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## IJFACS Volume 5, 2016

### MANUSCRIPT GUIDE FOR AUTHORS

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The International Journal of Family and Consumer Sciences (IJFACS) aims to publish high quality research on all aspects of Consumer Sciences/Home Economics and related fields. As an international academic journal, provides a global and multidisciplinary forum to understand consumers from psychology, sociology, anthropology, marketing and consumption economics perspectives. All submissions will go through a strict double-blind peer-reviewed procedure based on strong theoretical conceptualization and rigours research methods. Short research notes and commentary, with innovative approach and insightful ideas are also welcome.

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# **BREAKFAST HABITS OF SECONDARY SCHOOL STUDENTS IN ODEDA LOCAL GOVERNMENT AREA, OGUN STATE, NIGERIA**

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## **ABSTRACT**

*Breakfast is considered the most important meal, increasing evidence suggest the health benefit of breakfast consumption for growing children. This study was carried out to determine breakfast habit of secondary school students in Odeda Local Government Area, Abeokuta (OLGA). A multistage sampling technique was adopted in selecting ten (10) schools from the twenty-four (24) secondary schools in Odeda LGA. Four-hundred respondents were randomly selected from the schools. A structured questionnaire was used to gather information on the personal characteristics of the respondents and their breakfast habits. Descriptive and inferential statistics was done. About 44.8% of the respondents were from the rural area while 55.2% were from the semi-urban. Less than half of the respondents were male while about 56.2% were females. The age of the respondents range from 10-19 years. About 20.25 % of the respondents skip breakfast and this was more common among the girls (79.01%) than boys (20.99%). Consumption of breakfast was more common with the adolescents from the rural (99.4%) area than from the semi-urban (63.80%). Factors identified to be significantly related to breakfast consumption include location, gender, tribe, religion and education level of parents. Rice is the most frequently consumed food for breakfast. Skipping of breakfast is more common among adolescent girls and more in the rural area.*

**Keywords:** Breakfast habit, adolescents, rural, secondary school

## **INTRODUCTION**

Adolescence is the transitional stage between childhood and adulthood and it is a period of rapid physical growth, reproductive maturation and cognitive transformations (Micronutrient Information Center, 2016). During the adolescence period, there is increase in linear growth and body weight and also changes in body composition. Apart from physical growth that is rapid during adolescence, reproductive maturation also occurs. Therefore adequate nutrition is needed during this period. Manisha *et al* (2015) mentioned that healthy eating behaviour during adolescence is a fundamental prerequisite for physical growth, psychosocial development and cognitive performance, as well as for the prevention of diet-related chronic diseases in adulthood.

Breakfast is a meal that “breaks” the “fast” of a period of time when the body receives no food or fuel. In most cases, this period without food is usually during sleep. It is widely regarded as the most important meal of the day (Deshmukh-Taska *et al.*, 2010). Breakfast is considered to be the most important meal, because it breaks the overnight fasting period, replenishes the body's supply of glucose and supplies other essential nutrients to keep an individual's energy levels up throughout the day. It also makes a large contribution to daily micronutrient intake and also contribute to maintaining a body mass index within the normal range (Aldophus *et al*, 2013). It has been reported that there is increased snacking, sedentary lifestyle and obesity among those who skip breakfast (Oladapo *et al*, 2014).

Neumark-Sztainer *et al.*, (2007) confirm the importance of teaching adolescents, to start the day off 'right' by eating breakfast. He said “Although adolescents may think that skipping breakfast may seem like a good way to save on calories, findings suggest opposite. Eating a healthy breakfast may help adolescents avoid over-eating later in the day and disrupt unhealthy eating patterns, such as not eating early in the day and eating a lot in the evening”.

Increasing evidence suggests that breakfast consumption has many health benefits for growing children, including an overall dietary quality and better concentration, attention and memory. Eating breakfast consistently, not only leads to higher IQ scores, but also has benefits on a person's quality of life (Greg, 2013). The importance of breakfast consumption during adolescence cannot be over emphasized. Therefore, this study aims to assess the breakfast consumption pattern of high school students in Odeda Local Government Area, Abeokuta, Ogun state.

## **METHODOLOGY**

### **Study design and sampling technique**

The study was cross-sectional in design and it was conducted among 400 adolescents in public and private secondary schools in Odeda Local Government Area (LGA). A multistage sampling technique was adopted in selecting ten (10) schools from the twenty-four (24) secondary schools in Odeda LGA. Four (4) public schools and one (1) private school were selected from the fourteen (14) secondary schools in the rural area. Two (2) public schools and three (3) private schools were selected from the ten (10) secondary schools in the semi-urban area. The respondents were randomly selected from the schools.

### **Data collection**

A structured questionnaire was used to gather information on the personal characteristics of the respondents and their breakfast consumption habits (consumption and skipping of breakfast, frequency of breakfast consumption, knowledge of the benefits of breakfast consumption and foods commonly consumed for breakfast).

### **Data analysis**

Data was analyzed, using Statistical Package for Social Sciences (SPSS version “16”) software. Descriptive (Frequency, percentage) and inferential statistics (chi-square) were done.

## **RESULTS AND DISCUSSION**

### **Personal characteristics**

The result shows that, 44.8% were from rural area while 55.2% were from semi-urban area. About 53.8% of the respondents were male and 56.2% were female, between the ages of 10-19 years. Among the respondents, 59.8% and 40.2% were Christian and Muslim respectively. About 34.2% of the respondents were in the junior secondary class and 65.8% in the senior class. About 24.5% of the respondent's parents had primary school education as the highest level of educational attainment.



Table 1: Personal characteristics of the respondents (n=400)

Variables	Frequency	Percentages (%)
<b>Sector</b>		
Rural	179	44.8
Semi-Urban	221	55.2
<b>Gender</b>		
Male	175	43.8
Female	225	56.2
<b>Age (years)</b>		
10-15	259	64.8
16-19	141	35.2
<b>Class</b>		
Junior Secondary School 1-3	137	34.2
Senior Secondary School 1-3	263	65.8
<b>Tribe</b>		
Yoruba	298	74.5
Igbo	61	15.2
Hausa	41	10.2
<b>Religion</b>		
Christianity	239	59.8
Islam	161	40.2
<b>Parental educational background</b>		
Primary	98	24.5
Secondary	121	30.2
Tertiary	181	45.2

About a quarter (20.25%) of the respondents skip breakfast, rice was observed to be the most frequently consumed food for breakfast and the foods for breakfast were mainly carbohydrate and proteins base. Most staple food in Nigerian communities are carbohydrates base. This result is consistent with results from similar studies. According to a review of 47 observational studies about eating habits conducted in the United States and Europe, about 10-30% of children and adolescents regularly skip breakfast, with a higher percentage among adolescents and the female population (Rampersaud et al., 2005). In a study by Khan and Lipke, (1982), 23.6% of the students skipped their breakfast.

Mukesh et al., (2014) in their study reported breakfast to be the most frequently missed meal among adolescents with 30.2% of the adolescents, missing their breakfast and the majority of those who eat breakfast (79.8%) reportedly consume starchy food such as rice, bread and noodles. Onyiruika et al., (2013) have also reported a similar finding, in their study, which indicated that there was high (89.6%) daily consumption of starchy food. Similarly, a high daily consumption of carbohydrates was reported among Iranian adolescent school girls (Doustmohammadian et al., 2012). Similar observations were made in a study of adolescent girls in Hyderabad, India. The data analysis of their FFQ revealed that 68% of the girls consume breakfast on a daily basis, 24% had one or two times a week, while the rest 8% never had breakfast. The girls also consumed energy foods such as cereals and millets for breakfast and the consumption of rice among the girls was 100%, while 52% of them included wheat in their diet (Antony et al., 2007).

Table 2: Breakfast consumption among the adolescents (n = 400)

Variable	Rural Frequency (%)	Semi-Urban Frequency (%)	Total Frequency (%)
<b>Breakfast intake</b>			
Yes	178(99.44)	141(63.80)	319(79.75)
No	1(0.56)	80(36.20)	81(20.25)
<b>Frequency of breakfast consumption</b>			
Daily	178(82.79)	141(76.22)	319(79.75)
3-5times/week	25(11.63)	15(8.11)	40(10)
1-2times/week	12(5.58)	29(15.67)	41(10.25)
<b>Benefits of breakfast consumption</b>			
Gives energy	79(44.13)	120(54.30)	199(49.75)
Gives a better mood	0(0)	41(18.55)	41(10.25)
Helps to pay attention	60(33.52)	40(18.10)	100(25)
Keeps one healthy	40(22.35)	20(9.05)	60(15)
<b>Eating a healthy breakfast helps one to perform better in classroom task</b>			
Yes	159(88.83)	200(90.50)	359(89.75)
No	20(11.17)	21(9.50)	41(10.25)
<b>Types of food consumed</b>			
Rice	64(40.3)	95(59.7)	159(39.8)
Rice and Beans	11(55)	9(45)	20(5.0)
Bread and Tea	11(27.5)	29(72.5)	40(10.0)
Beans	33(82.5)	7(17.5)	40(10.0)
Noodles	19(31.7)	41(68.3)	60(15.0)
Nothing	1(0.56)	80(36.20)	81(20.2)

It was observed that consumption of breakfast was more common among the adolescents from the rural sector than from the semi-urban area of Odeda. The semi-urban dwellers indicated that their reason for skipping breakfast were lack of time, unavailability of food and not being hungry. In the study conducted on the dietary behavior of adolescents from urban and rural areas in Cameroon, majority of students had 3 meals daily, and it was shown that more rural students had breakfast daily, than their urban counterparts (Dapi et al., 2005). Another study also revealed that 83.1% of the surveyed (rural children and adolescents) were in the habit of eating their first meal of the day before school (Koflataj et al., 2011).

Olumakaiye et al., (2010) also reported that the majority of Nigerian adolescents aged 10-19 years ate 3 meals a day and the percentage was significantly higher among rural (75.4%) than urban (61.4%) students. Also the result of a comparative study of breakfast intake among school children in urban and rural areas of Nsukka Nigeria, shows that 10% and 21.7% of the rural and urban children respectively skip breakfast. In a study carried out by Mukesh et al., (2014), several reasons were given by the respondents for skipping breakfast and this include the lack of time, breakfast not being prepared on time and the fear of weight gain while some said they do not like to eat early in the

morning. According to a study carried out in Nsukka Nigeria, the factors that affect the breakfast intake of children in the urban areas include lack of time, not being hungry and unavailability of food (Onyechi and Ugwunnadi, 2009).

The result in Table 2 shows that, about 88.8% of the students believed that breakfast helps them to perform better in classroom task. Two studies in small samples of adolescents aged 14-19 years showed an increase in on-task behavior in the classroom, following the frequent consumption of breakfast (Bro et al., 1994). Chang et al., (1996) examined the effects of breakfast on classroom behavior in 57 undernourished and 56 adequately nourished children in Jamaican rural schools. A significant increase in on task behavior was observed, following a 520 kilocalorie breakfast.

Table 3 shows that sector, gender, religion, class, tribe and parent educational background have a significant contribution to breakfast intake.

Table 3: Association between breakfast intake and personal characteristics of respondents

Variables	Eat breakfast	Skip breakfast	Total	P-value
<b>Location</b>				
Rural	178(99.44)	1(0.56)	179(44.75)	0.001
Semi-urban	141(65.80)	80(36.20)	221(55.25)	
<b>Gender</b>				
Male	158(90.29)	17(9.71)	175(43.75)	0.001
Female	161(71.56)	64(28.44)	225(56.25)	
<b>Age (Years)</b>				
10-15	210(81.08)	49(18.92)	259(64.75)	0.369
16-19	109(77.30)	32(22.70)	141(35.25)	
<b>Religion</b>				
Christianity	174(72.80)	65(27.20)	239(59.75)	0.001
Islam	145(90.06)	16(9.94)	161(40.25)	
<b>Class</b>				
Junior Secondary School 1-3	137(100)	0(0)	137(34.25)	0.001
SSS 1-3	182(69.20)	81(30.80)	263(65.75)	
<b>Tribe</b>				
Yoruba	249(83.56)	49(16.44)	298(74.50)	0.002
Igbo	45(73.77)	16(26.23)	61(15.25)	
Hausa	25(60.98)	16(39.02)	41(10.25)	
Total	319(79.75)	81(20.25)	400(100)	
<b>Parent Educational Background</b>				
Primary	81(82.65)	17(17.35)	98(24.50)	0.013
Secondary	105(86.78)	16(13.22)	121(30.25)	
Tertiary	133(73.48)	48(26.52)	181(45.25)	
Total	319(79.75)	81(20.25)	400(100)	

The frequency of skipping breakfast was significantly higher in semi-urban adolescents than rural adolescents and this could be due to the fact that in the rural area, the food system is characterized by self-subsistent food from farming, breeding, hunting, picking and gathering, with little purchased food. In contrast, in the semi-urban area, food is mostly purchased and people are used to consuming industrial, imported and canned food product. The same result has been reported previously in a study conducted in Cameroon (Dapi et al., 2005). Onyiriuka et al., (2013) in their study revealed that skipping of meals was a common dietary habit among adolescents in the urban area.

Factors associated with breakfast consumption

The findings in this study show that gender has a significant contribution to breakfast intake of adolescents, as about a quarter of the girls (28.44%) skip breakfast. Results also revealed a significant association between the class of the respondents and their breakfast intake. Majority of those who skipped breakfast were in the senior class. Similarly in a study amongst adolescent school girls in Benin City Nigeria, it was reported that more adolescent school girls in the senior class were more likely to skip meals than their schoolmates who were in the junior class (Onyiruika et al., 2013). The older adolescents may have a higher degree of body image and size concerns than the younger ones, especially girls

A cross-sectional study on adolescent girls showed that as much as 87.3 % were dissatisfied with their own body size (Kah et al., 2008). In a study conducted by Lai Yeung, (2010) in Hong Kong, more female students reported they would feel upset if they found themselves overweight and the majority of the female respondents watched their weight, thereby going on a slimming diet. They also said that if their weight increased, some of them would eat less food. Overall female students were more conscious about their body weight than male students. In Spain, for example, the AVENA study showed that 8.6% of female adolescents and 3.5% of male adolescents skip breakfast (Moreno et al., 2010).

Religion was another factor found to contribute to breakfast consumption of the respondents, among those who skip breakfast, 80.25% of them were Christians. This may be due to the fact fasting is a common practice with the Christian religion. It was also observed that the educational level of the parents of the respondents had a significant association with their breakfast consumption habit. A higher percentage of adolescents who skip breakfast are the ones whose parents had secondary and tertiary education as the highest level of educational attainment. This may be due to the fact that the parents of these adolescents are always busy with work and hardly have time for their children. Fadakar and Blackman (2011) in their research confirmed that adolescents who reported positive relationships with their mother and father were more likely to consume healthier breakfasts. The result of their research also indicates that as one's relationship with one's mother increases, the likelihood of consuming a healthy breakfast also increases.

CONCLUSIONS

About a quarter of the respondents skip breakfast and this habit was more common among the girls than boys. Rice was the most frequently food for breakfast. About 80% of the respondents consume breakfast daily among the respondents. The educational level of the respondents is a factor that affects the habit of breakfast consumption.

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# RECYCLING OF GARMENTS BY STUDENTS IN A GHANAIA TERTIARY INSTITUTION

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## ABSTRACT

Sixty males and females each in a tertiary institution in Accra, Ghana were studied to document how their unwanted outer garments were recycled and investigate whether the recycled behaviours portrayed Ghanaian identity. Questionnaire and the Statistical Package for Social Sciences (SPSS) software were used to collect and analyse data respectively. The hypotheses that there is no difference between recycling behaviours; recycling of the outer garments and when they were recycled by male and female, were tested using the chi-square statistics. Beneficiaries of the garments were family members (52%), institutions (46.6%), friends (45%), 32.5% used theirs as rags. Males recycled shirts (42.5%), trousers (9.2%) by both genders; while females recycled dresses (20.8%), blouses (1/3%), and skirts (9.2%). There was a feeling of satisfaction for clothing others (92.2%). Gender did not determine recycling behaviours which were not peculiar to Ghanaian identity. When and type of outer garments recycled by male and female were not significantly different. Since environmental awareness motivated 60% of recycling behaviours consumers need education by educational and extension institutions in Ghana, not to dump unwanted clothes anywhere to prevent filth and stagnant water that breeds mosquitoes that cause malaria. Funds for drugs could be channeled into infrastructural developments. The National Union of Ghana Students (NUGS) could sensitize people to donate clothes, by placing containers at vantage places such as banks and halls of residence entrance, to be given to the needy during Hall and NUGS' Week Celebrations.

**Key Words:** Recycling, unwanted outer garments, document, resident and tertiary students, Ghanaian,

## INTRODUCTION

Waste generation is now a global problem due to population growth, economic development and technological advancement. Textiles and clothing waste forms part of the problem as they are integral part of all human activities from birth to death (Gupta and Sekhri, 2014). The (WHO) World Health Organization (1996) defined waste as discarded materials or objects that originate from domestic business and industrial sources and are disposed of in landfills but excludes industrial hazardous products. Wikipedia (2010) reported the Basel Convention (1997) that wastes are substances or objects which are disposed off by the provision of a national law. The waste may be liquid, semi-solid or solid. Solid waste arises from human activities and is discarded as useless (Tchobanoglous et al., 1993 and Acquah, 2010).

There are pre- and post-consumer textile wastes (Council for Textile Recycling, 1997). Pre-consumer waste results from textile production and can be recycled into new products. The post-consumer one is from unwanted or worn out garments and other household items which can be donated to people or discarded and buried in landfills. About 68 pounds of clothing are thrown away yearly by individual Americans (Claudio, 2007). Joung and Park-Poaps (2013) cited the US (EPA)

Environmental Protection Agency (2009) that textiles accounted for 13 million tonnes of solid waste and only 15% were recovered. Morley et al. (2009), however, reported two million tonnes of waste generation annually in the US and one million tonnes of it were clothing. The Textiles and clothing labeled as waste can be reused or recycled (Domina and Koch, 2002)

Re-use is the recovery of items to be used again, possibly after cleaning and refurbishing (Tchobanoglous et al., 1977 and it is more socially desirable than recycling of the same material (Hui et al., 2006). Recycling is the process of processing waste materials for re-use (Encarta Dictionary, 2009). Wikipedia (2010) defined recycling as the processing of waste materials into new products to reduce the consumption of raw materials, energy usage and air pollution. While Medina (1999) described recycling as the recovery of materials after re-use of the material, Oniboku and Kumuyi (2003) reported that it is the recovery of materials for melting, re-pulping and re-incorporating them in raw materials. Oniboku and Kumuyi's (2003) definition has more to do with metals and plastics from which some textiles and clothing are produced.

Instead of re-use or recycling, current teenagers have been raised in a "disposable society" in which attention is paid to replacement instead of care and maintenance (Gupta and Sekhri, 2014). This observation appears to cover all groups of clothing consumers. Birtwistle and Moore (2007) mentioned a "throw away" fashion attitude among young fashion leaders. The trend is linked to availability of cheap clothing from low-wage countries and less expensive clothing with a short life cycle from "fast fashion" suppliers (Joung and Park-Poaps, 2013). Nonetheless, Joung and Park-Poaps (2013) cited Britten (2008) that low-priced and low-quality garments do not have justification to be recycled and are not easily recycled. The cost of collecting cheap and poor quality garments to be recycled generally exceeds revenue that is generated (Motley et al., 2009).

It is an observable fact that cheap and less expensive apparel and clothing accessories than those locally manufactured in Ghana are imported into Ghana from some Asian countries, among others. It would therefore not be surprising to observe a "throw away" fashion trend in Ghana. With regard to this study, however, recycling is identified as clothing items which were unwanted, needed or liked might be given out to others for re-use; or they might be utilized for a different purpose other than their original intended use.

## Clothing recycling behaviour

Consumers may recycle their clothes that are outmoded, worn out, or are no longer fit or those they are bored with (Koch and Domina, 1999). Such clothes may be donated to a group, individuals or sold (Solomon and Rabolt, 2009). Shim (1995) observed eight clothing recycling attitudes of college students and linked each attitude to specific clothing behaviours. The behaviours are: (a) and (b) resale due to economic and environmental motivations, (c) donation to charity, (d) environmentally motivated donation, (e) economically oriented re-use, (f) environmentally motivated re-use, (g) convenience-oriented discarding and (h) unawareness based discarding. It is common for a consumer to use more than one recycling behavior (Shim, 1995). Avenues for clothing recycling were non-profit organization such as the Salvation Army, family members and friends (Koch and Domina, 1999). They further stated that convenience and familiarity with a recycling process are the reasons consumers used a textile recycling option.

In Ghana, it is observed that clothes that do not fit the owner or unwanted are given to family members and others outside the family. Clothing items given to family members are labelled "Sister or Brother Thank You". They may also be given out to churches, religious organizations, orphanages or may be used as rags for general cleaning. However, the researchers have not come across any study documenting the clothing recycling behaviours of any group of Ghanaians. Secondly, is the



clothing recycling behavior of Ghanaians similar to those of other countries or it just portrays only Ghanaian identity. This study was therefore conducted to bridge these gaps and the focus was on the recycling of outer garments.

METHODOLOGY

Resident students in a tertiary institution in Ghana were the population for the study. As tertiary students, they were in a position to purchase and recycle their outer garments if they so desired. They might have siblings in Senior High Schools (SHS) who might be looking up to them for such clothing acquisition. As for back as 1974, Ward found that young children learnt skills, gained knowledge and adopted attitudes from parents and friends. Such clothing behaviors could also be learnt from siblings. The tertiary students were thus a good choice for the study. Their clothing recycling attitudes could be used to plan formal and informal education curricula to establish useful recycling activities for classroom and outreach programmes.

