality time with their children and let them know of the resultant effect when they fail to do so.

Purpose of the Study

The main aim of the study was to determine working mothers' activities with their children (birth-5years), among female staff in University of Nigeria, Nsukka. Specifically, the study:

1. identified activities mothers engage in with their children (birth-5years); and
2. determined amount of time mothers spend carrying out these activities with their children (birth-5years)

Methodology

Design of the study: The study adopted a descriptive survey research design.

Area of the study: The study was carried out in University of Nigeria, Nsukka Campus. The university is one of the first indigenous universities in the country established by the federal government of Nigeria. It is located in Nsukka urban, Enugu state. It has nine faculties at the time of the study which were made up of forty-nine departments.

Population for the Study: The study population consisted of one hundred and twenty female staff with children birth-5years old in the nine faculties; thirty-seven of which were academic staff while eighty-three were non-academic staff. Majority of them were first degree holders; up to 91.70% of them were married; and most of them were aged between 31-40years.

Sample and Sampling Technique: The researchers moved from department to department to identify academic and non-academic staff with children birth-5years. All the female staff with children birth-5years at the time of the study gave a total of one hundred and twenty mothers that served as sample for the study.

***Instrument for Data Collection*:** Questionnaire was used for data collection. It was developed through literature review based on the specific purposes of the study. The instrument was validated by three lecturers in the department of Home Science and Management, University of Nigeria, Nsukka. It consisted of sections A, B and C. Section A was used to elicit information on the demographic characteristics of the mothers. Section B was used to identify activities mothers engage in with their children while section C was used to determine time mothers spend carrying out activities with their children.

***Data Collection Techniques*:** One hundred and twenty copies of questionnaire were administered to mothers with children birth to 5years and they were expected to tick the item as it applies to them. The researchers distributed and retrieved one hundred and twenty questionnaires from the respondents.

***Data Analysis Techniques*:** The data collected were analyzed using frequencies and percentages.

Results

Background information of the respondents showed that majority of them (48.3%) were between 31-40 years old. Their educational qualification showed that 44.2% were HND/B.Sc holders and 21.7% were M.Sc/Ph.D holders. A good number of the respondents (91.7%) were married. The study reported 30.8% academic staff and 69.2% non-academic staff. Most of them (25.8%) earned between ₦71,000 – ₦90,000 in a month.

Table 1: Frequency and Percentage Responses of Working Mothers on Activities They Engage in with Their Children (birth-5years)

S/N	Activities	Engaged F (%)	Not Engaged F (%)
1	Watching TV programs	118(98.30)	02(01.70)
2	Playing indoors	098(81.70)	22(18.30)
3	Playing outdoors	089(74.20)	31(25.80)
4	Playing on the computer	078(65.00)	42(35.00)
5	Drawing/painting	066(71.70)	34(28.30)
6	Making up stories	110(91.70)	10(08.30)
7	Going to sports/swimming area	043(35.80)	77(64.20)
8	Reading stories	108(90.00)	12(10.00)
9	Talking about school	116(96.70)	04(03.30)
10	Visiting the museum	051(42.50)	69(57.50)
11	Visiting the zoo	065(54.20)	55(45.80)
12	Reading in the library	096(80.00)	24(20.00)

F = Frequency, % = Percentage

Table 1 shows that more than 50% of the mothers engage in the following activities with their children; watching TV programs, playing indoors and outdoors, playing on the computer, drawing and painting, making up stories, reading stories, talking about school, visiting the zoo and reading in the library. On the other hand, more than 50% of mothers do not engage in the following activities with their children; going to sports/swimming area and visiting the museum.

Table 2: Frequency and Percentage Responses of Working Mothers on time they spend with their children (birth-5years) on weekly basis

S/N	Activities Time spent with children:	Very Frequently /7hrs and above F (%)	Frequently /4-6 hrs a week F (%)	Occasionally /1-3 hrs a week F (%)	Rarely/ < 1hour a week F (%)	Never F (%)
1	watching TV programs	04(03.30)	11(09.20)	71(59.20)	32(26.70)	02(01.70)
2	playing indoors	06(05.00)	29(24.20)	40(33.30)	23(19.20)	22(18.30)
3	playing outdoors	00(00.00)	16(13.30)	21(17.50)	52(43.30)	31(25.80)
4	playing on the computer	07(05.80)	04(03.30)	28(23.30)	39(32.50)	42(35.00)
5	drawing/painting	08(06.70)	35(29.20)	25(20.80)	18(15.00)	34(28.30)
6	making up stories	02(01.70)	44(36.70)	44(36.70)	20(16.70)	10(08.30)
7	going to sports/swimming area	00(00.00)	10(08.30)	15(12.50)	18(15.00)	77(64.20)
8	reading stories	11(09.20)	27(22.50)	44(36.70)	26(21.70)	12(10.00)
9	talking about school	18(15.00)	43(35.80)	35(29.20)	20(16.70)	04(03.30)
10	visiting the museum	07(05.80)	20(16.70)	04(03.30)	20(16.70)	69(57.50)
11	visiting the zoo	00(00.00)	08(06.70)	23(19.20)	34(28.30)	55(45.80)
12	reading in the library	28(23.40)	22(18.30)	22(18.30)	24(20.0)	24(20.00)

F = Frequency, % = Percentage

Table 2 shows that 59.20% of the mothers watch TV programs with their children occasionally (1-3hours a week); 33.30% play indoors with their children occasionally (1-3hours a week); and 43.30% play outdoors with their children rarely/less than I hour a week. Also, 35.0% of the respondents never play on the computer with their children; 29.20% draw and paint with their children usually (4-6hours a week); 64.20% never go to sports area with their children; and 36.70% read stories with their children occasionally (1-3hours a week). Finally, 35.80% of the mothers talk about school with their children frequently (4-6hours a week); 57.50% never visit the museum and 45.80% never visit the zoo with their children; and 23.40% read in the library with their children very frequently (7hours and above) with their children.

Discussion

The findings showed that majority of the working mothers were still of child-bearing age. From the result, working mothers meet up to the educational requirement for working in a higher institution of learning both academic and non-academic according to Yeats (2018). Yantzi, *et al.* (2007) noted that maternal higher education has been found to be a powerful contributor to positive outcome in children's intellectual and language development. The extra income working mothers bring into the household as shown in the result is very helpful. According to Chase-Lansdale *et al.* (2003), mothers' employed status benefits children by improving family income and better structure of family routines. Also, a study conducted by Yantzi, *et al.* (2007), showed that employed mothers had more positive perceptions and provided more enriching environments for their children.

The study showed that majority of the respondents engage in the following activities with their children; watching television programs, playing outdoor and indoor, drawing and painting, making up and reading stories, visiting the zoo, reading in the library and so on. According to Feugen, Biernat, Haines & Deaux (2004), children's developmental trajectory is critically mediated by appropriate, affective relationships with loving and consistent caregivers as they relate to children. According to Greffe and Roux-Le (2002), the amount of time parents spend together with their children and the activities they carry out was a good indicator of family togetherness. These daily activities play an important role in the holistic development of the child. They further stated that important positive memories from childhood were often related to activities like baking, fishing, shopping and watching the television with other family members. Research by Ering, *et.al.* (2014), showed that the absence of a mother because of the demands of employment leaves the child vulnerable to negative behavioral patterns. Furthermore, they opined that working mothers' status impede on the verbal skills of the child; in that children with strong affinity to their mothers and communicate with her most of the time maybe unable to communicate with caregivers who they see as strangers, in the absence of their mother.

Greffe & Roux-Le (2002) found that the amount of time parents spend together with their children was a good indicator of a cohesive well-functioning family. Findings from this study showed that majority of the mothers watch the television with their children occasionally. Play and unscheduled time allow for children's interaction with their parents, which is an important component of socio-emotional and language development

(Miller, Trost & Brown, 2002). However, this study revealed that most of the mothers rarely play outside with their children while only a few of them play indoors with their children occasionally. This agrees with the findings of Hsin & Felfe (2014) which showed that children with full-time working mothers spend about six fewer hours per week in leisure activities. Similarly, a study by Nisa (2016), showed that 88% of mothers after returning from office were not in a position to attend to their children as a result of fatigue, need to perform domestic duties and lack of time. This implies that it is very difficult for the working women to devote attention to their children properly. Such inattention may create the feeling of being unwanted which may result in the child developing bad habits. Again, their result showed that 96% of them did not get sufficient time to attend to their children because they had to stay outside the home for major part of the day and they had to attend domestic duties after returning from the office. Play is a cherished part of childhood that offers children important developmental benefits and parents the opportunity to fully engage with their children. It allows children to create and explore a world they can master while practicing adult roles, sometimes in conjunction with other children or adult caregivers (Michie, Abraham, Whittington, McAteer & Gupta, 2009). Furthermore, from the findings, it was observed that some of the respondents frequently draw and paint with their children. Also, majority of them make up and read stories with their children occasionally and only very few of the mothers talk about school with their children very frequently. According to Gellert, *et al*. (2011), parents who have the opportunity to glimpse into their children's world learn to communicate more effectively with them and are given a setting to offer gentle, nurturing guidance.

Conclusion

The study determined activities working mothers engage in with their children and the time they spend carrying out these activities with them. The findings showed that although mothers engage in most of the activities with their children, the time they spent on these activities is obviously low. The quality of time parents spend together with their children has been found to be a good indicator of family togetherness. The result of the study is showing a lack of quality time maybe because of long working hours of university staff. However, it is important for mothers to note that family is the foundation of every society. And since women are the home-makers, if their work is given greater priority at the expense of the family, they are running a risk of losing the home.

Recommendations

1. Working mothers should compensate for their labor market activities by sacrificing some aspects of their personal and domestic life so that they can spend time with their children.

2. They should protect the time that involves direct engagement with children and sacrifice time that only peripherally involves children; that is, they should trade quantity for quality of childcare time.
3. Government should amend the existing policy on maternity leave by increasing the duration from three months to six months. This is to enable mothers form close and secure attachments with their infants while feeding them exclusively.

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Strategies for Enhancing Youth Participation in Agricultural Production in Rural Areas in Ebonyi State

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Abstract

The major purpose of this study was to evolve strategies for enhancing youth participation in agricultural production in rural areas of Ebonyi State. Specifically; the study determined agricultural inputs; essential amenities in rural areas; special incentives; to the youths and efficient marketing system necessary for enhancing youth participation in agricultural production. The population for the study was 335 youth and registered farmers. Instrument for data collection was questionnaire. Data were analyzed using mean and standard deviation. Findings show that seven agricultural inputs; 15 essential amenities in rural areas; eight special incentives; and nine marketing systems were identified as strategies for enhancing youth participation in agricultural production in rural areas. Four recommendations were made for enhancing youth participation in agricultural production in the rural areas of Ebonyi State. These include: that the Ebonyi State Government should provide agricultural inputs to the youth at subsidized rate as well as provision of special amenities in the rural areas for effective youth participation in agricultural production.

Keywords: Youth, Participation, Agriculture, Production, Rural Areas.

Introduction

Agriculture is an important way out of poverty, hunger and economic challenges. About 80 percent of the Nigerian population purchase food products from the open market (Ogba, 2015). Nigeria is endowed with vast of rich agricultural land, human and material resources needed in food production for economic development and self reliance. Ndem (2014) observed that in spite of these material resources as well as several government efforts to ensure adequate food production and fiber crops as raw materials for the domestic industries, hunger still remains a serious challenge in Nigeria.

According to Ndomi (2015) the present economic situation in Nigeria is as a result of over independent in oil, (petroleum) by Nigeria government. He observed that billions of Naira invested in different sectors of agriculture have not yielded meaningful results. Nwanosike (2007) stressed that agriculture provides food, employment, rural development foreign exchange, income, shelter, and raw materials for economic development of the Nation. He stressed that one of the only positive ways out of the poor agricultural development in the country is through full participation by youths in agricultural production. Since agriculture enhances rural development and assists youth employment, it becomes imperative to involve youth in agricultural production. In the context of this study, youth participation involves engaging the youth in different sectors of agricultural production to make them self-reliant and improve their economic well being. It will provide food, reduce hunger and food importation. It will also encourage exportation of food to other countries of the world. It is therefore necessary to evolve ways of enhancing youth participation in agricultural production. Ndem (2016) explained youth as somebody that is young, but often means the time between childhood and adulthood. Youth can be seen as the period between the age of 15 and 45 years, which is characterized with vigor, freshness, high productivities, experimentation and resourcefulness.

Further more, he explained that the youth are the future leaders in any society. He viewed the youth as an important instrument in any society for developmental process. Youth are faced with many challenges ranging from hunger, lack of self confidence, identity crisis, sense of hopelessness, confusion, social, media competitiveness and business, sexuality challenges high apatite, economic recession, unemployment, poverty, insecurity and lot others (Tysska, 2015). They need help.

The youth should be fully involved and participate in agricultural production in the rural areas for production of food and raw materials for the industry, and not abandon agricultural production for the aged ones in the rural areas. Many migrate to the urban areas in search of white collar job and other businesses for fast money making. This situation has made the agricultural production to be abandoned and relegated to the background. This invariably has led to low productivity of farm products. The neglect of the youth in agricultural production has also made agricultural commodities to be expensive because the quantities of food produced by the aged farmers in the rural areas are not adequate which are required by more consumers. Involvement of youth in food production will go a long way to reduce unemployment, dependent on white collar job, and as well make the youth to be self-employed, self sufficient, and contribute to the national development.

Purpose of the Study

The main purpose of this work was to evolve strategies for enhancing youth participation in agricultural production in rural areas of Ebonyi State. Specifically; the study determined strategies for enhancing youth participation in agricultural production in relation to provision of:

1. agricultural inputs,
2. essential amenities in rural areas.
3. special incentives to the youth.
4. efficient marketing system for agricultural produce in rural areas.

Research Questions

1. What are the agricultural inputs that will enhance the youth participation in agricultural production?
2. What are the special amenities in rural areas that will enhance youth participation in agricultural production?
3. What are the incentives to the youth that will enhance their participation to agricultural production?
4. What are the efficient marketing system that will enhance youth participation in agricultural production?

Methodology

***Area and Design of the Study*:** This research adopted survey research method. The area of the study was Ebonyi State.

***Population for the Study*:** The population used for the study was 335 registered youth and farmers. This comprised 205 youth and 130 farmers. The youth were registered with the ministry of youth, sports and culture in Ebonyi State between 2016 and 2017. The youth were within the age range of 25 and 30 years. Many of the youth were university graduates. The farmers were registered with the Ebonyi State Agricultural development project within 2016 and 2017. The farmers have common cultural background and majority of them were primary school graduates.

***Sample for the Study*:** There was no sampling, rather the 205 youth and 130 farmers registered were all used for the study.

***Instrument for Data Collection*:** The instrument for data collection was a 4-point questionnaire. The 4- point scale were Strongly Agree 4 points, Agree 3 points, Disagree 2 points and Strongly disagree 1 point. The questionnaire was divided into two sections. Section 'A' gathered data of the respondents and section 'B' collected information on agricultural inputs, essential amenities in rural areas, incentives to the youth and efficient marketing system to enhance youth participation in agricultural production. The instrument was face validated by three agricultural educationists and a professor who specialized in measurement and evaluation.

The reliability of the instrument was determined by using Cronbach alpha to analyze the data generated from the pilot test which yielded a reliability coefficient of 0.82.

Data Collection Techniques: Three hundred and thirty five copies of the questionnaire were distributed to the 335 youth and farmers by hand. Out of the 335 questionnaire distributed, 330 were retrieved. This represents 98.5% return.

Data Analysis Techniques: The data were analyzed using mean and standard deviation. Based on 4-points scale of the instrument, 2.50 was adopted as a cut-off point for decision. Any item in the instrument that had 2.50 score or above was regarded as the factor that will enhance youth participation in agricultural production while any item that scored less than 2.50 was regarded as the factor that does not enhance youth participation in agricultural production.

Findings

Based on the analysis of the data, the following findings are put forward.

1. Seven agricultural inputs were identified to enhance the youth participation in agricultural production (Table 1).
2. Fifteen essential amenities were identified to be provided in the rural areas to enhance youth participation in agricultural production (Table 2).
3. Eight special incentives were identified to be given to the youth to enhance their participation in agricultural production (Table 3).
4. Nine factors in efficient marketing system were identified to be provided in the rural areas to enhance youth participation in agricultural production (Table 4).

Table 1: Mean with standard deviation of the respondents on agricultural inputs for enhancing youth participation in agricultural production**.**

S/N	Item statements	X	SD	Remark
1	Productive land for crop production	2.85	1.28	Agree
2	Planting materials such as yam seeds, maize and rice grains at a subsidized rate	2.80	0.76	Agree
3	Improved livestock, at a subsided rates	2.59	0.49	Agree
4	Farm tools like cutlass and hoes at a subsided rates	2.90	1.39	Agree
5	Farm machines such as tractors for hiring at low cost	2.69	0.46	Agree
6	Agro-chemicals such as herbicides, insecticides at a subsidized rate	3.30	1.06	Agree
7	Fertilizers of different types	3.10	0.96	Agree

Table 1 indicates that all the items had their mean scores above the cut-off point of 2.50 and their corresponding standard deviation. This shows that the respondents were of the opinion that provision of agricultural inputs will enhance youth participation in agricultural production.

Table 2: Mean with the standard deviation of the respondents on provision of essential amenities in the rural areas to enhance youth participation in agricultural production

S/N	Item statements adequate	X	SD	Remark
1	Low cost accommodation	3.57	0.67	Agree
2	Regular supply of electricity	3.44	0.721	Agree
3	Regular water supply	3.22	0.72	Agree
4	Availability of medical facilities	3.50	0.79	Agree
5	Adequate security network	3.40	0.81	Agree
6	Good road network	3.28	0.87	Agree
7	Educational facilities	2.88	0.86	Agree
8	Market facilities	2.73	0.91	Agree
9	Post-offices.	2.83	0.91	Agree
10	Recreational centres	3.24	0.93	Agree
11	Agro-service centres	3.24	0.99	Agree
12	Processing plants	3.17	0.97	Agree
13	Post office	3.26	1.05	Agree
14	Telecommunication network system	3.01	1.01	Agree
15	Banks	2.83	1.16	Agree

Table 2 reveals that all the items had their mean scores rating above the cutoff point of 2.50 with their standard deviation ranging between 0.67 and 1.16. This shows that the respondents were of the opinion that provision of essential amenities in the rural areas enhance youth participations in agricultural production. The standard deviation shows a close relationship in the opinions of the respondents.

Table 3: Mean with the standard deviation of the respondents on provision of incentives for enhancing youth participation in agricultural production.

