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*Full Length Research Paper*

## Perceived health believes of breast cancer and knowledge of its early detection measures among rural women in Umuduru Mbano, Imo State

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Breast cancer is one of the commonest causes of cancer morbidity and mortality in women in the world, but early detection measure (EDM) has been found to be the solution. This article presents perceived health belief of breast cancer and knowledge of its early detection measures among rural women in Umuduru Mbano, Imo State, Eastern Nigeria. A cross-sectional design was used in the study. A total of 440 young and old women from Umuduru Health District in the study area were sampled. Multistage sampling technique was used in selecting the respondents. Each woman was subjected to a structured questionnaire to elicit information on the perceived health belief of breast cancer and knowledge of its early detection measures. The study revealed that perceived susceptibility to breast cancer was significant among the old and young women. Their perception of the benefits of practice of EDM was significant. Meanwhile, the perceived barrier to practice of EDM among the young and old women was not significant. Findings of this study indicate that there is a need for an interventional study to enhance knowledge and free discussion of early detection measures of breast cancer among rural women in Umuduru Mbano.

**Key words:** Perceived health belief, early detection measures, breast cancer, young and old women, Umuduru Mbano.

### INTRODUCTION

Breast cancer is the most common malignancy in women worldwide. In Nigeria the prevalence of breast cancer is 116 cases per 100,000 women every year (Adebamowo and Ajayi, 2000). According to the World Health Organization (2011), more than 1.2 million women worldwide are diagnosed with breast cancer annually and about 460,000 will die from the disease. The importance

of this type of cancer in Nigeria clearly demonstrated by data collated in regional cancer registries show that breast cancer accounts for 17 to 44.5% of all cancers in women. This proportion is increasing in Nigeria, partly as a result of the changing demographic profile of acquisition of Western lifestyle and the changing socioeconomic profile of the country (Adebamowo and Adekunle, 1999).

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In all the centres (except in Calabar and Eruwa), breast cancer was the most common cancer in women (Banjo, 2004). It has been estimated that between 7000 and 10,000 new cases of breast cancer were developed in Nigeria in 2005, post-menopausal women accounted for 20% of these cases. Adebamowo (2005) identified a peak age of incidence of 43%, with 12% younger than 30 years of age. It has been observed that women from sub-Saharan Africa were found to have a low incidence of breast cancer. This was partly explained by a largely protective reproductive history, including late menarche, early menopause and high parity with prolonged breast-feeding, irregular menses and fewer ovulatory cycles. The average age at diagnosis, however, was approximately 10 years younger than breast cancer patients of Western nations and disease stage distribution was shifted toward more advanced disease, which resulted in higher mortality rates (Arbor, 2005). Sambanje and Mafuvadze (2012) found out that the high breast cancer mortality rate in Sub-Saharan Africa has been attributed to a lack of public awareness of the disease which often leads to late diagnosis of the disease.

According to Janz et al. (2002), the health belief model (HBM) developed by Hochbaum et al. (1950) has been widely used to examine beliefs related to breast cancer screening behaviors, such as practice of breast self-examination (BSE), clinical breast examination (CBE) and mammography. Based on the HBM, individuals are more likely to engage in preventive health behaviors if they perceive themselves to be susceptible to a certain disease/illness (perceived susceptibility), perceive the condition to have potentially serious consequences (perceived severity), believe that a course of action will produce positive outcomes (perceived benefits), or perceive that obstacles or barriers to taking actions are outweighed by the benefits.

With varying incidences of breast cancer across the age groups, it is important for both young and old women to be aware of breast cancer. Cancer mortality can be reduced if cases are detected and treated early (WHO, 2011). It is therefore important that women are informed of early detection measures for breast cancer. It is opined

that formal education will provide an advantage in understanding various health issues and that people with less education have significantly less knowledge of breast cancer; among less socio-economically developed regions in Nigeria, there appears to be a lack of awareness and knowledge among women, which means that the issues are not widely discussed (Pillay, 2002). For example, the breast cancer incidence report of Joint hospital, Mbanda in Eastern Nigeria (2006) suggests that early detection measures in Isi-ala Mbanda Local Government Area are lacking. A report on regional variations in breast cancer incidence showed that the teaching hospital in Eastern Nigeria had the highest number of

cases of breast cancer in Nigeria (Adebamowo and Adekunle, 1999; Banjo, 2004).