A day after obtaining permission from the institution's authorities, the researchers contacted the students in their rooms and explained the purpose of the study to them. A sample size of 120 students, 60 each of males and females, who agreed to take part in the study and who recycled their outer garments were purposively selected for the study. Three (3) days after the choice of sample, copies of a close and open-ended questionnaire were given to the respondents to fill in. School had just re-opened and lectures had not started in full swing so each respondent completed his copy of the questionnaire and handed it in the same day. The data were collected on background characteristics, methods used for recycling their unwanted outer garments, when in the year the garments were recycled; the type of outer garments recycled; their general views on recycling of garments with reasons and how they felt after recycling the garments.

The data analysis was done using the Statistical Package for Social Sciences (SPSS) computer software. The chi-square statistics was employed to test the hypotheses that there is no difference between: (a) the male and female respondents recycled behaviours and (b) the recycling of different types of outer garments and the time of the year during which the garments were recycled at the significant level of 5%. The words-unwanted, not needed or not liked would be used interchangeably in this study.

RESULTS

Background characteristics

The respondents were young adults who were between 18 and 27 years old. The majority (82.5%) were between 18 and 22 years and 17.5% were between 23 and 27 years. The unmarried respondents were 99.2%

Behavior with unwanted outer garments

About 52% gave them to family members, especially siblings, 46.6% sent them to institutions (Salvation Army and orphanages) and 45%, to friends. Those who used theirs as rags because they were too worn out were 32.5%. Very few (0.8%) sold them as second-hand clothing labelled “obroni wawu” (to wit, “The Deceased Whiteman/Whitewoman's Clothing”) in Ghana (Table I). The statistical test indicated no difference between the males and females recycling behaviours (Chi-square value = 4.096, df = 4 at 0.05) (Table 2).

Table 1: Recycling of behaviours of respondents

*Recycling Behaviours	No.	% **
Family members	62	51.7
Institutions	56	46.6
Friends	54	45.0
Used as rags	39	32.6
Sold	1	0.8

\*Multiple Responses

Table 2: Influence of gender on recycling behaviour

Gender of Respondents	Family Members	Institutions	Friends	Rags	Sold	Total
Female	37	26	29	25	0	117
Male	25	30	25	14	1	95
Total	62	56	54	39	1	212

X<sup>2</sup> (Tabulated) = 9.488

X<sup>2</sup> (Calculated) = 4.096 df = 4 at 0.05

Periods of recycling and types of outer garments recycled

Those who recycled their outer garments any time of the year were 88.4% while 11.6% mentioned special occasions such as Christmas, Easter and Birthdays (. The garments recycled by the males were shirts (42.5%) and trousers by both genders (9.2%). The females recycled dresses (20.8%), blouses (18.3%) and 9.2%, skirts (Table 3). The chi-square statistics showed no difference between the recycling of the different outer garments and the periods in the year when they were recycled (Chi-square value = 0.228, df = 4 at 0.05) (Table4).

Table 3: Outer garments recycled

Type of Outer Garments	No.	%
Shirts	51	42.5
Dresses	25	20.8
Blouses	22	18.3
Trousers (9 Males and 2 Females)	11	9.2
Skirts	11	9.2
Total	120	100.0

Table 4: Influence of popular unwanted outer garments on when recycled

Types of Outer Garments	Anytime of the year	Special Occasions	Total
Shirts	45	6	51
Dresses	22	3	25
Blouses	19	3	22
Trousers	10	1	11
Skirts	10	1	11
Total	106	14	120

$X^2$  (Calculated) = 0.228       $X^2$  = (Tabulated) 9.488      df = 4 at 0.05

**Feelings of the respondents after recycling their outer garments and their general views about recycling of clothing items.**

All the respondents (99.2%) but one had a deep feeling of satisfaction for being able to clothe other people. While 60% indicated that recycling saved the environment from filth, 37% reported that recycled clothes help reduce money spent on clothing by the recipients. About 3% said that it was not advisable to recycle clothes as they could cause skin diseases such as eczema.

**Discussion of the results**

The ages of the respondents are what observed in tertiary institutions in Ghana. The unmarried ones might like to obtain a higher academic qualification before thinking of marriage. With such qualifications they might be employed and be self-sufficient. Giving out unwanted clothes to family members, others and institutions is common in Ghana. The findings are therefore not surprising and document what persists in Ghana and are consistent with Koch and Domina's (1999) study and that of Joung and Park-Poaps' (2013). Such clothing behaviours prolong the life of clothes and probably, the easiest and least planning and preparation methods of recycling (Koch and Domina, 1999). 'Recycled clothes sent to institutions' is also in line with Koch and Domina's (1999) studies. Very insignificant though, however the 0.8% (male) who sold his outer garments might have done it due to economic consideration which support's Shim's (1995) economically oriented re-use motivation, trading or selling by Solomon and Rabolt (2009). As a student he probably needed money to purchase an item for school. This should have been verified, though. The males and the females used the same methods to recycle their unwanted outer garments.

Special occasions were used, though few, to recycle the garments to exhibit love and concern for others as some of the garments were pretty new The respondents stated that it was an opportune time to give unwanted clothes out to those who might need them. Christmas, for instance, is a period to show love and care for each other. Males might purchase and wear more shirts than trousers since a pair of trousers can be worn with many different shirts. Females also might wear more dresses and blouses than skirts. One skirt can be worn with many different blouses. It is therefore not surprising that the males donated more shirts than trousers and the females, more dresses and blouses than skirts. Any unwanted outer garment was recycled anytime of the year.

Halvorsen (2008) also found that social and moral norms affected recycling decisions through a

feeling of what is termed “warm glow” expressed as a giving in order to feel good about helping others. When clothes are donated, the donor gains satisfaction that his/her clothes still have a purpose instead of being used in landfills (Waste Recycling <http://www.ehow.co.uk>, 2010). Conversation with friends and the researchers' personal experiences attest to this feeling of satisfaction in giving.

Clothes thrown away any how could choke drains and cause stagnant water that breeds mosquitoes which cause malaria in a tropical country like Ghana. Lots of funds spent on drugs to cure malaria fever could be channeled into infrastructural developments. Improper recycling of clothes could also cause unsightly scenes that dampen one's spirit. It is therefore proper for the respondents to be environmentally conscious. Their environmental awareness is consistent with Koch and Donna (1997), Shim (1995), Joung and Park-Poaps' (2013) findings.

**CONCLUSION AND RECOMMENDATIONS**

The channels for recycling of the outer garments documented in descending order were family members, friends, institutions and a few were sold or served as rags. While the majority recycled the garments any time of the year, very few used occasions. Gender had no influence on the recycling behaviours and also the types of outer garments and when they were recycled were not significantly different. A feeling of satisfaction for clothing others was mentioned. The recycling behaviours are the same/similar to those observed in countries like the USA and UK, among others and are not peculiar to Ghanaian identity. The researchers, however, did not come across any outside study outlining the types of garments and when they were recycled. These results therefore cannot be compared with any other country's study. Based on the results, it is recommended that consumers should be educated through classroom and extension programmes by educational institutions, such as the Family and Consumer Sciences Department at the University of Ghana, Legon not to dump unwanted clothes anywhere since the respondents were environmentally conscious. Clothes dumped any where could cause filth and stagnant water that breeds mosquitoes that cause malaria. Funds for infrastructural development would therefore be used for drugs. Unwanted clothes were given to churches and orphanages. The National Union of Ghana Students (NUGS) can sensitize students and other consumers during Hall Week Celebrations to donate unwanted clothing by placing containers at vantage places like banks and entrances of halls of residence. Items collected can be given to needy consumers such as those who lost their belongings, including clothing, through the flood experienced in Accra, Ghana on 3rd June, 2015. A sample from the 10 regions of Ghana can be studied so that the findings could be generalized to cover the whole country's recycling behaviour.

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## EVALUATION OF THREE METHODS OF PROCESSING ROSELLE DRINK AMONG RURAL HOUSEHOLDS IN OSUN STATE, NIGERIA.

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### ABSTRACT

The study aimed at establishing a standard method of processing Roselle drink in Osun State Nigeria, using three processing techniques. In the first method, dried calyces of dark red Roselle was rinsed and soaked in boiled water and allowed to infuse for 30 minutes before filtering, the second was by soaking rinsed calyces in cold water for 30 minutes before boiling the filtrate for 5 minutes while the third was by soaking rinsed calyces in cold water overnight before boiling the filtrate for 5 minutes. Six replicates were conducted at 2 per each of the three agricultural zones of the State and a 12 member taste panel was selected per replicate to assess the drinks produced for appearance, colour, taste, flavor, preference and acceptability using 3 point hedonic scale. Result revealed that drink produced with method 3 was the thickest and had the highest acceptability. Based on the findings, the study concluded that method 3 should be popularized in the state.

Key words: Processing method, roselle drink, evaluation.

### INTRODUCTION

Roselle plant (*Hibiscus sabdariffa* L) is an herb with leaves, seeds and inflated calyces that could be green, red or dark red in colour. The use of Roselle calyces for the production of a sweetened drink called zobo drink is gaining popularity especially among children and youth who consider it as an alternative source of cheap and relaxing non-alcoholic drink (Ogiehor and Nwafor, 2004). Nutritionally, the calyces have been found to be rich sources of minerals such as calcium, phosphorus, iron and potassium (Morton, 1987; Babalola et al., 2000; Kolawole and Okeniyi, 2007) as well as antioxidants like vitamins B3 and C, natural carbohydrate and protein (Wong et al., 2002) which are the major benefits of consuming fruit juices (Okoro, 2003; Ogiehor and Nwafor, 2004). In addition, the level of minerals and vitamin C in the calyces have been found to meet the daily requirement in juices and natural fruit drinks (Holdens et al., 1999).

The implication is that, zobo drink, if properly prepared and packaged has the potential of competing with most of the imported non-alcoholic drinks which are relatively costlier and unaffordable to people of low socio-economic status that constitute the majority of the rural populace. More so, a good number of rural households could derive their livelihood from its sales. Unfortunately, as a result of lack of established standard processing method, there have been varying qualities of the product from one processor to another. The condition that has drastically reduced the popularity of the drink among the consumers and resulting into gradual extinction of the enterprise, hence, the need to conduct this experiment using sensory evaluation of the different production methods to establish a standard method which could be recommended for popularization.

### MATERIALS

The dark red Roselle calyces used for this study were obtained from the open market in Osun State, Nigeria. The dark red variety was purposefully selected for the experiment because it had been tested and confirmed by previous researchers to produce more quantity of drink and contain higher content of vitamin C and minerals than others (Rao, 1996; Olayemi et al., 2011).



## METHODS

The calyces were picked to remove all dirt; clean calyces was measured at the ratio of 1:5 calyces to water, i.e., one level cup (250cl size) of clean calyces was rinsed and added to five cups (250cl) of clean water for each treatment. Six replicates were carried out at the rate of two per OSSADEP zone. The three treatments employed were adapted from the processing methods originally used by Institute of Agricultural Research and Training (IAR&T), Ibadan Nigeria.

**Method 1:** One part of sorted calyces was rinsed in clean water to remove sand particles. Five part of clean water was boiled and removed from fire. The rinsed calyces was added to the boiled water immediately and allowed to infuse for 30 minutes, after which it was filtered and sugar was added to taste. The drink produced was allowed to cool before packaging and refrigeration.

**Method 2:** One part of sorted dry calyces was rinsed and added to 5 parts of clean cool water. It was allowed to infuse for 30 minutes before filtering. The filtrate was boiled for 5 minutes and sugar was added to taste. The drink produced was allowed to cool, packaged and refrigerated.

**Method 3:** One part of sorted dry calyces was rinsed and added to 5 parts of clean cool water. It was allowed to infuse overnight and filtered. The filtrate was boiled for 5 minutes and sugar was added to taste. The drink produced was allowed to cool, packaged and refrigerated.

The processing flow charts were shown in figure 1 below:

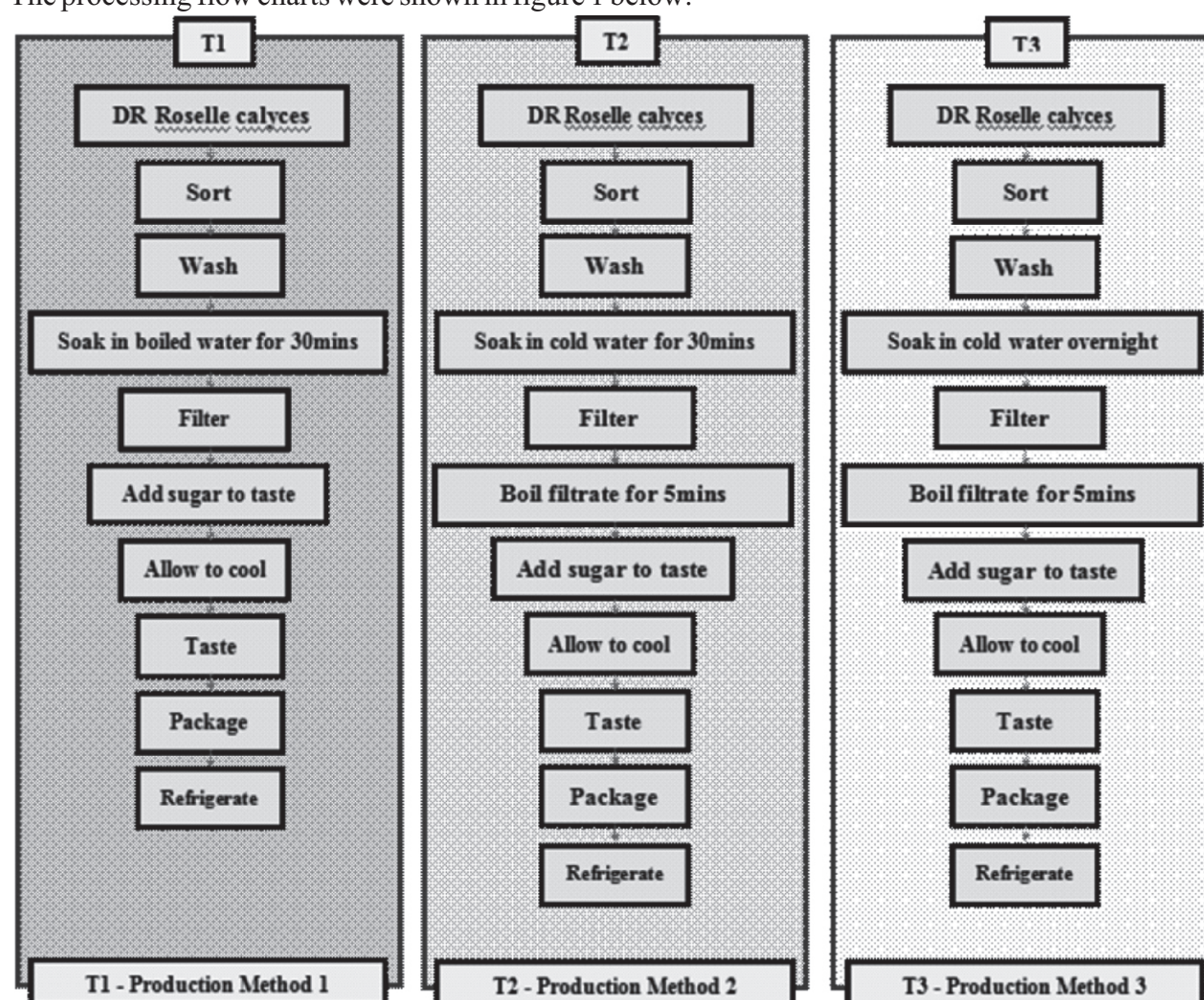


FIGURE 1: SHOWING THE PROCESSING FLOW CHARTS FOR THE THREE TREATMENTS (T1-T3)

## SENSORY EVALUATION

For each replicate, the organoleptic properties of the drink such as appearance (i.e. attractiveness), colour, taste, flavour, preference and overall acceptability were assessed by a – 12 member taste panel who were familiar with zobo drink. The scores were ranked based on 3 points hedonic scale with 1 representing extreme dislike and 3 equals extreme like, analysis of variance (ANOVA) was used to determine the difference while Duncan multiple range test was used to separate the means where there was a significant difference.

## RESULTS AND DISCUSSION

Table 1 shows that the means were significantly different ( $P < 0.05$ ) for all the parameters and that treatment 2 accounted for the difference except for taste which treatment 1 accounted for. However, there was no significant difference in the appearance, colour, flavour and overall acceptability of drinks processed with treatments 1 and 3. The implication of the finding is that production methods used in treatments 1 and 3 were both acceptable for popularization, although treatment 3 has the highest acceptability among the three while the method used in treatment 2 has the least acceptability.

Comments from taste panel also indicated that at the same ratio of calyces to water for the three treatments, treatment 3 produced the thickest drink implying sufficient infusion of the Roselle calyces while treatment 2 produced the lightest drink. The thicker the drink produced, the more the concentration of vitamins and minerals that will be consumed by the end users, hence, it implies that production method used in treatment 3 will promote sufficient mineral and vitamin intake among rural households in the study area.

Table 1: Sensory evaluation of Roselle drink for the three treatments

Samples	Appearance	Colour	Taste	Flavour	Overall Acceptability
T1	2.14 <sup>a</sup>	2.08 <sup>a</sup>	2.21 <sup>a</sup>	2.17 <sup>a</sup>	2.06 <sup>a</sup>
T2	1.82 <sup>b</sup>	1.84 <sup>b</sup>	1.88 <sup>b</sup>	1.87 <sup>ab</sup>	1.86 <sup>b</sup>
T3	2.06 <sup>a</sup>	2.07 <sup>a</sup>	1.93 <sup>b</sup>	1.99 <sup>b</sup>	2.10 <sup>a</sup>
S.E.±	0.039	0.039	0.039	0.039	0.039

a,b = Means in the same column followed by the same letter are not significantly different from each other at  $p < 0.05$

Table 2 shows that colour was significantly and positively correlated with all other parameters namely; appearance, flavour, taste and overall acceptability of Roselle drink. It implies that the colour of the drink is a major determinant of its acceptability to the consumers; hence, the dark red roselle variety should be promoted among the processors and the zobo production should be handled in such a way that the dark colour is preserved.

Table 2: Correlation matrix between colour and sensory evaluation parameters for Roselle drink

Samples	Colour	Appearance	Flavour	Taste	Overall Acceptability
Colour					
Appearance	0.6042*				
Flavour	0.3691*	0.4042*			
Taste	0.4210*	0.4000*	0.5035*		
Overall Acceptability	0.5209*	0.4097	0.4921*	0.6922*	

\* Significant ( $P < 0.01$ )



**CONCLUSION AND RECOMMENDATION**

The result showed that Roselle drink produced by soaking calyces in water overnight before boiling the filtrate for 5 minutes was the most acceptable, implying that this processing method should be popularized. This will consequently enhance the vitamin and mineral intake as well as improving the rural household income generation capabilities. It was therefore recommended, that efforts should be made by the relevant ministries, departments or agencies (particularly OSSADEP) to encourage the cultivation of Roselle plant by farmers in the state and the home economics extension service delivery agencies of the State to actively publicize this acceptable processing technique with emphasis on the nutritional benefits and economic prospect of the venture.

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**HEALTH, NUTRITION AND GENERAL CARE OF THE AGED IN ONDO WEST  
LOCAL GOVERNMENT AREA OF ONDO STATE**

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**ABSTRACT**

*Aging is a process in which there is reduced capacity to replace worn-out tissues and cells resulting to changes in the health, nutrition and general wellbeing of a person. This study focused on the health, nutrition and general care of the aged in Ondo West Local Government Area (OWLGA) of Ondo State. Descriptive survey research design was used. The population for the study comprised of all 16,735 elders (60 years and above) in Ondo West Local Government Area of Ondo State. 17 males and 17 females all elderly, were selected from each of five wards in the LGA making 170 elders (1% of the population) using proportionate sampling technique. The research instrument was a structured and open-ended questionnaire. Data collected were analyzed using frequency count, mean and t-test. Findings revealed that (92.9%) of the elderly receive treatment for ailments; 53.5% had poor vision and 58.2% had stroke. Daily consumption of animal protein, tubers, legumes, fruits and vitamin A rich foods was low. There is a significant difference in self-reported ailments and dietary pattern among male and female elders. About three quarters (71.29%) of the respondents did not live alone and about three quarters (77.1%) claimed they had care givers. Based on the research findings, it was recommended that elders should be encouraged to make use of local nutritious foods to increase their consumption of animal protein, tubers, legumes fruits and vitamin A rich foods. They should also not be saddled with the responsibility of looking after grandchildren.*

**Keywords:** Health, nutrition, dietary pattern, care, elders.

**INTRODUCTION**

Aging is a process in which there is a reduced capacity to replace worn out cells. It is a continuous process that occurs throughout life cycle, resulting in procreative changes. Aging in individuals is part of the total life process. Susceptibility to diseases increases with age, since there is a reduced capacity to handle physical stress (Harrick, 2002).

The World Health Organisation's definition of elderly is 'persons of 60 years of age or older (WHO, 2002). Aged people are growing in prevalence and their nutrition-related concerns impact upon health, function and life quality (McGee and Jensen, 2000). Changes in body composition, organs and system functions alter nutrient requirement and this nutritional challenges are more common in

aged persons than in younger adults. A nutritional challenge in an aged person is therefore a consequence of somatic, psychic or social problem. Typical causes of nutritional problems are chewing and swallowing disorders, cardiac insufficiency, depression, social deprivation and loneliness (Pirlich, Loch and Jensen, 2001).

Lack of fund to pay for adequate food can result in nutritional problems for the aged. There is reduction in energy requirement with increasing age, whereas there are increased requirement for a number of nutrients, such as: protein, riboflavin, Vitamin B6, calcium, Vitamin D and for some Vitamin B12. Therefore, since it is difficult for older people on relatively low-energy diets to meet their nutrients requirements from food, Vitamin supplements and fortified foods may be required to meet nutrient requirements. To ensure optimal nutritional status, one must assess nutritional requirement on an individual level and provide practical advice regarding appropriate choices which takes into account, physical and psychological conditions, body weight, level of physical activities, medication use, income, ethnics groups, social support, access to retail food outlets, cooking facilities and access to community support schemes.