S/N	Item statements	X	SD	Remark
1	Giving award to the best farmer	3.60	0.64	Agree
2	Loans facilities to the youth without interest	3.54	0.67	Agree
3	Scholarship for further education	3.50	0.64	Agree
4	Christmas bonus in material things	3.52	0.70	Agree
5	Free medical treatment	3.37	0.75	Agree
6	Provision of free storage facilities	3.12	0.82	Agree
7	Provision of free agro-consultations	2.88	0.89	Agree
8	Free accommodation	3.00	1.05	Agree

Table 3 reveals that all the items had their mean scores above the cut-off point of 2.50 with their standard deviations ranging between 0.64 and 0.89. This signifies that the respondents agree that provision of incentives could enhance the youth participation in rural family agricultural production. From the standard deviation, it shows that the opinions of the respondents did not differ far from each other.

Table 4: Mean with the standard deviation of the respondents on marketing system to enhance youth participation in agricultural production.

S/N	Item statements adequate	X	SD	Remark
1	Maintenance of uniform measure of the sale of agric-commodities	3.45	0.74	Agree
2	Establishment of good markets	3.50	0.75	Agree
3	Effective market research and findings	3.44	0.78	Agree
4	Effective market information	3.45	0.75	Agree
5	Control of fluctuation of prices of agric-commodities	3.13	0.70	Agree
6	Checking of adulteration of farm products	3.35	0.82	Agree
7	Provision of storage and cold room	3.03	1.07	Agree
8	Subsidization of cost of warehouse storage	2.92	1.08	Agree
9	Revitalization of commodity board to by farmers product during harvest	3.15	1.03	Agree

Table 4 reveals that all the items had their mean scores above the cut-off point of 2.50 and their standard deviations ranging from 0.70 to 1.08. This indicates that the respondents were of the opinion that efficient marketing system enhances youth participation in agricultural production. The standard deviation showed that the means deviation of the respondents were very close and not far from each other.

Discussion of Findings

The study has established that provision of agricultural inputs enhance youth participation in agricultural production. This finding aligns with Ndem (2016) who was of the opinion that youth shy away from participating in agricultural production due to scarcity and high cost of certain agricultural inputs. For instance a farmer who wants to produce yam must need yam seeds of good varieties, but to get good yam seed is not easy due to its scarce nature and cost during planting period. Apart from the yam seeds, yam production is labour intensive such as clearing the bush and making the mounds. To hire machine like tractor for land preparation is capital intensive.

Also the research shows that provision of essential amenities; incentives and efficient marketing system enhance youth participation in agricultural production. The findings agree with Ogba (2015) who reported that essential amenities such as electricity, pipe-borne water, accommodation, good road network, medical facilities and many others are needed by the farmers for their comfort in agricultural production. Absence of essential amenities demoralizes and discourages farmers in agricultural production.

Furthermore, Mohammed (2016) reported that many youth are showing negative attitude towards agricultural production is because they are not motivated of which if they are motivated, they may be interested in agricultural production. He further expressed that incentives such as provision of planting materials, subsidization of other farm inputs and provision of accommodation at low rental cost can motivate the youth to participate in agricultural production.

Humman and Gana (2016) also reported that youth in Nigeria, especially in the rural areas shy away from farming due to the un-conducive conditions in the rural areas. They further explained that youth always drift from the rural areas to the urban centres due to lack of basic amenities such as electricity, pipe borne water, good road network, recreational facilities and other things that can make life comfortable. Eze (2018) stressed that youth will embrace agricultural production if the basic amenities are provided in the rural areas. He further explained that any rural area that has the basic amenities attract youth to stay and practice agricultural production.

Additionally, Ndu (2014) and Ndem (2018) reported that many farmers are discouraged in their production due to price fluctuation of the farm products. In most cases the farmers do not break even in their agricultural production due to fluctuation of prices of farm products. She went further to explain that efficient market system where farmer can profitably market their products is essential and can motivated a farmer in the farm business.

One of the results of the study is that the youth need to be motivated for them to participate in agricultural production. This finding is in agreement with Ndomi (2016) who stated that for an individual to be productive, motivation is essential. He expressed that adequate incentives to farmers motivate the farmers in agricultural production. Such incentives he said could be award giving to the best farmer of the year, free medical care to farmer's family and free basic education to the children and the wards of the farmers.

Conclusion

The daily increases in human population coupled with massive drift of the youth to the cities have made agricultural commodities to become scare and expensive. This is also partly due to youth neglect to agricultural production which has made agricultural production to be left in the hands of the aged rural people. The scarcity and expensiveness of food commodities has made it impossible for many families not to have adequate food required for their families. This has led to malnutrition and starvation. It becomes necessary to involve and encourage the youth to participate in agricultural production through provision of essential amenities in the rural areas, provision of incentives and efficient marketing system has been found by this research to encourage the youth to participate actively in agricultural production.

Recommendations

The researchers recommended that:

1. The Ebonyi State government should provide agricultural inputs to any youth who want to engage in agricultural production at a subsidized price.
2. The government and non-governmental organizations should ensure that essential amenities like electricity, good roads leading to the farmers are constructed in the rural areas.
3. There should be annual events to celebrate outstanding farmers for recognition and award giving by the government or non-governmental organizations.
4. Effective pricing system should be maintained in the market in order to ensure that farmers market their products profitably.

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Utilization of Digital Information Resources and Services (DIRS) by Business Education Students and Lecturers in Universities in South-East, Nigeria

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Abstract

The study determined the extent of utilization of digital information resources and services for research by business education lecturers and students in universities in South-East, Nigeria. Two research questions were answered and two null hypotheses tested at $p \leq 0.05$ level of significance. It adopted descriptive survey research design. Population for the study consisted 364 students and lecturers of Business Education programme drawn from public Universities in South-East, Nigeria. Instrument for data collection was questionnaire. Data were analyzed using mean and standard deviation to answer research questions, while t-test was used to test the null hypotheses at 0.05 level of significance. Findings include 14 DIRS sources and nine constraints to DIRS utilization, among others. Based on the findings, the study recommended among others that Business Education students and lecturers should be exposed to various digital information resources and service platforms where they can carry out research with ease; Curriculum designers should align with the changes and as such infuse digital information courses in the update of the curriculum; Service providers of bandit-width and on-line access should make their services more affordable for all among others

Keywords: Utilization, Digital, Information, Resources, Business, Education, Students, Lecturers.

Introduction

Business Education has been defined in many ways by different individuals/authors, most of which highlight its vocational nature. Business education is a form of vocational education that is geared towards developing the learner to become productive in teaching, paid employment and self reliant (Ajisafe, Bolarinwa & Edeh, 2015). Business education prepares beneficiaries for gainful employment and sustainable livelihood. It is seen as a form of education for and about business (Osuala, 2006). Business education provides its recipients with knowledge and understanding of the economic, financial, marketing, accounting, management system and other branches of business endeavor Aina (2014) Hence, business education prepares students to function intelligently as consumers and citizens in an economy. Amoor (2010) noted that business education plays a significant role in economic development by providing knowledge and skills to the learners through research, thereby, enabling them to adequately impart knowledge to others, and handle sophisticated office technologies and information systems. Since the primary goal of business education is to produce competent, skillful and dynamic business teachers, office administrators, scholars, businessmen and women who will effectively compete in the world of work, it is very important that the graduates are properly equipped. Appropriate resources need to be provided for their training including adequate digital resources (Ezeani & Ishaq, 2016).

The world is presently witnessing the birth of digital data and communication networks as a major trend in the information marketplace. Digital Information Resources and Services (DIRS) connotes those information resources and services which, before now were in print form, but currently found in non-print form (soft copy) and are accessible through computer machines and other corresponding ICT tools (Obaseki, Umeji & Krubu, 2010), Dadzie, (2005). Digitalization makes the invisible to be visible (Aina 2014). Several users can access and utilize the same material at the same time without hindrance Ogenetega,(2013). It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such material (Chimah & Nwokocha 2015), especially in business education. With the benefits of digital services, there is gain saying that technology has brought relief into the academic parlance and has made the resources imperative tool for research use. The internal users of digital information resources and services in a university environment consist of undergraduates, post-graduates, lecturers, research fellows and other members of the institutions, while the external users are those that are not members of the institution, but are also served by the universities (Omekwu, 2010).

Utilization of Digital Information Resources and Services (DIRS) enhances the quality of research output Lucky, Ifeka & Michael (2015). Rader (2001) observed that research is a conscious effort to collect, verify, and analyze information and can be understood as having two broad components, namely, knowledge creation and knowledge distribution. One of the purposes of universities is to support the objectives of the Federal government, which is to promote teaching, learning and research. Thus, for Business Education students and lecturers in universities to achieve greatly in research and advance further in their academics, there is need to learn and explore the digital environment. Some academic staff are unable to access quality and current materials for the teaching of their students while others are denied promotion due to inadequate research for conference and journal publication. The quality of DIRs for research places it above other sources of information generation (Bhattacharya & Khan (2012).

Quality digital information resources such as CD ROM, databases, Online Public Access Catalogues and Internet Browser, among others, are available for research but the question is how many business education users are aware of their existence, access and utilize them in their research exercise. As such, the need for DIRs for business education users in carrying out research in Universities cannot be overemphasized. In spite of the enormous benefits offered by the use of digital resources at improving research work, the quality of research of Business Education lecturers and students in universities still appears low as many students indulge in plagiarism in their assignments, seminars and project writing. As such, little or no contribution is added to the body of knowledge (Madu & Adeniran 2017). This is presumed to be as a result of inadequate utilization of DIRs. Further interactions with business education students in some Universities in South-East states of Nigeria reveal that their perceived inadequate utilization of DIRs may be as a result of their inadequate knowledge of the existence of some digital resources possessed by the libraries and online interface. By implication, according to Obaseki, Ibrahim, & Momoh, (2010), the advancement of any national development is based on two strengths: types and outcomes of research carried out and how these findings are put to use. Other problems associated to the utilization of DIRs includes and not limited to non availability of electronic information resources, Internet connectivity, Online Public Access Catalogue (OPAC), online databases, lack of skills among students and lecturers to utilize DIRs in the library and online interface, poor telecommunication link, resources in buying data, network challenges among others. It is against this backdrop therefore, that the researchers seek to determine the extent of Utilization of Digital Information Resources and Services for Research by Business Education Students and Lecturers in Universities in South-East States of Nigeria.

Purpose of the Study

The major purpose of the study determined the extent of Utilization of Digital Information Resources and Services for Research by Business Education Students and Lecturers in Universities in South-East States of Nigeria. Specifically the study investigated:

1. extent to which Digital Information Resources and Services (DIRs) are utilized by Business Education students and lecturers for research in Universities in South-East, Nigeria.
2. constraints to the utilization of Digital Information Resources and

Services (DIRs) for research by Business education students and lecturers in Universities in South-East, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent do Business education students and lecturers utilize Digital Information Resources and Services (DIRs) for research in Universities in South-East, Nigeria?
2. What are the constraints on the utilization of Digital Information Resources and Services (DIRs) for research by Business education students and lecturers in Universities in South-East, Nigeria?

Hypotheses

The following null hypotheses guided the study and were tested at 0.05 level of significance.

$H0_1$: There is no significant difference between the mean responses of lecturers and students on strategies needed for enhancing Business education students and lecturers' utilization of digital information resources and services (DIRs) for research in Universities in South-East, Nigeria

$H0_2$: There is no significant difference in the mean responses of male and female Business education students and lecturers on the constraints utilization of digital information resources and services (DIRs) for research in Universities South-East states in Nigeria.

Methodology

Design of the Study The study adopted descriptive survey research to examine the utilization of digital information resources and services by Business education students and lecturers for research. Descriptive survey design according to Nworgu (2015) is appropriate for those studies which are concerned with describing the characteristics of a group of individuals or items by collecting and analyzing data from the group or items. This design is considered appropriate for this study because there was need to collect data on the opinions of Business Education Students and Lecturers in Universities in South-East, Nigeria.

Area of the Study The study was carried out in Universities in South-East States of Nigeria. The choice of Federal and State Universities is due to the fact that most of the universities library are well equipped with digital information resources and services facilities as a result of intervention from Government, private sectors, foreign donors and inter-governmental agencies, since the quality of research for Business Education Students and Lecturers is imperative for the sustainability of economic development of the nation and production of qualitative research work.

Population of the study The population of the study comprised of 276 final year Business Education Students of 2017/2018 academic session and 88 Business Education lecturers totaling 364 respondents drawn from the eight universities offering Business Education programme in South-East, Nigeria.

Sample for the Study The entire population was used for the study because of the manageable size.

Instrument for Data collection The instrument for data collection was a structured questionnaire. It was validated by three lecturers in Business Education. Cronbach Alpha method was used in ascertaining the internal consistency of the instrument with overall coefficient of .72.

Data Collection Techniques A total of 364 copies of the instrument were administered to the respondents by hand with the aid of trained research assistants. Only 354 copies were completely filled and returned.

Data Analysis Mean, standard deviation and t-test were used to answer the research questions and test the null hypothesis at 0.05 level of significance difference.

Results

Research Question 1: To what extent do Business Education Students and Lecturers utilize digital Information Resources and Services for Research in Universities in South-East, Nigeria.

Table 1: Mean ratings and t-test responses on utilization of digital information resources and services (DIRs) by Business Education Students and lecturers for research

S/N	DIRS Resources	$\overline{X}$	SD	Rmks	p-value	Dec
1	Online Public Access Catalogue (OPAC)	1.21	.58	LE	0.23	NS
2	Online Databases	1.17	.55	LE	0.75	NS
3	E-Journals	1.20	.43	LE	0.58	NS
4	E-Books	1.42	.62	LE	0.77	NS
5	Utilization of information stored in CD-ROMs	1.09	.37	LE	0.64	NS
6	Utilization of E-Newspaper for research	1.16	.51	LE	0.58	NS
7	Utilization of E-Magazines for research	1.20	.56	LE	0.77	NS
8	Utilization of E-Thesis literature for carrying out research	1.64	.48	ME	0.64	NS
9	Utilization of electronic reference services in	1.14	.35	LE	0.64	NS
10	research thesis Utilization Multimedia information services	1.09	.28	LE	0.66	NS
11	Utilization Electronic Reference services	1.10	.38	LE	0.58	NS
12	Utilization Electronic Selective dissemination of information services	1.99	.31	ME	0.77	NS
	Utilization Electronic Document Delivery Services	1.02	.14	LE	0.64	NS
14	Utilization Electronic retrieval of information services	1.98	.36	ME	0.28	NS
	Overall	**1.32**	**.42**	**LE**	**0.43**	**NS**

Note: $\overline{X}$ **=** Mean; O = Overall; SA= Strongly Agreed; A= Agreed; N= No of Respondents 354; S= Significant; NS= Not Significant; Sig. at 0.05

Data presented in Table 1 show that the mean ratings and standard deviation of the respondents on 11 out of 14 identified items ranged 1.21, 1.17, 1.20, 1.42, 1.09, 1.16, 1.20, 1.14, 1.09, 1.10 and 1.02 which is within the boundary limit of 1.00 -1.49. This indicated that the digital information resources utilization is at low extent. On the other hand the mean rating of the respondents on three items, specifically item 8, 12, and 14 with range 1.64, 1.99, and 1.98. This indicated that the digital information resources utilization is at moderate extent. Also, the data presented in Table 1 show that all identified 14 items on extent of utilization of digital information resources and services (DIRs) for research in Universities have their p-values ranging from 0.23 – 0.77 which are all greater than 0.05 level of significance. This indicates there are no significant difference in the mean ratings of business education students and lecturers on extent of utilization of digital information resources and services (DIRs) for research. Therefore, the hypothesis of no significant difference accepted relative to the 14 items.

Research Question 2: What are the constraints on the utilization of Digital Information Resources and Services (DIRs) for research by Business Education Students and Lecturers in Universities in South-East, Nigeria?

Table 2: Mean ratings and t-test responses on Constraints on the Utilization of Digital Information Resources and Services (DIRs) for Research by Business Education Students and Lecturers

S/N	Constraints to DIRS utilization	$\overline{X}$	SD	Rmks	p-value	Dec
1	Epileptic power supply	3.06	.39	A	0.66	NS
2	Non-availability of online database	3.13	.42	A	0.12	NS
3	Inadequate computers to access digital information resources	3.58	.59	SA	0.05	S
4	Network problems(inability to access network)	3.27	.58	A	0.21	NS
5	Inadequate bandwidth	3.43	.51	A	0.88	NS
6	Lack of skill to access digital information resources from local and foreign database	3.64	.42	SA	0.74	NS
7	Lack of formal training on internet usage	3.35	.54	A	0.58	NS
8	Saver slowness	3.37	.58	A	0.77	NS
9	High cost of airtime for browsing	3.50	.59	SA	0.64	NS
	Overall	3.37	.51	A	0.52	NS

Note: $\overline{X}$ = Mean; O = Overall; SA= Strongly Agreed; A= Agreed; N= No of Respondents 354; S*Significant; NS= Not Significant; Sig. at 0.05

Table 2 shows the mean ratings and standard deviation of the responses on three items out of 9 items in the Table with mean value range 3.58, 3.64 and 3.50. This indicates that the three items identified are strongly agreed constraints for the utilization of Digital Information Resources and services.

On the other hand the mean values of the remaining 6 items are 3.06, 3.13, 3.27, 3.43, 3.35, and 3.37 respectively and fall within the boundary limit of 2.50 - 3.49. This indicates that the remaining 6 items were agreed as constraints for the utilization of Digital Information Resources and Services. Also, the data presented in Table 2 shows that eight out of nine identified constraints on the extent of utilization of digital information resources and services (DIRS) for research in Universities by male and female business education students and lecturers have their p-values ranging from 0.12 – 0.88 which are all greater than 0.05 level of significance. This indicates there are no significant difference in the mean ratings of male and female business education students and lecturers on the constraints on extent of utilization of digital information resources and services (DIRS) for research in Universities South-East states in Nigeria. Therefore, the hypothesis of no significant difference was accepted relatively to the eight items. On the other hand, the p-values of the remaining one item specifically item 3 have range 0.05 which is equal to 0.05 level of significance. This indicates that there are significant differences in the mean ratings of. male and female business education students and lecturers on the constraints on extent of utilization digital information resources and services (DIRS) for research Thus, the hypothesis of no significant difference in the mean ratings of male and female business education students and lecturers on the constraints on the constraints utilization of digital information resources and services (DIRS) for research in Universities is rejected relative to one item.

Discussion

The findings of this study with respect to the first research question revealed that the digital information resources and services utilization by business education students and lecturers in the following items were moderately extent and low extent utilized for research in universities. They include: online public access catalogue (OPAC), online databases, e-journals, e-books, utilization of information stored in CD-ROMs, utilization of e-newspaper for research, utilization of e-magazines for research, utilization of e-thesis literature for carrying out research, and utilization of electronic reference services in research thesis. These findings corroborated the report of Chimah & Nwokocha, (2013) who reported in a study that utilization of digital information resources among postgraduates' students is to an extent less than (50%). Dadzie (2005) in a study reported that is only when the faculty themselves are aware of library resources that they can develop a positive attitude towards library use, that will encourage the utilization. Similarly Ogenetega (2013) in a study reported that academic staff uses the e-mail and some other e-resources to communicate with research colleagues for researcher purposes and for other needs. Other online resources common among them included telnet, World Wide Web (www), and e-journals.