Breast self-examination and clinical breast examination are the readily available self-care options for early detection of breast cancer in Nigeria; however screening mammography is becoming more available and affordable and it has been recommended (American Cancer Society, 2003). In light of these apparent limitations in awareness of breast cancer and early detection measures in Nigeria, along with the varying incidences across the age groups, the aim of this study was to ascertain if there were differences between young (20 to 49 years) and old (50 years and above) women with regard to overall knowledge of breast cancer, knowledge of early detection measures, perceived benefit of early detection, perceived susceptibility, severity of breast cancer and barriers to early detection. The findings would be invaluable in helping health professionals to understand women and their attitudes to early detection measures of breast cancer. Therefore professionals will be able to appropriately and effectively encourage and raise awareness across the age groups of the importance of early detection of breast cancer in Nigeria.

## METHODOLOGY

The study utilized a cross-sectional descriptive research design. A total of 440 respondents, made up of young women aged 20 to 49 years and older women aged 50 years and above, who had lived for a minimum period of 6 months in the community were selected using systematic random sampling method. Each woman who met the eligibility criteria for the study and who was willing to participate was subjected to a structured questionnaire to elicit information on the perceived health belief of breast cancer and knowledge of its early detection measures. Adequate information about the study was given to the women, as well as the duration of time required to fill in the questionnaire and the fact that they had the right to opt out at any point during the data collection.

### Sampling procedure

A multistage sampling technique was used for this study. At the first stage, the five health districts in Isi-ala Mbanda Local Government were listed and Umuduru health district was selected by balloting procedure. Out of the three villages in Umuduru health district, Umuluwe was purposefully selected as it had the highest number of young and old women in Umuduru health district. A sample size was calculated using a formula proposed for studies where the population is less than 10,000 (Araoye, 2004). The formula is:  $n / (1 + n / N)$ ; where  $n$  = population of women in Umuluwe (where the study took place),  $N$  = population of women in Umuduru (the surrounding area), that is  $(608/1+608/1600) = 440$ . However, 450 questionnaires were used for the study because of attrition rate. The next step was house selection; a sample interval of three was calculated by dividing the number of houses in Umuluwe, ( $N$ ) with the number of women ( $n$ ).  $K = N/n$ . House selection was done by locating the central house in the village using the primary health care numbering system on houses. Starting from the center, every

third house on either side of the central house was selected. Permission was taken from the leader of the household to get information from a young or old woman within the household, with the help of some of the female community leaders. This process continued until 440 women were interviewed.

### Study setting

The study took place in Umuluwe in Umuduru Health District in Isiala Mbandi Local Government Area in Imo State, Eastern Nigeria. Umuduru Health District is made up of three villages, Umuluwe, Umueke and Orji. The population is predominantly Ibos. In Umuluwe the major occupation of the people is farming. The cash and food crops produced include cassava, maize, palm oil and palm kernels. Health facilities available include one comprehensive health centre, many private clinics, one Catholic mission hospital with a School of Nursing and two health posts that take care of the health needs of the people.

### Ethical considerations

Permission to conduct the study among women in the community was obtained from the traditional ruler of the village, Umuluwe. Individual consents were granted by each respondent before the questionnaires were given to them. They were informed that they could withdraw from the study at any stage. They were also reassured that such withdrawal or non-participation would not cause prejudice of any sort.

### Instrument for data collection

Data were collected through a structured questionnaire developed by the researcher following a preparatory literature review. The questionnaire is made up of three sections: section A, the demographic variables of the subject, section B, knowledge of breast cancer and early detection measures of breast cancer, section C respondents' perceived susceptibility, perceived severity, perceived benefit and perceived barriers to the practice of early detection of breast cancer. Each option in section C was assigned a score; scores ranged from 0 to 5, strongly agreed = 5, agreed = 4, disagree = 3, strongly disagreed = 2, while no response was = 0, after which it was converted to percentage. Scores between 0 to 49 was negative while 50 to 100 was positive. The questionnaire was in English and Ibo language. The test-retest reliability of the instrument was  $r = 0.6874$ . Utilizing a systematic random sampling of the houses, the selected respondents were given the questionnaire after informed consent. A period of two weeks was used for data collection.