It is a challenge for many aged people to maintain their interest in food, as there is a reduction in appetite with increasing age; therefore, it is important to keep aged people interested in food through the development of a variety of meals and snacks that are both nutritious and appetizing (Caryl, 2007). Certainly, taking Vitamins and supplements can help and a balanced diet plan is a must for aged people. Nutritious recipes for cooking can also help. Proper elderly nutrition and eating habit are crucial to maintain the quality of life, control blood sugar to avoid diabetes, maintain good vision, a positive mood, good sleep, energy, bone, muscle strength and digestion etc, these are affected by poor diets and thereby cause nutrition problems for the aged.

Studies in developed countries have indicated that among those aged 65years and above, malnutrition and obesity are common (USDA, 2002). The study noted that if elderly receive what is known as 'Nutritional Intervention', many diseases could be prevented. Intervention studies have indicated too that malnutrition is a major reason for hospitalization for the elderly (USDA, 2002).

As people grow older, they find out that they need more help with day-to -day tasks or healthcare. Aged people who live on their own are not able to get out and about as easily as they used to, they may also want extra company. Sometimes, the best way to receive help and support can be by living in an aged care home either on permanent basis or for a short stay called 'residential respite'. An aged person may need help because of an illness, a disability or an emergency. Staffs at aged care homes can help with day-to-day tasks (such as cleaning, cooking, laundry); personal care (such as dressing, grooming, going to the toilet) or 24hour nursing care (such as wound care, catheter care). Aged care system aims to make sure that all older people can receive support and quality care when they need it (Pirlich, Loch and Jensen, 2001).

Traditionally, aged care has been the responsibility of family members and was often provided within the extended family home in Africa. Increasingly in modern societies, aged care is now being provided by the State or charitable institutions. The reasons for this change are decreasing family size, the greater life expectancy of aged people, the geographical dispersion of families, and the tendency for women to be educated and work outside the home (Joseph, 2015).

It has been observed that most of the aged people usually have problems that are peculiar to them starting from age 60 and above, some diseases are common to elderly people as they age such as cardiovascular diseases, high blood pressure, heart diseases, stroke, osteoporosis and decrease in functions of the organs etc. Most of the elderly have challenges in care, usually they have no one to take proper care of them especially those living alone. Some of these aged people lack information

about their nutritional needs while others are illiterate and ignorant and all these may result in their untimely death. This research was therefore undertaken to identify the challenges in health, nutrition and general care of the aged in Ondo West Local Government Area in Ondo State (OWLGA). Specifically, the study determined:

- i. self reported ailments among the aged in OWLGA;
- ii. the dietary pattern of and frequency of consumption of major food group items by the aged in OWLGA;
- iii. whether adequate care was given to the aged in OWLGA;
- iv. the difference in the self reported ailments among male and female elderly in OWLGA; and
- v. the difference in the dietary pattern of male and female elderly in OWLGA.

#### Research questions

1. What are the self reported ailments among the aged in OWLGA?
2. What is the dietary pattern of and frequency of consumption of major food group items by the aged in OWLGA?
3. Are adequate care given to the aged in OWLGA?

#### Research hypotheses

1. There is no significant difference in the self reported ailments of male and female elderly in OWLGA.
2. There is no significant difference in the dietary pattern of male and female elderly in OWLGA.

#### METHODOLOGY

The design used for this study was descriptive survey research design. The study was carried out in Ondo West Local Government Area of Ondo State. Ondo West Local Government Area is one of the 18 local government areas in Ondo State. There are 12 wards in the study area, they are: Bagbe/Igunsin, Igbado, Ilunla, Laje, Lekere, Newtown, Odojomu, Odosida, Okerowo, Okelisa, Surulere and Yaba. The headquarters of OWLGA is Ondo town and Ondo State is situated in the Western Region of Nigeria. Like other regions in the country, the area of study comprises of elderly with little or no attention in terms of care. They have been observed to be lacking in terms of care, have some ailments and poor nutrition this justifies the study in the area.

The population for the study comprised of all 16,735 elders (60 years and above) in Ondo West Local Government Area of Ondo State. [(National Population Commission (NPC), 2009), (Federal Republic of Nigeria Official Gazette, 2009)]. The sample size used for the study was 170 aged men and women in Ondo West Local Government Area. Proportionate sampling technique was used to determine the sample size. One percent of the total population was selected. Five wards were selected from the twelve wards in the Local Government Area by balloting. 17 males and 17 female elders were selected from each of the five wards. A well-structured questionnaire titled Dietary Pattern and Self-Reported Ailment Questionnaire containing 26 open ended questions was used to elicit information from the respondents. The instrument was divided into three sections (A-C). The questionnaire was validated by three experts in Food and Nutrition. Cronbach's alpha was used to determine the reliability of the questionnaire and a Cronbach's coefficient alpha of 0.80 was obtained. The validated copies of the questionnaire were administered to the selected elders through personal contact. The data collected was analyzed using frequency and simple percentages for the research questions while the hypotheses were analyzed using t-test at 0.05% level of significance.



RESULTS

Table 1: Self-reported ailments of the elderly in Ondo West Local Government Area

Self-reported ailments	Frequency	Percentage (%)	Rank
Swallowing problems	52	30.6	6 <sup>th</sup>
Cancer	21	12.4	13 <sup>th</sup>
Eye problem	34	20.0	10 <sup>th</sup>
Diabetes	28	16.5	11 <sup>th</sup>
Rheumatism	45	26.5	8 <sup>th</sup>
Hypertension	23	13.5	12 <sup>th</sup>
Arthritis	47	27.6	7 <sup>th</sup>
Tooth ache	67	39.4	4 <sup>th</sup>
Constipation	55	32.4	5 <sup>th</sup>
Waist pain	78	45.9	3 <sup>rd</sup>
Poor vision	91	53.5	2 <sup>nd</sup>
Stroke	99	58.2	1 <sup>st</sup>
Respiratory problem	43	25.3	9 <sup>th</sup>

Table 1 revealed the self-reported ailments of the elderly in OWLGA. It shows that (58.2%) reported stroke, 53.5% and 45.9% respectively reported poor vision and waist pain. About one third reported toothache, constipation and swallowing problems. Almost all (92.9%) of the respondents claimed to receive treatments for ailments. Majority of the respondents (87.6%, 83.5%, 89% and 79.4%) did not report cancer, diabetes, eye problem and hypertension respectively.

Table 2a revealed the dietary pattern of elderly in OWLGA. It shows that half (50%) of the respondents take three meals a day, 17.1% take a meal a day, two-thirds (65.3%) did not eat in between meals and half (51.8%) did not skip meals. Half (55.3%) take fruits daily. Half (59.4%) take vegetables once daily. All respondents (100%) take onions and tomatoes. About two-thirds (66.5%) do not take snacks. Half (56.5%) buy cooked foods from vendors.

Table 2b shows the frequency of consumption of major food groups by the elderly. Daily consumption of animal protein (20%), tubers (41.8%), legumes (22.4%), fruits (40.6%) and vitamin A rich foods (30%) were low.

Table 2a: Dietary pattern of the Elderly in Ondo West Local Government Area

	Yes	%	No	%
<b>Daily consumption of food</b>				
Once	29	17.05	141	82.90
Twice	53	31.20	117	68.80
Thrice	85	50.00	85	50.0
More than thrice	3	2.14	167	98.20
Eating in-between meals	59	34.71	111	65.29
Skipping meals	82	48.20	88	51.80
If yes, state the meals you skip				
Breakfast	33	19.41	137	80.59
Lunch	58	34.12	112	65.88
Supper	79	46.47	91	53.53
Daily consumption of fruits	94	55.30	76	44.70
Fruits taken				
Orange	43	25.29	127	74.71
Water melon	76	44.71	94	55.29
Guava	12	7.06	158	92.94
Apple	98	57.64	72	42.35
Pineapple	65	38.23	105	61.77
Cherry	23	13.53	147	86.47
Daily consumption of vegetables				
Once	101	59.41	69	40.59
Twice	69	40.59	101	59.41
Types of vegetables consumed				
Carrot	67	39.41	103	60.59
Cucumber	34	20.00	136	80.00
Cabbage	22	12.94	148	87.06
Spinach	43	25.29	127	74.71
Lettuce	37	21.76	133	78.24
Onions	170	100.00	0	0.00
Tomatoes	170	100.00	0	0.00
Taking snacks	57	33.50	113	66.50
Buying cooked foods from vendors	96	56.50	74	43.50
Frequency of purchase				
Everyday	45	26.47	125	73.53
Frequently	67	39.41	103	60.59
Occasionally	58	34.12	112	65.88

Table 2b: Food frequency questionnaire

FOOD LIST	Once/day	%	1-3times/wk	%	4-6times/wk	%	Less than once /wk or never	%
Animal protein (meat, fish, egg)	34	20.00	51	30.00	74	43.53	11	6.47
Tubers/Roots (cassava, yam)	71	41.77	35	20.59	38	22.35	26	15.29
Legumes (beans, groundnut etc)	38	22.35	49	28.82	81	47.65	2	1.18
Cereals (maize, rice etc)	84	49.41	66	38.82	17	10.00	3	1.77
Fruits	69	40.59	83	48.82	17	10.00	1	0.59
Milk and Milk Products	102	60.00	54	31.76	11	6.47	0	0.00
Green vegetables	88	51.76	76	44.70	8	4.71	2	1.18
Vit. A rich foods (liver, carrots, etc)	51	30.00	63	37.06	36	21.80	20	11.76

Table 3: Adequacy of Care of the Elderly in Ondo West Local Government Area

Adequacy of Care	Yes	Percentage	No	Percentage
Living alone	49	28.80	121	71.20
Adult children far away	51	30.00	119	70.00
Meal Preparation (Self )	18	10.59	152	89.41
Grandchild/children	41	21.18	129	75.82
Child/children	12	7.06	158	92.94
Care giver	51	30.00	119	70.00
Relative(s)	46	27.06	124	72.94
Neighbour(s)	2	1.18	168	98.82
Presence of regular care giver	131	77.10	39	22.90
Care for grandchildren	125	73.50	45	26.50
Living with grandchild/children	101	59.40	69	40.60

Table 3 shows that 28.8% of the respondents live alone and 30% have their adult children far from them. Caregiver prepares meals for 30% of the respondents. About three quarters (73.5%) still look after their grandchildren.

Table 4: Self-reported ailments among male and female elderly in Ondo West Local Government Area

Sex	Number	Mean	Std. Deviation	df	t-cal	t-crit	Remark
Male	76	14.80	2.26	118	18.41	1.95	Significant
Female	94	21.95	3.70				

Table 4 revealed the self-reported ailments of male and female elderly in OWLGA It shows that the t-calculated is (18.41) while t-table value is (1.96). The t-calculated is greater than the t-table value. This implies that there is significant difference in the self-reported ailments among male and female elderly in Ondo West Local Government Area. Females reported more ailments than males.

Table 5: Dietary pattern of male and female elderly in Ondo West Local Government Area.

Sex	Number	Mean	Std. Deviation	df	t-cal	t-crit	Remark
Male	76	10.05	2.258	118	14.256	1.95	Significant
Female	94	9.75	3.058				

Table 5 shows that the t-calculated is (14.256) while t-table value is (1.96). The t-calculated is greater than the t-table value. This implies that there is significant difference in the dietary pattern of male and female elderly in Ondo West Local Government Area. Males had better dietary pattern than females.

Discussion of findings

Findings of this study reveal that a number of elders in Ondo West Local Government Area of Ondo State reported suffering from stroke (58.2%), poor vision (53.5%), waist pain (45.9%), toothache (39.4%), constipation (32.4%), swallowing problems (30.6%), arthritis (27.6%) and respiratory problems (25.3%). All ailments in this study are common ailments of the elderly throughout the world. Previous studies had similar reports. Fadupin (2012) reported that many (52.7%) of the Ibadan elders that were studied complained of poor health due to joint pain, poor vision, constipation and hypertension. Adebimpe, Omobuwa, Omisore and Adeoye (2014) in their study of elderly women in Osun State reported that (66.3%) of their respondents had complaints of joint pains (Awoka as expressed in the local language). Olarewaju (2015) also reported musculoskeletal (rheumatism, cramps) eye problems, respiratory problems, high blood pressure, cough, toothache, other problems (sickle cell anaemia, cancer and epilepsy) alimentary/digestive problems and diabetes among elders in Ondo State.

The eye problems observed in this study could be as a result of age-related macular degeneration (AMD). According to National Eye Institute (NEI) (2015) age-related macular degeneration (AMD) is a leading cause of vision loss in Americans aged 60 and older, affecting an estimated 10 million people. The aged people are more likely to lack proper hydration in warm-weather months and during illness. Medications and chronic medical conditions often increase the risk of dehydration. Mild to moderate complications from dehydration include constipation, headache, dizziness, low blood pressure, rapid heartbeat and loss of consciousness.

During the investigation, it was observed that 50% of the respondents take three meals a day, about one-quarter (17.05%) a meal per day, about two-thirds (65.3%) did not eat in between meals, half did not skip meals and two thirds did not take snacks. Olasunbo and Ayo (2013) reported that two thirds and almost all their respondents in Ile-Ife ate three meals per day and had favourite foods respectively. Olarewaju (2015) observed that very few elders in the study ate between meals and avoided certain foods. Two thirds of respondents (63%) in Olasunbo and Ayo (2013) study also ate thrice daily, 35% skipped meals, 19% drank alcohol and 4.5% were smokers. Afolabi, Olayiwola, Sanni and Oyawoye (2012) reported that the elders in their study (South West Nigeria) ate three meals per day; snacks or between meals were not common.

The study further showed that daily consumption of animal protein, tubers, legumes, fruits and Vitamin A rich foods were low. In a similar study Olarewaju (2015) found out that daily consumption of all nutrients by elders except animal protein was generally low. Elders in the study (Ondo State) had diets high in animal protein, moderate in tubers, legumes, cereals and green vegetables but low in fruits, dairy and vitamin A rich foods.

This study showed that the respondents have regular care givers but look after their grandchildren. Caregivers prepare meals for most of them. Previous studies revealed that elders who still have young children or grandchildren to cater for have greater vulnerability to poor well-being than those living alone and that diversion of care to meeting the needs of their young children can have negative impact on the health of the elderly (Okumagba, 2011; Adebowale, Atte and Ayeni, 2012). This study further showed that self reported ailments were higher among females than males and dietary pattern was better among males than females. This is logical because better nutrition is expected to lead to less occurrence of ailments and diseases.

CONCLUSION

Self reported ailments among elderly in Ondo town were stroke, poor vision, waist pain, toothache, constipation, swallowing problems, arthritis and respiratory problems. Most of these health problems are associated with aging; however, some of them could be prevented or managed. Most of

these ailments will reduce intake of nutrients and predispose them to other diseases. Majority of elderly in Ondo town take at least three meals per day while few of them (about one-quarter) consumed a meal per day. Eating in between meals and skipping meals were not common among elderly in this area. Daily consumption of animal protein, tubers, legumes, fruits and vitamin A rich foods were low. If foods containing these nutrients are consumed daily elders will be healthier and able to meet RDA. The low consumption in vitamin A rich foods could be responsible for the poor vision observed in the elders. The availability and quality of health care made available by children, care givers, grandchildren are vital for the general well-being of aged people.

### Recommendations

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

- I. Ailments reported in this study are common ones with elders throughout the world. Elders in the study area should report any noticed ailments in the nearest hospital for proper treatment
- ii. Elders should be encouraged to eat healthy snacks (especially fruits) in-between meals and avoid skipping meals to be able to meet the RDA
- iii. Workshops, seminars and nutrition education programmes should be organised to encourage elders to make use of cheap local nutritious (different forms and types of fishes, crayfish, yam, beans, fruits available at various seasons, tomatoes carrots etc) to increase their consumption of animal protein, tubers, legumes, fruits and vitamin A rich foods (that were poorly consumed in this study)
- iv. Elders should not be saddled with the responsibility of looking after grandchildren. They should not be left alone to provide for their daily or nutritional needs, members of the family should endeavour to provide their needs and rally round them at all times.

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# FROZEN FISH MARKETING FOR FAMILY SUSTAINABILITY IN ONDO STATE, NIGERIA

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## ABSTRACT

*The primary data for this study were collected with the aid of structured questionnaire coupled with oral interview. Data were analyzed using descriptive statistics and regression analysis. One hundred and three frozen fish marketers were randomly selected from three major markets in the study area. The results of the study showed that 83.5 percent of the respondents were still at their active age of between 21 – 50 years of age and the market was dominated by women. The marital status of the frozen fish marketers revealed that 58.3percent were married while the mean household size was 4.0±2.6members. On educational status, 50.5 percent had secondary education while 27.2 percent had adult literacy education. Majority (60.2 percent) of the fish marketers had between 6 and10 years of experience in the business. Personal savings formed the major source of credit for the marketers. The challenges of the business included inadequate capital with 31.1 percent, cost of transportation 27.1 percent, among others. Regression analysis revealed that, the selling price of frozen fish was influenced by the purchase price, tax imposed on marketers, transportation cost, and the rent of stalls were positive and statistically significant. The Gross margin was ₦17,074.85 from the cost and returns analysis while the marketing margin and the producer share were 24.5 percent and 75.5 respectively. The marketing share cost was 7.6 percent while the cost-benefit ratio showed that for every naira invested, 32k was realised as profit. It was recommended that in order to promote frozen fish marketing for family sustainability, government should promote fish marketers access to education and credit; empowerment programmes and micro-credit schemes/ cooperative society and poverty reduction programmes, among others.*

**Keywords:** Sustainability, frozen fish, marketing margin, Ondo state.

## INTRODUCTION

Sustainability is a systemic concept relating to the continuity of economic, social and environmental aspect of human society thus meeting the present needs and ensuring the survival of the future generation and attaining development (Brundtland Commission, 1987). Sustainable development therefore means meeting the present needs without compromising the needs of the future. It means that development should keep going. Sustainable development is closely linked to economic development. This is because it emphasizes the creation of sustainable improvement in the quality of life all for people through increase in real income, improvement in education, health, and general quality of life and improvement in the quality of natural environment. Fish marketing is an important means of livelihood which contributes to both economic and welfare of the family.

Fish consumption constitutes about 40 percent of protein intake in the developing countries (FAO, 2000), particularly in Nigeria. It is one of the major sources of protein in human diet. It also provides additional income to farmers and their families thereby ensuring sustainability, food security and alleviates poverty, particularly among the populace. Fish provides employment opportunities to both rural and urban dwellers. Fish marketing is a source of livelihoods as people engaged in harvesting, processing, preservation, distribution, and marketing activities. Fish serves is a source of foreign exchange, however, Nigeria imports more than 50 percent of the total fish consumed locally (Omitoyin, 2007). The need for fish consumption is predicated on the fact that apart from being a

source of livelihood, it is low in cholesterol, rich in essential amino acids, and it is relatively cheaper compared to beef, chicken, mutton and turkey (Adekoya and Miller, 2004; Omitoyin, 2007; Ali, Gaya and Jampada, 2008; Coster and Otulafe, 2010)

However, despite the importance of protein in diet of human beings, and fish been the cheapest source, distribution/marketing of fish is still been faced with so many challenges in ensuring family sustainability. This is as a result of the problems of access and availability of fish and fish products in the markets for the family. Reports showed that the average annual demand for fish in Nigeria between 1995 -2000 was estimated at 1.22 million metric tonnes and that this might increase to about 1.68 million metric tonnes by the year 2015 while the projected population is estimated between 173.90 million (FAO, 2000; Ajana, 2002; Omitoyin, 2007). This implies that efforts must be intensified to boost the production and distribution/ marketing of fish and fish-products in order to ensure its availability in sufficient quantity to meet the need of the family. However, uncoordinated marketing arrangements, ineffective marketing functions coupled with other problems affect fish distribution/ marketing (Omitoyin, 2007).

Fish marketing is an important aspect of fish production that requires serious consideration because of the perishability of fish product and post – harvest losses (Coster and Otulafe, 2010). This means that good marketing system should be encouraged such that the producers will suffer less loss in marketing of their products and the consumers will have access to good quality fish. Fish supply and marketing suffer various problems in the marketing chain ranging from shortage of supply, price instability, damages/spoilage on transit, poor preservation due to erratic power supply, uncoordinated marketing systems, and high cost of transportation, among others. However, despite these problems the demand for and marketing of fish are on the increase by the day. This may not be unconnected with the increase in population and the need for average Nigerians to meet up with their daily protein requirements.

The quality of fish is directly proportional to the price; however, quality depreciates due to the time taken in the distribution chain. Omitoyin (2007) reported that the element of time has been an obstacle to market price stabilization for most perishable goods while Shimang (2005) relates the price changes in fish marketing to the cost of transportation, processing and preservation against spoilage. Moreover, changes in the marketing functions can also bring about instability in the prices of fish in the market. Marketing could be simple or complex, it is simple when consumers buy directly from producers involving face to face interaction, and without any middleman such that the price charged is low (Kotler and Keller, 2006; Olayinka and Aminu, 2006). In complex market, the various marketing functions such as transportation, assembling, storage and processing, among others, create gap in the time between production and consumption. The sustainability of fish marketing for the well-being of the family entails; good margin, effective market performance and efficient distribution.