There are various uses of ICT by academic staff and other library users and its significant influence on job efficiency and improved publication output. The author further found that, it is not clear from the literature whether the utilization of these library resources influences the publication output of the academic staff.

The findings of second study revealed that the following items are strongly agree and agree as constraints to the utilization of digital information resources and services (DIRS) for research by business education students and lecturers in universities. They include: epileptic power supply, non-availability of online database, inadequate computers to access digital information resources, network problems (inability to access network), inadequate bandwidth, and lack of skill to access digital information resources from local and foreign database, lack of formal training on internet usage, saver slowness and high cost of airtime for browsing. The findings of this study is in consonance with the study of Lucky, Ifeka & Michael (2015) who reported that epileptic power supply, non-availability of online database; inadequate number of computer to access digital information resources; inadequate bandwidth; network problems; lack of skill to access digital information resources in local and foreign database; lack of formal training on internet user; server slowness and frequent breakdown of digital resources are constraints to students effective use of digital information resources in university libraries. The findings of this study seem to conform to the result of the study of Bhattacharya & Khan (2012) who found that the utilization of digital resources especially in the developing countries has not been without some problems. The authors further found that the problems include among others: poor library organization; lack of user skills; poor funding of libraries, lack of current information resources; lack of adequate/relevant materials; poor IT infrastructure; unconducive reading environment; poor power supply; lack of technical support; and lack of user education. The authors reported that the above problems no doubt will be more pronounced in countries such as Nigeria where issues concerning education are many a time relegated to the background in policy implementations.

Conclusion

The need for digital information resources for research in any tertiary institution cannot be overemphasized. The quality of a university is measured largely by the quality of its digital information resources and services because of its unique role in the university system, since the university is meant to teach and carryout research. For the teaching staff, research fellows and students, the university is supposed to provide information resources and services in sufficient quality and diversity. For business education students and lecturers in universities to achieve greatly in research and advance further in their academics, there is need to learn and explore the digital environment. To be responsive to the growing information needs of business education programmes in Nigeria, new competencies, skills and experiences are required to respond to the need of the time that extends beyond the traditional setting.

Recommendations

The following recommendations were made:

1. Business education students in particular should be exposed to various research platforms where they can carry out research through the giving of assignments and term papers.
2. There is need for in-service training for Business Education lecturers to enable them to be aware of digital information resources and services available to Business Education programmes.
3. They need to be retrained and be abreast with the new technology needed for research and updating of their teaching materials.
4. Curriculum designers should be abreast with the change in the educational system and as such update the curriculum with digital information resource and services needed for carrying out research in higher institution of learning.
5. Service providers of bandit-width and on-line access should make their services more affordable and accessible for all especially Business students and lecturers for carrying out their research work
6. Universities as an apex for teaching and learning should be equipped with digital information resources and services that are of world class standard.

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Expectations of Guests on Restaurant Menu Cards in Selected Hotels within Government Reserved Areas in Port-Harcourt, Rivers State, Nigeria

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Abstract

The major purpose of this study was to investigate the expectations of customers from restaurant menu cards in Government Reserved Area (GRA) in Port Harcourt Rivers State, Nigeria. Specifically, this study determined expectations of customers with reference to: features of a typical menu card, and pieces of information needed on menu cards. The study adopted a descriptive survey research design. Population for the study was made up of all customers who patronize 30 hotels located in GRA. The sample of the study was 210 customers who patronize the restaurants regularly. Questionnaire was used for data collection. Data were analyzed using means and standard deviation. Findings include 11 expected features of the menu card. These include attractive design with establishment logo (Mean of 2.90) and types of meals offered (Mean of 2.98). Also 10 pieces of information needed on the menu card were identified. The study recommended that menu card should be written in a clear language for the customer to read and understand and provide valid information to enhance customer satisfaction.

Keywords: Menu, card, Customer, Expectations, Information, Restaurants

Introduction

Menu card is an information source which guests glance through whenever they patronized a restaurant or any meal service establishment. It is also a vital material that provides more details about the branding and theme of the restaurant (Moshin *et al.* 2005, Chow *et al.* 2007). A well-presented, organized and comprehensive menu card can also help customers familiarize with the type of food the restaurant prepared for that day. Haghighi *et al.* (2012) stated that restaurants all over the world, view menu card as primarily a selling aid, a bill of fare presented at table for guests to choose from. According to Business Monitor (2012), Muller (2009), the restaurant is a business establishment that prepares and serves food including drinks to customers in return for money. However the restaurant also offers both indoor and outdoor services with side variety of cuisines and service models. The term covers many types of venue and a diversity of styles with regards to cuisine and services (Pei and Ayub, 2015, Bates 2014). Restaurants range from modest lunching or dining places that cater for people working nearby, with simple food served in simple settings at low prices, to expensive refined food and wines in a formal setting (Caany 2013, Tuttle 2011, Powell and Nguyen 2013). There are many different restaurants offering different cuisines of diverse cultures in Nigeria and other countries of the world. It is a type of food service establishments with facilities ranging from the exclusive top class to the medium class and small ones. Restaurants are graded using crown criteria based on the standard of the facilities. Hence, it could be four crowns, three crowns, two and one crown depending on the quality of facilities, services and meals being offered (Bello *et al*, 2016). Restaurants selling local foods are simply called traditional restaurants because they use local ingredients, cook and serve a variety of ethnic foods and beverages, delicacies of the local communities and cater for dietary requirements for customers (Deedam, 2014, Bello and Bello, 2016).

According to Davis *et al* (2012), menu card dates back to the eighteen century as a custom of showing a list of the courses for a meal (Lillicrap and Cousins 2010, Kinton *et al*. 2005). According to (Deedam, 2014) menu card is defined, as the physical object on which the list of dishes is written for guests to choose from. Bates (2014), stated that it communicates a wide range of information to the customer both in terms of the words used to describe dishes, or referred to as a document that reflects the colour, layout, quality of material used in the restaurant. These definition shows that the primary function of the card to the customer is to identify the items available, prices attached, charges like value added tax (VAT), and other external features that described the style and food service offered. The menu is very useful for a restaurant with a modern concept where their variety of food is described as the ingredient. This helps the guest to identify key food type which they can consume and enjoy (Kapiki 2012, Walker 2010). The menu card can be a book which is used by restaurants to operate for the day and offer a different type of meal to each customer at a different time like breakfast, lunch, dinner. This card covers a whole meal in detail which helps the client to identify as per their needs. Menu card plays a significant role in restaurant business for success. According to Hean and Lame (2013); Muller (2009), menu card is the primary writing document from which a customer makes an order selection, including but not limited to breakfast, lunch and dinner menus, desert, beverages, children's menu, takeout or delivered menus from a restaurant. The card depends on a number of factors such as location, standard, price, décor, customers, etcetera (Powers, 1995, Deedam, 2014). The restaurant menu card is essential as it gives all the details and lists of vital dishes and specialty of the restaurant and the heart any hotel whether it is a five star or standard

(Brown *et al,* 2004; Brymer, 2000). As the services and rooms decoration could be forgotten by the customers but the food taste lingers on their tongue. So every restaurant should mainly focus on their foods and its flavours. It is needed and mainly required to convey the prices, food and wine list and their specialties. The restaurant menu card themes should be considered with the interior décor. The theme, designs and food list must be coordinated perfectly with each other to form the perfect restaurant menu card.

The card comes in different forms such as booklets, pamphlets or a single sheet of paper. From the establishment view, the menu is considered to meet the goals of the marketing policy, hospitality policy as well as the business policy and must carry vital information and features from which the customer chooses what they want and what to pay and also considering nutritional information (David *et al* 2012, Oliver 2012 and Canny 2013). The physical attributes of the card contributes in creating a level of expectation from the customer, therefore meeting customer expectation should be the primary objectives of the restaurant. It must carry information such as the food price, quality, food consistency, method of preparation and nutritional information (Oliver 2012; Burton and Creyer 2004). Furthermore, Spreng (2003) and Brymer (2000) stated that a menu card contains a list of dishes offered for service at a meal it offers customers choices and price to be paid. It has three broad uses: as a working document for the back of house (kitchen), as a published announcement to guests, to identify the food and drink to be offered, portions to be served, quantities and quality of food and beverage ingredients to be purchased and the price (Davis 2012, Business Monitor 2013). The card should bear names that are clear and well understood, the symbol of the operation, the establishment logo, durable and grease resistant while the inside paper should be lighter in weight, strong heavy book paper (Symons, 2013). It should withstand changes without discarding it, the language should be clear without over-elaboration, and English is preferably for naming the dishes unless it is a local cuisine, other features includes communication to customers (Heathcote and Baic 2015).

The aesthetic of a menu card is one of the important information on the card that will give the customer the ease to always patronize the restaurant. Harnack and French (2008), Weiss *et al*, (2004), stated that information required on the menu card includes history, general overview of the food that is offered, the address and contact information. Food items should be displayed to showcase the origin, production methods as well as nutritional, calorific, allergen information on the card (Dupuis *et al.* 2016, Rozali *et al.* 2014, Krieger *et al.* 2013). Also available on menu card are time allocated for breakfast, lunch and dinner (first, second and third courses), the brand, appetizers (wines), digestives (liqueurs, brandy etcetera), and room service.

A well-constructed menu card should also contain the following information, such as dietary requirements, cultural influences, religion, *a la carte, table d`hote* menu, list of appropriate wine for different dishes, special dish on customers request (Davis *et al* (2012), Kinton *et al* (2005) and Lillicrap and Cousins (2013). Creating a unique and special menu card is more vital for food business because the establishment need to get first time dinning customers and increase the order of food item (Spreng, 2013, Bello and Bello 2016). There are various ways menu cards can be presented to the guests based on the type of food and beverages available. These are: *A la carte, Table d` hote*, banquet, beverage, room service menu etcetera. All these menus serve as a brand for the restaurant and allow the guest to see what is offered in a pleasing manner. It provide important information about the food and beverages which the restaurant can offer, creates a unique experience, informs the guest of the quality, food origin and ingredients used in preparation of the dish (Dayan and Bar-Hillel 2011, Hye and Woo 2012). Improper presentation of information on restaurant menu card can however, lead to customer dissatisfaction, loss of profitability and could influence the ultimate failure of a restaurant operation (Noorliza *et al.*, 2014; Oliver 2012).

The food industry always needs an attractive and excellent food, it is said that the restaurant menu cards depicts the taste and elegance of the restaurant food, and should include all the necessary dishes so as to match with the standards (Akbaba, 2006). It is pertinent to affirm the fact that despite the developmental trend in the hospitality industry, the hotel business is still faced with so many challenges which inhibit its development and sustenance. These are poor infrastructural amenities such as power supply, inadequate trained professional, social unrest such as insecurity, unstable government policies and regulations, inflation and economic hardship etcetera. The hotels and restaurants in these areas are still in business and their facilities are being improved to meet up with the standards of the star rating criteria. The trend at which guests patronized the restaurants in these areas necessitated the study. It is for this reason, the study seek to identify expectation of customers on restaurant menu cards of selected hotels within government reserved areas in Port Harcourt Rivers State, Nigeria.

Purpose of the study

The main purpose of the study was to examine the expectations of customers from restaurant menu cards in selected restaurants within Government Reserved Areas of Rivers State, Nigeria. Specifically the study determined expectations of customers with reference to:

1. features of a typical menu card in the restaurant
2. pieces of information needed on menu cards.

Research Questions

1. What are the expected features on a typical menu card?
2. What are the pieces of information needed on the menu card?

Methodology

Design and area of the study: The study employed survey research design.

Area of the study: The area was Government Reserve Area Phases 2 and 3 Port Harcourt City, Rivers State, Nigeria. The area is the heart of the city. There are 40 hotels located within phases 2 and 3. They have features of 1-5 stars depending on the facilities they provide to guests. The rate of patronage is very high compared to other areas in Port Harcourt city. It has major access routes and accommodates several clubs and cinemas houses. The hotels target affluent segment of the society, offer world class products with personalised service of high standards and provide luxury restaurants and lounge. They have exquisite decors, opulent rooms and luxury amenities. The design and interior decoration reflects the standards maintained by the hotels. Their guest rooms are large with exquisite decoration and furnishing.

Population for the study: The population of the study comprised of restaurants located in GRA Phases 2 and 3. The number of restaurants located in this area was 30; Phase 2 has 18 while Phase 3 has 12. The guests (customers) in the restaurants were the respondents for the study. Hotels located within this area are classified into stars and provide facilities for guests comfort. Small hotels have 25 rooms; medium hotels have 30- 60 rooms; large hotels have 70-100; while very large hotels have 100-200 rooms. They are rated between 3-5 Stars, well equipped, located near business areas for immediate approach and of highest standard. Menus are based on the traditional cuisine from the region or may solely feature innovations from the chef. Other restaurants may devise menus based on specific types of food or according to certain dishes like plant based foods. The customers are mainly resident guests in the hotel apart from few who visit the restaurants for breakfast and lunch. The respondents were the guests who patronized the restaurant regularly.

Sample for the study: Fifteen restaurants which were mostly patronized were purposively selected for the study. A total of 14 guests were also purposively selected. They were guests who were most regular in each of the 15 restaurants. The sample size for the study was 210.

Instrument for data collection: Instrument used for data collection was questionnaire. It was made up of two sections A and B. Section A dealt with features of menu card while section B dealt with pieces of information on the menu card. It was developed based on literature review and the purposes of the study. It was validated by three University Lecturers of Food Science and Technology. This was done to eliminate irrelevant and ambiguous items from the questionnaire. To ensure reliability of the instrument, it was trial- tested on 30 respondents in restaurants in Old GRA (Phase 1) who were not part of the study. The data from the trial-testing was analyzed. The Cronbach Alpha reliability coefficient index was used to determine the reliability of the instrument and consistent in measuring what is supposed to measure as coefficient of 0.87 was high and acceptable.

***Data collection technique*:** The questionnaire distributed were 210 copies to respondents who visited the restaurants for breakfast, lunch and dinner. The copies of questionnaire were given to the waiters on duty to administer to the respondents after their meal. Most of the guests took the questionnaire to their rooms and returned them after few hours. Two hundred copies of the questionnaire were properly completed and returned. These represented 95.24 percent return.

***Data analysis methods*:** The data were analyzed using the mean and item with mean score of 2.50 and above was regarded agreed while any item with mean score below 2.50 was regarded as disagreed.

Findings of the Study:

Expected features on a typical menu card.

Table1: Mean responses of Customers on Expected features on Typical Menu Card

S/No	Expected Features of a Typical Menu Card	Mean	Remarks
1	Menu card informs customer of the meals offered in restaurant	2.98	Agreed
2	Language should be clear, easy to read, precise to enable customers to calculate how much to spend	2.58	Agreed
3	Traditional cuisine written in their country language with a simple English description	2.62	Agreed
4	Design attractive with restaurant logo	2.90	Agreed
5	Price charged is a good value for food on the menu card	2.32	Disagreed
6	Menu card must communicate the full range of food and beverages offered	2.54	Agreed
7	The menu card should have names of dishes that are clear and well understood.	2.56	Agreed
8	Menu card should have a clear heading and easy to find dish titles and visual techniques	2.85	Agreed
9	Place the expensive foods large and bold to draw attention	2.63	Agreed
10	Special dish features hand graphics to bring attention to certain menu items	2.31	Disagreed
11	Decorative illustrations and frames are used to highlight certain dishes to encourage customers to order from selection	2.53	Agreed
12	The wine list is separated from the food menu	2.54	Agreed
13	The menu card should be of good quality, heavy and durable	2.78	Agreed
14	Card for lunch was preferred to that of breakfast and dinner	2.20	Disagreed

Table 1 shows 14 possible features that could be expected on a typical menu card. Eleven out of 14 of the items obtained mean ($\bar{X}$) scores of ≥2.50.

This implies that there are 11 features expected by customers to be found on a typical menu card in selected hotels within GRA Port-Harcourt.

Pieces of information needed on menu cards.

Table 2: Mean response of Customers on Pieces of Information Needed on Menu Cards.

S/No	Pieces of Information Needed on Menu Card	Mean	Remarks
1	Brief history of the establishment including (date)	2.45	Disagreed
2	List of courses offered (1st, 2nd & 3rd course)	2.56	Agreed
3	Address and contact information of the restaurant	2.60	Agreed
4	Provide an elegant and attractive look for the customer	2.74	Agreed
5	Lists of wine and beverage offered	2.65	Agreed
6	It gives all the details about the restaurant and its cuisine	2.34	Disagreed
7	It is useful to convey the prices of the restaurants	2.27	Disagreed
8	Types of menu offered (A la carte, Table d'hote)	2.98	Agreed
9	Charges example value added tax, service charge	2.62	Agreed
10	Room service menu (breakfast, lunch and dinner)	2.54	Agreed
11	A good restaurant menu card is an excellent depiction of quality	2.50	Agreed
12	The menu card conveys the uniqueness and tradition of the city	2.52	Agreed
13	Essential details about the restaurants, its courses and ingredients are presented in a proper way	2.53	Agreed

Table 2 shows 13 possible pieces of information needed by customers on the menu card. Ten out of the 13 items obtained mean ($\bar{X}$) scores of ≥ 2.50. This implies that 10 pieces of information from this study that are needed in a menu card in the selected restaurants within the GRA Port-Harcourt.

Discussion of Findings

The findings of the study revealed that menu card informs the customer of the product offered and should be presented in a sensible and convenient manner for the customer. This is in line with the findings by Lillicrap and Cousins (2013) who stated that menu card is a vital tool that provides more details about the restaurant. It is the primary writing document from which a customer makes an order selection (Heathcote and Baic 2011, Powell and Nguyen 2013), agreed that menu is not limited to breakfast, lunch and dinner menus, desert, beverages, children, takeout or delivered menus from a restaurant. Menu card should be written in the language the customer will understand. Studies indicate that restaurant menu card (Burton and Creyer 2004) should show what the customer wants, and the knowledge of what they know would prevent them from consuming items that are not healthier and to avoid disease risk food (Symons 2013). The card should include names of dishes that are clear and well understood. This statement is in agreement with (Lillicrap and Cousins 2010, Kinton *et al,* 2005) who view menu card as a way of informing the customer of what is available on a particular day. Burton and Creyer (2004), Heathcote and Baic (2011), Bello and Bello (2016) agreed with the findings that the menu card is a promotional tool used to communicate with customers to know what the restaurant offers. Design attractive card with restaurant logo, this finding agreed with the result by Bates (2014), menu card is a document that reflects the colour, layout and quality of the material used.