## RESULTS

Four hundred and fifty (450) questionnaires were administered to old and young women of Umuluwe in Umuduru. Due to a refusal rate of 2%, 447 (99.3%) questionnaires were retrieved and only 440 (97.8%) were found adequate for analysis. The total number of young women was 220 and also 220 old women. Details of socio-demographic characteristics are stated in Table 1. Table 2 shows that the old women have knowledge of

early detection measures of breast cancer than the young women. 76.4% of the young women and 86.4% of the old women know that clinical breast examination is an early detection measure of breast cancer. Table 3 shows that 58.2% of the young women and 60.0% of the old women knew that exposure to rays will increase their perceived susceptibility to breast cancer. The old women have a higher knowledge of their perceived susceptibility to breast cancer than the young women. Table 4 shows that the young and old women had knowledge of the severity of breast cancer, with 90.0% of the young women and 72.7% of the old women indicating that breast cancer is severe as it can lead to death. Thus the young women have a higher perceived severity. Table 5 outlines that the young and old women perceived that there is a lot to benefit by practicing early detection measures of breast cancer, with 80.9% of the young and 91.8% of the old women confirming that early identification can prolong life.

Table 6 shows that majority of the young respondents, 74.5 and 69% of the old respondents indicated that attitude of health workers was a barrier to early detection measures of breast cancer.

Table 7 showed the respondents perceived susceptibility to breast cancer was significant, with  $P = 0.0071$ . Their perceived severity of breast cancer was not significant, with  $P = 0.6252$ . Perceived benefit of early detection measures for breast cancer was significant among the women, with  $P = 0.0232$ . The old and young women perceived barriers to use of early detection measures was not significant, with  $P = 1.1971$ .

## DISCUSSION

### Demographic characteristics and knowledge of early detection measure of breast cancer

Forty seven percent (47.3%) of the old women and 37.3% of young women were married; also 40.9% of the old women and 59.1% of the young women are civil servants. The high level of knowledge of early detection measures of breast cancer reported in this study (young women, 76.4%; old women, 86.4%) may be related to the fact that majority of the respondents were civil servants and more than half of the respondents had tertiary education, therefore they may be able to source information independently of health care workers. This is consistent with findings of other studies where participants were highly educated - in an urban community in Eastern Nigeria, it was found that 54.4% of their respondents had a fair degree of awareness (Okoronkwo et al., 2003; Jebbin and Adotey, 2004). In addition it is an opinion that formal education will provide an advantage in understanding various health issues and that people with

**Table 1.** Demographic data of participants. For each group (n=220).

<b>Characteristic</b>	<b>Frequency (%) of old respondents n=220</b>	<b>Frequency (%) of young respondents n=220</b>
<b>Age (years)</b>	20-30	92 (41.8)
	31-40	78 (35.5)
	41-49	50 (22.7)
	50-60	134 (61.0)
	61-70	66 (30.0)
	71 above	20 (9.1)
<b>Marital status</b>		
Single	8 (3.6)	56 (25.5)
Married	104 (47.3)	82 (37.3)
Separated	8 (3.6)	4 (1.8)
Divorced	4 (1.8)	8 (3.6)
Windowed	46 (21.0)	26 (11.8)
<b>Educational qualification</b>		
Primary	42 (19.1)	4 (1.8)
JSS/SSCE	16 (7.3)	50 (22.7)
Diploma	60 (27.3)	50 (22.7)
BSc	38 (17.3)	66 (30.0)
MSc	2 (0.9)	8 (3.6)
Commercial	52 (23.6)	26 (11.8)
<b>Occupation</b>		
Farming	18 (8.2)	14 (6.4)
Trading	32 (14.5)	26 (11.8)
Housewife	46 (21.0)	18 (8.2)
Civil servant	90 (40.9)	130 (59.1)
<b>State of origin</b>		
Imo	192 (87.3)	220 (100.0)
Anambra	6 (2.7)	-
Delta	2 (0.9)	-

JSS = junior secondary school; SSCE = senior school certificate examination.

less education have significantly less knowledge of breast cancer (Janz et al., 2002). According to Adebamowo and Ajayi (2000), Oluwatosin (2008) and Oluwatosin and Oladepo (2006), health education and screening programmes for breast cancer were identified in their studies as the cause of low levels of knowledge. It has been suggested that incorporation of teaching about breast awareness into the primary health care programme may be a cheap and cost-effective strategy.