Several empirical studies have been carried out on fish marketing and production (Omitoyin, 2007; Ali, Gaya and Jampada, 2008; Coster and Otulafe, 2010; Adekoya and Miller, 2004) however, no study have been done on fish marketing relative to family sustainability and also there are scanty literature on the study. However, this study will provide information about fish marketing, guide the formulation of marketing policies and it will help the stakeholders to understand trends in fish marketing. Above all, it will contribute to knowledge and assist the family on ensuring family sustainability through fish business. From the fore-goings, the following questions are generated; what are the socio-economic/demographic characteristics of the fish farmers? What are the sources of capital for frozen fish marketing? What are the contributions of fish marketing to family sustainability? What are the challenges of fish marketing in sustaining the family? Finally, is fish marketing profitable to sustain the family? The objectives are; to determine the socio-economic/demographic characteristics of the marketers in the study area, identify the sources of capital and contributions of frozen fish marketing to family sustainability, identify the problems of frozen fish marketing in the study area, and estimate the costs and returns in frozen fish marketing.

MATERIALS AND METHODS

The study was carried out in Ondo state with a particular focus on frozen fish marketers. Ondo state consists of 3,441,024 people occupying about 14,793 square kilometres of land area and a population density of 268 persons per square kilometre (National Population Commission, 2006; Ondo State, 2010). The state is located in the tropical rain forest zone with rainfall between 1000mm and 2200mm per annum and temperature of between 240C and 330C which favours the cultivation of arable crops and cash crops. A multi-stage sampling technique was used for the study. A total of one hundred and three frozen fish marketers were randomly selected from three major markets across the three senatorial districts in the state. Primary data for the study were collected with the aid of structured questionnaire coupled with interview schedule. Data were collected on the socio – economic characteristics of the frozen fish marketers, marketing characteristics; price, cost incurred on marketing, and problems associated with frozen fish marketing in the study area.

Analytical techniques

The descriptive statistics such as frequency distribution, percentages and the mean were used to describe the socio-economic/demographic and other variables. The Ordinary Least Square regression (OLS) was used to determine the effects of marketing cost on the selling price of frozen fish in the study area. The model specification is as stated below;

$$Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \epsilon_i \dots\dots\dots 1$$
  

$$Y_i$$
 = selling price of frozen fish  
 $\alpha$  = constant  
 $\beta$  = coefficient  
 $X_i$  = explanatory variables  
 $X_1$  =Purchase price;  $X_2$  = Cost of transportation;  $X_3$  = Security;  $X_4$  = Tax;  $X_5$  = Rent of stall  
 $\epsilon_i$  = disturbance term

Marketing Margin Analysis

This is the difference between the price paid by the consumers and that received by the producer. Marketing margin is the cost of factors involved in the provision of marketing services, such as packaging, labour, purchase price, transport and returns for risk undertaking for all activities or management activities. Marketing margin is expressed as

$$\frac{\text{Selling Price} - \text{Purchase Price}}{\text{Selling Price}} \dots\dots\dots 2$$

Gross –Margin Analysis

The gross margin is the difference between the total revenue (TR) from production and the total variable cost (TVC) of production. Gross margin is expressed as

$$GM = TR - TVC \dots\dots\dots 3$$
  

$$\pi = TR - TC \dots\dots\dots 4$$

Where,  
 $\pi$  = Profit; TR = Total Revenue; TVC = Total Variable Cost; TC = Total Cost

Benefit/cost ratio

This is the ratio of the gross revenue to the variable cost. It is used to determine the profit earn for every naira invested in the business. It is expressed as

$$\text{Benefit/cost ratio (B/C)} = \text{Gross Revenue / Total variable Cost} \dots\dots\dots 5$$

RESULTS AND DISCUSSIONS

Table 1 shows the summary of the socio – economic characteristics of frozen fish marketers in the study area. On age, majority (83.5percent) of the frozen fish marketers were between 25 – 50 years while 9.7percent and 6.8 percent occupy less than 25years of age and above 50years respectively.

The mean age of the marketers was 45.7±8.4years. This implies that majority of the fish marketers are within the economically active age. The fish markets in the study area were dominated by females with 92.2 percent and 7.8 percent males. The marital status indicated that 58.3 percent of the marketers were married, 24.3 percent were widowed and 6.8% were divorced. This attested to the fact that marital responsibility will entrench the need for sustainability in the family. On household size 63.1 percent had between 3-4members in the household. On level of education, 50.5 percent had secondary school education followed by 27.2 percent with adult literacy education while 20.4 percent had primary school education. The level of education, they opined has helped them in the areas of record keeping, addition and subtraction of money value, determine their margin or profit without difficulty. On years of experience, 60.2 percent of the frozen fish marketers had between 6 – 10 years of experience while 25.2 percent had above 10 years of experience in the business. Only 14.6 percent of the marketers had less than 6 years experience in frozen fish business. The mean year of experience of the fish marketers was 7.3±4.3years. This supports the fact that more years of experienced is an advantage to them because the more experienced you are in a business the better. They also attributed that the years of experience enables them to determine the market trends, conditions and the profitability of the fish business at various times and seasons of the year

Table 1: Socio – economic characteristics of frozen fish marketers n= 103

Table 1: Socio – economic characteristics of frozen fish marketers n= 103

Age (in Yrs)	Frequency	Percentage (%)
<25	10	9.7
25-50	86	83.5
>50	7	6.8
Mean(SD)		45.7(8.4)
Gender		
Male	8	7.8
Female	95	92.2
Marital Status		
Single	11	10.7
Married	60	58.3
Widowed	25	24.3
Divorced	7	
Household Size		
1-2	34	33.0
3-4	65	
5 and above	4	3.9
Mean(SD)		4.0(2.4)
Educational level		
Adult Education	28	27.2
Primary Education	21	20.4
Secondary Education	52	50.5
Higher Education	2	1.9
Experience ( in Yrs)		
1-5	15	14.6
6 – 10	62	60.2
11and above	26	25.2
Mean(SD)		7.3(4.3)

Source: Field survey, 2012



Table 2 shows the sources of capital available to frozen fish marketers in the study area. About 50 percent of the marketers made use of personal savings while 37.9 percent patronized the cooperative society/Credit and thrift schemes for capital. The low patronage of other sources of capital like moneylenders and banks was attributable to exorbitant interest rates, lack of collateral security and administrative bottlenecks attached to them.

Table 2: Sources of Capital for fish marketing n= 103

Sources	Frequency	Percentage (%)
Personal savings	51	49.5
Friends/Relatives	8	7.8
Cooperatives/Credit &Thrift	39	37.9
Moneylenders	2	1.9
Banks	3	2.9

Source: Field survey, 2012

The results on Table 3 show the contributions of fish marketing to family sustainability in the study area, 44.7percent revealed that it contributes to family sources of employment/livelihoods while 24.3 percent, 19.4 percent and 11.6 percent indicated that fish business increases nutrition access, generate income, and reduce poverty in the family respectively. This is not unconnected with the fact that marketing enhances free flow of goods to places at the right time and quality thus ensuring its availability. However, Adunga (2009) indicated that markets have influence on income distribution, food security, and other important development objectives. Moreover, marketing integrates the farming community in to the market economy through communication and exchange; provision of secured market outlets which encourage producers to increase marketable surplus and diversify their economy of production.

Table3: Contributions of fish marketing to Family sustainability n = 103

Contributions of fish marketing	Frequency	Percentages (%)
Generate income	20	19.4
Source of employment/Livelihoods	46	44.7
Increase access to nutrition	25	24.3
Reduce Poverty	12	11.6

Source: Field Survey, 2012

Table 4 shows the various problems associated with the marketing of frozen fish in the study area. Top on the list of the challenges was inadequate capital as attested by 31.1 percent of the respondents. This finding is in line with Faleye, (2014) that inadequate finance has being a major factor affecting agricultural production and marketing. Also, 29.1 percent submitted that high cost of transportation is another major problem facing them which is not unconnected with the increase in the cost of fuel due to the erratic supply. However, this is in agreement with Oluwatomiwa (2008) that high cost of transportation affects effective marketing functions and inefficiency in the marketing systems. Other problems included; poor preservation/storage due to erratic supply of electricity which resulted into deterioration in the quality of the fish.

Table 4: Problems associated with frozen fish marketing n=103

Problems	Frequency	Percentage (%)
Inadequate Capital	32	31.1
High cost of transportation	30	27.1
Erratic power supply	12	11.7
Taxation (high tax)	8	7.8
Health problem	2	1.9
Poor transportation/storage	19	18.4

Source: Field survey, 2012.

Table 5 presents the estimated cost and returns in frozen fish business. The Gross margin and Marketing margin were used to determine the profit and market performance in the business. The result showed a gross margin of ₦17,074.85. This implies that the business is profitable and that the profit is quite high. It also means that trading in fish and fish products in the study area was a form of diversification which increases the household income share. The marketing margin and producer's share were 24.47 percent and 75.53 percent respectively, while the share for the marketing cost was 7.55 percent. The marketing margin was high compared to the marketing cost by implication frozen fish business is economically viable and profitable in the study area. The B/C ratio shows that for every naira invested in the business, a profit of ₦0.32k is made.

Table 5: Estimated Cost and Returns on frozen fish markets.

	₦ : K
Gross Revenue	69,785 .48
Variable Costs ( VC )	
Purchase Price	32,638.45
Transportation	10,875.68
Security	2,150.00
Rent of stalls	4,156.40
Tax	2,890.10
TOTAL	52,710.63
Gross Margin	17,074.85
Market Margin	24.5
Producer Share	75.5
Marketing Share Cost	7.6
Benefit-cost Ratio (B/C)	1.32

Source: Author's Computation, 2012

Results of regression analysis

The regression results (Table 6) showed that, the value of R2 is 62.1% which implies that the explanatory variables included in the model is able to explain 62.1 percent of the variations in the prices of frozen fish in the study area. The results also revealed that the purchase price is positively and statistically significant at 5 percent, indicating that the selling price is significantly influenced by the purchasing price of fish. Equally, cost of transportation, tax, and the rent of stalls are



positively related and statistically significant at 10 percent level of significance. This implies that an increase in the cost of transportation, taxation and rent of stalls will increase the price of frozen fish in the markets, hence increase in the amount to be paid by consumers for fish in the markets.

**Table 6: Regression Estimates of marketing costs against selling Price**

Variables	Coefficient	T – ratio
Constant	-452.632	-0.275
Purchase Price (X1 )	0.534*	5.124
Transportation (X2)	15.432***	1.625
Security (X3)	-0.248	-0.758
Tax (X4)	23.226***	1.354
Rent of stall (X5)	5.682**	2.312

Source: Author's Computation, 2012 \*Significant @1%; \*\* Significant @ 5%; \*\*\* Significant @ 10%.

## CONCLUSION AND RECOMMENDATIONS

The marketing of frozen fish in Ondo state was analysed and the results of the findings showed that the mean age of respondents was 45.7±8.4years and 92.2 percent of the marketers were female with 58.5 percent of them married. The marketers had a mean household size of 4.0±2.4members. The educational status of the marketers revealed that 50.5 percent had secondary school education. The mean years of experience was 7.3±4.3years moreover 49.5 percent of the fish marketers were able to raise capital for their operations through personal savings. Also, frozen fish marketing contributes employment and livelihoods (44.7 percent). Frozen fish marketing in the study area was faced with a lot of challenges ranging from inadequate capital, to high cost of transportation, power failures among others. The regression analysis revealed that the purchase price, cost of transportation, rent of stalls and the tax paid were positive and significantly influenced the price of frozen fish in the study area. The cost and returns analysis revealed that, the gross margin was high with the marketing margin of 24.47 percent, producer share of 75.53 percent and the marketing share cost of 7.55 percent. These revealed the efficient fish marketing performance. The B/C ratio shows that the business was profitable. In order to promote frozen fish marketing for family sustainability, government and family should collaborate to promote access to education and credit, equitable access to resources, empowerment programmes and micro-credit schemes, cooperative society and poverty reduction programmes. Moreover, government should provide and rehabilitate roads and ensure steady supply of fuel which will reduce the cost of transportation thus enhance free movement of goods and services. Finally, government should ensure steady supply of electricity to ensure proper preservation of fish and its quality, review tax policies as this will lead to reduction in the price of fish

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# ENVIRONMENTAL FACTORS INFLUENCING PURCHASE DECISION AMONG WOMEN IN ONDO WEST LOCAL GOVERNMENT AREA, ONDO STATE

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## ABSTRACT

*The research was carried out to examine the environmental factors influencing purchase decision among women in Ondo West Local Government Area of Ondo State. The sample of the study comprised of four hundred and forty one (441) women selected from seven (7) wards in Ondo West Local Government Area of Ondo State. A questionnaire made up of structured items was employed for data collection. Research questions and hypotheses were generated to serve as a guide to the findings of the study and analyzed using frequency count, simple percentage, rank order and mean. The results revealed that price (99.55%), beliefs (93.2%), attitudes and life styles (91.38%), perception about a particular product (90.93%), family and household (90.48%), age and sex (89.34%), culture (87.98%), brand (85.94%), social class (82.54%), personality and consumer knowledge (75.51%) and reference group (66.44%) were some of the factors affecting consumer decision making among women. It was recommended that; consideration should be given to money at hand before purchase decision is made, and prices and quality of different goods and services can be compared from different shops before final decision making or one may window shop before the actual buying takes place.*

**Keywords:** Environmental factors, women, decision making, consumer, family

## INTRODUCTION

The complex nature of the way goods and services are consumed by people requires a great deal of attention to consumer decision making. The process by which goods are consumed starts from income generation to decision on what, where, who and how to buy. This creates tedious but rewarding task to an organization to ascertain the disposable income level of its target market, to identify who makes the buying decision, to identify who actually makes the buying and to identify who influences the buying for the organization to remain relevant in the marketplace. Also, it is on this background that an organization will be able to send across marketing messages to the target market and as such becoming accessible and effective. A group of consumers belong to the same market segments, they do not behave alike, and the characteristics of the products and services would not appeal to them in the same degree. Just as income, tastes and other factors influence the demand for a product, so the consumers decision making are influenced by environmental and cultural factors. Consumer purchase decision is a process by which consumers identify their needs, collect information, evaluate alternatives, and make the purchase decision (Erasmus, Boshoff and Rousseau, 2001). These actions are determined by psychological and economical factors, and are influenced by environmental factors such as cultural, group, and social values.

The market, today, is witnessing proliferation of different categories of goods and services with close similarity in design, and end use. The place of understanding consumer behaviour becomes pertinent for a producer to actually make a wave in the seemingly flooded market. Consumer behaviour is the study of the decision making units directly involved in the process of obtaining, consuming and disposing of economic products (goods and services). In some cases, buying decision is not made by single individual but a group of people (Blackwell, Miniard and Engel, 2006). Such decision does not hinge on the acquisition but also consumption and disposition of what is acquired. According to

Osuagwu and Eniola (2010) consumer behavior is “the behaviour customers or client display in searching for, buying, using, evaluating and disposing of products, ideas and experiences which they expect will satisfy their needs and wants. From the definition, it can be deduced that consumer behaviour involves the act of individuals or groups that can be influenced. These individuals or groups directly involve in acquiring, consuming and disposing of economic goods, services, ideas and experiences; and also it involves decision process that precedes and shapes these acts. Consumer behaviour involves both physical (goods) and intangible products (services, ideas and experiences). It is a dynamic process; may involve more than just buying to include acquiring (which could be by leasing, hiring, borrowing, etc), using or consuming and disposing.

Buying behaviour according to Dawson, Findlay & Sparks (2006), are set of attitudes that characterize the patterns of consumers' choices. Apart from the essential internal factors, which are recognized as influential to buying behaviour, there are a number of external situational contexts that affects consumer choices. Consumer behaviour is a combination of customers' buying consciousness and external incentives which are likely to results in behaviour remodeling. The society's culture, norms, convention, customs , religion, festivity, class, lifestyle and other sub-culture influence how individual consumers buy and use products, and help explain how groups of consumers behave (Lawan and Zanna, 2013).

Although, a lot of factors sum up to influence consumer buying behaviour, these factors can be categorized as individual (intrinsic) and environmental (extrinsic). The major individual factors affecting consumer behaviour are demographics, consumer knowledge, perception, learning, motivation, personality, beliefs, attitudes and life styles. The second category of factors is environmental (Mesay, 2013). The study is particular about environmental factors that influence consumer purchase decision. Environment is the surroundings of a physical system that may interact with the system by exchanging mass, energy, or other properties (Everett and Ishwaran, 2010). For the purpose of this study, the environment also includes human activity and interaction, weather conditions, culture, social class, reference group, family and household. They are the major determinants behind the decision of consumers to opt for a given good or service (Blackwell, Miniard and Engel, 2006). Unless the factors responsible for consumer decision making are identified effective use of goods and services might be hindered. The study therefore examines how interaction with the environment and its elements affect decision making of consumers. In specific terms, the study identifies factors that affect buying decision of consumers and the cultural factors influencing consumer purchase decision.

Consumer decision making means a consumer make a choice between more than one option of goods or services. The study on consumer decision making concerns how consumer make decision between those alternatives (Peter and Olson, 1999). A large number of researches on consumer decision making put the focus on the cognitive process. Consumer decision making process describes the steps of a consumer's decision making. Consumers first identify their needs and then collect information, evaluate the alternatives and finally make the purchase decision. All these actions are determined by both psychological and economical factors, and are affected by environmental factors like cultural, group, and social values (Klein and Yadav, 1989).

In the psychological aspect, consumers are viewed as irrational, impulsive and passive when making decision (Zaichkowsky, 1991). Some psychologists presume consumers would use rational shortcuts to make decisions. They think that consumers are not perfect decision makers and their minds are limited to handle and recall the information. For the economical perspectives, the Utility Theory anticipated that consumers make decisions based on the expected outcomes of their decisions. In this model consumers were viewed as rational actors who were able to estimate the probabilistic outcomes of uncertain decisions and select the outcome which maximized their well-being (Fishburn, 1968).



Consumer decision was categorised into three by Haghshenas, Abedi, Ghorbani, Kamali, and Harooni (2013) namely; complicated decision, limited decision and regular decision making.

**Complicated decision:** These are adopted to solve the complex problems that are consistent with traditional decision making. Decision-making processes for solving complex problems usually start with motivation to achieve a good success. Decisions made are along with a lot of risk. The consumer tries to collect available information as possible, including its memory (local search) also external sources (external search). Each product base on importance of decision, carefully evaluated and between assessments the choice is made according to features of a particular brand.

**Limited decision making:** Limited decision making is usually easier and more intelligible. Buyers have little incentive to collect information and are not strict to evaluate the options. They use simple rules to select one of the options such cognitive causes the consumer instead of restarting making decision in future, to be able to a general guideline for this purpose.

**Regular decision making:** Complex and time-limited decision making some measurements and data collection provided. Many purchase decisions are made when the goods seen within the store shelf. Selection of such goods, with minimum effort and without prior knowledge of product features usually takes place automatically. Purchase based on habit and repeat purchase behaviour allows consumers to spend less energy to decision of buying this product.

**Factors influencing buying decision of consumers**

Consumers according to Kotler (2004) and Sata (2013) are individuals and households that buy the firms product for personal consumption. There are two different kinds of consumers: the personal consumers and the organizational consumers (Sata, 2013). The process of obtaining, consuming, and disposing of goods and services is known as consumer behaviour. Consumer behaviour involves studying how people buy, what they buy, when they buy and why they buy (Sata, 2013). When a consumer wanted to make the purchase decision, they will pass through the process through recognition, search information, evaluation, purchase, feedback (Blackwell, Miniard & Engel, 2006). After these processes, a consumer will choose a product to consume from various choices in the market. However, these factors affecting the buying behaviour of consumers vary due to diverse environmental and individual determinants.

Sata (2013) emphasized that consumer buying behaviour is influenced by two major factors. These factors are individual and environmental. The major categories of individual factors affecting consumer behaviour are demographics, consumer knowledge, perception, learning, motivation, personality, beliefs, attitudes and life styles. The second category of factors is environmental factors (Sata, 2013). In relation to the primary definition of the environment, environmental factors represent those items outside of the individual that affect individual consumer's decision making process. These factors include family, household, culture, reference group and social class. They are the major determinants behind the decision of consumers to opt a given good or service (Blackwell, Miniard, and Engel, 2006). In Nigeria for instance, a developing country and has witnessed fast economic growth and developments in mobile telecommunication penetration in recent years. Due to these reasons, there is a dynamic increase in the number of mobile phone device users. This attracted large number of international firms to enter into mobile industry and offer various brands of mobile phones. However, the choice of consumer is diverse due to various factors associated with consumer behaviour.

Several authors have identified factors (individual or environmental) that can influence consumer decision making of choice of product. Ling, Hwang and Salvendy (2007) identified physical appearance, size and menu organization of the mobile phones as some of the most determinant factors affecting the choice of mobile phones. Karjaluoto (2005) identified price, brand, interface,

and properties as some of the most influential factors affecting the actual choice different brands of product. Mack and Sharples (2009) noted that usability in the most important determinant of mobile choice; other attributes particularly features, aesthetics and cost are other factors that have implication on the choice of mobile phone brand. Kumar (2012) showed that, price, quality and style functions are some of the most influential factors affecting the choice of a particular product. According to Skwirk (2014) there are a number of internal and external forces that compete for a consumer's attention in a commercial environment. Internal factors include taste, politics, prior experience and personal limits.

**METHODOLOGY**

**Research design:** The design that was employed for the study was descriptive survey design.

**Population of the study:** The population for the study comprised of all women in Ondo West Local Government Area, Ondo State. The population of women in Ondo West Local Government Area of Ondo State is 182,708 (Ondo West Local Government Secretariat, 2014).

**Sample and sampling technique:** For the purpose of the study, purposive and random sampling techniques were employed. Seven (7) wards out of the twelve (12) wards in Ondo West Local Government Area of Ondo State were randomly selected. Sixty-three (63) women were randomly selected in each of the selected wards. The sample for the study was four hundred and forty-one (441) respondents.

**Research instrument:** The research instrument that was employed for the study was a structured questionnaire. The questionnaire consists 19 items and was validated by two (2) Home Economists in Adeyemi College of Education, Ondo. A reliability coefficient of 0.811 (estimated with Pearson Product Moment Correlation Coefficient) was obtained using test-retest

**Data analysis:** Data were analysed using frequency count, simple percentage, rank order and mean. A cut-off of 2.50 was considered as agreed while any mean less than 2.5 was considered disagreed.