The study also revealed information on the menu card address and contact information of the restaurant. Harnack and French (2008), Weiss, Feinstein and Dalbor (2004), stated that information required on the menu card includes history, general overview of the food that is offered, the address and contact information. Charges such as value added tax, service charge and price of the dish form part of a menu card, this agreed with the results obtained by (Alamanza and Heish, 2007, Spreng *et al.,* 2003, Brymer 2000). The menu card therefore must have some vital information which the customer needs such as the percentage of service charged. Spreng *et al.,* (2003), Brymer (2010) and Davis *et al.,* (2012), posited that a menu card contains a list of dishes offered for service at a meal; it offers customers choices and price to be paid as well as offer the customer an interesting and varied choice (Canny, 2013, Oliver, 2012). In general, it is better to offer fewer dishes of good standard than a long list of mediocre quality that will not attract customers` interest. The menu complements the image of the dining room and should be designed to allow for changes (total or partial) which may be daily, weekly, monthly etc (Kintonet al., 2005, Haghighi *et al.*, 2012). A list of dishes of the day or of the week showing first course, second course and third course as well as list of wines offered gives the customer added interest (Muller, 2009, Kinton et al., 2005). It gives all the details about the restaurant and its cuisine. The findings was also in consonance with the findings by Spreng (2003); Davis 2012; Business Monitor 2013 and Brymer (2000) stated that a menu card contains a list of dishes offered for service at a meal, it offers customers choices and price to be paid. It has three broad uses: as a working document for the back of house (kitchen), as a published announcement to guests, to identify the food and drink to be offered, portions to be served, quantities and quality of food and beverage ingredients to be purchased and the price. However improper presentation of information on restaurant menu card can lead to customer dissatisfaction, loss of profitability and could influence the ultimate failure of a restaurant operation (Chow *et al.*, 2007, Moshin *et al.*, 2005). This agrees with Lilicrap and Cousins (2010) who emphasized that food and its accompanying list of wine and drink should harmonize well together with each enhancing the other performance of aperitifs and digestive.

Conclusion

The following conclusions were made based on the findings of the study. It revealed that restaurant menu card was the main tool that the establishment uses in selling their products. Hence the features and information on the menu card will determine their sales. The findings also revealed that language should be clear, easy to read, precise to enable customers to calculate how much to spend, provides an elegant and attractive look for the customer and design attractive with restaurant logo.

Recommendation

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

- Restaurant menu cards should have the expected features such as the products available and the language should be clear, easy to read, precise to enable customers to calculate how much to spend.
- The menu card should be designed to promote the restaurant`s image and customers` satisfaction.
- Proper presentation of information on restaurant menu card can lead to customer satisfaction, profitability and could influence the ultimate profit of a restaurant operation.

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Clothing Expenditure Issues among Female Lecturers in Colleges of Education in North Central Zone of Nigeria

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Abstract

The study determined the factors influencing clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria. It was guided by two research questions. The population for the study was 660 female lecturers from all the 13 Colleges of Education (State and Federal) in the Zone. Multistage sampling was used to select 400 female lecturers for the study. The sample comprised 237 junior and 163 senior female lecturers from eight sampled Colleges of Education. Data were collected using validated questionnaire and focus group discussion guide (FGD). The internal consistency of the items was determined using Cronbach Alpha give a reliability coefficient of 0.88 was obtained. A total of 390 copies of questionnaire were administered and one FGD session was organized. Data were analyzed using percentages, means and standard deviation. Findings revealed eight indicators of clothing expenditure and 20 factors influencing clothing expenditure of female lecturers. The study recommended that female lecturers be educated on how to make adequate clothing budget.

Keywords: Factors, Influencing, Clothing, Expenditure, Female, Lecturers.

Introduction

Clothing is one of the basic needs of man. It is worn to cover and adorn the body. It is an important component of physical appearance which expresses cultural identity, class distinction, profession, class costumes and gender differences (Diyaolu, 2010). Appropriate clothing gives confidence to the wearer and it is usually the basis on which immediate impression is formed (Kyung, 2013). Clothing is constantly consumed and valued by women, especially the working class. Constant clothing consumption by women may claim an increasing percentage of their income. The trend may probably reflect a competing demand on family needs and may be a threat to budgetary plan and allocation (Enyekit, 2013). Clothing occupies an important position in the life of workers especially lecturers in Colleges of Education in Nigeria. College of Education (COE) is an arm of tertiary institutions in Nigeria's educational system (Federal Government of Nigeria, National Policy on Education 2013).

College of Education lecturers train and certify teachers to impart knowledge, skills and attitudes in relevant subject areas (teachers in training). Some of these lecturers are male while others are female. Female lecturers in Colleges of Education cut across various ranks and file (junior and senior female lecturers) and they hold key positions and ranks by their calling as teachers. They are models in dressing through appropriate clothing practices on which they constantly expend money. Thus substantial part of their income is spent on clothing.

Expenditure is the action of spending fund. Expenditure is the amount of money spent on goods and services which include clothing (Adetoun, 2013). Clothing Expenditure is the total expenses made on clothing and its maintenance during a period of time (Heather, 2015). Allocating money for various family needs including clothing, should involve careful planning and budgeting so that no important family need is allowed to suffer or unattended to through unnecessary expenses (Tate and Gibson, 2011). This is because clothing is just only one of the many items needed by an individual, hence the need to stay within the budget limit set for clothing (Roth, 2015).

In spite of the economic hardship and family struggle for survival, female lecturers give priority attention to constant consumption of new styles, expensive fashionable clothing and accessories. This may probably claim substantial part of their income making it a challenge to budgetary planning and allocation and financial discipline. It is therefore imperative to conduct a study to find out the factors influencing clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria in order to guide and assist this group of consumers in their choices of suitable and economically adequate clothing.

Many factors influence clothing budget and expenditure of consumers including female lecturers. This is determined by factors such as culture, occupation, religion, location, advertisement, peer, habit, size of family, age of family members, attitude about clothing and value (Ijaz 2011). The author noted that these factors have significant influence on how much of the individual income is used for buying clothing. Medeiros (2014) observed that since clothing is only one of the many needs and wants of individuals and families, it is not usually possible to have all the clothes wanted. The author added that income and other expenses must be considered when allocating money for clothing. Davies (2017) pointed out that, factors such as personal interest, age group, locality, motivation, product availability, advertisement and marketing strategies, consumer choice and value determines clothing expenditure of female lecturers and other clothing consumers. Fields (2013) said that many expenses on clothing depend on the lifestyle, income, educational level, occupation, age, marital status, family life cycle, location, culture and values among others. Clothing expenditure is influenced by personal taste, preference and value.

In the North Central Zone of Nigeria involving Benue, Kwara, Kogi, Nassarawa, Niger, Plateau states, and Federal Capital Territory (FCT) Abuja, female lecturers work outside home demanding for an increased consumption of fashionable clothing. They value unique and expensive clothing which they constantly consume. Priority attention is given to clothing by most women especially female lecturers. This may probably make careful budgeting and planning of income for other family needs a challenge. Many factors may be responsible for their expenditure on clothing. It is on this note that this study sought to find out the factors that influence clothing expenditure of female lecturers in Colleges of Education in North Central Zone of Nigeria.

Purpose of the Study

The main purpose of the study was to investigate factors influencing clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria. Specifically, the study determined:

1. indicators of clothing expenditure among female lecturers (senior and junior) in Colleges of Education in the North Central Zone of Nigeria.
2. factors influencing clothing expenditure of female lecturers (senior and junior) in Colleges of Education in the North Central Zone of Nigeria.

Research Questions

The following research questions were answered:

1. What are the indicators of clothing expenditure among senior and junior female lecturers in College of Education in the North Central Zone of Nigeria?
2. What are the factors influencing clothing expenditure of senior and junior senior female lecturers in Colleges of Education in the North Central Zone of Nigeria?

Methodology

***Design of the Study*:** The study was a survey research.

***Area of the Study*:** The study area was North central zone of Nigeria. It is made up of six states and the Federal Capital Territory (FCT) Abuja. There are thirteen Colleges of Education (state and federal) in the area located within the six states in North Central Zone and the Federal Capital Territory (FCT).

***Population for the Study*:** The population for the study was 660 female lecturers from all the 13 (thirteen) Colleges of Education, (10 State and 3 Federal COE) within the North Central geo-political Zone of

Nigeria. This comprised 253 senior and 407 junior lecturers.
***Source*:** Registered members 2015 Association of Women in Colleges of Education (WICE) North Central.

***Sample for the study*:** The sample size for the study was 400 female lecturers made up of 163 senior and 237 junior female lecturers from Colleges of Education in the North Central Zone of Nigeria. Multistage sampling technique was adopted in selecting the sample size. Stratified random sampling technique was employed to stratify the Colleges of Education in the North Central Zone of Nigeria into state and federal. There were 10 State and 3 Federal Colleges of Education. Random sampling technique was used to select one State and one Federal College of Education used for the reliability of the instrument which was not part of the subject. A sample of 15 senior and 15 junior female lecturers were selected and used for reliability test. The 2 Federal Colleges of Education left and randomly sampled 6 out of 9 State College of Education remaining were used for the study. Female lecturers from all the selected Colleges of Educations were used without sampling giving a total of 400 respondents/participants. Out of the 8 sampled Colleges of Education, 1 was random sampled and 10 participants for the Focused Group Discussion (FGD) were selected which was made up of 5 senior and 5 junior female lecturers as discussants. The remaining 390 female lecturers were respondents to the questionnaire

***Instrument for Data Collection*:** A 4-point scale questionnaire and focus group discussion (FGD) Guide (FGDG) were used for data collection. They were developed based on literature reviewed and specific purposes of the study. The questionnaire was made up of three sections (A-C). Section A, dealt with respondents' characteristics, Section B dealt with indicators of clothing expenditure while Section C dealt with factors influencing clothing expenditure of female lecturers.

The FGD guide focused on the two research questions. This was to collect qualitative data from the female lecturers on clothing expenditure. The instruments were subjected to face validation by five experts in Home Economics at the tertiary education level. The instrument had a reliability coefficient of 0.88

***Method of Data Collection*:** A total of 390 copies of the questionnaire were distributed by hand to the lectures. A total of 388 out of the 390 questionnaire administered were retrieved, which represent 99.5 per cent return rate.

***Data Analysis*:** Data were analysed using percentages for indicators of expenditure; mean and standard deviation for factors that influence, t-test was used to test the hypotheses at 0.05 levels of significance. Items, that scored 50% and above is regarded as indicator of clothing expenditure. Also, item with mean score of 2.5 and above is considered has factors that influence clothing expenditure.

Results

The findings of the study are summarized in tables 1 and 2.

Table 1: Percentage distribution of clothing expenditure of junior and senior female lecturers in Colleges of Education in the North Central Zone of Nigeria N = 388 (157 SL and 231 JL)

S/No	Indicators of clothing Expenditure	Junior Female Lecturers (%)		Senior Female Lecturers (%)	
		₦1,000-14,999	₦15,000 & above	₦1,000-14,999	₦15,000 & above
1	Payment for clothing care services	81.80%	18.20%	46.2%	53.8%
2	Payment for clothing in boutique & special shops	41.90%	58.10%	20.1%	79.9%
3	Budget limit set for clothing	65.20%	34.80%	45.2%	54.8%
4	Payment for on-line clothing purchases	76.90%	23.10%	49.1%	50.9%
5	Payment for clothing in primary market stores	66.20%	33.80%	12.2%	87.8%
6	Expenses on uniform clothing for occasion	59.30%	40.70%	48.7%	51.3%
7	Expenses on shopping trip for clothing	98.90%	1.10%	37.9%	62.1%
8	Payment for sewing	68.60%	31.40%	59.4%	40.6%

Table 1 shows the clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria. From the Table, 18.20% of the junior female lecturers spend above ₦15,000 on payment for clothing care services while 53.8% of the senior female lecturers spend above ₦15,000 for the same service. 58.10% of the junior female lecturers pay above ₦15,000 for clothing in boutique and special shops while 79.9% of the senior female lecturers spend above ₦15,000 for payment of clothing in boutique and special shops. 34.80% of the junior female lecturers have budget limits above ₦15,000 while 54.8% of the senior female lecturers have budgets limit set above ₦15,000. 23.10% of the junior female lecturers spend above ₦15,000 for online clothing purchases while 50.9% of the senior female lecturers spend above ₦15,000 for online purchases. 33.80% of the junior female lecturers spend above ₦15,000 in the primary market for clothing purchases while about 50.90% of the senior female lecturers spend above ₦15,000 in the primary market for clothing purchases. 40.70% of the junior female lecturers spend above ₦15,000 on uniform for occasions while about 51.3% of the senior female lecturers spend about that same amount on uniforms. 1.10% of the junior female lecturers spend above ₦15,000 on shopping trip for clothing while about 61.2% of the senior female lecturers spend above ₦15,000 on shopping trips for clothing. 31.40% of the junior female lecturers spend above ₦15,000 on sewing while 40.60% of the senior female lecturers pay above ₦15,000 for same services.

Table 2: Mean Response of Senior and Junior Female Lecturers on Factors influencing their Clothing Expenditure in Colleges of Education in the North Central Zone of Nigeria N = 388 (157 SL and 231 JL)

SN	Factors	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}g$	SD	Remarks
A	**Sociological Factors**					
1	Family members	3.18	3.14	3.16	0.88	Agree
2	Reference group	3.11	3.30	3.22	0.86	Agree
3	Social class/status	2.65	2.66	2.66	1.11	
4	Opinion leaders	3.21	3.30	3.27	0.79	Agree
5	Culture	2.74	2.73	2.73	1.04	
B	**Personal factors**					Agree
6	Age and life cycle stage	2.98	2.89	2.93	0.94	
7	Life style	3.18	3.37	3.30	0.80	Agree
8	Personality	3.08	3.18	3.14	0.81	
9	Self – concept	2.65	2.71	2.69	0.89	Agree
10	Taste and brand	2.92	2.92	2.92	0.83	
C	**Economic factors**					Agree
11	Personal income	3.01	2.93	2.96	0.83	
12	Price	2.83	2.90	2.87	0.85	Agree
13	Shopping skills	2.60	2.61	2.61	1.03	
14	Consumer credit	2.94	2.89	2.91	0.96	Agree
15	Sewing skills	2.89	3.00	2.96	0.82	Agree
D	**Psychological factors**					
16	Motivation	2.79	2.86	2.83	0.95	
17	Perception	2.93	3.02	2.98	0.75	Agree
18	Learning	2.65	2.65	2.65	0.97	
19	Beliefs	2.80	2.82	2.81	0.87	Agree
20	Attitudes	2.89	2.83	2.85	1.01	

Key: $\bar{X}_1$ = Mean of Senior Female Lecturers; $\bar{X}_2$ = Mean of Junior Female Lecturers; $\bar{X}g$ = Overall Mean; SD = Standard Deviation; N= Number of the Respondents (388).

Table 2 shows that all the 20 identified factors influencing clothing expenditure had mean values ranging from 2.61 to 3.30 which are greater than the cut-off point value of 2.50. This indicates that the respondents (female lecturers) agreed that all the 20 items are factors influencing clothing expenditure. The standard deviation values for the 20 factors influencing clothing expenditure of female lecturers ranged from 0.75 to 1.11. This implied that the responses of the respondents are close to one another and to the mean.

This indicated that there was no significant difference between the mean opinion of senior and junior female lecturers on the 18 factors influencing clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria.

The discussants in the focus group discussion also revealed that clothing expenditure is influenced by a number of factors such as family, social activities, income, quality of fabrics, religion, job, roles and status. As female lecturers, there are expectations from the society for decency and moderation in appearance. All these contribute immensely to the clothing expenditure of female lecturers.

Discussion of Findings

The findings on research question one showed the clothing expenditure of female lecturers in the Colleges of Education. From the findings, women spend much on clothing. Women are noted to have a high drive for clothing and pride themselves in fashionable clothing. Although the discussants in the focus group discussion could not give a budget estimate of the amount they spend on clothing they all agreed that a substantial amount of their income goes into clothing. This finding agrees with the study carried out by Dhurup (2014) that women consume clothing more than men and find emotional gratification in appearing fashionable. The findings also showed that the clothing expenditure of senior female lecturers is higher than the junior female lecturers. This further affirms the position of Hager and Bryant (2018) that clothing expenditure depends largely on income, lifestyle and occupation of an individual.

The findings of this study in research question two as evident from responses from the questionnaire and focus group discussion showed that the respondents agreed that factors influencing their clothing expenditure include: family members, reference group, social class/status, opinion leaders, age and life cycle stage, life style, personality, self – concept, taste and brand, price, shopping skills, consumer credit, sewing skills display, motivation, perception, learning, beliefs and attitudes. The finding was in agreement with the study carried out by Heather (2015) on clothing values and buying practices of black and white middle income women where a variation was found in the rank order of clothing values within the two groups. Buying practices of blacks were found to be influenced by religious values. The finding of this study is also in line with the study carried out by Holly (2015) that factors such as personal interest, age group, locality, motivation, product availability, advertising and marketing strategies, consumer choice and value determines clothing purchases and expenditure of female lecturers as well as that of other clothing consumers. Fields (2013) also carried out a study where they found out that many expenses on clothing depend on lifestyle, income, educational level, occupation, age, marital status, family life cycle, location, culture and values among others.

Conclusion

It has been revealed in the present study that female lecturers spend significantly on clothing although the clothing expenditure of the senior female lecturers is higher than the junior female lecturers. The study also revealed that twenty factors influenced clothing expenditure of female lecturers in Colleges of Education in the North Central Zone of Nigeria. No significant difference in the opinion of junior and senior female lecturers on factors that influence their clothing expenditure. Female lecturers should therefore adequately plan their income, have a budget limit set for clothing and follow such family budget plan for economic survival.

Recommendations

Based on the findings made and conclusion drawn, the following recommendations were made:

1. Clothing consumers especially female lecturers in Colleges of Education should adequately plan and implement a realistic budget for clothing constantly consumed so that other essential family needs will not suffer or unattended to as a result of too much expenses on new and fashionable clothing.
2. A budget limit should be set for clothing which should be largely determined by individual values and income.

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Establishment of Average Body Measurements of Women with Large Bust Lines for Drafting Basic Bodice Block Patterns

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Abstract

The study established the average body measurements needed for drafting bodice block patterns for women with large bust lines. It focused on three categories of sizes: 1X (extra large), 2X (extra-extra large), and 3X (extra-extra-extra large). The research design was a survey and quasi – experimental design. The study was carried out in three states of Nigeria, the states are; Ekiti, Enugu and Nasarawa. Purposive and snowball sampling techniques were used to select a sample of 225 women with large bust lines from the population. The instrument for the study was an adopted Body Measurement Guide (BMG). One research question guided the study. Mean and standard deviation were used for data analysis. The study revealed that the average body measurements of women with large bust lines increased as the sizes progressed. The study recommended that data generated in this study should be made available to garment producers, Home Economics lecturers and students. The data could be used for production of commercial patterns for women with large bust lines.