### Perceived susceptibility

The perceived susceptibility of the young and old women

to breast cancer was moderate and there was a significant association between the two groups except for being thin and exposure to rays. Within the groups, 58.2% of the young women and 60.0% of the old women believed that exposure to rays would make them susceptible to breast cancer with  $X^2 = 0.085$ ,  $P = 0.7711$ . Also, 52.7% of the young women and 70.9% of the old women believed that their use of oral contraceptive will make them susceptible to breast cancer,  $X^2 = 14.645$ ,  $P = 0.0001$ . 54.5% of the young women and 44.6% of the old women disagreed that having their first baby at the age of 40 years will make them susceptible to breast cancer. Additionally, 40.9% of the young women and 61.8% of the old women were able to identify that family history of

**Table 2.** Respondents' knowledge of early detection measure of breast cancer (n=220).

Variable		Yes		No		Don't know/No response		X <sup>2</sup>	P-value
		Freq	%	Freq	%	Freq	%		
Breast self-examination	Young	192	87.3	2	0.9	26	11.8	12.022	0.0025
	Old	206	93.6	6	2.7	8	3.6		
Clinical Breast Examination	Young	168	76.4	12	5.5	40	18.2	7.352	0.0253
	Old	190	86.4	6	2.7	24	10.9		
X-ray	Young	70	31.8	68	30.9	82	37.3	38.484	0.0001
	Old	98	44.5	96	43.6	26	11.8		
Mammography	Young	78	35.5	28	12.7	114	51.8	64.855	0.0001
	Old	146	66.4	36	16.4	34	15.5		
Ultrasound	Young	78	35.5	52	23.6	90	40.9	18.257	0.0001
	Old	78	35.5	88	40.0	54	24.5		
Laboratory test	Young	82	37.3	50	22.7	88	40.0	27.743	0.0001
	Old	74	33.6	98	44.5	48	21.8		

Significant P<0.05. Freq: Frequency.

especially among young women (McPherson et al., 2000). The women do not consider that they are susceptible to breast cancer; they may not practice early detection measures or value the breast cancer screening programmes. Breast cancer screening programmes have been seen as an important component of breast cancer prevention and perceived susceptibility has been linked to an increase in cancer screening (Champion, 1999).

#### Perceived severity

Many of the respondents perceived that breast

cancer is severe; however there was no significant association in the perception of the two groups in late detection of breast cancer with  $X^2 = 1.171$ ,  $P = 0.2793$ , less dangerous than other cancers with  $X^2 = 0.506$ ,  $P = 0.477$  and breast cancer affecting maternal mortality with  $X^2 = 1.383$ ,  $P = 0.2395$ . The young and old women knew the prognosis of breast cancer, 76.4% of the young and 88.2% of the old respondents acknowledged that breast cancer could spread to the other parts of the body. Majority of the young women (78.2%) and 82.7% of the old women are of the opinion that the severity of breast cancer is because it is

always detected late. Some of the respondents recognized its severity with 90.0% of the young and 72.7% of the old, indicating that breast cancer can lead to death,  $X^2 = 20.519$ ,  $P = 0.0001$ . Some of the women may have been aware of this due to previous experience with breast cancer or other forms of cancer.