**RESULTS**

**Table 1: Factors that influencing purchase decision of consumers**

S/N	Items	Frequency	Percentage (%)	Rank
1.	Age and sex (Demographics)	394	89.34	6th
2.	Consumer Knowledge	333	75.51	11th
3.	Perception about a particular product	401	90.93	4th
4.	Personality	356	80.73	10th
5.	Beliefs	411	93.20	2nd
6.	Attitudes and Life Styles.	403	91.38	3rd
7.	Culture	388	87.98	7th
8.	Social Class	364	82.54	9th
9.	Reference Group	293	66.44	12th
10.	Family and Household	399	90.48	5th
11.	Price	439	99.55	1st
12.	Brand	379	85.94	8th

Table 1 showed that price (99.55%) ranked first among the factors that influence purchase decision of consumers while reference group (66.44%) ranked last. Other factors such as beliefs (93.2%), attitudes and life styles (91.38%), perception about a particular product (90.93%), family and household (90.48%), age and sex (89.34%), culture (87.98%), brand (85.94%), social class (82.54%), personality and consumer knowledge (75.51%) ranked second to eleventh respectively.

**Table 2: Cultural factors influencing consumer purchase decision among young and old women**

S/N	Items	Mean	Std. Deviation	Remark
1.	Concern about health and fitness	3.33	0.877	Agreed
2.	Shift toward informality	2.69	1.015	Agreed
3.	Increased desire for leisure time	2.87	0.966	Agreed
4.	Priority to the goals of a particular set of people	2.93	0.764	Agreed
5.	Self-identity	2.88	0.843	Agreed
6.	Influence of norms and value of the society	3.49	0.801	Agreed
7.	Suppression of emotion	3.04	0.931	Agreed

Table 2 revealed that the mean response of young and old on items 1-7 were greater than the cut-off point (2.5), hence, respondents agreed to all the item statements.

**Discussions**

The results revealed that price is one of the factors responsible for purchase decision among women. The price of a product or service is the amount of money needed to purchase it. Ordinarily, consumers get more fascinated at low cost products when compared to high cost articles. In support of these findings Karjaluoto (2005) stated that price, brand, interface, and properties are the most influential factors affecting the actual choice of different brands of product. Other factors as revealed in the results of the study are beliefs, attitudes, life styles, perception about a particular product, family and household, age and sex, culture, brand, social class, personality and consumer knowledge. In corroboration with the findings, Sata (2013) stated the major categories of individual factors affecting consumer behaviour are demographics, consumer knowledge, perception, learning, motivation, personality, beliefs, attitudes and life styles. Additionally Blackwell, Miniard and Engel (2006) identified culture, social class, reference group, family and household as some of the factors influencing consumer purchase decision. Mack and Sharples (2009) identified cost and other factors to have implication on consumer purchase decision. Kumar (2012) identified price, quality and style functions as the most influential factors affecting the choice of a particular product. In the same vein, Saif, Razzaq, Amad, & Gul (2012) identified price, size/shape, new technology features and brand name as influential factors on consumers' buying behaviour.

Culture is a mix of all the knowledge and values shared by a society. Cultural factors influencing consumer purchase decision include a mix of knowledge and values shared among members of a particular society. As identified in the study, the cultural factors influencing consumer decision making include concern about health and fitness, shift toward informality, increased desire for leisure time, priority to the goals of a particular set of people, self-identity, influence of norms and value of the society and suppression of emotion. Every community irrespective of the size has its own way of life, this added together affect their purchase decision. In a community where the cooking fuel is firewood, kerosene or gas will hardly be found. In line with this finding Lawan and Zanna (2013) observed that cultural influences on buying behaviour may vary greatly from place to place and failure to adjust to these differences can result in ineffective marketing. Hofstede (1980)

stated that culture outlines many business norms, family norms, behaviour norms, etc. Explaining the influence of culture on consumer purchase decision Triandis (1995) stated that a person is generally seen as more mature when he/she puts personal feelings aside and acts in a socially appropriate manner rather than in a way consistent with personal attitudes and beliefs. Also Kacea and Lee (2002) revealed that there is a powerful and consistent influence of culture at both ethnicity level and the individual level.

**CONCLUSION**

Environmental factors influencing consumer decision making includes all external factors that drive consumer decision making. Environmental factors include price, beliefs, attitudes, life styles, perception about a particular product, family and household, age and sex, culture, brand, social class, personality and consumer as well as cultural factors. Consumer decision making especially among women needs to be given serious consideration to ensure right purchase decision. Irrespective of environmental influences such as culture, price, brand, size, beliefs, lifestyles attitude and a host of others, it is important for consumers to make right purchase decisions.

**Recommendations**

In order to ensure right purchase decision, the following were recommended:-

1. Consideration should be given to the means (cash at hand) before purchase decision, in case of a limited food budget or products need for use at home;
2. Prices and quality of different goods and services can be compared from different shops before final decision making or one may window shop before the actual buying takes place;
3. In choosing a particular product to purchase consideration should be given to the particular needs of individual in a family;
4. Potential buyers should avoid purchasing things that are not initially planned for;
5. One of the great influences on consumer decision making is advertisement, consumer should watch out for adverts that are decent, honest and truthful; and
6. Women should be careful not to over pay for convenience and online shopping should be discouraged. It is better to see what is to be bought before purchase.

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# OGUN STATE EMPLOYMENT GENERATION PROGRAMME AND POVERTY STATUS OF DRESSMAKING SKILLS BENEFICIARIES

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## ABSTRACT

Poverty, a concept with many dimensions and complexities has become a central global concern. All levels of government and Non-Government Organizations (NGOs) in Nigeria are fully engaged in finding solutions to problems arising from poverty including Ogun State Employment Generation Programme (OGE GEP). This study examined the effect of OGE GEP on the poverty status of beneficiaries in dressmaking skills acquisition. A two-stage sampling procedure was used to select 49 respondents who had benefited from the OGE GEP training. Primary data was collected using a well-structured questionnaire containing information on respondents' personal characteristics and other relevant variables. Data were analyzed using descriptive (frequency, percentage and mean) and inferential (t-test) statistics. Results indicate that beneficiaries had an average age of 31.2 years. Majority was female (67.3%), single (57.1%), self-sponsored (38.8%), level of involvement during the training was high among majority (53.1%). Though less than half (42.9%) of the beneficiaries were better off post training, only 36.7% had a moderately improved poverty status. There was a significant difference in the poverty status of dressmaking skills beneficiaries before and after the programme ( $t=-3.660, p=0.001$ ). It was recommended that gains of OGE GEP intervention in dressmaking skills be sustained in the state.

**Keywords:** OGE GEP, dressmaking skills, poverty status, employment generation.

## INTRODUCTION

The issue of poverty in Nigeria has been described as “widespread and severe” Central Bank of Nigeria, 2006; World Bank, 2006). Poverty has been one of the most challenging problems facing mankind today especially in developing countries like Nigeria, despite the country's vast resources. Poverty is not only a state of existence but a process with many dimensions and complexities (Khan, 2000). Available statistics also showed that about 1.2 billion people around the world live on less than a dollar a day while almost 850 million go hungry every night (United Nations Development Programme, 2008), as such it is a worldwide phenomenon.

Nigeria seems to be faced with many challenges that gave birth to poverty. These are unemployment, food crises, high crime rate, illiteracy, ignorance, inequality, malnutrition to mention a few. Unemployment on the other hand has been described as one of the serious impediments to social progress. Substantial evidences have shown that nations and individuals that had their rate of poverty reduced invest greatly in skill development and vocational training for creating jobs as well as increasing national productive capacity. Leach (2002) asserted that training and skill development cannot be over emphasized in raising the living standard of entrepreneurs. Hatten (2006) viewed training and skill development as necessary tools needed for successful career by an entrepreneur. Denga (2000) affirmed that the way forward is to equip youths with vocational skills that would provide opportunities for employment and self-reliance.

Ogun State Employment Generation Programme (OGE GEP) is one of the programmes in Ogun State set up to tackle unemployment challenge in the state. OGE GEP was established in 2003 by Ogun State government in Abeokuta, to train unemployed youth on various agricultural and non agricultural related vocations. Some priority areas for intervention are agricultural activities, agro allied, processing, and craftsmanship, including dressmaking, interior decoration, indigenous resist fabric production and general services. A weekly stipend of a thousand naira is given to each trainee. The form for the training is free. The training lasts for a period of three months. Thereafter, a certificate of training is offered to the graduates by the Bureau of Employment. The intervention mandate was to mobilize resources from all tiers of government in the state for economic empowerment. Resources generated are being used to spur the economic activities at the grassroots thereby promoting the wellbeing of the people and ensuring sustainability (Bureau of Employment, 2008).

### Problem statement

The big challenge of the 21st century is the eradication of poverty. Virtually all countries and government agreed on the importance of eradicating poverty. Poverty is a condition of insufficient resources or income, a violation of human welfare or dignity (Adeola and Ayoade, 2012). Moreover, poverty is a state of having little or no money or other endowments and not being able to get the necessities of life (Akinyemi and Torimiro, 2008). The concept of poverty derived from long and protracted inability to generate productive resources for the purpose of generating a desired level of output in order to enhance the realization of an appreciable income. According to Kankwenda, Gregoire, Legros and Quedraogo (2000), to be able to graduate from this poverty situation, income generated must be reasonable enough to meet daily needs and must be sustainable. This would lead to sustainable human development in the end. The 2003 head count put Nigeria's population at 143 million while in 2005 Nigeria was ranked 158 in a Table of 177 countries with the lowest human development index (UNDP, 2005). Poverty in Nigeria manifest in many ways such as unemployment (resulting to high incidence of many forms of social ills such as arm robbery, political thuggery, child labour, human trafficking, prostitution, internet fraud, cultism and terrorism that is currently disturbing global and national peace ), malnutrition (leading to low health standard or condition ), illiteracy to mention a few (Olaosebikan, 2014).

In order to eliminate poverty, governments at various levels including non-governmental agencies provided different opportunities to enhance entrepreneurial development among the citizenry. Nigerian government focused on poverty alleviation as part of the activities to achieve the Millennium Development Goals (MDGs) in response to increasing poverty situation thus committed lots of resources to programmes and projects aimed at alleviating poverty. In spite of government's interest in initiating programmes and projects for the improvement of the living standard of Nigerians, there has been increase in the poverty level. These alarming indicators made government to review the existing poverty alleviation scheme with a view to harmonizing and improving on them. Thus there is the need to check if the dressmaking skills acquired by the beneficiaries have improved their poverty status (economic worth).

### Research objectives

The broad objective of this study is to evaluate the effect of employment generation programme on poverty status of dressmaking skills beneficiaries in Ogun State.

Specifically, this study sought to:

1. describe the personal characteristics of OGE GEP beneficiaries in dressmaking skills;
2. ascertain the level of involvement of beneficiaries in dressmaking skills acquisition;
3. determine the change in the poverty status of OGE GEP beneficiaries in dressmaking skills before and after the programme.

### METHODOLOGY

The study was carried out in Ogun State, Nigeria. Geographically, Ogun State lies between latitude 6°N and 8°N and longitude 2°E and 5°E. It is located in the southwestern rainforest zone of Nigeria. The state is bounded on the west by the Republic of Benin and on the east by Ondo State. To the north of the State are Oyo and Osun State while Lagos State and the Atlantic Ocean lie south. With the relative geographical setting of the State, it shares international boundary with the Republic of Benin particularly Idi Iroko through which it has enjoyed tremendous association with other West African countries. Ogun State serves as the entry point for goods from these countries into Nigeria, hence it is called gateway to Nigeria. Agriculture remains the mainstay of the state. The people of Ogun State are mainly farmers producing food and cash crops such as cassava, maize, melon, cocoyam, yam, cowpea, rice, cocoa, kola, oil palm, rubber, citrus, plantain, and coffee. The population for this study

included all beneficiaries of Ogun State Employment Generation Programme in dressmaking skills acquisition.

A two-stage sampling procedure was used in selecting respondents. In the first stage, purposive sampling method was used to select dressmaking skills beneficiaries (80 beneficiaries) from all the different skills acquisition of OGE GEP intervention because they were the focused beneficiaries of this study. In the second stage, snow ball method was used to reach the dressmaking skills beneficiaries as they were not located in one place. Therefore, few of them were identified and were used to locate other dressmaking skills beneficiaries. In all, a total of 49 beneficiaries (more than 50% of the beneficiaries) were eventually reached.

Primary data were collected using well-structured questionnaire. Variables measured were respondents' personal characteristics; level of involvement of beneficiaries in the dressmaking skills; and the change in poverty status of beneficiaries before and after the intervention. A list of skills taught during training was presented to the beneficiaries to know their level of involvement. This was operationalised as fully, partially and not involved and a score of 2, 1, and 0 were assigned respectively. The highest obtainable score was 40. The lowest obtainable score was zero (0). The mean score for involvement (30.1) was computed and respondents were categorized on the basis of whether they were lowly (scores < mean) or highly (scores ≥ mean) involved in the enterprises during training. The change in poverty status of the beneficiaries was determined by asking the respondents to state their income, and expenditure on items such as food, drug, rent (house and shop), electricity, social event, transportation, toiletries, before and after the programme. Their poverty index before and after the programme was determined. Poverty index = (Income - expenditure) / number of household. The change in poverty index was determined. The minimum value, maximum value and the mean of the change in poverty status was also obtained. These were used to categorize the level of change in poverty status into worse off (minimum value to -0.01), moderately improved (0.01 to < mean), and better off (mean to maximum value). Data were analyzed using frequency counts, percentages, mean, and T-test.

## RESULTS AND DISCUSSION

### Personal characteristics of respondents

Table 1 reveals that dressmaking skills beneficiaries had the mean age of 31.2 years, with majority (63.4%) within the age bracket of 21 to 30 years. This showed that majority of the beneficiaries were active and adventurous and would probably put to practice the various skills acquired. There were more females (67.3%) than males (32.7%), majority were Christians (55.1%), had secondary school education (44.9%), implying majority of the beneficiaries were literate. Zeardon (2000) stressed that better educated members have access to any training skills on offer and are more likely to establish their enterprises. About 57.1% of the beneficiaries were single, 38.8% self-sponsored; this result contradicts Bureau of Employment Generation (2008) that the beneficiaries were sponsored by the government. 63.3% spent 12 months, 65.2% enrolled within the year 2011 to 2014, and they had a mean household size of 3.6 persons.

### Respondents' level of involvement in dressmaking skills during training

Table 2 presents a list of various activities beneficiaries were taken through during the training and their level of involvement during the programme. Data indicates that a very large proportion of the respondents were fully involved in all the activities, especially in adult female garments like buba and iro (77.6%), skirt and blouse (75.3%), gown (77.6%), as well as children female garment, like iro and buba (73.5%), skirt and blouse (73.5%), gown (75.5%), trousers (63.3%). This could be due to the practical and participatory nature of teaching used by the instructors. The percentage of beneficiaries fully involved in adult male garment was about average, as seen in buba and sokoto (53.1%), agbada and sokoto (49.0%), shirt and trouser (53.1 %), suits (51.0). This may be because majority of the beneficiaries were female (67.3%) with interest in female outfits. The high level of involvement in children garment may be due to the fact that children's outfits are not time consuming, hence a lot of children's garments can be completed within a short period of time. Moreover, since children are usually small in size, the materials needed to make children's garment are small and affordable, thus making it easy for majority of the beneficiaries to be fully involved in dressmaking skills involving children's garments.



**Table 1: Distribution of respondents' selected personal characteristics (n=49)**

Variables	Dressmaking beneficiaries F (%)
<b>Age (years)</b>	
20	9 (18.4)
21-30	31 (63.4)
31-40	7 (14.2)
41-50	2 (4.0)
Mean	31.2
<b>Total</b>	<b>49 (100.0)</b>
<b>Sex</b>	
Male	16 (32.7)
Female	33 (67.3)
Total	49 (100.0)
<b>Religion</b>	
Islam	15 (30.6)
Christianity	27 (55.1)
Traditional	7 (14.3)
<b>Total</b>	<b>49 (100.0)</b>
<b>Educational level</b>	
Primary school	4 (8.2)
Secondary school	22 (44.9)
NCE	6 (12.2)
OND	11 (22.4)
HND	3 (6.1)
BSc	3 (6.1)
<b>Total</b>	<b>49 (100.0)</b>
<b>Marital status</b>	
Single	28 (57.1)
Married	18 (36.7)
Separated	2 (4.1)
Widowed	1 (2.0)
<b>Total</b>	<b>49 (100.0)</b>
<b>Household size</b>	
1-3	30 (61.2)
Mean	3.6
<b>Total</b>	<b>49 (100.0)</b>
<b>Sponsorship</b>	
Parent	14 (28.6)
Guardian	7 (14.3)
Self	19 (38.8)
Government	9 (18.4)
<b>Total</b>	<b>49 (100.0)</b>
<b>What year did you enroll for the programme?</b>	
2003-2006	6 (12.2)
2007-2010	11 (22.4)
2011-2014	32 (65.2)
<b>Total</b>	<b>49 (100.0)</b>
<b>How many months did you spend?</b>	
3-5	3 (6.1)
6-8	14 (28.5)
9-11	1 (2.0)
12-14	31 (63.3)
<b>Total</b>	<b>49 (100.0)</b>

Source: Field survey, 2015.

**Change in poverty status of the beneficiaries**

Table 3 shows the distribution according to the level of change in poverty status of the beneficiaries in dressmaking skills. The results of the findings show that 42.9% of the beneficiaries were better off, 36.7% of the beneficiaries had a moderately improved poverty status, while 20.4% were worse off. These imply that most of the dressmaking skills beneficiaries (42%) were more self-reliant, they were also able to improve their standard of living, they could afford more nourishing meals, buy more dresses and shoes, purchase more recharge cards, attend more functions, give more gifts, rent their personal apartment; while 36.7% of the beneficiaries were averagely self-reliant, such that they still need to depend on others for survival though they could afford a little bit more of nourishing meals, buy few dresses and shoes, purchase a little additional recharge cards, spend a little more on gifts, rent very cheap apartments.

**Table 2: Distribution of respondents based on level of involvement in dressmaking skills (n=49)**

Activities	Not involved F (%)	Partially involved F (%)	Fully involved F (%)
<b>Adult female garment</b>			
Buba and iro	5 (10.2)	6 (12.2)	38 (77.6)
Skirt and blouse	5 (10.2)	7 (14.3)	37 (75.3)
Boubou	7 (14.3)	9 (18.4)	33 (67.3)
Gown	5 (10.2)	6 (12.2)	38 (77.6)
Trousers	6 (12.2)	11 (22.4)	32 (65.3)
Suits	8 (16.3)	13 (26.5)	28 (57.1)
<b>Children female garment</b>			
Buba and iro	8 (16.3)	8 (16.3)	36 (73.5)
Skirt and blouse	7 (14.3)	6 (12.2)	36 (73.5)
Gown	7 (14.3)	5 (10.2)	37 (75.5)
Trousers	8 (16.3)	10 (20.4)	31 (63.3)
Suits	11 (22.4)	10 (20.4)	28 (57.1)
<b>Adult male garments</b>			
Buba and sokoto	12 (24.5)	11 (22.4)	26 (53.1)
Agbada and sokoto	12 (24.5)	13 (26.5)	24 (49.0)
Gbariye and sokoto	13 (26.5)	12 (24.5)	24 (49.0)
Shirt and trouser	12 (24.5)	11 (22.4)	26 (53.1)
Suits	13 (26.5)	11 (22.4)	25 (51.0)
<b>Children male garment</b>			
Buba and sokoto	16 (32.7)	5 (10.2)	28 (57.1)
Dansiki and sokoto	18 (36.7)	4 (8.2)	27 (55.1)
Shirt and trouser	13 (26.5)	7 (14.3)	29 (59.2)
Suits	13 (26.5)	5 (10.2)	31 (63.3)

Source: Field survey, 2015.

However, about a quarter (20.4%) of the beneficiaries were not self-reliant after the training, their standard of living was not improved. Most of them still borrow and beg for money in order to make ends meet. These corroborate Akinyemiju and Torimiro (2008) who emphasised that poverty is a condition of having little or no money or other endowments and not being able to get the necessities of life. According to Kankwenda et al (2000), to be able to graduate from this poverty situation, income generated must be reasonable enough to meet daily needs and must be sustainable. This would lead to sustainable human development in the end. However, these respondents were not able

to attain this, thus they are classified as worse off after training. This may be because their level of involvement during training was very low; hence they were not able to utilize the necessary dressmaking skills after the intervention to make garments that would fetch them enough money to improve their standard of living and ensure a sustainable livelihood.

**Table 3: Distribution of dressmaking respondents according to their level of change in poverty status**

Change in poverty status score	Dressmaking respondents	
	F (%)	SD
Worse off (-81400.0 to -0.01)	10 (20.4)	
Moderately improved (0.01 to 22782.00)	18 (36.7)	22783.3 43577.72
Better off (22783.0 to 198800.00)	21 (42.9)	
Total	49 (100.0)	

Source: Field survey, 2015.

**T-test of difference of beneficiaries' poverty status before and after the intervention**

Table 4 reveals that there was a significant difference in the poverty status (economic worth) of dressmaking skills beneficiaries before and after the programme. ( $t=-3.660$ ,  $p = 0.001$ ). A programme is beneficial when there is an improvement in status. The dressmaking skills acquired equipped the beneficiaries to exploit the wealth creating opportunities in dressmaking. This ensured economic self-reliance (entrepreneurship); sustainable livelihood with beneficiaries having opportunities for self-employment, job creation, enhanced income, capacity for insightful thinking, creative abilities as well as opportunities for career advancement. Also, the dressmaking skills acquired enabled them to be professionals, well sought after which was not so before the dressmaking skills were acquired. In all, the dressmaking skills intervention impacted on those beneficiaries that stuck with it after the training

**Table 4: Difference in poverty status of the beneficiaries before and after the programme**

Poverty status before and after programme	N	t-value	DF	p-value	Remark	Decision
Dressmaking skills	49	-3.660	48	0.001	S	Reject $H_0$

**CONCLUSION AND RECOMMENDATION**

Most dressmaking skills beneficiaries were mostly youth, female and self-sponsored. Level of involvement was high among more than half of the respondents and most were better off after the intervention. It is recommended that the gain of OGE GEP be sustained by the state.