Keywords: Bodice, Average, Body, Measurement, Women, Large, Bust, Lines.

Introduction

Women are adult females from 18years and above. The feminine figure varies greatly in shape from person to person. Women tend to store body fats in their busts, hips and thighs resulting in many shapes such as triangular/top-heavy, inverted triangle/bottom-heavy, rectangular, round and hour glass (Faust and Carrier, 2014). According to Anyakoha (2016); some women have natural figure faults. These include; flat chest, short neck, large hips and large busts. Others have sloppy shoulders and protruding tummy.

Women with large bust lines are apparel consumers with bust measuring 50inches and above (127cm and above) and whose bust measurement is between 2inches and 14inches (5cm and 36cm) than the hip measurements (Felsenthal, 2012). Nellis, (2013), highlighted the body characteristics of women with large bust lines to include, heavy upper torso translating into width prominence of bust and shoulder with relatively narrow hips. This presents a disproportionate figure which is not balanced. This figure fault poses a serious challenge on apparel fit of women with large bust lines. The width at the upper torso contributes to problem of tight fit, while the lower sections experience loose fit. These flaw conditions are manifest and are reflected in ill-fitted garments worn by women with large bust lines. Some of these garments "jump up" while some have a boxy look and others appear too tight resulting in poor fit.

Garment fit problems can be embarrassing, frustrating and costly to both tailors and users, especially women with large bust lines. Poor fit in clothes is one of the major factors that have seen a lot of clothes made by tailors being returned or rejected by their customers. This has incurred unquantifiable losses. These losses are reflected in low patronage with few visits to the tailors shop. If the tailors and researchers do not address the fit problems of women with large bust lines their fit apparel requirements will be compromised. Therefore, to ensure that the clothing needs of women with large bust lines are met, places a huge demand on the clothing industries in Nigeria.

Most developed countries of the world have eased the apparel crisis of their countries by the use of block patterns in garment manufacturing. According to Bhati (2011), pattern drafting is an engineering approach used to establish series of curves and lines on paper to produce patterns by using tools such as T-square, French curves, fashion rulers, yard sticks, rulers, pencils tape measure and white/brown papers and according to Anderson (2013), patterns are pieces of paper drafted cut to size and shape used for cutting out fabric pieces for sewing garments and. A block in apparel production refers to the shape, and form in which a garment is presented (Saima, Sarwa and Ameen, 2014). For women's clothing five basic blocks are used. These include a snug – fitting bodice front and bodice with darts and a jewel neck line, a long fitted sleeve, a fitted skirt front and skirt back with darts. The basic bodice as a component of the basic pattern is most often referred to as the upper part of women's garment covering the body from the neck to the waist. The function of the basic bodice pattern is to provide a simple outline upon which design and fit are based. It is on the basic bodice that style decisions and fit are worked out. According to Igbo and Iloeje, (2012), every style pattern can be developed on the basic bodice. In addition, blocks provide permanent record of correct fit thereby reducing trial and error in clothing construction (Igbo and Iloeje, 2012).

Accurate body measurement is fundamental to the production of well fitted garments. These measurements are used for the drafting of basic bodice. Igbo and Iloeje (2012), Identified ten principles to be observed while taking body measurements. Aldrich (2002), identified 21 body measurements that are essential for female pattern development. Oluah (2014), also identified 13 body dimensions as basic for drafting women's block and these body dimensions were adopted for the study.

Studies have shown that Nigeria has no block patterns for her populace which is basic to the development of properly fitted garments (Iloeje and Anyakoha, 2009; Ekumankama and Igbo, 2009; Shailong and Igbo (2009); Anikweze, 2013). The non-availability of conclusive study on standard body measurements especially for women with large bust lines that can be used in drafting patterns for them is also a major problem. The garment producers depend on custom – made or 'cut and sew'. This entails sewing for individuals who purchase their fabrics and present them to the garment producers. The individual body measurement is taken and style is sketched directly using free hand unto the fabric. This technique often depends on trial and error, most times do not give garments proper fit. This calls for the development and use of standard patterns that will facilitate the production of fitted garments for women with large bust lines. This study therefore, evolved data that will be used as average body measurements for drafting basic bodice patterns for different categories of women with large bust lines in Nigeria and other countries with similar figure types.

Purpose of the Study

The main purpose of the study was to establish average body measurements needed for drafting basic bodice block patterns for women with large bust lines. Specifically the study was designed to:

1. take body measurements of women with large bust lines required to establish average body measurements.
2. establish average body measurements of women with large bust lines required to draft basic bodice patterns for three categorized sizes of 1X (extra-large), 2X (extra-extra-large) and 3X (extra-extra-extra large).

Research Question

The study was guided by one research question.

1. What are the average body measurements of women with large bust lines required for the drafting of basic bodice block patterns?

Methodology

Design of the study

A survey and Quasi – experimental design was used for the study. The survey aspect was used to elicit information about the background of the women with large bust lines, while the quasi experimental was the actual taking and recording of the body measurements of women with large bust lines.

Area of the Study

This study was carried out in three states in Nigeria, which are Enugu State in South East Geopolitical Zone, Ekiti State in South West Geopolitical Zone and Nasarawa State in North Central Geopolitical Zone. The researcher choice of this area of study was basically for operational ease and enhanced access to research assistants that will help get the type of information needed in the study.

Population for the Study

The population for the study was made up of the entire women population in the study area totaling 3,780,841. This population comprised 1,671,795 women from Enugu State, 1,183,470 from Ekiti State and 925,576 from Nasarawa State (Population and Housing Census, 2006). Out of the entire women population in the three states, women with large bust lines were identified by the researcher and research assistants in a preliminary survey in their homes, offices and business places from whom measurements were obtained.

Sample of the Study

Purposive and snow-ball sampling techniques were used to select 225 women with large bust lines. This sample was made up of 80 women with large bust lines from Enugu State, 76 from Ekiti State and 69 from Nasarawa State. The body measurements of these women were taken, recorded, and average body measurements were established based on three categorized sizes of 1X, 2X and 3X.

Instrument for Data Collection

The instrument for data collection was a Body Measurement Guide (BMG) adopted from Aldrich (2002) with essential body measurements needed for drafting basic bodice patterns. The BMG is a chart with columns on all the different parts of the body to be measured, how to measure and actual measurement obtained. The chart also contained demographic characteristics for each woman to be measured such as age of respondent, state and geo-political zone. The instrument was validated by three experts, two of the validators are from the department of Home Economics and Hospitality Management Education and one from the Department of Home Science and Management (Clothing and Textile Option) all from University of Nigeria Nsukka.

Method of Data Collection

This was carried out in two phases as follows:-

Phase 1: Training of research assistants, 18 research assistants, six from each state used for the study were given training on data collection using the Body Measurement Guide (BMG). The researcher assistants were trained on the following;

- the different measurements to be taken
- the sites/location for the various measurements and
- the techniques of taking the various measurements.

Phase 2: Administration of the instrument, 225 copies of the BMG were used in recording the body measurements of women with large bust lines sampled for the study. The researcher and the research assistants took the measurements over one layer of garment. Subjects were not allowed to wear bulky clothes such as cardigans or sweaters or belts as such clothing could distort the accuracy of the data. A non-stretch tape measure was used in taking the body measurements of the subjects. The data collected was categorized into three sizes based on their bust and waist measurements.

Method of Data Analysis

The body measurements obtained from the three categorized sizes of the subjects representing 1X, 2X and 3X were organized into tables. The data was analyzed using mean and standard deviation to answer the research questions. The means were obtained using the Statistical Package for Social Science (SPSS) version 24.

Findings of the Study

The study determined 12 average body measurements of the subjects needed for drafting basic bodice block for three categorized sizes. These include; bust measurements for 1X size category (124 ± 11.48), 2X size (136 ± 11.67), 3X size (148.79 ± 11.79). The chest measurements for 1X size (113.80 ± 10.67), 2X size (115.89 ± 10.77) 3X size (117.98 ± 8.12) and waist measurements for 1X size (110.29 ± 10.50), 2X size (120.55 ± 10.98), 3X size (132.13 ± 11.49) among others.

Variations in the mean body measurements of the subjects in the different size categories, indicating that differences exist in shape and figure of women with large bust lines. This implies that average body measurements obtained from each size category will facilitate the drafting of basic bodice patterns that will provide good fit to women with large bust lines, since all sizes within each category is considered.

Table 1: Mean and standard deviation of body measurements of 1X, 2X and 3X size categories of women with large bust lines required for drafting of basic bodice block.

S/N	Body Parts	1X (n_1=80)		2X (n_2=93)		3X (n_3=52)	
		$\bar{X}_1$	SD_1	$\bar{X}_2$	SD_2	$\bar{X}_3$	SD_3
1.	Bust	124	11.48	136.24	11.67	148.79	11.79
2.	Waist	110.29	10.50	120.55	10.98	132.13	11.49
3.	Back width	52.66	7.26	55.17	7.43	60.12	7.75
4.	Chest	113.80	10.67	115.89	10.77	117.98	8.12
5.	Shoulder	13.63	3.69	14.29	3.78	14.88	3.85
6.	Dart	17.98	4.24	19.44	4.41	21.46	4.63
7.	Top arm	40.12	6.33	41.87	6.47	42.40	6.27
8.	Wrist	22.44	4.74	24.00	4.89	25.53	5.05
9.	Nape to waist	41.40	4.25	43.89	6.43	46.83	6.83
10.	Front shoulder to waist	44.56	6.68	48.31	6.95	52.07	7.22
11.	Armhole Depth	50.59	7.11	52.80	7.25	54.63	7.39
12.	Sleeve length	61.01	7.81	61.25	7.83	63.48	7.97

1X = extra large size category, 2X = extra – extra large size category, 3X = extra – extra – extra large size category. n_1 = number of 1X size – based subjects, n_2 = number of 2X size - based subjects, n_3 = number of 3X size - based subjects, $\bar{X}_1$ = Means of 1X size - based subjects, $\bar{X}_2$ = means of 2X size – based subjects, $\bar{X}_3$ = means of 3X size – based subjects, SD_1 = Standard deviation of 1X size – based subjects, SD_2 = standard deviation of 2X size – based subjects, SD_3 = Standard deviation of 3X size – based subjects,

Table 1 shows the mean body measurements of 1X, 2X and 3X size categories of women with large bust lines required for the drafting of basic bodice block. It presents the highest and lowest mean body measurement and standard deviation for the three categorized sizes. The result reveals that the highest means obtained are for bust, chest and waist while the lowest means are for the shoulder and wrist across all sizes.

Discussion

The result of the findings identified 12 mean body measurements of women with large bust lines required to draft basic bodice patterns. The following body measurements were taken, bust, waist, back width, chest, shoulder, dart, top arm, wrist, nape to waist, front shoulder to waist, armhole depth and sleeve length.

Generating body measurements of the target group serve as the first step in clothing design. This stance agreed with Aldrich (2002), that standardized rules of obtaining body measurements facilitate a comprehensive measuring of all the body parts necessary for the fit of clothing items, which eventually must fit three – dimensional body shape from which the measurements were taken. Ashdown and Dunne (2006), supported this view by maintaining that since the body is three-dimensional, the measurements obtained from it must be accurately taken and must be representative of the characteristics of the body shape critical to the fit of clothing. Jungiang, Guolian and Bugau (2015), stressed that the measurements of the varied body shapes can only be accurate, consistent and representative if they are taken accurately by employing correct methods, instrument and techniques. Iloeje and Anyakoha (2009), opined that a perfectly fitted garment begins with accurate measurement.

Results of the study shows that the means for each of the body measurement progresses with size. The bust measurements for instance for 1X size category was (124 ± 11.48), 2X size (136.24 ± 11.67) and 3X size (148.79 ± 11.78), showing high variability. This is an indication that there are differences in figure type, size and proportions of women with large bust lines. This supports the views of Sawyer (2014), that physical variations exist among individuals in posture and stance which must be understood before the development of dress patterns.

Conclusion

The study determined average body measurements of women with large bust lines required for drafting of basic bodice blocks for three categorized sizes of 1X (extra-large), 2X (extra-extra large) and 3X (extra-extra-extra large). Clothing and textile lecturers need master patterns to teach their students basic and advanced pattern drafting, thereby equipping the students with the necessary skills for promoting the clothing industries in Nigeria. The data generated from this study provides a baseline data for subsequent researches on body measurements for other categories of women with disproportionate figures.

Recommendations

The following recommendations were made based on the study.

- The findings of the study should be made available to garment producers in Nigeria with the aim of helping them to use information in this study to gain insight on pattern drafting that will lead to better design, prediction of fit and ultimately the production of well fitted garments for the larger society.
- Organizing special training for clothing and textile lecturers and students in pattern making for different categories of people. Patterns designed could be commercialized to serve as good substitute for banned imported patterns. This will generate income and contribute to economic development of the country.

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Sensory Evaluation and Acceptability of Hand Sanitizer produced from Local Raw Materials –Garlic (*Allium Sativum*), Aloe Vera (*Aloe Barbadensis Miller*) and Ethyl Alcohol

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Abstract

This study focused on sensory evaluation and general acceptability of hand sanitizer (verabeny) produced from local raw materials – garlic and aloe vera with 30% ethyl alcohol. Verabeny hand sanitizer was produced and compared with two other types of commercial alcohol – based (60% - 70%) hand sanitizer's purchase from local market. Sensory attributes studies included: colour, texture, and odour. General acceptability was also compared. A 5-point hedonic rating scale was used for data collection. The panel of judges was drawn from a group of Home Economics students. Data were analyzed using means. The result indicated that verabeny compared well with the two commercial hand sanitizer samples in all sensory attributes except odour.

Keywords: Hand Sanitizer, Garlic, Aloe Vera, Ethyl Alcohol, Sensory, Evaluation

Introduction

Hygiene simply means cleanliness, that is, the observation of good health practices based on rules of general cleanliness. Hygiene is of great importance in the prevention of many kinds of infections and diseases within the household and the environment. Adigbo and Maddah (2011) noted that good personal hygiene is a critical protective measure against food borne illness. It is ironic that people are the cause and victims of food borne illness incidents. It has been observed that at every step in food chain from preparation to consumption, handlers can contaminate food when they contact the environment with their hands, perspiration or breath; they spread bacteria and other micro – organisms. Every unguided cough or sneeze transmits a wave invisible micro – organisms capable of causing disease. Washing of the hands regularly reduces to the barest minimum the increase of the germs in human hands. Effective washing of hands require the use of soap and good water. This may however not be available at all times; hence hand sanitizer becomes a veritable alternative for cleaning hands when soap and water are not available.

Productions of local hand sanitizer will ensure prevention of diseases and infections but unfortunately observations and studies have revealed that most of the hand sanitizers used in the country are imported and as such they are very expensive to buy. The production of local hand sanitizer will involve using locally produced agricultural materials such as ethyl alcohol, garlic and aloe vera to generate the necessary anti-biotic effects for tackling the spread of diseases. The hand sanitizer produced with locally available materials will be cheaper, effective and available, and would enable families to prevent the spread of diseases and infection for healthy living and would aid in income generating by family members who may wish to engage in the production of hand sanitizer. The issue on the use of alcohol-based hand sanitizer have centered mainly on product flammability and ingestion, both unintentional by young children and intentional by individuals seeking to abuse alcohol. The use of alcohol-based hand will be reduced if other non-alcohol-based hand sanitizer is available. The question now is what is this hand sanitizer?

Hand sanitizer is a liquid substance that is applied by rubbing it on hands to kill germs. Hand sanitizers are basically made up of ethyl alcohol, isopropyl (isopropanol), n-propanol or povidone-iodine and other inactive additives such as tricosan, sodium lauryl, ether sulphate, aqua, sodium chloride, citric acid, cocamide, diethanolamine, colour preservative, propylene glycol and essential oil of plants and fragrances (Center for Disease Control and Prevention, 2016). Hand sanitizers can be prepared in many forms such as gel, foam and liquid solutions. Generally hand sanitizers are grouped into, alcohol-based and non-alcohol-based. Alcohol-based hand sanitizers are those hand sanitizers that have about 60 – 70% alcohol as the active ingredient (Sherwood 2013 & Rogers 2015).The non-alcoholic-based hand sanitizer can be produced using local agricultural materials - garlic, aloe vera and 30% ethyl alcohol for extracting garlic and aloe vera gel. This can be used with other inactive additives such as treated water, carbopol, triethanolamine, glycerine, frangrance, and colouring for producing locally made hand sanitizer aloe–vera, garlic extracts and alcohol can kill micro organisms by denaturing their proteins and dissolving their lipids and so were all effective against bacteria, fungi and viruses.

Garlic is one of the earliest documented plants used by human for the treatment of diseases and maintenance of health (Natural Health Publications 2010). It is a bulbous plant cultivated for its compound. It is used in food preservative; it forms part of the daily diet with raw meat. her Saini (2016) observed that the best garlic varieties is the sulphur-containing compound, Allicin, found in fresh, crushed or chewed garlic has anti-bacterial and anti-fungal properties and some startling claims mention that it may help prevent some forms of cancer.

Aloe Vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. Aloe Vera contains over 200 biologically active, naturally-occurring constituents including polysaccharides, vitamins, enzymes, amino acids and minerals that promote nutrient absorption, digestive health, a healthy immune system and a reduction of nitrates (Yeh, Eisenberg, and Philips 2003 and National Institute of Health 2015). Today, the Aloe Vera plant is used for various purposes in dermatology. Ethyl alcohol, garlic and Aloe Vera have high anti microbial properties known to kill or denature germ in our body environment. Some studies have been carried out on hand sanitizers produced from local materials. For instance, Ezeoguine & Mbah (2017) evaluated the effectiveness of hand sanitizers produced from local raw materials in denaturing six test organisms. In a similar study, hand sanitizer was produced from garlic, aloe vera and 30% ethyl alcohol for family use and chemical its analysis was carried out (Ezeoguine & Ezema, 2018). It was discovered, among others, that the latter hand sanitizer possessed antiseptic properties. There remained, however, the need to find out the extent of acceptability of this product in terms of colour, texture, odour and general acceptability necessitated this research also production is not complete until the goods produced reach the final consumer. The hand sanitizer produced will not be valuable if consumers' acceptability of the new product is not ascertained.

The Purpose of the Study

The general purpose of this study was to establish the acceptability of hand sanitizer produced from local agricultural materials using garlic, aloe vera and 30% alcohol. Specifically the study determined:

Acceptability of hand sanitizer in terms of: texture; colour; odour and; general acceptability and two alcohols based Nigerian used hand sanitizers.