#### Perceived benefit of early detection measures

The respondents' perception of benefit of early detection measures for breast cancer was high an

**Table 3.** The old and young women' perceived susceptibility to breast cancer (n = 220).

Variable	Age group	Perceive susceptibility to breast cancer				Statistics	
		Positive		Negative		X <sup>2</sup>	P-value
		Freq	%	Freq	%		
Exposure to rays	Young	128	58.2	92	41.8	0.085	0.7711
	Old	132	60.0	88	40.0		
Use of oral contraceptives	Young	116	52.7	104	47.3	14.645	0.0001
	Old	156	70.9	64	29.1		
Previous benign cancer	Young	100	45.5	120	54.5	17.012	0.0001
	Old	144	65.5	76	34.5		
First child at the age of 40 years	Young	46	20.9	174	79.1	14.947	0.0001
	Old	84	38.2	136	61.8		
First child at the age of 20 years	Young	44	20.0	176	80.0	8.534	0.0035
	Old	72	32.7	148	67.3		
Family history of breast cancer	Young	90	40.9	130	59.1	18.423	0.0001
	Old	136	61.8	84	38.2		
Being fat	Young	52	23.6	168	76.4	12.833	0.0003
	Old	88	40.0	132	60.0		
Being thin	Young	74	33.6	146	66.4	0.513	0.4737
	Old	66	30.0	154	70.0		

Freq: Frequency.

**Table 4.** The old and young women' perceived severity of breast cancer (n = 220).

Variable	Age group	Perceive severity of breast cancer				Statistics	
		Positive		Negative		X <sup>2</sup>	P-value
		Freq	%	Freq	%		
Is always detected late	Young	172	78.2	48	21.8	1.171	0.2793
	Old	182	82.7	38	17.3		
Spread to other organs	Young	168	76.4	52	23.6	9.739	0.0018
	Old	194	88.2	26	11.8		
Is more dangerous than other cancers	Young	130	59.1	90	40.9	13.827	0.0002
	Old	90	40.9	130	59.1		
Leads to deaths	Young	198	90.0	22	10.0	20.519	0.0001
	Old	160	72.7	60	27.3		
Less dangerous than other cancers	Young	76	34.5	144	65.5	0.506	0.477
	Old	68	30.9	152	69.1		
Affects maternal mortality	Young	78	35.5	142	64.5	1.383	0.2395
	Old	91	41.4	129	58.6		

Freq: Frequency.

**Table 5.** The old and young women' perceived benefit of early detection measures for breast cancer (n = 220).

Variable	Age group	Perceived benefit of early detection measures for breast cancer				Statistics	
		Positive		Negative		X <sup>2</sup>	P-value
		Freq	%	Freq	%		
Early identification of breast cancer	Young	194	88.2	26	11.8	0.21	0.6464
	Old	198	90.0	22	10.0		
Reduces maternal mortality	Young	176	80.0	44	20.0	4.91	0.0267
	Old	194	88.2	26	11.8		
Treatment at a lower cost	Young	180	81.8	40	18.2	3.012	0.0826
	Old	198	90.0	22	10.0		
Prolong life	Young	178	80.9	42	19.1	10.209	0.0014
	Old	202	91.8	18	8.2		
Ability to detect lump	Young	162	73.6	58	26.4	7.27	0.007
	Old	186	84.5	34	15.5		

Freq: Frequency.

was high and there was a significant association in their perception which accepts the respondent's early identification of breast cancer and treatment at a lower cost. Majority of the women in both groups had formal education and were able to perceive that early detection measures of breast cancer can be of benefit to them  $X^2 = 0.21$ ,  $P = 0.6464$ . Within the groups, 80.0% of the young women and 88.2% of the old women believed reduction of maternal mortality to be a benefit and 81.8% of the young women and 90.0% of the old women said it leads to reduction in the cost of treatment. Meanwhile, 73.6% of the young women and 84.5% of the old women knew that ability to detect lump was a benefit, with  $X^2 = 7.27$ ,  $P = 0.007$ . Similarly, studies carried out by the following

authors Jatoi (1997), Nzarusara (1999) and Oluwatosin (2008) found out that their respondents considered early detection measures of breast cancer to be of benefit to them.