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# WOMEN ATTITUDE ON PUBLIC BREASTFEEDING AND CHOICE OF BREASTFEEDING GARMENTS FOR LACTATING MOTHERS IN ASABA, DELTA STATE

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## ABSTRACT

*Globally, breastfeeding has been much talked about. Many women especially, nursing mothers find it difficult and are ashamed of feeding their babies in the public especially when the garment worn will not allow easy access to the breast. The study was carried out on the attitude of women on public breastfeeding and the acceptability of breastfeeding garments for lactating mothers. A descriptive survey was carried out using a pre-tested self-structured questionnaire. A total sample of 200 consisting 20 female nurses and 100 nursing mothers purposively selected from Federal Medical Centre and 80 female staff randomly selected from Delta State Government Secretariat, Asaba. The results shows that (98.0%) of respondents fell above 20 years old with mean age of 36.1 years, and are within child bearing age; 80(40.0%). 86.0% had at least secondary school education and 89.0% are civil servants. Though respondents were in support that naturally, mothers should breastfeed their babies ( $x=3.83$ ), encourage breastfeeding ( $x=2.79$ ) but frowns at unethical exposure of breast in the public except during breastfeeding babies below six months ( $x=2.78$ ). 91% (3.59) said that breastfeeding will not stop them from attending public functions and agreed to use breastfeeding garments and covers with mean score of 3.39. Finally, fashionable women prefer breastfeeding covers as this will enable them have a wide range of clothing selection; and also agreed that awareness should be created by educating women on the importance of using breastfeeding garments during antenatal to make them comfortable to breastfeed in public and not deny babies their right.*

**Keywords:** Nursing Mother, Public, Breastfeeding, Breastfeeding-garment, Attitude

## INTRODUCTION

Studies have shown that breastfeeding is more advantageous to a child than other forms of feeding. Breastfeeding has nourishment advantages for the nursing child and mother over bottle feeding with formula as well creating intimacy between the mother and child which help to promote a natural bond. Woman breast milk is the healthiest form of milk for the human beings; there is little exception such as when the mother is taking certain drugs or is affected with one form of sickness or disease. Furthermore, as advantageous and natural as breastfeeding is many women are uncomfortable with nursing in public when access to privacy is unavailable. This un-comfortableness or modesty is largely due to the fact that while breastfeeding, it can be difficult for a mother to completely conceal or cover the expose breast at all times during nursing. Hence, breastfeeding garment is a dress put on by women while breastfeeding a child which conceals the woman breast.

According to , breastfeeding garment comprises of a body portion having a top section and bottom section. The body portion extended downwardly over one of the woman's breast, having a pouch extending substantially from the top section to the bottom section with strap connected to the top of the body portion for extending around a neck of wearer allowing the body portion to be swing-able about the neck from the first position to the second portion. Also the garment has pair waist straps extending from a respective left and right section of the body portion around the waist of the wearer and in detachable from one another.

Nowadays women and young ladies are not ashamed to expose their breast in the public. However, it

has been discovered that present days women are finding it difficult to breastfeed their babies during social gathering or in public places due to civilization, shame, Psychological reasons, economic and social lifestyle (socio-economic status) thereby subjecting their babies to unnecessary crying and pain, all due to clothes worn which require exposing their breast when breastfeeding. It is obvious that the child does not understand whether the mother is at home or in the public places, all the child needs at that time is the satisfaction from the mother especially children undergoing exclusive breastfeeding (baby friendly).

One will agree that a child need to be fed every now and then. This will require the mother breastfeeding child at all time he or she wants food because that is the only food the child takes. It is good for the mother not to ignore her duty on the child because of shame instead she should be prepared at all times to attend to the free gift she had received by making use of the garment which will allow her to breastfeed her baby without shame and exposure of her breast during public functions like wedding ceremonies, burial, working place, church services, birthday parties, shops to mention but a few.

Most women are ignorant of the kind of clothes they should wear during the period of breastfeeding their babies. Breastfeeding mothers feel they can dress in all kind of clothes like every other woman who are not breastfeeding. This could be that they are not aware or educated that as there are clothes for pregnancy so also for breastfeeding. If they are aware, the choice of garment to be used becomes a problem as some act on limitation or there is no money to purchase a befitting breastfeeding garment. It also could be that many breastfeeding garments are primary articles of clothing itself and do not allow the mother the flexibility of wearing a wild selection of convectional clothing. Others suffer from having a complicated or simply do not provide a sufficient manner of concealing the breast throughout the entire nursing process.

The study will help to solve the problem of mother avoiding breastfeeding their babies away from home because they do not want their breast to be exposed publicly and to see how the breast can be covered when carrying out their child publicly and still retained their social prestige.

## Public breastfeeding and breastfeeding garments

A baby's need to feed cannot be reliably predicated so, legal and social rules about indecent exposure and dress code is often adapted to meet this need. Many laws, around the world make public breastfeeding legal and disallow companies from prohibiting in the workplace but some people are uncomfortable with seeing a mother breastfeed in public; likewise some breastfeeding mothers feel reluctant to breastfeed in public.

In order to maintain modesty even when breastfeeding in public, breastfeeding garment were introduced. According to , Breastfeeding garment is provided for use by a woman while breastfeeding a child which conceals the woman breast. Nursing clothes allow breastfeeding mothers to nurse or breastfeed their babies or toddlers with ease. Some woman appreciated the discretion and privacy offered by specialty nursing garments. Maternity shops offer a variety of items ranging from basic nursing bras and camisoles to cocktail dresses and swim wear. While nursing clothes are not a necessity; they can make breastfeeding, especially in public a bit more convenient for both the mother and the child.

Nursing/breastfeeding clothes of all types are design to allow breastfeeding mothers to easily feed their children. Nursing bras are supportive, highly adjustable and include a drop flap to allow the mothers to nurse their babies without shifting or removing bra; Nursing tanks and camisoles are increasingly available at maternity retailers and include a similar drop flap over the shirts, dresses nightgowns and swimwear designed for nursing all include openings access the breast, as well as integrated coverage for these openings.

Nursing tops, dresses and undergarments can make it easier and more convenient to provide the baby with the best in life. If the nursing mother is uncomfortable when nursing in public, nursing wear that allow her to nurse without anyone around her being aware should be used. Nursing dresses offer breastfeeding mothers the convenience of one piece dressing and can make it easier to manage taking baby along to a wedding or other formal occasion. Maternity clothes have very significant roles during lactation period also because breastfeeding in regular clothes become awkward and embarrassing, there is a great need designing clothes for lactating women. Selecting the most comfortable clothes to wear can be a challenge during lactation and a working lactating woman, have to worry even more about looking chic, yet at ease. Comfort is primary; it is not all that difficult to find stylish breastfeeding clothes or trendy lactating clothing to make nursing mothers and baby even more comfortable.

Many women feel uncomfortable when breastfeeding in public, so they use a breastfeeding cover to maintain their modesty . Whatever may be the nursing mother level of comfort, there is no reason not to feed her baby whenever and wherever the baby needs to be fed. Regardless of the location, some public places have set aside where mother and baby may breastfeed in relative privacy wherever. Privacy can also be important for babies who are easily distracted and need to focus to nurse successfully .

**Opinions on breastfeeding in public**

People have different opinion about public breastfeeding base on cultural belief and practice in different regions of the world. According to Hannan, Li and Grummer (2005), in Nigeria, mothers especially the uneducated can breastfeed anytime and anywhere even in public buses. Some even breastfeed while working in the farms, what the mother does is shift the baby to her side, still strapped to the mother, she brings out the breast, then sticks it in the baby's mouth and continues her planting. The educated nursing mothers usually try to stay in secluded places to breastfeed. It is perfectly normal to see a woman breastfeeding when necessary, for example at a wedding, church or in the office with little cover not to reveal the breast to maintain some level of modesty. People do not usually whip out their boobs especially in an urban setting.

**Objectives of the study**

The main objective of the study is to investigate women's attitude on public breastfeeding and choice of breastfeeding garment for lactating mothers. Specific Objectives of the study are to:

- i. Investigate attitude of women toward public breastfeeding;
- ii. Examine the right and wrong of public breastfeeding; and
- iii. Examine the garment design most acceptable by women.

**METHODOLOGY**

Self-structured pre-tested questionnaire with a 5 point Likert scale where 1 equals to the lowest (Strongly Disagreed) and 5 equals to the highest (Strongly Agreed) that probe into women's attitude on public breastfeeding and choice of breastfeeding garment for lactating mothers were administered to purposively and randomly selected women which included 3 groups: female nurses (n=20), nursing mothers (n=100) from Federal Medical Center (FMC) and female staff (n=80) from State Secretariat Asaba, Delta State; consisting 200 respondents.

The questionnaire was sectioned into three: A – socioeconomic characteristics of the respondents, that is: age, religion, ethnicity, educational background, marital status, and number of children; section B -women attitude towards breastfeeding in public, and Section C - awareness level and choice of breastfeeding garment. Reliability of instrument was tested using Cronbach's Alpha and reliability coefficient of 0.805, 0.709, and 0.801 were obtained for each section. Descriptive statistics such as frequency and percentages were used to present data obtained on women attitude towards public breastfeeding, awareness and choice of breastfeeding garment.

**RESULTS AND DISCUSSION**

Socioeconomic characteristics: Table 1 shows that 196 (98.0%) of respondents fell above 20 years old with mean age of 36.1 years, an indication that majority of the respondents was within child bearing age; and most were married 124 (62.0%).

Also respondents with formal education at secondary schools level was 40(20%); OND/NCE was 56(28.0%); and HND and above was 80(40.0%). This shows that majority of the respondents are enlightened.

From the table, all the respondents were Christian 200(100%); majority civil servant 178 (89.0%) and those with annual income above ₦300, 000 were 82.0%; this shows that only few respondents 36 (18.0%) have low socio-economic status. About half of the respondents 96(48%) were Igbo and 54(27%) Urhobo; an indication that Asaba is Delta-Igbo.

Table 2 shows that majority of respondents were fully in agreement that naturally a mother should breastfeed her baby with mean score of 3.83 and also supported exclusive breastfeeding (3.53). Respondents appeared to concur that their religion has nothing against public breastfeeding (3.09); although it is unethical for woman to expose breast in public hence, the mean score of statement number four (4) 2.78 is favorable. Statement number seven (7) shows a mean score of 3.28 revealing that cultural norms are irrelevant to public breastfeeding.

Respondents will breastfeed anywhere (3.59) as this will not stop them from attending public functions but they dislike women with expose breast in public except during breastfeeding. Therefore, respondents had positive attitude and were not against public breastfeeding and the exposure of the breast when breastfeeding.

**Table 1: Socioeconomic characteristics of the respondents (n=200)**

Variables	Frequency	Percentages
<b>Age</b>		
Under 20	4	2.0
20-29	96	48.0
30-39	60	30.0
40 and above	40	20.00
Mean		36.1
<b>Religion</b>		
Christianity	200	100
Islam	0	0
Traditional	-	-
Others	-	-
<b>Ethnicity</b>		
Yoruba	10	5
Igbo	96	48
Hausa	2	1
Ijaw	16	8
Urhobo	54	27
Itsekiri	22	11
<b>Educational Background</b>		
Non formal Education	12	6
Primary	12	6
Secondary	40	20
OND/NCE	56	28
HND and Above	80	40
<b>Marital Status</b>		
Single	76	38.0
Married	116	58.0
Divorced	0	0.0
Separated	0	0.0
Widow	8	4.0
<b>Occupation</b>		
Civil Servant	178	89.0
Trader	8	4.0
Businesswoman	14	7.0
<b>Annual Income</b>		
₦90,000-200,000	16	8.0
₦201,000-300,000	20	10.0
₦ 301,000-500,000	48	24.0
₦501,000 and Above	116	58.0

**Attitude of Women toward Public Breastfeeding**



Table 2: Mean response on women attitude on public breastfeeding (n=200)

S/No.	ATTITUDE QUESTIONS	Mean Score	Remark
1	Naturally, a mother should breastfeed her baby.	3.83	Agreed
2	I do support exclusive breastfeeding?	3.53	Agreed
3	Is your religion against public breastfeeding?	1.85	Disagreed
4	It is unethical for woman to expose breast in public	2.78	Agreed
5	There is nothing wrong with women breastfeeding in public	2.56	Agreed
6	Religious should have nothing to do with public breastfeeding	3.09	Agreed
7	Cultural norms are irrelevant to public breastfeeding	2.72	Agreed
8	I prefer to breastfeed indoor	2.51	Agreed
9	I dislike women with exposed breast in public except when breastfeeding	2.55	Agreed
10	Breastfeeding will not stop me from attending public functions	3.59	Agreed

The right and wrong of public breastfeeding

Table 3: Respondents views on public breastfeeding with breastfeeding garment (n=200)

S/No	Statement	SA Freq (%)	A Freq (%)	U Freq (%)	D Freq (%)	SD Freq (%)	Mean
1.	Do you encourage public breastfeeding?	70 (35.0)	58 (29.0)	0 (0.0)	40 (20.0)	32 (16.0)	2.79
2.	Personally, I will like women to cover their body during public breastfeeding	110 (55.0)	58 (29.0)	4 (2.0)	18 (9.0)	10 (5.0)	3.26
3.	Nursing covers should be encourage for use by breastfeeding mothers in the public	110 (55.0)	64 (32.0)	8 (4.0)	12 (6.0)	6 (3.0)	3.28
4.	I prefer to breastfeed in door covered	44 (22.0)	76 (38.0)	14 (7.0)	34 (17.0)	32 (16.0)	2.51
5.	With a breastfeeding garment, I will breastfeed publicly	108 (54.0)	76 (38.0)	2 (1.0)	10 (5.0)	4 (2.0)	3.39
6.	Breastfeeding garment should be encouraged during antenatal	120 (60.0)	62 (31.0)	6 (3.0)	8 (4.0)	4 (2.0)	3.41

From Table 3, over and above half 128(64.0%) of respondents do encourage public breastfeeding while majority of respondents 168 (84%) agreed to nursing mother should cover her breast; Also from the table, statement number three (3) shows a mean score of 3.28 supporting the view that nursing or breastfeeding garment should be encouraged for use by breastfeeding mothers in the public. statement number five (5) with the mean score of 3.39 indicated that 184 (92.0%) respondents established that nursing mother accept breastfeeding in public with the aid of breastfeeding garment that will cover the breast during the process. Furthermore, statement in number six (6) with mean score of 3.41 emphases that 182 (91.0%) respondents accepted that breastfeeding garment should be encouraged during antenatal in order for the woman to be aware of the existence of the garments and cover as this will drastically give confidence for public breastfeeding.

Choice of breastfeeding garment design by women






Table 4 clearly shows base on individual choice the garment design acceptable by women as the respondents have their different reasons of choosing a particular garment.

Fifty-four (27%) respondents chose Garment A for the reason that according to the respondent, it allows them to dress in wild range of clothing selection like every woman who is not breastfeeding to different occasions they wish to attend and it will allow air to go through to the baby; Hence, having the highest acceptability. Some respondents prefer garment B (15%) with the reason that it is stylish and easy to use.

Others showed interest in garment design C (21%) because of the fastening along the princess line that will help to cover the breast the more after opening for the process of breastfeeding. Cover D has the second highest percentage of acceptability with 23%. They accepted it with the reason that it is not a piece of garment worn for a long time but just meant for the period of breastfeeding after which it is removed.

This also gives mothers the prospect of dressing in wild range of clothing selection. Though some women opinioned that it might produce heat and make baby uncomfortable for the period of breastfeeding.

Table 4: Respondents choice of breastfeeding garment (n=200)

Garment Sample	Frequency	Percentages (%)
A	 54	27.0
B	 30	15.0
C	 42	21.0
D	 46	23.0
E	 28	14.0

14% of women prefer garment E and it was among young ladies who loves spaghetti and halter tops and still very fresh to expose their skin. From the survey it was discovered that women and breastfeeding mother appreciate the use of breastfeeding garments and was widely accepted.

**CONCLUSION**

From the view and response given by the respondent, the study have been able to revealed that so many women were in support of public breastfeeding but the breast should not be exposed during the process. They were also in support of the use of breastfeeding garments that will help to cover the breast during public breastfeeding. Breastfeeding garments were accepted base on individual choice and the idea of encouraging the women to use breastfeeding garments during antenatal in order to promote awareness was highly accepted.

The use of breastfeeding garments play an important role apart from being a coverage to the breast, it also help in covering the tummy from being exposed since mother clothes will not be raised as breastfeeding required just a small opening. According to fashion conscious women, they prefer the breastfeeding garment that are covers so they can dress in wild rang of clothing selection like every other women. It is economical since they are met for the period of breastfeeding and after that, it can be kept for another period of breastfeeding.

**Recommendation**

The study therefore recommends that:

1. Public breastfeeding should be encouraged as the right to feeding should not be denied the child but should be done in modestly.
2. The use of breastfeeding garments should be encouraged during public breastfeeding and antenatal session to extensively create awareness on the existence of such garments.
3. Fashion designers and merchants should make available breastfeeding garments as it has proved to conceal the breast during breastfeeding.

**Contribution to knowledge**

The study had revealed that breastfeeding garments should be used during public breastfeeding so that women can still keep their prestige even if they are breastfeeding and have helped to educate the public on existence of breastfeeding garments. Nursing mothers will be comfortable to attend any public function with their babies when equipped with a breastfeeding garment.

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**EFFECTIVENESS OF EXTENSION METHODS EMPLOYED IN THE PREVENTION OF CHILD ABUSE PRACTICES AMONG FAMILIES IN ODEDA LOCAL GOVERNMENT, OGUN STATE.**

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**ABSTRACT**

*The paper investigated the extension methods employed in the dissemination of child abuse practices and its prevention to families in Odeda Local Government Area villages, Ogun State. Multi stage sampling technique was used to select 150 respondents. Interview guide was used to measure the effectiveness of extension methods employed, the involvement of respondents, and preventive practices emphasised. Data was analysed using descriptive and inferential statistics. Result showed that posters and radio programmes were among the most commonly reported methods employed in the dissemination of the child abusive practices and their prevention in the area. The mean of the most effective methods as indicated by the respondents were the use of posters (2.58), leaflet (2.53), and group discussion (2.04). The types of abuse reported by the respondents' involvement were: hitting (83.3%), beating (81.3%), bullying (92.0%) and shouting (93.3%) while the emphasised preventive measures were; positive parenting/proper monitoring (81.3%), access to adequate care (70.0%). The chi-square result showed there was no significant association ( $p = 0.05$ ) between educational qualification ( $\chi^2 = 2.014$ ;  $df = 3$ ) and involvement in child abuse practices. It could be concluded that the extension methods involved adequately conveyed child welfare practices capable of discouraging child abuse in the area.*

**Key Words:** Effectiveness, Extension Methods, Prevention, Child Abuse, Practices, Rural Families

**INTRODUCTION**

One of the major obligation of the family is safety of its members both physically and health wise. These obligations are either learnt or imitated from parents, peers, and older people in the community. Extension system is one major way government institutions processed useful information to people in rural and urban centers. In general, people acquire knowledge, skill and information with the ultimate aim of raising their efficiency and achieving higher level of living. Through outreaches, extension services create awareness and disseminate knowledge on some social vices and their preventive measures. Laogun (2005) classified methods used in extension teaching into three broad classes as: (a) Individual contact method (b) Group contact method (c) Mass media method. Individual contact methods usually are superior for conviction and action because of face-to-face relationship of teacher and learner, examples are farm and home visits, office calls, telephone calls, correspondence and result demonstration. Group contact method involves meeting clients in groups examples lecture, workshop, and conference. Mass media method involves transmission of programs over the radio or television, posters, handbills which field back may not be obtained instantly.

According to the U.S. Department of Health and Human Services (2012), over a million children are victims of maltreatment annually. Over half a million children suffer serious injuries, and about 1,500 children die, making child maltreatment the leading cause of deaths from injuries in children over a year old (Institute of Medicine, 1999). Extension agents have used several extension methods to



disseminate messages on prevention of child abuse practices which are among the many vices plaguing our modern society.

Child maltreatment is an act or series of acts of commission or omission by a parent or other caregiver (e.g., clergy, coach, and teacher) that results in harm, potential for harm, or threat of harm to a child. Physical Abuse refers to the injury of a child on purpose, e.g., striking, kicking, beating, biting or any action that leads to physical injury. In 2011, approximately 1,570 children died from abuse and neglect across the country—a rate of 2.10 deaths per 100,000 children (USDHHS, 2012). Maltreatment during infancy or early childhood can cause important regions of the brain to form and function improperly with long-term consequences on cognitive, language, and socio-emotional development, and mental health (DHHS, 2001). Children may experience severe or fatal head trauma as a result of abuse. Nonfatal consequences of abusive head trauma include varying degrees of visual impairment (e.g., blindness), motor impairment (e.g., cerebral palsy) and cognitive impairments. Children who experience maltreatment are also at increased risk for adverse health effects and certain chronic diseases as adults, including heart disease, cancer, chronic lung disease, liver disease, obesity, high blood pressure, high cholesterol, and high levels of C-reactive protein (Felitti, et al., 1998; Danese, *et al.*, 2009).