Methodology

Design of the Study: This study was based on an experimental study which produced a hand sanitizer called verabeny (Specimen A), made from garlic, aloe vera and 30% ethyl alcohol (Ezeoguine & Ezema 2018). This present study was an organoleptic evaluation that compared the sensory attributes of Verabeny (A) with those of other two commercially purchased alcohol-based nabd-sanitizers (B&C) 60 – 70% alcohol contents.

Area of Study: This study was carried out in Michael Okpara University of

Agriculture (MOUA) Umudike, Abia State.

Population for the Study: The population for this study comprised all 1130 students in the College of Applied Food Science and Tourism, (CAFST) Michael Okpara University of Agriculture, Umudike in Abia State.

Sampling (Panel) for the Study: The college is made up of four departments. Representative samples of 119 students were purposively selected from the college to form the panel for the study. Selection was based on students past experiences with hand sanitizer.

Instruments for Data Collection: A hedonic rating scale was the instrument for data collection. It was designed to assess the sensory attributes – colour, texture, odour, and general acceptability – of specimens A, B & C, each on a 5-point scale. The instrument was validated by two Biochemists and three Home Economics lecturers.

Data Collection Techniques: Panel members were sitted comfortably in one of th laboratories in the Department of Home Economics, MOUA. They were thoroughly briefed by the researchers on thepurpose of the study and the hedonic instrument. They were then requested to apply the specimens (A, B & C) on their hands, one after the other and make their entries as appropriate. They were instructed to wash their hands and dry them thoroughly, then wait for 30 mins before application of the next specimen. A total of 119 copies of the instrument were distributed but only 113 were properly completed and retrieved.

***Methods of Data Analysis*:** The data generated were analyzed with frequency count, percentages, mean and standard deviation. The items were based on a 5 point; the acceptable mean score was 3.00. Thus mean ratings of 3.00 and above was considered as agreed, while items with mean ratings below 3.00 was considered as disagreed. The colour, odour, texture and general acceptability were evaluated using the three score sheet. See appendix: For a sample of the score sheet labeled "A" representing the locally made hand sanitizer.

Findings of the study

Table 1: Mean Ratings of Sensory Perception of the Colour of Three Specimens hand sanitizers A (Verabeny), B & C.

Type	Very Pleasing	Slightly Pleasing	Acceptable	Slightly Acceptable	Off Colour	Mean	ST. DEV.
A (Verabeny)	70(61.9)	16(14.2)	16(14.2)	8(7.1)	3(2.7)	4.23	1.119
"B"	82(72.6)	3(2.7)	20(17.7)	3(2.7)	5(4.4)	4.36	1.138
"C"	25(22.1)	48(42.5)	33(29.2)	7(6.2)	0(0.0)	3.81	0.854

Percentages in parenthesis, Bench Mark Mean = 3.00, Benchmark Percentage = 50%

Table 1 shows that 61.9 percent of the panelists agree that the colour of A (Verabeny) with mean score of 4.23 while 72.6% and 22.1% indicated so for B and C respectively.

Table 2: Mean Ratings of Sensory Perception of Odour of hand sanitizers A, B, & C.

Brands of Hand Sanitizers	Very Pleasing	Slightly Pleasing	Acceptable	Slightly Acceptable	Off Odour	Mean	ST. DEV.
A(Verabeny)	10(8.9)	21(18.6)	12(10.6)	34(30.1)	36(31.9)	2.40	1.325
"B"	55(48.7)	30(26.5)	16(14.2)	11(9.7)	1(0.9)	4.12	1.046
"C"	28(24.8)	32(28.3)	47(41.6)	6(5.3)	0(0.0)	3.73	0.899

Percentages in parenthesis, Bench Mark Mean = 3.00, Benchmark Percentage = 50%

Table 2 shows that only 8.9% of the panelists perceived the odour of A (Verabeny) as very pleasing, while 48.7% and 24.8% indicated so for B and C. A higher percentage of panelists (31.9%) perceived A (Verabeny) as "off odour".

Table 3: Mean Ratings of Sensory Perception of Texture of Hand Sanitizer A, B, & C.

TYPE	Dry	Smooth	Soft	Coarse	Sticking	Mean	ST. DEV.
A(Verabeny)	14(12.4)	57(50.4)	30(26.5)	7(6.2)	5(4.4)	3.59	0.935
"B"	26(23.0)	67(59.3)	17(15.0)	1(0.9)	2(1.8)	4.00	0.759
"C"	30(26.5)	50(44.2)	32(28.3)	1(0.9)	0(0.0)	4.05	0.800

Percentages in parenthesis, *Bench Mark Mean = 3.00, Benchmark Percentage = 50%*

Table 3 shows that A (Verabeny) has the lowest percentage rating for texture (12.4%). Specimens B and C, however have higher ratings of 23.0% and 26.5% respectively. The three specimens A, B, and C have high "smooth" ratings of 50.4%, 59.3% and 44.2% respectively.

Table 4: Mean Ratings of Sensory Perception of General Acceptability of Hand Sanitizers A, B, & C.

Type	Very Good and Pleasing	Good and Acceptable	Acceptable	Slightly Acceptable	Not Acceptable	Mean	ST. DEV.
A (Verabeny)	13(11.5)	28(24.8)	35(31.0)	34(30.1)	3(2.7)	3.09	1.032
"B"	59(52.2)	41(36.3)	10(8.8)	3 (2.7)	0(0.0)	4.38	0.761
"C"	38(33.6)	44(38.9)	30(26.5)	1(0.9)	0(0.0)	4.05	0.800

Percentages in parenthesis, Bench Mark Mean = 3.00, Benchmark Percentage = 50%

Table 4 shows that A (Verabeny) obtained the lowest rating for "very good and pleasing" (11.5%), while B and C obtained 52.2% and 33.6% respectively. Only 2.7% indicated that A (Verabeny was "Not acceptable".

Discussion of finding

The study shows the acceptability level of the hand sanitizer produced from local raw materials in terms of colour, texture, odour and general acceptability and the two alcohol based hand sanitizer represented by

"B" and "C"., Table 1a above shows the sensory perception of colour by respondents about the locally produced hand Sanitizer and the alcohol-based.It shows that 61.9% of the students agreed that the colour of Verabeny is very pleasing; Dettol has 72.6% while So.-safe has 22.1%. Those that signified very pleasing, slightly pleasing and acceptable on the colours are above the 50.0% benchmark for acceptance. The mean ratings of each of the types are also above the 3.00 benchmark for the acceptance of a statement. This is a confirmation of the result found from the frequency and percentages analyses. Table1b above shows the sensory perception of odour by respondents about locally produced hand sanitizer and the alcohol-based. Majority of the respondents disagreed that the odour of the hand sanitizers produced from local materials is pleasing. That is, those that signified very pleasing, slightly pleasing and acceptable on the odour of the locally produced (Verabeny) hand sanitizer is below the 50.0% benchmark for acceptance. This shows the addition of those that are in support of the colour of Verabeny product are 38.1% This is further established by the mean ratings of the opinion of the respondents which is only 2.40 which is below the 3.00 bench mark.. On the other hand, those that signified very pleasing, slightly pleasing and acceptable on the odour of the two brands of alcohol-based hand sanitizers used are above the 50.0% benchmark for acceptance.The addition of the respondents that signified very pleasing and acceptable for Dettol is 89.4% while it is 53.1% for So-Safe. This is buttressed by the mean ratings of each of the alcohol-based hand sanitizers which are 4.12 and 3.73 for Dettol and So-safe respectively which are above the 3.00 benchmark for the acceptance of the respondent's statement. Conclusively, the odour of the alcohol-based hand sanitizer is pleasing while that of the locally produced is not. Table 1c above shows the respondent's sensory perception of the texture of tested locally produced and alcohol based hand sanitizers. It shows that locally produced hand sanitizer which is Verabeny, a mean of 3.59 which is above the mean benchmark of 3.00. This is evidenced by the fact that 50.4% of the respondents observed that it has smooth texture while the respondents rank it 26.5% in terms of its softness. On the other hand, Dettol was ranked best in terms of smoothness while So-safe the least. Also in terms of softness So-safe was ranked highest followed by Verabeny and Dettol with 28.3%, 26.5% and 15.0% respectively. The table also shows that the degree of coarseness was relatively high for Verabeny as indicated by the respondents while it was negligible for Dettol and So-safe. Table 1d above shows the general acceptability of locally produced hand sanitizer and the alcohol-based. Majority of the students generally accepted that both the locally produced and alcohol-based are very good and pleasing, good and acceptable and acceptable.Those that signified very good and pleasing, good and acceptable and acceptable are above the 50.0% benchmark for acceptance for the three brands. The mean ratings of each of the three brands of hand sanitizers are also above the 3.00 benchmark for the acceptance of the opinion statement presented to them.The evidence of this is a mean acceptance of 4.38, 4.05 and 3.09 for Dettol, So-safe and Verabeny respectively. This also shows that the order of acceptance is in favour of Dettol, So-safe and Verabeny the least.

Conclusion

From the findings of the study, hand sanitizer was produced from local raw materials using garlic, aloe vera and 30% ethyl alcohol for extracting garlic juice and aloe vera gel. The hand sanitizer produced was evaluated in terms of colour, texture, odour and general acceptability and was compared with the two alcohol based Nigerian used hand sanitizer, the findings revealed that Verabenny hand was acceptable in terms of colour, texture and the general acceptability while the odour of Verabenny was not acceptable by the majority of the respondents. The poor acceptance of the odour of Verabenny hand sanitizer could be attributed to the offensive odour of garlic, and this may be enhanced by the addition of more fragrance in the production process.

Recommendations

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

- ❖ The findings of this study should be made available to individuals, families, future learners, researchers, consumers in all works of life through organizing seminars and workshop at the local and state government levels to educate the public on the importance of producing and using hand sanitizer made from local raw materials.
- ❖ The manufacturers of hand sanitizer should continually engage in more research to update themselves on other ways of improving their products.
- ❖ The government should encourage the unemployed graduates by providing soft loans to enable them to engage in small scale production of hand sanitizer using our local raw materials instead of relying heavily on the importation of foreign products.

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SCORE SHEET FOR SPECIMEN A

Colour

Very pleasing	5
Slightly pleasing	4
Acceptable	3
Slightly acceptable	2
Off colour	1

Texture:

Dry	5
Smooth	4
Soft	3
Coarse	2
Sticking	1

Odour:

Very pleasing	5
Slightly pleasing	4
Acceptable	3
Slightly acceptable	2
Not acceptable	1

General Acceptability:

Very good and pleasing	5
Good and acceptable	4
Acceptable	3
Slightly acceptable	2
Not acceptable	

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Pattern Drafting Skills Acquisition by Home Economics Undergraduates: A Case Study of 400 Level Students of Michael Okpara University of Agriculture, Umudike

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Abstract

This study focused on Pattern Drafting Skills Acquisition by Home Economics Undergraduates: A Case Study of 400 Level Students of Michael Okpara University of Agriculture, Umudike. The study identified the pattern drafting skills acquired by the students, the methods adopted in pattern drafting, the challenges the students encounter in acquiring pattern drafting skills and the possible ways of enhancing acquisition of more pattern drafting skills among the students. Survey research design was adopted for this study. The population comprised 72 400 level Home Science students of Michael Okpara University of Agriculture Umudike. Results showed that the students have acquired few pattern drafting skills which include taking accurate body measurement, pattern lay out and transferring of pattern marks among others. Methods adopted in pattern drafting were flat pattern drafting method and Grading/Modifying from a set of patterns while the students were yet to adopt the use of Computer aided - Design, pattern alteration and draping among others. Also identified by the study were the challenges hindering acquisition of skills by students which include insufficient equipment/facilities for pattern drafting, and lack of financial assistant from school management among others. The measures to enhance pattern drafting among students include; providing facilities/equipment needed for pattern drafting, Consistent involvement of students in practical lessons and the school management funding practical lessons.

Keywords: Pattern Drafting, Skills, Undergraduates Students.

Introduction

Pattern is a piece of paper drafted and cut to size a shape used for cutting out fabric pieces for sewing out dress. According to Igbo and Illoeje (2012), drafting is a term used to describe an engineering approach to producing patterns, using a set of measurement obtained from a figure while following a set of instructions. The instructions are interpreted into drawings of shapes on the paper and transferred to the fabrics. Pattern drafting involves creating pattern by taking measurements from a person, form, or model, in order to create a foundation, which is a pattern used as the basis for the design. Ombugadu (2014) pointed out that to have a perfect and fitted dress, that it is necessary to make some adjustments on the paper pattern so that the real measurements will correspond with the individual's proportions.

In most Nigerian universities that offer Home Economics as a course, Clothing and textiles is one of the major area of Home Economics taught. Saskatchewan (2000) stated that clothing and textiles help students to understand and use the terminologies applied in the field of clothing, textiles and fashion designing. Njoku (2002), pointed out that clothing and textiles as a course offer skills in tailoring or dress making, clothing repairing, dyeing, batik making, embroidery, crocheting, weaving, knitting among others which help in alleviating poverty or creating job opportunities. Clothing and textiles can equip someone with varieties of competencies needed to be self-employed thus increasing the economic standard of one's family. Learning of income generating activities such as sewing, dye- making, batik and knitting will not only help the students to raise income but it will also help them to be employers of labour instead of a job seeker.

Igbo (2001) pointed out that the first step towards job creation is that there must be proper identification of jobs available in different segments of the economy so that necessary training can be provided.

Shaeffer (2001) outlined the areas skills should be acquired before someone can enter an apparel/garment production successfully or be employed in an apparel industry. These include the ability to describe the organizational structure of an apparel/garment manufacturing industry, identify and define job opportunities in apparel/garment manufacturing, identify and describe the processes in manufacturing and describe the interaction among the design, production and marketing/sale of the products.

In like manner, Mbah, Orhewere and Osifeso (2001) pointed out that there is joy and sense of belonging in making one's own garment. However to make a good dress for self and others, one should be able to acquire the following important skills: ability to make simple basic and decorative stitches, ability to take accurate body measurement, ability to draft pattern and lay out pattern pieces on the fabric correctly, ability to transfer and cut out pattern marks among other skills.

In Nigerian universities, clothing construction is among the courses taught under clothing and textiles to Home Economics students. Thus, Home Economics students who are unable to acquire skills in pattern drafting in school are likely to find it difficult to gain employment in garment production industry or teach clothing in schools, or sew garments after graduation from an institution.

Skill is the ability to do something expertly and well (Ezeani, 2012). One is said to be skillful, if he/she carry out a process with efficient result. To possess a skill is to exhibit the habit of thinking and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practice. Skill is widely regarded as a core object for policy intervention in the modern global high technology.

Home Economics undergraduate students have been defined as students in higher institution who are undergoing training/course studies in Human Nutrition, Home Management, Clothing and Textile, Child development, Consumer education, Family living among others. In other words, they are students in higher institution who are being trained to deal with the economics and management of the home and community (International Federation for Home Economics (IFHE), 2004). Their training deals with the relationship between individuals, families, communities, and the environment in which they live.

According to Kane (2015), in pattern drafting, there are some basic skills which are necessary to be acquire by the pattern maker. These skills include: the ability to study, interpret drawings, written instructions or sample of design, to have good drawing skills, mathematical skills, particularly making calculations involved in measurement, excellent knowledge of pattern making and sewing terms/symbols. Fashion2apparel.blogspot,com, (2017) pointed out that the ability and skill of an average Home Economics student in pattern drafting is derived from what they have learnt and can do.

Ombugadu (2014) stated that to be able to have a perfect and fitted dress, it is necessary to make some adjustments on the paper pattern so that the real measurements may correspond with the person's proportion. Clothing fit is the most important element for consumers in determining their overall satisfaction with garments.

Bellis (1997) stated that a fitted garment should ideally provide maximum comfort and protection for the wearer. The design and fit of a garment are factors which can affect both the protection aspects of a garment as well as its comfort.

Apple (2012) stated that fitting is more than learning how to adjust patterns. She explained further that fitting is more than following rules and calculating measurements. It involves judgments, understanding, and taste. Mastering the act of fitting is a cumulate process; expertise does not come instantly, but it does develop through experience which include trial and error. This means that when one fitting adjustment is successfully completed on one pattern, similar steps with other patterns can be taken. By so doing the pattern maker will identify additional improvements worth making.

Apple (2012) stated that fitting skills are as important as sewing skills for creating garments of quality, value and beauty. She point out that one can be an expert at fine sewing and not know how to fit and would not realize that something is wrong with the way garment fit., Skill in understanding figure, body measurements /Choosing a pattern size in case of commercial patterns, pattern adjustments, fine Tuning (fine tuning points of fit, pleats and darts, seams etc). A practical guide to adjusting patterns for a professional finish include: knowing the fact that a good pattern is a fitting tools expected that Home Economics students acquire skills in flat pattern drafting,

Based on the above, it is important that Home Economics students should acquire skills in pattern making so that they can produce well fitted garments even in large quantity for commercial purposes.

Most Home Economics students in Michael Okpara University of Agriculture, Umudike have not adequately acquired such skills in pattern making. This however is due to the fact that there are some challenges hindering majority of them from learning the basic skills in pattern drafting, which among others include inability to calculate accurately figures obtained in body measurement, unable to make accurate patterns or interpret patterns symbols, and inability to transfer pattern marks among others. They look at it as a tedious and time consuming subject/course, finance demanding nature of the course, lack of competent lecturers/technologist in impacting the practical skills on the students among others.

Based on the above facts, it is therefore, necessary to identify the skills already acquired by 400 level Home Economics students in Michael Okpara University of Agriculture, Umudike, Abia State, identify their challenges and suggest possible way of improving and sustaining skills in pattern making. Hence, this is the justification for the study.

Purpose of the Study

The main purpose of this study was to investigate pattern drafting skills acquisition by 400 level Undergraduates of Home Economics.

Specifically, this study identified:

1. pattern drafting skills already acquired by 400 levels Home Economics undergraduate student in Michael Okpara University of Agriculture, Umudike.
2. techniques/methods adopted in pattern drafting by Home Economic undergraduate students.

3. challenges encountered by the undergraduate students in acquiring pattern drafting skills.
4. possible ways of enhancing more acquisition of skills and sustaining the acquired skills among students.

Research Questions

1. What are the skills already acquired in pattern drafting by 400 level Home Economics students in Michael Okpara University of Agriculture Umudike?
2. What are the methods adopted in pattern drafting?
3. What are the challenges encountered by the student in acquiring pattern drafting skills?
4. What are the possible solutions to the challenges encountered in acquiring pattern drafting skills?