According to Silverman *et al* (1996), psychological abuse includes depression, anxiety, eating disorders, and suicide attempts. In addition to physical and developmental problems, the stress of chronic abuse may result in anxiety and may make victims more vulnerable to problems such as post-traumatic stress disorder, conduct disorder, and learning, attention, and memory difficulties (Dallam, 2001; Perry, 2001). Neglect on the other hand is a failure to meet the child's basic needs, e.g., not providing enough food, shelter or basic supervision, necessary medical or mental health treatment, adequate education or emotional comfort and lastly, sexual abuse is the use, persuasion or forcing of a child to engage in sexual acts or imitation of such acts.

**Problem statement**

With the growing cases of child abuse and criminality against children globally, there is need to support and increase the awareness against child abuse its types, forms, perpetrators and prevention. However, there may not be sufficient education if the methods employed failed to impact the needed information, hence, the need for this study.

The following research questions are formulated for the study:

- \* How effective are the extension methods employed in the dissemination of child abuse practices among rural families?
- \* How involved are the respondents in various forms of child abuse?
- \* What are the preventive measures suggested and emphasised by the extension agents in the study area?

**Specific objectives:**

The specific objectives of the study are to:

- determine effectiveness of extension methods used in dissemination of preventive measures to rural families in the study area;
- assess the prevalence of child abusive practices in the study area; and
- identify preventive measures emphasised by the extension agents in the study area.

**Study hypothesis**

**H01:** There is no significant association between respondents' educational background and involvement in child abuse practices.

**RESEARCH METHODOLOGY**

The study adopted survey design to investigate effectiveness of extension methods employed in the prevention of child abuse practices among families in Odeda Local Government area, Ogun State. Multi-stage sampling technique was used to select 150 respondents within five (5) rural communities which include: Elepa, Ilugun, Opeji, Isolu, and AbuleKeesin within the Local Government area where extension programmes are held. Samples were made up with 25% of

participants in the programme. Respondents were drawn from participant in village extension outreach carried out by Ogun State Agricultural Development Programme in the identified villages. Data was analysed using descriptive and inferential statistics such as frequency counts, percentages, mean, standard deviation, and chi-square. Interview guide was used to elicit responses from the respondents. The instrument was divided into sections A, B, C, and D.

**Measurement of variables**

Socio-demographic characteristics of the respondents are measured accordingly; Age was measured in figure; Religion (Christianity, Islam, Traditional); Ethnicity (Yoruba, Igbo, Hausa,); Level of education (No formal education, primary, secondary, tertiary); Marital Status (married, single, widowed or divorced); Number of children in figure; Family type (Monogamy or Polygamy); Section B measured effectiveness of extension methods employed by extension agent in the prevention of child abuse practices. This was measured on a 3-point rating scale (Very effective, Less effective and non effective); Section C measured respondents involvement in child abuse practices. This was measured through the use of an ordinal scale (High, moderate, low); Section D measured preventive measures emphasised by the extension agents in the study area. This was measured on an ordinal scale (emphasised, not emphasised).

**RESULT OF THE FINDINGS**

**Table 1: Socio demographic characteristics of the respondents (n=150)**

Variables	Frequency	Percentages
<b>Age</b>		
18-24	38	25.3
25-30	18	12.0
31-35	20	13.3
36-40	48	32.0
41 and above	26	17.3
<b>Mean (SD)</b>	30.5 (5.021)	
<b>Religion</b>		
Christianity	69	46.0
Islam	81	54.0
Traditional	-	-
Others	-	-
<b>Ethnicity</b>		
Yoruba	106	70.7
Igbo	44	29.3
Hausa	-	-
Others	-	-
<b>Educational Background</b>		
No Formal Education	20	13.3
Primary	34	22.7
Secondary	94	62.7
Tertiary	2	1.3
<b>Marital Status</b>		
Married	110	73.3
Single	40	26.7
Widowed	-	-
Divorced	-	-
<b>Number of Children</b>		
1-3	52	34.7
4-6	87	58.0
7-9	11	7.3
10 and above	-	-
<b>Family Type</b>		
Monogamy	66	44.0
Polygamy	84	56.0
Others	-	-

As shown above, 32.0% of the respondents were within 36-40 years with a mean score age of 30.5 years. They belong to the two popular religions Islam and Christianity, 54.0% Islam and 46.0% Christian. Also, 70.7% were found to be speaking Yoruba language and the rest were Igbo. 58.0% of the respondents had between 4-6 number of children and lastly, 56.0% were from polygamous family respectively. Many of them had one form of education. This is believed to enhance understanding of the medium employed in communicating the content or messages about child abuse.

**Table 2: Effectiveness of extension methods employed by extension agents in dissemination of child abuse practices(n=150)**

Extension					
Teaching Methods	Very effective Freq (%)	Less effective Freq (%)	Non effective Freq (%)	Mean	S.D
Home visit	20 (13.3)	32 (21.3)	98 (65.3)	1.48	.721
Radio programme	48 (32.0)	50 (33.3)	52 (34.7)	1.97	.819
Slides	3 (2.0)	6 (4.0)	141 (94.0)	1.08	.338
Posters	87 (58.0)	63 (42.0)	-	2.58	.495
Leaflets	85 (56.7)	59 (39.3)	6 (4.0)	2.53	.576
Video tapes	6 (4.0)	6 (4.0)	138 (92.0)	1.12	.432
Audio cassette	4 (2.7)	14 (9.3)	132 (88.0)	1.15	.424
Group discussion	68 (45.3)	20 (13.3)	62 (41.3)	2.04	.933
Seminars	4 (2.7)	39 (26.0)	107 (71.3)	1.55	.879

Table 2 shows effectiveness of extension methods employed by the extension agents in the study area. The use of posters was the highest (58.0%) followed by leaflets (56.7%) and group discussion (45.3%), they were at the fore front as they prove to be very effective. The picture/image of the form of abuse been addressed is contained and displayed on the posters. The leaflet usually contain sub topic regarding the form of abuse in quote in written form. Such information includes causes of child abuse, prevention and effect of such abuse on a child and the society. Often times, a group discussion is held which focuses on how to combat child abuse practices and preference is given to this method as it allows the clients to interact among themselves. One good thing about this method is that the problem faced by an individual when expressed could serve as a solution to the problem of others.

Radio programme is considered very effective by minority of the population (32.0%) and the reason for this may be due to cost of obtaining it and maintenance which may not be afforded by this category of people who live in rural areas. Also, there are some extension methods that are considered to be non- effective. For example, the use of slides which was reported by (92.0%) and Audio cassette (88.0%) are considered non-effective by the respondents. The reason given by the respondents for this is due to non availability or irregularity of power supply in the community.

**Table 3: Prevalence of child abusive practices as reported by the respondents (n=150)**

Forms of child abuse practices	High Freq (%)	Moderate Freq (%)	Low Freq (%)
<b>Physical Abuse</b>			
Hitting	125 (83.3)	15 (10.0)	10 (6.6)
Slapping	92 (61.3)	36 (24.0)	22 (14.6)
Biting	6 (4.0)	9 (6.0)	135 (90.0)
Striking with objects	80 (53.3)	46 (30.6)	24 (16.0)
Punching	6 (4.0)	12 (8.0)	132 (88.0)
Kicking	8 (5.3)	15 (10.0)	127 (84.6)
Beating	122 (81.3)	14 (9.3)	14.0 (9.3)
Applying pepper on sensitive part of the body	30 (20.0)	38 (25.3)	82 (54.6)
Burning (scalding)	12 (8.0)	26 (17.3)	112 (74.6)
Attack with knife	13 (8.6)	16 (10.6)	121 (80.6)
<b>Psychological Abuse</b>			
Bullying	138 (92.0)	7 (4.6)	5 (3.3)
Shouting/sarcasm	140 (93.3)	8 (5.3)	2 (1.3)
Intimidating	98 (65.3)	36 (24.0)	16 (10.6)
Blackmailing	90 (60.0)	40 (26.6)	20 (13.3)
<b>Neglect</b>			
Non availability of food, clothing and shelter	112 (74.6)	24 (16.0)	14 (9.3)
<b>Sexual Abuse</b>			
Unlawful sexual activity	42 (28.0)	34 (22.6)	74 (49.3)

Table 3 shows respondent's assessment of child abuse practices prevalent in the study area. The most common form of abuse is the physical abuse. For example, it was discovered that a high percentage (83.3%) reported hitting as very rampant in the study area, beating (81.3%) using cane or rod and so on, shouting (93.3%) particularly when the children do what is wrong), bullying (92.0%) through the use of abusive speech. On the other hand, there are some forms which are hidden in nature. For example, unlawful sexual activity which was reported by only (28.0%) so as not to bring reproach to their industrious family name. Applying pepper on sensitive part of the body is another form which only (20.0%) of respondents reported.

Another form of child abuse practices is negligence which majority (74.6%) of the respondents are involved in. Negligence cut across non- availability of food, shelter, and clothing. Some respondents who made all these provisions available are not to the children's satisfaction. Also, attacking with knife is also hidden in nature and this is evident in the result presented in Table 3 where only (8.6%) of the respondents are highly involved in.



**Table 4: Child abuse preventive measures emphasised by the extension agents in the study area (n=150)**

Preventive Measures	Emphasised	Not Emphasised
	Freq (%)	Freq (%)
Positive Parenting/proper monitoring	122 (81.3)	28 (18.7)
Child-parent centres (for counselling)	48 (32.0)	102 (68.0)
Nurse-family partnership (seminars)	45 (30.0)	105 (70.0)
Parent-child interaction therapy (family interaction)	12 (8.0)	138 (92.0)
Family access to social support (social welfare)	9 (6.0)	141 (94.0)
Access to adequate care	45 (30.0)	105 (70.0)
Expression of love	135 (90.0)	15 (10.0)
Acceptance	133 (88.7)	17 (11.3)
Positive guidance and protection	122 (81.3)	28 (18.7)
Parent's or caregiver's respectful communication and listening	135 (90.0)	15 (10.0)
Family meeting up with their basic needs such as food, clothing, housing and transportation	135 (90.0)	15 (10.0)

Result presented in Table 4 shows the respondents assessment of preventive measures emphasised and disseminated by the extension agents in the prevention of occurrence of child abuse practices in the study area. As indicated, 81.3% of the respondents said positive parenting is often emphasised during seminars by the extension agents. Also emphasised are expression of love which 90.0% said was emphasised; acceptance (88.7%); positive guidance and protection (81.3%); parent's or caregiver's respectful communication and listening (90.0%) and family meeting up with their basic needs such as food, clothing, housing and transportation (90.0%). On the other hand, 68.0% said child-parent centres' (counselling) was not emphasised, nurse-family partnership (seminars) (70.0%), parent-child interaction therapy (92.0%), family access to social support (social welfare) (94.0%) and 70.0% access to adequate care respectively.

**Hypothesis testing**

**H01:** There is no significant association between respondents' educational background and involvement in child abuse practices.

**Table 5: Test of chi-square relationship between respondents' educational background and assessment of child abuse prevalence in the study area (n=150)**

Variable	( $\chi^2$ )c	( $\chi^2$ )t	df	P-value	Decision
Educational Background and prevalence of child abuse practices	2.014	9.488	4	0.05	Not Sig.

As shown in Table 5, the null hypothesis was accepted because the chi-square value tabulated at p 0.05 is greater than the calculated. This implied there was no significant association between respondents' level of education and their assessment of child abuse prevalence in the area.

**DISCUSSION OF FINDINGS**

The focus of the study was to investigate effectiveness of extension methods employed in the prevention of child abuse practices among families in Odeda Local Government, Ogun State. Those

within the age range of 36-40 years among the respondents were the highest in number 48 (32.0%) and they constituted those within the active age range. Majority 81(54.0%) were Muslim and 69 (46.0%) were Christian respectively. Also, majority 94(62.7%) had secondary education and only few 20(13.3%) had no formal education. In considering the number of children possessed by families, it was discovered that majority 87(58.0%) had between 4-6 children and this may be due to the rural environment whereby most families give birth to many children without putting into consideration their care.

Effectiveness of extension methods employed in the prevention of child abuse practices among families were measured. It was true that extension is concerned with two basic assignments, such as dissemination of useful and practical information relating to individual's need and practical application of such knowledge by an individual. The teaching methods employed in dissemination of child abuse practices by an extension worker directly influence the effectiveness of his effort. For example, as shown in Table 2, the use of posters, leaflets, group discussion, slides, radio programs, video tapes, audio cassette, and seminars help to stimulate interest of individual clientele. It is true that radio is, of course, limited to the oral method of presentation but visual aids such as slides, posters, video tapes, are frequently used to supplement the spoken and written words. As shown in Table 2, the most very effective extension method is the use of posters which often portray the picture of form of child abuse being addressed. In essence, the visual aids are considered to be very effective in dissemination of child abuse preventive measures among families in rural communities.

In considering respondents assessment in child abuse practices in the study area, it was discovered that all forms of child abuse such as physical, neglect, psychological, and sexual abuse are practiced. For instance, physical abuse which includes: hitting, slapping, punching, biting, burning, and kicking among others. This physical form of abuse conforms to those classified by Higgins (1998); James (1994) and US National Research Council (1993), as including shoving, hitting, slapping, shaking, throwing, punching, biting, burning, and kicking. According to Higgins et. al. (1998), physically abusive behaviour refers to any non-accidental physically aggressive act towards a child. Physical abuse may be intentional or may be the inadvertent result of physical punishment.

Another form of child abuse reported by the respondents is neglect (negligence). Negligence could be in form of not meeting up with children basic needs such as food, clothing and shelter. According to Miller-Perrin and Perrin (2007), neglectful behaviour refers to the failure (usually by a parent) to provide for a child's basic needs. Physically neglectful behaviours include a failure to provide adequate food, shelter, clothing, supervision, hygiene or medical attention to the children. In line with this research, it was obvious that many of the respondents could not meet up with their children basic needs (Table 3).

Another form of abusive practice is sexual. Sexual abusive behaviour refers to any sexual activity between an adult and a child below the age of consent. James (1994) refers to it as non-consensual sexual activity between minors (e.g a 14 year old and a 10 year old) or any sexual activity between a child under 18 years old and a person in a position of power or authority (e.g parent, teacher). According to Higgins (1998); James (1994) and US National Research Council (1993), sexual activity includes fondling genitals, masturbation, oral sex, vaginal or anal penetration by a penis, finger or any other object, fondling of breast, voyeurism and exposing or involving the child in pornography.

The researcher also went further to determine the suggestive preventive measures of child abuse emphasised by the extension agents in the study area. It was discovered that positive parenting, expression of love, acceptance, positive guidance and protection, respectful communication and listening as well as family meeting up with their children's basic needs were more emphasised compared to counselling, seminars, parent-child interaction therapy, and child parent centres which

less emphasis were placed. According to Reynolds, *et al* (2003), Child-Parent Centres (CPCs) which only minority reported as been emphasised as presented in Table 4 was meant to provide comprehensive educational and family support to economically disadvantaged children and their parents. CPCs require parental participation and emphasize a child centered, individualized approach to social and cognitive development.

Chaffin *et al* (2004) came up with the importance of parent-child interaction therapy which teaches parents specific skills to build a nurturing and secure relationship with their children, increase their children's desirable behaviours, and decreases negative behaviours. As shown in Table 4, minimal emphasis was placed on these preventive measures.

In a null shell, test of association between respondents' educational status and their assessment about child abuse prevalence in the study area showed no significant association. This implies that education played less or no significant role in perception about what constituted an abuse against a child.

## CONCLUSION

The study investigated effectiveness of extension method employed in the prevention of child abuse practices among families in Odeda Local Government, Ogun State. Effectiveness of different extension methods were determined and it was discovered that visual aids such as posters and leaflets were very effective in the dissemination of preventive measures to rural families in the study area. On the other hand, the use of slides and video tapes (that require electricity to power them which often time is not available in rural communities) are found non-effective in the study area. It was surprising however that all the respondents were involved in all forms of child abuse, most especially the physical form. In order to bring about a reduction in the rate of child abuse practices among rural families, several preventive measures were suggested and emphasised. This includes positive parenting, expression of love, acceptance, positive guidance and protection among others.

## RECOMMENDATIONS

1. Awareness should be created in rural communities of the hidden forms of child abuse practices which is sprawling in major communities these days.
2. Extension agents should pay more emphasis on the importance of preventive measures in order to have more adopters.
3. Parents and other stakeholders in child care and protection should be involved in regular extension outreaches for adoption of best practices in child upbringing.

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INFLUENCE OF POST-MORTEM ADDITION OF WHEAT GERM VITAMIN E ON COOKING YIELD, COOKING LOSS AND OXIDATIVE STABILITY OF REFRIGERATED RAW AND COOKED BROILER MEAT.

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ABSTRACT

Addition of natural antioxidants is one of the ways to extend the durability of meat and meat products. This study was carried out to evaluate cooking yield and storability of broiler chicken meat processed with wheat germ vitamin E. Post mortem addition of wheat germ vitamin E at three levels (0.4, 0.8 and 1.2% w/w) were assessed using processed meat from nine mature broilers. The fourth level (0.0%) served as the control. Results showed that the post mortem addition of wheat germ vitamin E did not significantly influence ( $P>0.05$ ) the cooking yield and cooking loss of broiler meat. However, post mortem addition as low as 0.4% w/w level reduced oxidative deterioration in both raw and cooked broiler meat during refrigerated storage thereby increasing the shelf-life of the stored meat.

**Keywords:** Broiler meat, Natural antioxidants, Post-mortem and Wheat germ vitamin E

INTRODUCTION

Food lipid oxidation is considered to be a risk factor for human health. Some lipid products are considered atherogenic and appear to have mutagenic and carcinogenic properties. Lipid oxidation is responsible for the development of unpleasant taste and odours, as well as changes in colour, rheological properties and formation of toxic compounds (Malgorzata and Zbigniew, 2007). The damaging effects of oxidative processes are well recognized in the medical field and food industry. An example is the involvement of lipid oxidation in the generation of reactive compounds which causes damage to cellular materials. These effects have been implicated in a number of physiological disorders and diseases (Bekhit *et al.*, 2013).

In practice, meat is stored and cooked for consumption. These processes of cooking and storage of meat promotes degradation of its lipid fraction (Grau *et al.*, 2001). The negative consequences of lipid oxidation can be overcome by the use of antioxidants such as alpha-tocopherol. Alpha-tocopherol prevents lipid oxidation and therefore increases the shelf-life of meat (Chou *et al.*, 2003). Most antioxidants in use are synthetic types and many consumers are running away from food or food products containing synthetic compound because of the health risk they pose to the consumers. Thus, it is of great commercial interest to assess the protective effect of wheat germ vitamin E (a natural antioxidant) during storage and cooking process of poultry meat. This work therefore aimed at assessing the influence of post mortem addition of wheat germ vitamin E on cooking yield, and oxidative storability of refrigerated broiler meat.

MATERIALS AND METHODS

Experimental animals and test ingredient:

Nine (9) matured broiler chicken fed the same diet were used in this study. Wheat germ vitamin E [Golden Neo-Life Dianamite (GNLD) Product] was purchased from an approved GNLD agent at Ilesha.

Processing of the broiler meat:

Processing of the chicken was carried out in the departmental laboratory of the University of Ilorin following the conventional slaughtering method, feather plucking and evisceration. The breasts were deboned and the meats were minced and thoroughly mixed together, then divided into four (4) equal parts. Graded levels of Wheat germ vitamin E (0.0, 0.4, 0.8 and 1.2 w/w) were added to each portion in a domestic blender and minced thoroughly for 2 minutes. Each portion was then subdivided into 4 replicates (100g each), separately packed in aluminium foil paper and refrigerated. TBARS analysis was carried out on these samples over a period of 9 days.

The thigh muscle of each chicken was separated, chopped and thoroughly mixed together, later divided into 4 parts (treatment) and weighed. Graded levels of Wheat germ vitamin E (0.0, 0.4, 0.8 and 1.2 w/w) was added to each portion in a domestic blender and ground thoroughly for 2 minutes. Each portion was then subdivided into 4 subgroups (100g each) separately kept in cellophane bags and sealed. These were steam cooked in pot for 12 minutes, drained and reweighed using triple beam balance to determine the cooking yield and cooking loss. Each steam-cooked sample was repacked in aluminium foil paper and refrigerated for cooked meat TBARS analysis over a period of 6 days.

Lipid oxidation determination:

Lipid oxidation in the meat was determined by quantifying Malonaldehyde (MDA) production based on the Thiobarbituric Acid Reactive Substances (TBARS) test using the procedure described by Pikul *et al* (1989).

Statistical analysis:

Data collected on cooking yield and cooking loss were subjected to one way Analysis of Variance (ANOVA) of a Complete Randomized Design (Steel and Torrie, 1980) using the statistical package of IBMPC (SPSS/ PC +) while data collected on TBARS analysis of refrigerated raw and cooked broiler meat were subjected to 3 x 4 Factorial analyses using Microsoft Excel Statistical Package (Version XP Microsoft Corp; W. A. USA; 2007).

RESULTS AND DISCUSSION

Table 1: Effects of post mortem addition of wheat germ vitamin E on cooking yield and cooking loss of broiler chicken meat

Parameters	Wheat Germ Vitamin E Addition Levels (%)				± SEM
	0.0	0.4	0.8	1.2	
Cooking yield	72.70 <sup>ab</sup>	63.95 <sup>a</sup>	75.05 <sup>b</sup>	74.20 <sup>b</sup>	1.75*
Cooking loss	27.30 <sup>ab</sup>	36.05 <sup>b</sup>	24.95 <sup>a</sup>	25.80 <sup>a</sup>	1.75*

a,b Mean values across rows having different superscripts differs significantly ( $P<0.05$ ).

\*Significantly different ( $P<0.05$ )

Percentage cooking yield was observed to be higher in broiler meat treated with 0.8 w/w and 1.2 w/w wheat germ vitamin E levels of addition. Percentage cooking loss was also lower at these levels of wheat germ vitamin E treatment. However, the differences were not statistically significant ( $P>0.05$ ) when compared with the control (Table 1). This suggests that post mortem addition of wheat germ vitamin E did not significantly ( $P>0.05$ ) influence the cooking yield and cooking loss of broiler meat.