Methodology

***Design of the Study*:** Survey research design was adopted in this study.

***Area of Study*:** The study area is Michael Okpara University of Agriculture, Umudike in Abia State. Michael Okpara University of Agriculture is under Ikwuano Local Government Area of Abia state. The total landmass of Ikwuano covers eighteen (18) villages, Isiala Oboro being the headquarters. Umudike is located eight kilometer southeast of Umuahia Ibeku (Abia State Hand Book, 1997).

Population for Study*:** The population for the study comprised 400 level Home Economics students from Home Science/Hospitality Management and Tourism Department. A total population of 72 students (*Source:** 2017/18 Departmental list of 400 level Home Science students, Michael Okpara University of Agriculture).

***Sample and Sampling Technique*:** There was no sampling. The entire population were involved in the study, because they are final year students and have gone training in all courses involving acquisition of skills in pattern drafting. More so, the population was small and of a manageable size.

***Instrument for Data Collection*:** Questionnaire was used for data collection. Through extensive review of literature, the instrument was developed based on the purpose of the study. It had a four point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and values 4, 3, 2 and 1 assigned respectively. The questionnaire had 46 items. Test retest reliability was used to test the reliability of the instrument. The coefficient of reliability obtained was 0.551, signifying that the research instrument was reliable.

Data Collection Techniques: A total of 72 copies of the questionnaires were distributed by hand to 72 400 level Home Science students during their meeting on students lecture free week. The questionnaires were correctly filled and return by the students before the end of the meeting that day. All the 72 questionnaires were completely filled and retrieved. This represent 100% return rate.

Data Analysis Techniques: The statistical tools used for data analysis were frequency, simple percentage and mean, simple percentages and standard deviation. Frequency was used to organize the data collected, while mean was used to analyze the responses to the research questions. The mean was calculated based on the 4 - points rating scale response categories of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and values 4, 3, 2 and 1 assigned respectively. The cut-off mean was 2.50. Any value below 2.50 is regarded as disagree while any mean score up to 2.50 and above was regarded as agreed.

Findings

Table 1: Mean Responses on Pattern Drafting Skills Already Acquired by the 400 level Home Economics Undergraduates of MOUA, Umudike

S/N	Pattern drafting skills already acquired by 400 level Home Economics undergraduates.	400 level $\bar{x}_1$	SD	Remark
1.	Taking accurate body Measurement.	2.69	0.89	A
2.	Sketching/drawing skill.	2.32	0.85	NA
3.	Laying out pattern on fabrics.	2.65	0.80	A
4.	Using computer in making pattern.	2.16	0.85	NA
5.	Transferring pattern marks on fabrics.	2.76	0.98	A
6	Adapting pattern	2.55	0.93	A
7.	Altering pattern.	2.20	0.80	NA
8.	Pattern/Symbol Interpretation.	2.32	0.85	NA
9.	Ability to do calculations involved in measurement.	2.26	0.86	NA
10	Handling pattern drafting tools.	2.69	0.98	A
11	Cutting Patterns.	2. 69	0.68	A
12	Spreading/Stacking up.	2.26	0.86	NA
13	Bundling skill	2.68	1.08	NA
14	Constructing darts.	2.32	0.85	NA
15	Handling pattern pieces.	2.65	0.80	A
16	Adding of seams & hem Allowance.	2.26	0.86	NA
17	Truing the pattern	2.23	0.85	NA
18	Fitting skill	2.26	0 86	NA

Source: Field Survey, 2018, Key $\bar{x}_1$= Mean Responses of 400 level Home Economics Students, SD = Standard Deviation. A= Acquired, NA = Not Acquired.

Table 1 above shows that 7 out of 18 enlisted pattern drafting skills have already been acquired by 400 Level Home Science undergraduate students of MOUA, Umudike, while 11 skills were yet to be acquired .This was shown on their mean scores which were up to 2.50 and above. The highest mean score was 2.76, item no. 5 (Transferring pattern marks on fabrics), the lowest mean score was 2.16, item no. 4 (Using computer in making patterns).

Table 2: Mean Responses on Methods Adopted in Pattern Drafting.

S/N	Pattern Drafting Methods	400 level $\bar{x}_1$	SD	Remark
1.	Modelling/Draping method	2.26	0.86	NA
2.	Knock-off design method	2.26	0.86	NA
3.	Grading/Modifying from a set of patterns	2.76	0.98	A
4.	Computer aided design method	2.20	0.80	NA
5.	Flat pattern drafting method	2.95	0.80	A
6.	Dart manipulation via pivoted points.	2.68	1.08	NA
7.	Printed method	2.26	0.85	NA
8.	Perforated Method	2.32	0.85	NA
9.	Slash Spread/Close technique.	2.67	1.08	NA
10.	Marking and tracing.	2.32	0.84	NA
11.	Use of quarter scale patterns.	2.30	0.85	NA

Source: Field Survey, 2018, Key $\bar{x}_1$= Mean Responses of 400 Level MOUA Umudike Home Science Students, **SD** = Standard Deviation, A = Adopted, NA =Not Adopted.

Table 2 shows that, 2 items out of 11 were methods adopted for pattern drafting while 9 methods are yet to be adopted. These were shown vividly in their mean scores. However, the highest grand mean score on the methods adopted was 2.95, item no. 5 (Flat pattern drafting method) while the lowest on the methods of those yet to be adopted was 2.20, item no.4 which bothers on computer aided design method.

Table 3: Mean Responses on Challenges the Students Encounter in Acquiring Pattern Drafting Skills.

S/N	Challenges the students encounter in acquiring pattern Drafting skills.	400 Level $\bar{x}_1$	SD	Remark
1.	Insufficient equipment/facilities.	2.98	0.93	Challenge
2.	Some Lecturer's incompetency in handling the course.	2.87	0.89	Challenge
3.	Insufficient number of clothing &textile lecturers.	2.57	1.04	Challenge
4.	Cost of pattern drafting materials.	2.68	1.08	Challenge
5.	Lack of financial support from parents and guardians	2.56	1.16	Challenge
6.	Lack of financial assistance from school authority.	2.81	1.06	Challenge
7.	Lack of interest by students.	2.85	0.95	Challenge
8.	Ambiguous teaching method.	2.70	1.09	Challenge
9.	Lecturers use tedious methods	2.92	1.11	Challenge.
10.	Lack of individual supervision during practical class by the lecturer.	2.83	0.930	Challenge.

Source: Field Survey, 2018, Key $\bar{x}_1$= Mean Responses of 400 level MOUAU Home Science Students, SD = Standard Deviation.

Table 3 shows that the students encounter 10 challenges in acquiring pattern drafting skills. These were shown on their mean scores which were all up to 2.50 and above. However, the highest mean was 2.98, item no.1 (insufficient equipment/facilities) while the lowest was 2.56, item no.5 (Lack of financial support from parents/guardians).

Table 4: Mean Responses on Possible Ways of Enhancing and Sustaining Acquisition of more Pattern Drafting Skills among the Students.

S/N	Possible Ways of enhancing and Sustaining Acquisition of more Pattern Drafting Skills among the Students.	MOUAU 400 level		
		$\bar{x}$	SD	Remark
1.	Organizing enlightenment programme regularly eg. seminars, workshop to show - case the students' products.	3.13	0.91	Agreed
2.	Employing competent clothing and textile lecturers.	3.48	0.78	Agreed
3.	Using simplified pattern drafting text books by lecturers and students.	3.50	0.67	Agreed
4.	Creating awareness of importance of pattern drafting among students.	3.41	0.66	Agreed
5.	Providing funds, facilities/equipment needed for pattern drafting by school authorities.	3.50	0.74	Agreed
6.	Lecturers should teach more of practical lessons than theoretical lessons.	3.56	0.73	Agreed

Source: Field Survey, 2018, Key $\bar{x}_1$= Mean Responses of 400 Level MOUAU Home Science Students, SD = Standard Deviation.

Table 4 shows that all the 6 items statements in the above table were the possible ways of enhancing and sustaining acquisition of more patterns drafting skills. This was shown vividly in their mean scores, which were all up to the acceptable mean score of 2.50 and above. However, the highest mean score was 3.56, item no.6 (Lecturers should teach more of practical lessons than theoretical lessons) while the lowest was 3.13, item no.1 which bothers on organizing enlightenment programme regularly eg. seminars, workshop to show - case the students' products.

Discussion of findings

The finding of the study shows that the students in only one institution in Abia State had acquired some pattern drafting skills while some skills are yet to be acquired. The result of the findings in table 1 showed that the highest mean score was on transferring pattern marks on fabric. This may be an indication that pattern transfer is an age long parts and parcel of pattern drafting during clothing construction. According to Lorenzen (2002), every pattern pieces bears markings that together constitute a pattern "sign language" which is indispensable at every stage in the process of pattern drafting. She explains that all symbols like darts, cutting lines , seam lines(stitching lines), notches among others, has special significance, so acquiring skills in transferring pattern marks is of great important in pattern drafting process. Mbah, Orhewere and Osifeso (2001) identified transferring pattern marks as a very important skill in pattern drafting.

The findings of the study showed in Table 2, the methods adopted in pattern drafting among 400 level students in Michael Okpara University of Agriculture, Umudike. The highest mean scores on the method adopted was 2.95, item no.5 (Flat pattern drafting method) which bothers on obtaining pattern by working from a set of measurement of a figure, adhering to a set of instructions and drawing a shape on a brown paper according to Igbo and Iloeje (2012) This is the most popular method of pattern drafting.

Hollen (2002) stated that Flat - Pattern has several advantages over other techniques in pattern drafting which include the ability to design patterns to fit into economical fabric layouts, the possibility of restyling old patterns and out-of-date clothing into new ones, the ease for determining causes of mistakes and how to correct them, and the flexible planning for new procedures and efficient organization of work. Igbo (2003) emphasized in her work titled ''Pattern Drafting Tasks for Effective Teachings of Pattern Drafting Techniques in Clothing and Textile Curriculum of Tertiary Institution'' that majority of the respondents in her study accepted employing the flat pattern method technique, that most of the respondents do not use the computer-aided design, knock – off designs among others but had none or little skills in other techniques like knock- off design, computer aided design, draping and so on. She pointed out that there is need for the students to know other techniques as well so that the students can acquire skills in them.

The study identified some challenges the students are facing in acquiring pattern-drafting skills as shown in table 3. However, the highest grand mean was 2.93, item no.1 (insufficient equipment/facilities).

Lack of the basic equipment and facilities for pattern drafting is a big problem to acquiring the needed skills in pattern making. Only relatively few schools has clothing laboratory or classes for pattern drafting. Nevertheless a reasonably equipped room/laboratory should have flat-topped desks at least one cutting table, a chest of drawer or ample cupboard for the storage of work, materials, tools a long or full-length mirror and pressing equipment. Aldrich (2008) pointed out that a person with blunt scissors, bent pins and a huge needle has to struggle in every step of the work. Borrowing from a neighbor is very bad as the borrower must use whatsoever equipment that is available whenever she can get it. Not only is she inconvenience but also the person she is borrowing from is being disturbed.

The study identified the possible ways of enhancing and sustaining acquisition of more pattern drafting skills in tertiary institutions. Many suggestions were identified by the study which among others include capturing and maintaining students interest, adequate equipment/facilities, adequate supervision by the lecturer during practical lessons, adequately funding practical lessons by the school authority, provision of current and simplified clothing construction text books among others. However the highest grand mean score was 3.56, item no.6 which bothers on Lecturers teaching more of practical lessons than theoretical lessons. This finding indicates the importance of arousing and sustaining students' interest during the learning process, especially in practical oriented course like clothing and textiles. In addition, when adequate time is allocated for pattern drafting lessons, it becomes sufficient enough for the students to finish their pattern drafting work in one lecture in order to ensure good final product in pattern drafting. Pattern drafting skills for a learner can be acquired gradually or slowly for it to be mastered very well.

The above findings is in agreement with Okeke (2005) who noted that some of the measures to pattern drafting problems include involvement of students in more practical work than in theory. This is a typical example of making the teaching real and learning process for the fact that majority of students retain more of the things they see, touch and hear during any course of teaching/instruction.

Conclusion

In conclusion, the findings from this study revealed that at the time of this study, that only one university (Michael Okpara University of Agriculture, Umudike) out of 4 universities in Abia state offer Home Economics courses. The study also provided information that the 400 level Home Economics students of Michael Okpara University of Agriculture, Umudike which was used as a case study have acquired some skills in pattern drafting on graduation which among others include skills in transferring pattern marks, skill in pattern layout, handling pattern pieces and cutting skills among others. However, there are some numerous essential skills they need to acquire to enable them be efficient in any career involving clothing construction and other related careers both nationally and internationally. The most popular method they use in pattern drafting is flat method of pattern drafting. Some of these essential pattern drafting skills the students are yet to acquire include Computer - aided design, Dart manipulation via pivoted points, perforated method, and printed method among others.

In this study, it was discovered that the 400 level Home Science student of Michael Okpara University of Agriculture encountered some challenges in pattern drafting which include financial difficulties, lack of adequate facilities and Lack of interest among others.

Measures to enhance and sustain pattern drafting skills among the 400 level Home Economics undergraduate students in Michael Okpara University of Agriculture, Umudike were identified by this study to include: Lecturers should teach more of practical lessons than theoretical lessons, More competent lecturers should be involved so that individualized lessons on practical lessons could be possible, School authority should adequately equip the existing clothing laboratory. These will definitely enhance and sustain more acquisition of skills in the university.

Recommendations

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

- ❖ The lecturers in Home Science Department of Michael Okpara University of Agriculture, Umudike, should followed the approved Home Economics Curriculum for the institution strictly with emphasis on practical lessons right from 100 level students so that strong foundation should be laid from the grass root and continue up to 400 level students. This will capture students' interest and ensure proper mastery of more techniques and skills involved in pattern drafting.
- ❖ School authority should provide adequate facilities/equipment for learning clothing and textiles in the institution.
- ❖ Students see clothing and textiles as tedious, time and money consuming course, so lecturers should employ techniques as Professor C. A. Igbo of the University of Nigeria, Nsukka does to clothing and textile students in the institution by being fair and firm, in teaching her students in love, this will certainly arouse and maintain student's interest in clothing construction during theory and practical lessons.
- ❖ Lecturers that handle the courses should be dynamic, i.e. try to update and acquire skills in modern technology for teaching clothing courses in the university so that the students can compete favourablely with their counter parts internationally.
- ❖ Students and lecturers should ensure that all the techniques in pattern drafting are taught and mastered practically before graduation of every students to enable the students have knowledge of each techniques and be able to compete both locally and internationally.

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Proximate and Anti-nutritional Properties of Two Lesser Utilized Leafy Vegetables (*vitex doniana* and *zanthoxylum zanthoxyliodes*)

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Abstract

The objective of the study was to ascertain the nutrient and anti-nutrient content of *zanthoxylum zanthoxyliodes, vitex donenia* leaves. Standard laboratory analytical method of AOAC procedure was used to determine the proximate composition of the samples. Analysis was carried out in triplicate, including moisture, protein, fat, ash, fibre and carbohydrate content of each sample. Data were analyzed using means and t-test at 0.05 level of significance. Results show that various nutrients were present in a considerable amount in leaves, this varied significantly between the samples at ($P<0.05$) and ($P>0.05$). The result on proximate composition shows that *vitex doniana* has the highest value for ash (14.25%), fibre (23%), *zanthoxylum zanthoxyliodes* has the highest value for moisture (37.7%), fat (3.4%), protein (6.99%) and carbohydrate (37.91%). The result on anti- nutrient value revealed that *vitex doniana* has the highest value in phytate (3.76m/100g) *zanthoxylum zanthoxyliodes* has the highest value of tannin (0.2335%), oxalate (0.4775%). The result showed that the vegetables contained an appreciable amount of nutrients and low level of anti- nutrient and could be included in diets to supplement our daily allowance needed by the body.

Keywords: *vitex-donaiana, zanthoxylum-zanthoxyliodes*, proximate, anti-nutrient, oxalate, tannin.

Introduction

Leafy vegetables are plant parts that are naturally low in fat, salt and sugar, making them excellent food choice. They are highly beneficial for maintaining health and preventing diseases. Dark green leafy vegetables provide high amounts of micro minerals which play vital roles in nutrient metabolism and retard degenerative diseases. Both wild and cultivated green leafy vegetables are used in food preparation. High intake of vegetables provides the body with vitamins, dietary fibre and minerals. Eating green vegetables that are rich in fibre may help regulate the digestive system, thereby aiding bowel health and lowering the risk of colon cancer (Asaolu, *et. al*, 2012). Foliate intake can also reduce the risk of heart related diseases such as heart attack and stroke. These health benefits of vegetables spring from a range of their phytonutrients composition (Sheela, *et. al*, 2004).

Leafy vegetables include cultivated and wild species. The wild tyes are most often underutilized due to lack of popularity (Adejumo, *et. al*, 2013). Lesser utilized vegetables are vegetables of any given locality. Such vegetables originate from an area and may or may not be confined to that particular region. They account for about 10 percent of the world's higher plants often regarded as weed. Some local vegetables grow in the wild and are readily available in the field without any formal cultivation. Some of these local vegetables are less utilized due to lack of awareness of their nutritional values (Lykke Padonou, 2019). Vegetables that may not be found in the regular market belongs to this category. These vegetables are often rich source of carotene, ascorbic acid, riboflavin, folic acid and minerals like calcium, iron and phosphorous (Nnamani *et al*., 2007). Maudu (2006) and Nnamani, *et. al* (2009) reported 47.00 to 442.00mg/100g and 54.06 to 90.10mg/100g values respectively for some lesser utilized indigenous vegetables. Two such vegetables are *Zanthoxylium zanthoxyloides* (*nka* leaf) and *Vitex doniana* (*uchakuru* leaf). They are often found in the forest and are used in soup preparation

Zanthoxylium zanthoxyloides (*Nka leaf*) is a prickly shrub or low branching shrubby very prickly tree usually growing up to 12 meters tall, occasionally to 16 meters. The tree can be use to provide medicines, food flavouring, timber and other commodities for the local people. This plant can be used as a relief from illness, as health care products fragrances, flavours, sweetness and as materials for pest control. The decoction of the root is used as a mouthwash and against a sore throat (Matu, 2011). The sap from the pulped bark is applied as eye drops to treat eye infections notably conjunctivitis with pus. In Ghana root and stem bark powder is taken to treat whopping cough (Arbonnier, 2004). This plant occurs more abundantly in the Savanah and dry forest vegetation and is found in parts of South Western Nigeria.

Vitex doniana (*Uchakuru*) is a medium sized deciduous tree, with 8 – 18m high with a levy rounded crown and a clear bole up to 5m. It has rough pale brown or greyish –white, rather smooth with vertical tissues. It can be used for food, medicinal purposes and as a source of fire wood. Its fruit is edible and is occasionally sold. The leaves serve as a vegetable, it serves as protective food, which are highly beneficial for the maintenance of good health and prevention of diseases

(Sheele *et al* ., 2004; Nnamani *et al*., 2007). This study therefore tends to determine the proximate and anti-nutritional properties of *Nka* and *uchakuru* leaves.