Table 2: Effects of post-mortem addition of wheat germ vitamin E on TBARS value of refrigerated raw broiler meat.

Parameters	TBARS Value
Wheat germ vitamin E levels (%)	
0.0	0.52 <sup>b</sup>
0.4	0.31 <sup>a</sup>
0.8	0.27 <sup>a</sup>
1.2	0.30 <sup>a</sup>
Storage Time (Days)	
3	0.23 <sup>a</sup>
6	0.39 <sup>b</sup>
9	0.43 <sup>b</sup>
±SEM	0.04
Wheat germ Vitamin E Levels	P< 0.0004
Storage Days	P< 0.0011
Interaction	P< 0.8134 (NS)

a,b Mean value within column having different superscripts differs significantly (P<0.05).  
NS: Not significant (P>0.05)

TBARS value of wheat germ vitamin E treated raw meat was significantly (P<0.05) lower than the control all the days of assessment

Post-mortem addition of wheat germ vitamin E significantly (P< 0.05) reduced the oxidative deterioration in refrigerated raw broiler meat. The TBARS values of meat blended with 0.4, 0.8 and 1.2w/w levels of wheat germ vitamin E were comparable (P>0.05) (Table 2).

The result showed that post mortem addition of vitamin E as low as 0.4 percent of meat weight was capable of reducing oxidative deterioration in refrigerated raw broiler meat thereby increasing the shelf life during storage.

This result is in agreement with the findings of other researchers who reported vitamin E as fat-soluble antioxidant in storage (Faustman et al., 1989; Sanders et al., 1993; Coetzee et al., 2001). Lipid oxidation was observed to increase with increase in days of storage but interaction between the levels of wheat germ vitamin E and days of storage was not significant (P>0.05).

Table 3: Effects of post-mortem addition of wheat germ vitamin E on TBARS value of refrigerated cooked broiler meat.

Parameters	TBARS Value
Wheat germ vitamin E levels (%)	
0.0	1.55 <sup>b</sup>
0.4	0.23 <sup>a</sup>
0.8	0.16 <sup>a</sup>
1.2	0.11 <sup>a</sup>
Storage Time (Days)	
2	0.28
4	0.52
6	0.74NS
±SEM	0.39
Wheat germ Vitamin E Levels	P< 0.04
Storage Days	P< 0.62 (NS)
Interaction	P< 0.96 (NS)

a, b Mean value within column having different superscripts differ significantly (P<0.05).  
NS: Not significant (P>0.05)

Table 3 shows that post mortem addition of wheat germ vitamin E significantly (P> 0.05) inhibited lipid oxidation of refrigerated cooked broiler chicken meat at all levels of treatment when compared with the control. Lipid peroxidation of refrigerated cooked broiler meat was best reduced in meat treated with 1.2w/w wheat germ vitamin E all the days of assessment. However, this did not statistically differ (P< 0.05) from refrigerated meat treated with 0.4w/w and 0.8w/w wheat germ vitamin E. TBARS values increased with increase in storage time however, these were not statistically different (P>0.05).

The result is in agreement with the findings of Karin (2002) who stated that vitamin E supplement of broiler feed increases oxidative stability of broiler carcasses under frozen and refrigerated storage. Faustman et al. (1989) stated that alpha-tocopherol (vitamin E) is a highly effective lipid soluble anti-oxidant. Gray et al. (1996) reported that vitamin E function as a lipid-soluble anti-oxidant and is capable of quenching free radicals in meat during irradiation and storage.

CONCLUSION

The findings of this study showed that post mortem addition of wheat germ vitamin E did not influence cooking yield and cooking loss of broiler meat. However, post mortem additions as low as 0.4w/w level was capable of reducing oxidative deterioration in both raw and cooked broiler meat during storage thereby increasing the shelf life and reducing the hazard, which oxidized meat posed to the consumer.

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# EFFECT OF JUICING ON CADMIUM AND LEAD CONTENTS OF SOME COMMONLY CONSUMED LEAFY VEGETABLES IN SOUTH-WEST NIGERIA

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## ABSTRACT

The effect of juicing on the cadmium and lead contents of fourteen different leafy vegetables from major markets in South-western Nigeria was assessed using Atomic Absorption Spectrophotometer. In fresh leaves the concentrations of cadmium ranged from 0.01mg/100g dry weight in *Amaranthus* species to 0.75 mg/100g dry weight in *Basela alba* while in juiced form; 0.03mg/100g dry weight in *Crassocephalum rubens* to 0.09 mg/100g dry weight in *Manihot esculenta*. Also Pb levels varies from 0.007 mg/100g in the leaves of fresh *Vernonia amygdalina* to 2.56 mg/100g in the leaves of *Telfairia occidentalis*; whereas in the juiced forms, *Piper guineensis* and *Telfairia occidentalis* have the least and the highest values, 0.05±0.01 and 2.56±0.25 mg/100g dry weight respectively; Though, in most cases juicing increased the level of these heavy metals. However, the content either in fresh vegetables or the juice is innocuous and far below the recommended toxic level stated by FAO/ WHO. Nonetheless, care must be exercised in regular intake of vegetable juice as the accumulation of such heavy metal may reach toxic level after long time consumption.

**Key words:** Vegetables, Cadmium, lead, heavy metals, Juicing, leafy vegetables

## INTRODUCTION

The ever-increasing use of leafy vegetables as dietary supplement and major food substance everyday by Nigerians cannot be overemphasised. The use of green leafy vegetables for the preparation of soups cuts across different cultures in Nigeria and other parts of West Africa (Akan, Abdulrahman, Ogugbuaja, & Ayodele, 2009; Ladipo and Doherty, 2011). Fresh vegetables are of great importance in the diet because of the presence of vitamins and mineral in addition to hemi-cellulose and pectin that give them their texture and firmness (Sobukola and Dairo, 2007). They are very important protective food and useful for the maintenance of health and the prevention and treatment of various disease (D'Mellow, 2003). However, these plants contain both essential and toxic metals over a wide range of concentration (Radwan and Salama, 2006).

Vegetables, especially the leafy types grown in heavy metals-contaminated soils, accumulate higher amounts of metals than those grown in uncontaminated soils because of the fact that they absorb these metals through their roots and these are present in their edible and non-edible parts (Farooq, Anwar, & Rashid, 2008). Absorption capacity of heavy metals depends upon the nature of vegetables and some of them have a

greater potential to accumulate higher concentrations of heavy metals than others (Akan et al., 2009).

Heavy metals have been reported to have both positive and negative roles in human life (Adriano, 1984; Dundar and Saglam, 2004). Some like cadmium, lead and mercury are major contaminants of food and may be considered an important problem to our environment while others like iron, zinc and copper are essential for biochemical reactions in the body (Zaidi, Asrar, Mansoor and Farooqui, 2005). Generally, most heavy metals are not biodegradable, have long biological half-lives and have the potential for accumulation in the different body organs leading to unwanted side effects (Jarup, 2003; Sathawara, Parikh, and Agarwal, 2004). There is a strong link between micro-nutrient nutrition of plants, animals and humans, including the uptake and impact of contaminants in these organisms (De Leonardis, Macciola, & De Felice, 2000; Yüzbaşı, Sezgin, Yıldırım, & Yıldırım, 2003; Baslar, Dogan, Yenil, Karagoz, and Bag, 2005; Yaman, Okumus, Bakirdere, and Akdeniz, 2005). The content of essential elements in plants is affected by the characteristics of the soil and the ability of plants to selectively accumulate some metals (Divrikli, Horzum, Soylak, and Elci, 2006).

Based on their persistence and cumulative behavior as well as the probability of potential toxicity effects, the absorption of heavy metals in human diets as a result of the consumption of vegetables means that there is a requirement for the analysis of food items, particularly vegetables, and the effect of processing such as juicing on the level of cadmium and lead. Therefore, the present study was undertaken with the aim to investigate and compare the concentration of some specific heavy metals - cadmium and lead in particular, found in some selected vegetables in this region and possible effect of juicing on their levels.

MATERIALS AND METHODS

Plant materials and preparation of extracts

Ten fresh leafy vegetables were sourced from different markets in Southwestern Nigeria. The identification and authenticity of the plants were done by a botanist at Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria. The vegetables were de-stalked and rinsed with distilled water. The fresh leaves were preserved at-4oC (Gleadow and Woodrow, 2002).

Plants

The lists of the vegetables with their botanical names and Yoruba/local names in parenthesis were: *Corchorus olitorius* (Ewedu), *Manihot esculenta* (Ewe paki), *Launea taraxacifolia* (Yanrin), *Amaranthus spp.* (Ebiden), *Piper guineense* (Uziza), *Ipomoea batatas* (Ewe Odunkun), *Crassocephalum rubens* (Ebolo), *Senecio biafrae* (Worowo), *Amaranthus cruentus* (Efotete), *Basela alba* (Amunututufunfun), *Basela rubra* (Amunututu pupa), *Talinumtriangulare* (Efo gbure), *Vernonia amygdalina* (Ewuro), *Telfairia occidentalis* (Ugwu).

Sample preparation

The leafy vegetables were sliced, weighed and prepared according to Odufuwa et al., (2013). The vegetables were de-stalked to remove the inedible part; 10g in four parts were weighed on the balance and introduced into the Petri dish to oven dry it with an electric oven for 19hrs at 100oC. The dried leaves were then measured to get a constant weight in order to determine the moisture content, after which they were transferred into the crucible to get the ash content in a furnace at 500oC for 5hrs. The ash was weighed and the resulting white ash was dissolved in 3ml of Conc. HNO3 and diluted with 25ml of distilled water. The solution was filtered and the filtrate stored at room temperature.

Sample preparation of juice extract

The fresh leafy vegetable were destalked from the stems and rinsed with distilled water to remove soil debris. 400g of vegetables was placed in the juice extractor and 400ml of distilled water was added to extract the juice. The Petri dish was placed on the weighing balance to measure 10g of the juice. Each 10g juice extract was dried at 100oC for 19hrs in an oven. The dried leaves were weighed to determine the moisture content and the leaves ashed in the furnace at 500oC for 5hrs. The resulting ash was dissolved in 3ml of conc. HNO3 and diluted with 25 ml distilled water and the solution was filtered and the filtrate analyzed by a method described by AOAC (1990) with an Atomic Absorption Spectrophotometer (Schimadzu, Model: AA-7000) and cadmium and lead contents were determined.

Statistics

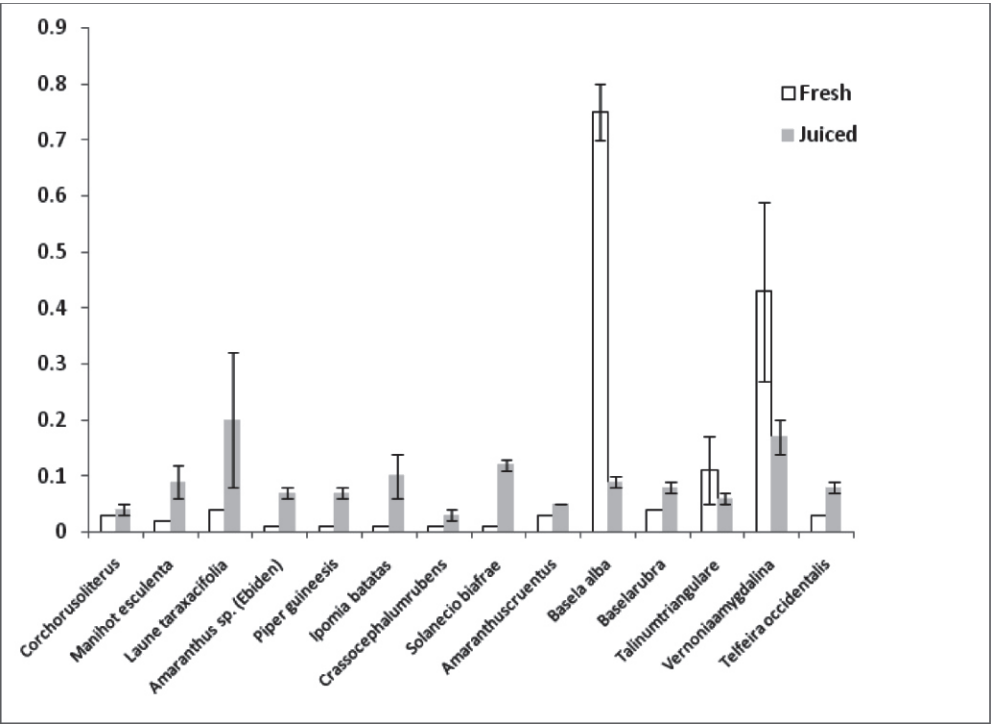
Differences between groups were determined by one-way Analysis of Variance (ANOVA), and Homogeneity post hoc testing was performed for intergroup comparisons using the Least Significant Difference (LSD) (Levine, 1991). Data presented are mean ± standard error of mean (SEM) and were analyzed using Statistical Package for Social Sciences (SPSS, 16.0) software for windows at P <0.05 level of significance.

RESULTS

Table 1: Effects of juicing on the Cadmium levels of some selected vegetables

Vegetables	Fresh (mg/100g dry weight)	Juiced (mg/100g dry weight)
<i>Corchorusoliterus</i>	0.03±0.00a	0.04±0.01a
<i>Manihotesculenta</i>	0.02±0.00a	0.09±0.03a,b,c
<i>Laune taraxacifolia</i>	0.04±0.00a	0.20±0.12c
<i>Amaranthus sp.</i>	0.01±0.00a	0.07±0.01a,b
<i>Piper guineesis</i>	0.01±0.00a	0.07±0.01a,b
<i>Ipomoea batatas</i>	0.01±0.00a	0.10±0.04a,b,c
<i>Crassocephalumrubens</i>	0.01±0.00a	0.03±0.01a
<i>Seneciobiafrae</i>	0.01±0.00a	0.12±0.01a,b,c
<i>Amaranthuscruentus</i>	0.03±0.00a	0.05±0.00a,b
<i>Basela alba</i>	0.75±0.05c	0.09±0.01a,b,c
<i>Baselarubra</i>	0.04±0.00a	0.08±0.01a,b,c
<i>Talinumtriangulare</i>	0.11±0.06a	0.06±0.01a,b
<i>Vernoniaamygdalina</i>	0.43±0.16b	0.17±0.03b,c
<i>Telfairiaoccidentalis</i>	0.03±0.00a	0.08±0.01a,b

Values are expressed as mean ± standard errors of mean (SEM). Values with different superscript in the same column are significantly different





Shown in Table 1 is the cadmium level in the fourteen selected vegetables. The fresh column shows an even concentration of cadmium except in Vemonia amygdalina (0.43±0.16 mg/100g) and Basela alba (0.75±0.05) which are significantly (p<0.05) different from others and they revealed the highest Cadmium content. The effect of juicing on the vegetables shows a significant (p<0.05) increase in their cadmium content except in Launea taraxacifolia (0.20±0.12). While a trend of increase appeared in all the other vegetables, though not significantly different (p>0.05)at the same time a trend of decrease apparent was observed in Basela alba (0.09±0.00), Talinum triangulare (0.06±0.01) and Vernonia amygdalina (0.17±0.03), though, not significant (p<0.05).

Table 2: Effects of juicing on the Lead levels of some selected vegetables

Vegetables	Fresh (mg/100g dry weight)	Juiced (mg/100g dry weight)
<i>Corchorus oliterus</i>	0.90±0.04e	0.07±0.01a
<i>Manihot esculenta</i>	0.42±0.04c	0.10±0.04a
<i>Launea taraxacifolia</i>	0.96±0.06e,f	0.47±0.29a
<i>Amaranthus sp.</i>	1.10±0.03g	0.50±0.05a
<i>Piper guineesis</i>	0.90±0.04c	0.05±0.01a
<i>Ipomoea batatas</i>	1.09±0.00g	0.07±0.03a
<i>Crassocephalum rubens</i>	0.64±0.06d	1.53±0.02b
<i>Senecio biafrae</i>	1.27±0.04h	0.23±0.11a
<i>Amaranthus cruentus</i>	0.20±0.01b	2.49±0.33c
<i>Basela alba</i>	0.99±0.01e,f,g	0.12±0.02a
<i>Basela rubra</i>	0.70±0.00a	0.23±0.03a
<i>Talinum triangulare</i>	1.06±0.01f,g	2.08±0.26c
<i>Vernonia amygdalina</i>	0.92±0.02e	0.28±0.05a
<i>Telfairia occidentalis</i>	1.01±0.02e,f,g	2.56±0.25c

Values are expressed as mean ± standard errors of mean (SEM). Values with different superscript in the same column are significantly different.

In Table 2, a wide variability in the lead content of the fresh vegetables was observed with Basela rubra (0.70±0.00) exhibiting the lowest concentration while the highest level of lead was observed in Senecio biafrae (1.27±0.04). To a large extent, juicing the vegetables led to insignificant difference (p<0.05) the content of lead in all the juiced vegetables with exception of Crassocephalum ruben (1.53±0.02), Amaranthus cruentus (2.49±0.33), Basela rubra (0.23±0.03), Talinum triangulare (2.08±0.26) and Telfairia occidentalis (2.56±0.25) showing significant (p<0.05) increases in their lead content. While it has no significant difference (p>0.05) when compared to the corresponding fresh species.

Discussion

Cadmium (Cd) is a non-essential element in foods and natural waters and it accumulates principally in the kidneys and liver (Divrikli et al., 2006). Various sources of environmental contamination have been implicated for its presence in foods (Adriano, 1984) and various values have been reported for leafy vegetables which include 0.09 mg/kg for fluted pumpkin by Sobukola et al., (2010), 0.05 mg/kg for lettuce by Muhammad et al., (2008). Consequently, in this study, cadmium was detected at a low level in all the vegetables examined except with basela alba and Vernonia amygdalina showing the highest values of 0.75mg/100g dry weight and 0.43mg/100g dry weight respectively which are above

the 0.20 mg/kg dry weight recommended for safe consumption by FAO/WHO (FAO/WHO., 1999, 2001). However these two vegetables show a significant reduction in their Cd content after juicing. Showing values of 0.02mg/100gand 0.09mg/100g dry weights respectively. This shows that these two vegetables are safer for consumption after juicing. The rest of the vegetables even after juicing maintained a low level of cadmium concentration with respect to the standard set by some international regulatory bodies like FAO. This is in tandem with the reports of some authors like Asaolu and Asaolu, (2010) who reported low cadmium concentration of 0.014mg/g in the leaves of Corchorus olitorius while Sobukola et. al.,(2010) reported Vernonia amygdalina to have mean Cd concentration of 0.0006mg/g. Generally, juicing to a large extent; was seen to increase the Cd content in most of the vegetables examined when compared to the fresh leaves. The Significant (p<0.05) differences which exist within each species of the vegetables in each column may be ascribed to genetic and environmental factors according to the report of Akan et al., (2009) that the absorption capacity of heavy metals depends upon the nature of vegetables and some of them have a greater potential to accumulate higher concentrations of heavy metals than others. Cd being among the non-essential elements in foods, its presence in these plants indicate that the plants contributes, though, insignificant as it may be, to the toxic effects of this non-essential element.

Lead (Pb) is a toxic element that can be harmful to plants, although plants usually show ability to accumulate large amounts of lead without visible changes in their appearance or yield. In many plants, Pb accumulation can exceed several hundred times the threshold of maximum level permissible for human consumption (Farooq et al., 2008). The high levels of Pb in some plants may probably be attributed to pollutants in irrigation water, farm soil or due to pollution from the highways traffic (Qui et al., 2000).

In all the samples analyzed, Pb levels were observed to vary from 0.007 mg/100g in the leaves of fresh Vernonia amygdalina to 2.56 mg/100g in the leaves of Telfairia occidentalis as shown in Table 2. Among the values reported previously for leafy vegetables, Dike (2010), reported Vernonia amygdalina to have 0.0082 mg/g including Asaolu and Asaolu, (2010), who also reported a mean concentration of Pb in Corchorus olitorius to be 0.05mg/g. The values reported by Asaolu and Asaolu, (2010) are not significantly different from those reported in this work particularly in the fresh leaves of the vegetables examined. Although the highest Pb concentration of 2.56mg/100g was found in the leaves of juiced Telfairia occidentalis, the value still has not exceeded the environmental lead (Pb) action level set by US EPA/WHO as reported by Mary (2009). Therefore, the lead levels in the leafy parts of the vegetables analyzed seems not to be alarming except in a case of excessive consumption. Moreover, a general increase in the Pb content of the vegetables was observed when juiced, except in few cases and therefore consumption of these vegetables in juiced form for a long period is not advisable in order to avoid consuming a higher dose of Pb through these leaves.

Lead is non-essential element in foods and natural waters. Automobile-exhaust ashes, batteries, bone meals, cigarette, petrol and lead accumulators/batteries are implicated as common sources of Pb in the environment (Nielson, 1996). Knowing the toxicity effect and the essentialities of some of the trace metals in the environment on human health, it is of paramount importance for food hygienist and health authorities to be familiar with available information on some of the hazardous metal content of our food like the leafy vegetables (Asaolu and Asaolu, 2010). This information may serve as a guide to the nutritional value and pollution potential of some leafy vegetables due to their mineral contents.

CONCLUSION

The goal of this study was to assess the level and compare the effect of juicing on Cd and Pb contents of fourteen leafy vegetables that are widely consumed by the inhabitants of South-west Nigeria. The results obtained in this work, on the concentration of heavy metals in the selected leafy vegetables

compared well with similar samples from other published works. Low concentrations of Cd and Pb in all the plant samples analyzed in the fresh and in the processed (juiced) vegetables, are clear indication that these plants contribute little or nothing to the toxic effect of these metals, and hence they can be consumed without fear of Cd and Pb toxicity. However, care must be exercised in consuming the juice because of possible cumulative effect of these toxic metals.

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