Nka and *Uchakuru* leaves are almost consumed on daily basis in Ebonyi State the study area. The two vegetable are often used in the preparation of soups, sauces, yam pottage, etc. *Nka* leaves in particular are used for preparation of various kinds of soup ranging from thin soups to thick soups. The astringent nature of *nka* made the people to believe that it has healing properties especially for diseases of the mouth. *Uchakuru* on the other hand is believed to boost the blood level of the body.

Interaction of nutrient often occurs when two food materials are consumed together (Bushra, *et. al*, 2011). This interaction of nutrients may lead to the formation of an anti or pro-nutrient. Since *nka* and *uchakuru* leaves are consumed on daily basis, it is necessary to ascertain and compare their nutrient and anti-nutrient properties.

Purpose of the study

The main purpose of this study was to ascertain the nutrient and anti-nutrient compositions of two lesser utilized leafy vegetables (*Vitex doniana*) *uchakuru* and (*Zanthoxylum zanthoxylodes*) *nka* leaves. Specifically, the study determined:

1. nutrient content, namely moisture, protein, ash, fibre and carbohydrate of the two lesser utilized leafy vegetables.
2. antinutrient content , namely tannin, oxalate and phytate of the lesser utilized leafy vegetables.

Research Question

1. What is the nutrient content (protein, fat, ash, fibre and carbohydrate) of lesser utilizes vegetables.
2. What is the antinutrient (tannin, oxalate and phytate) content of the lesser utilized leafy vegetables.

Materials and method

***Design of the study*: E**xperimental research design was adopted for this study. A true experimental research design which involved a laboratory analysis was adopted. The steps include, preparation of the sample/materials, proximate analysis, moisture content, crude protein, fat, fibre, ash, carbohydrate content, and anti nutrient determination. Data collected were analysed using mean, standard deviation and t-test.

***Materials*:** The vegetables that were used for this study, *Vitex donenia* and *Zanthoxilum zanthoxilodies* were purchased and procured from Ekeimoha Market in Ezza South Local Government Area and Okaria Amana forest in Ebonyi State, Nigeria respectively. The wild vegetables were identified by their local names. The vegetables were taken to the Department of Crops Science at Faculty of Agriculture and Natural Resources Management, Ebonyi State University Abakaliki for characterization and identification with their botanical names.

***Preparation of Materials/Samples*:** Fresh leaves of two indigenous tree species used as vegetables (*Vitex donenia* and *Zanthoxilum zanthoxilodies*) were sorted and put in separately numbered polythene bags. Contamination, colour change or browning were prevented. Prior to analytical work the samples were thoroughly washed with deionised water and were pounded with ceramic mortar and pestle. The pounded leaves were transferred to air tight container. This were analysed while still fresh.

Laboratory/Proximate Analyses: Standard laboratory analytical method of Association of official analytical chemist (AOAC, 2005) procedure was used to determine the proximate composition of the samples. Analysis for each sample was done triplicate which include – Analysis covered Moisture, protein, fat, ash, fiber and carbohydrate contents, anti-nutrients (oxalate, phytate).

***Moisture content*:** The moisture content of the samples was determined using AOAC (2005) procedure. Washed porcelain dishes were dried in a gallenkemp oven at 100^{0}c for about 2hours, cooled in a desiccator and was weighed. Two grams (2g) of each of the sample was weighed into the weighed dishes and placed in the oven at 100^{0}C for 24hours. The dishes containing the samples was cooled in a desiccator, weighed and dried.

The % moisture was calculated using the formular below: $\frac{W_2 - W_3}{W_2 - W_1} x \frac{100}{1}$

Where W_1= Weight of the empty aluminum dish; W_2= Weight of the dish with sample before drying; W_3= Weight of dish with sample after drying.

***Crude Protein*:** Crude protein was determined by automatic micro kjeldahl method of AOAC (2005). Crude protein was estimated by multiplying nitrogen value with N conversion factor 6.25 (N x 6.25) % N_2 x 6.25% N_2= Ty x 0.1 x (0.014) x 100.

***Fat*:** Fat content of the samples was determined using the soxhlet extraction method. Flask was washed, dried, cooled and weighed prior to addition of 2g of the sample. The samples was weighed into filter paper and introduced into thimble. Petroleum ether was added to the flask for the extraction in the soxhlet apparatus. After which the extract was dried in an oven for 15 minute at 100^{0}c for the removal of any remaining solvent, It was cooled in a desiccator and reweighed.

% fat =

$$\frac{\text{weight of extract cup} - \text{weight of cup}}{\text{Original weight of sample}} x \frac{100}{1}$$

$$\% \text{ fat} = \frac{W_2 - W_1}{\text{Original weight of sample}} x \frac{100}{1}$$

***Ash Determination*:** The ash content of the samples was determined using the method AOAC (2005). Two grams of each of the sample was weighed into crucible heated in a furnace at a temperature of 600^{0}C for about three hours, cooled in a desiccator and was reweighed. The crucible was weighed as (W_1), the crucible with the sample as (W_2) and the sample with the crucible after ashing as (W_3).

$$\%\text{Ash} = \frac{W_3 - W_1}{W_2 - W_1} x \frac{100}{1}$$

Where W_1= Weight of the empty crucible; W_2= Weight of crucible with sample before ashing; W_3 = Weight of crucible with sample after ashing.

***Fibre Determination*:** Two grams of the sample was defatted with petroleum ether. The sample was boiled under reflux for about 30 minutes with 20ml of a solution containing 1.25gof H_2SO_4per 100ml of solution. The solution was filtered through linen of several layers of cheese cloth on a fluted funnel and washed in boiling water until the washing was no longer acidic. The residue was transferred to the beaker and was boiled for 30minutes with 200ml of solution. The final residue was filtered through a thin but close pad of washed and ignited asbestos crucible the residue was dried in an electric oven, and was reweighed and then incinerated, cooled and weighed. The loss in the weight after incineration x 100 will be the percentage of crude fibre.

$$\% \text{ crude fibre} = \frac{W_1 - W_2}{W_0} x \frac{100}{1}$$

Where W_0= Dry weight of sample; W_1= Weight of crucible + Residue; W_2=Weight of crucible + ash

***Carbohydrate Content*:** Total carbohydrate content was determined by the difference (substation of crude protein, moisture, fat, fibre and ash content from 100%). The total carbohydrate of each of the sample was the different.

% carbohydrate = 100 – (% protein + % fat + % ash + % crude fibre + % moisture).

Anti-Nutrients

***Tannin*:** This was determined by Folin Denis colometric method described by (A.V.AC 1990).Two grams (2g) of the leave sample was put inside a volumetric flask and 50ml of distilled water was dispensed inside the volumetric flask. The mixture was shaken for 30 minutes at room temperature and filtered to obtain the extract. A standard tannic acid solution was prepared, 2ml of the standard solution and equal volume of distilled water was dispersed into a separate 50ml volumetric flask to serve as a standard and reagent bank respectively. Then 2ml of each of the sample extract was put in their respective labelled flask. The content of each flask was mixed with 35ml of distilled water and 1ml of the Folin Denis reagent was added to each. This was followed by 2.5ml of saturated Na_2C03 solution.

$$\% \text{ Tannin} = \frac{100}{W} x \frac{au}{as} \text{ x C x } \frac{v}{va}$$

***Oxalate*:** The oxalate content was determined by a method described by AOAC (1990). Two grams (2g) of the sample were weighed out and extracted thrice at 50^{0}C and stirred for 1hour with 20ml of 0.3ml HCL. The combination of the extract was diluted to 100ml with distilled water and used for total oxalic estimation. The oxalate was estimated by pipetting about 5ml of the extract which was made alkaline with 1ml of 5m Ammonium hydroxide. About 3 drops of phenolphthalein was added to the extract and acetic acid was added in drops. Also about 1ml of 5% aqueous Cacl was added to the mixture and allowed to stand for 2hours after which it was decanted and the precipitated, washed three times with hot water, thoroughly mixed and centrifuged each time in the test tube, 2ml of 3m H_2SO_4 was added and the precipitate was dissolved by warming in water bath at 75^0C.The content of the test tube was titrated with freshly prepared 0.001m $KMNO_4$ at room temperature until the pink colour appeared throughout the solution. This was warmed at 75^0C and the titration continued until the pink colour persisted.

% oxalate=vt/ws x vme x titre

Where vt=total volume of titrate; ws =weight of sample; vme=volume - mass Equivalent (ie 1cm^{3}of 0.05m $KMNO_4$ is equivalent to 0.00225g.

Phytate: The phytate content was determined by a method described by (Hang and Lautzsch, 1983). Two grams (2g) of the sample was soaked with 20ml of HCL for 3hours.The sample was filtered and the filtrate was collected. 0.5ml of the extract was put with 1ml of ferric ammonium sulphate solution in a test tube and stoppered. The mixture was boiled for 30 minutes in water bath, the tubes were cooled in ice for 15mins and allowed to adjust to room temperature before solution and absorbance measured at 519nm against a reagent blank in a spectrophotometer. Concentration of the phytic acid was obtained from a standard curve made from standard phytic acid solution.

$$\% \text{ phytate} = \frac{An}{As} \times c \times \frac{100}{w} \times \frac{vf}{va}$$

Data Analysis

Three sets of data were collected for each nutrient. Data were analysed using percentages, means, standard deviation and t-test at P<0.05 level of significance.

Findings

Data on proximate composition of two lesser utilized vegetable *vitex doniana and zanthoxylum zanthoxyliodes* are presented in Table 1.

Table 1: Proximate composition of *vitex doniana and zanthoxylum zanthoxyliodes*

S/N	Sample code	A	B
1	Moisture %	32.30±0.473	37.70±0.857
2	Fat %	1.70±0.0816	3.40±0.160
3	Ash %	14.25±0.048	7.75±0.040
4	Fibre %	23.00±0.81	6.25±0.040
5	Protein %	6.96±0.008	6.95±0.024
6	Carbohydrate %	21.79±0.008	37.91±0.008

*A = *vitex doniana;* B = *zanthoxylum zanthoxyloide*

Table 1 shows the percentage protein, fat, fibre, moisture, Ash and carbohydrate. The percentage moisture content of *vitexdoniana* and *zanthoxylum zanthoxyloides* sample ranged from 32.30 to37.70%. The obtained result for the two sample shows that the sample named *zanthoxylum zanthoxyloides* had the highest moisture content of 37.70 %; while *vitex doniana* had the low moisture content of 32.30%. There were significant different at (P<0.05) among the sample.

The percentage fat content of the two sample *zanthoxylumzanthoxyloides* and *vitexdoniana* are presented in Table 1. From the table, showsthat the fat content ranged from 1.7-3.4 (%) respectively.The obtained result shows that sample B *zanthoxylum zanthoxloides* had the highest fat content of 3.4% while sample *vitex doniana* had the least/lowest of value of 1.7%. there were significant different at (P<0.05) among the sample.

The percentage ash content of two sample *vitex doniana* and *zanthoxylum zanthoxyloides* are presented in Table 1 The table shows that the ash content ranged from 14.25 to 7.75% respectively. The obtained result shows that sample A *vitexdoniana* had the highest ash content of 114.25% while sample B *zanthoxylumzanthoxyloides* had the lowest value of 7.75%. There were significant different at (P<0.05) respectively.

The percentage fibre content of the two sample *vitexdoniana* and *zanthoxylumzanthoxyloides* are presented in Table 1. From the Table shows the fire content of these samples to range from 23 to 6.25%. There were significant different at (P<0.05) among the sample. This result shows that sample A *vitexdoniana* had the highest value of 23% while sample B *zanthoxylumzanthoxyloides* had the lowest value of 6.25% for fibre.

The percentage crude protein of two sample *vitexdoniana* and *zanthoxylumzanthoxyloides* are presented in Table 1. From the Table, 1 shows the percentage crude protein to range from 6.96 to 6.96%. From the statistical analysis there were no significant difference at (P>0.05).

The percentage carbohydrate content of the two sample *vitexdoniana* and *zanthoxylumzanthoxyloides* are presented in Table 1. From the table, shows the carbohydrate content of the sample to range from 21.79 to 37.91% with sample B *zanthoxylumzanthoxyloides* having the highest and sample A *vitexdoniana* having the lowest. There were significant different at (P< 0.05).

Anti-Nutrient

Table 2: Anti-nutrient content of *vitex doniana* and *zanthoxylum zanthoxyloides*.

S/N	Sample code	A	B	LSD
1.	Phytate ml/100g	3.760 ±0.008	3.548±1.669a	0.0246
2.	Tannin %	0.228±0.25	0.2335±0.008	-
3.	Oxalate%	0.2378±0.0007	0.4775±0,00016	-

* A= *vitex doniana;* B =*zanthoxylum zanthoxyloides*

Table 2 shows the percentage and ml/100g of *vitex doniana* and *zanthoxylum zanthoxyloides*. The table also shows the ml/100g of phytate, percentage tannin and oxalate.

Phytate**:** The phytate content in the two samples of *vitexdoniana* and *zanthoxylum zanthoxyloides* are presented in Table 2, the table shows the phytate content of the two samples range from 3.76 to 3.548 ml/100g respectively. It also shows that sample A, *vitexdoniana* had the highest phytate content of 3.76ml/100g and sample B *zanthoxylumzanthoxyloides* had the lowest of 3.548ml/100g. There were significant different at (P<0.05) among the samples.

Tannin Content**:** The tannin content of *vitex doniana* and *zanthoxylum zanthoxyloides* are presented in Table 2. These range from 0.2275 to 0.2335 %. The result also shows that the *zanthoxylum zanthoxyloides* had the highest tannin value of 0.2335 %. There were no significant different at (P>0.05) among the sample.

Oxalate Content**:** Table 2 shows that the oxalate content of the two samples ranged from 0.2887 to 0.4775% respectively. The result obtained showed that the *zanthoxylumzanthryloides*had the highest oxalate value of 0.4775% while *vitexdoinana* had the lowest value of 0.2881%. There were no significant different at (p>0.05) among the sample.

Discussion

The high moisture content observed over them may be due to the genetic factor, naturally, as their name varies. This high moisture content observed in them may show that the sample are liable to microbial attraction by micro-organism and other phenomenon that may led to quick damage. The result also shows that the moisture are higher than the moisture content of *zanthoxylum zanthoxyliodes* as reported by Oselebe, 2013 and Olujobi, 2015 for *vitex doniana* whom reported on oven dried to ranged from 10.8- 28% when dried.

This result obtained shows that the *zanthoxylum zanthoxyoides* is a good source of fat compared to *vitexdoniana* sample that had the lowest fat content. Sample B having the highest fat content could make it a good supplement in the diet of a person suffering from diseases associated with coronary artery since vegetable fat and oil are lower in cholesterol thereby helps in reducing blood lipids. The low value of fat obtained in sample A *vitex doniana* suggest that these leaves are poor sources of lipids, hence they could be a good diet for people suffering from obesity (Ejoh *et al.,* 1996; Gazuwa and Timothy, 2019). This fat (%) also showed that genetic factor and variety of plant varies in their fat content. The *vitex doniana* that was observed its fat to be 1.7% is higher than report of Oselebe whom reported that the fat content is 1.4% after dried while fat content of *zanthoxylum zanthoxylides* has not been properly documented before now.

This result is similar to report of Nnamani, (2013) when reported the ash content of the samples to range from 8.10 to 6.30% when dried. The relatively high value of the ash content obtained on the leaves investigated is an indication that these leaves could be a good sources of mineral for human nutrition. This assertion is in consonance with the report by Fagbohun *et. al,* (2012) that high ash contnet in any food substance implies high mineral content.

High fiber in any food could play an active role in clearing of digestive tract and increase faces consistency. It also helps in reducing blood sugar and acts as a general body purifier (Emebu and Anyika, 2011).This result shows that the fibre are higher than the fibre content of *vitex doniana* and *zan thoxylum zanthoxyloides* as reported by Okporie, (2013)when reported on oven dried to ranged from 12.50 to 4.50%

The result is similar to a report of Adejumo *et. al,* (2013) whom reported the protein content of *vitex doniana* to be 8.10%, also to the report of Nnamani *et. al,* (2013) whom reported the protein content of *zanthoxylum zanthoxyloides* to be 5.12% when dried, this low carbohydrate content in sample A *vitex doniana* is similar to a report of Olujobi (2015) who reported the carbohydrate content to be 22.57%, But different with a report of Oselebe *et. al,* (2013) and Marta, Ana, Aida, Luis, Ana & *Generosa* (2019), on *zanthoxylum zanthoxyloides* whom reported the carbohydrate content to be 58.94%.

The result from *vitex doniana* is within the range of a report of Olujobi, 2015 who reported the phytate value to be 1.33 for oven dried, while that of the *zanthoxylum zanthoxyloides* has not been properly documented. The results from this study were below the established toxic level of 6% (Sobowale *et. al,* 2011).

These were similar to a report of work done by Olujobi, (2015) and Yangora and Bello (2017), on *vitex doinana*, who reported the tannin content to be 0.35mg/100g; while that of *zanthoxylum zanthoxyloides* have not been properly documented.

This result are similar to a report of Agbaire, 2011, on same green vegetables, *Talinum triangular*, *Amaranthus spinous* whom reported the oxalate content to range from 0.76 to 0.92. The oxalate content obtained are within recommended intake by FOA, WHO.

Conclusion

It has been observed that two lesser utilized vegetable investigated in this study contained considerable amount of proximate constituents (moisture, fat, ash, fibre, protein and carbohydrate) and anti-nutrient (phytate, tannin and oxalate) in varying proportion. The high moisture content of the samples will encourage microbial growth, increase in the rate of enzymatic reaction hence lead to deterioration. The high fibre content of *vitex doniana* will help in reduction of blood sugar and act as a general body purifier, the high ash content on the samples is an indication that these vegetable are good source of other mineral for human consumption. The anti-nutrient factors such as phytate, tannin and oxalate were detected from the result of the analysis these were present in small quantity; these factors may not pose any serious nutritional problem in its consumption.

Recommendation

- ❖ Since the leaves of the lesser utilized vegetable *vitexdoniana* and *zanthoxylum zanthoxyloides* contained considerable amount of important nutrient it is suggested that they should be taken as food or added to food as a supplement as its consumption poses no danger to human health, but rather a more healthy living.
- ❖ It is also potential for income generation, poverty reduction and could help in reducing micro nutrient deficiency for a small holders farmers especially woman, children and the elderly.
- ❖ It is recommended that government and corporate bodies should embark on plantation establishment of these species for sustainable production.
- ❖ Also modern propagation techniques should be taught to all communities that produces these plants by the extension staff of the government agencies.

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