#### Perceived barriers to use of early detection measures

Majority of the respondents, 79.1% of the young women and 62.7% of the old women considered lack of knowledge as a major barrier to early detection practice. The poor attitude of health workers was not significant, with  $X^2 = 1.359$ ,  $P = 0.2438$ . Cultural belief was also seen as barrier - in many societies women cannot make decision of

their own unless given permission by their husbands, or sometimes their mother-in-laws. Many people also believe that people get diseases like cancer after offending the gods of the land. Health workers, as the major source of knowledge for these women, have a significant role to play. The educational preparation for health workers should include both theoretical knowledge and opportunities to develop skills in early detection procedures. These skills include breast self-examination and clinical breast examination. There is also the need to have good knowledge of the principles of teaching and learning as well as the art of communication, this can be transferred into skills. Nurses are expected to serve as role models for early detection of breast cancer (Lillington

**Table 6.** The young and old women' Perceived barriers to use of early detection measures of breast cancer (n = 220).

Variables	Age group	Perceived barriers to use of early detection measures between women				Statistics	
		Positive		Negative		X <sup>2</sup>	P-value
		Freq	%	Freq	%		
Cultural belief	Young	57	25.9	163	74.1	11.731	0.0006
	Old	92	41.8	128	58.2		
High cost of investigation	Young	90	40.9	130	59.1	13.827	0.0002
	Old	130	59.1	90	40.9		
Lack of support from family	Young	32	14.5	188	85.5	26.458	0.0001
	Old	80	36.4	140	63.6		
Receiving medical treatment from herbalist	Young	134	60.9	86	39.1	1.188	0.2757
	Old	146	66.4	74	33.6		
Lack of knowledge of early detection measures	Young	174	79.1	46	20.9	13.497	0.0002
	Old	138	62.7	82	37.3		
Attitude of health workers	Young	164	74.5	56	25.5	1.359	0.2438
	Old	152	69.1	68	30.9		

Freq: Frequency.

**Table 7.** The old and young women perceptions to breast cancer (n = 220).

Variable	Young				Old				P-value
	Positive		Negative		Positive		Negative		
	Freq	%	Freq	%	Freq	%	Freq	%	
Perceived susceptibility to breast cancer	81	36.8	139	63.2	110	50.0	110	50.0	0.0071
Perceived severity of breast cancer	137	62.3	83	37.7	131	59.5	89	40.5	0.6252
Perceived benefit of early detection measures for breast cancer	178	80.9	42	19.1	196	89.1	24	10.9	0.0232
Perceived barriers to use of early detection measures between women	109	49.5	112	50.9	123	55.9	97	44.1	0.1971

Freq: Frequency.



et al., 1993). Nurses knowledge should be transferred to practice if not the nurse has failed in her role. However early detection of breast cancer is the primary determinant in survival. It is therefore recommended that women should receive age-appropriate periodic screening and education, which includes a combination of mammography, clinical breast examination and breast self-examination. More than 90% of breast cancers were discovered by women themselves. The need to develop the chances of women detecting breast cancer and promptly reporting any changes was emphasized by Jones and Trabeaux (1996). Adegoke (1992) found out that most of the older respondents also indicated that non-utilization of health facilities, finance and receiving medical treatment from herbalist were barriers to the practice of early detection measures. Barriers to breast cancer screening identified included: economic barriers, difficulty with transportation, inconvenience, lack of time, psychological factors such as fear and fatalism, lack of knowledge and awareness of breast cancer and misunderstanding of recommended screening frequency. In addition, it has been suggested that there is a need to dispel myths, change beliefs and modify the perception of the intended audience in order to have health promotion activities (Erwin et al., 1996).

## Conclusion

This article provides a perceived health belief of breast cancer and knowledge of its early detection measures among rural women in Umuduru Mbano. Women should be educated on how to identify early signs of breast cancer to ensure that a quick treatment can be effected. The respondents all had a high knowledge of breast cancer and early detection measures. The younger respondents did not see breast cancer as a disease of older women but as a disease that all women should look out for in the bid to reduce maternal mortality and mobility caused by breast cancer. Cultural belief still plays an important negative role on the health of women in Nigeria till date. Even with their high level of education and exposure most women cannot fight some of the cultural norm that affect their health which explains why 26.0% of the young women and 41.8% of the old women believed culture would prevent women from practicing early detection for breast cancer. There is a need to involve not only health professionals in creating awareness of early detection measures of breast cancer, religious organizations should be included. This campaign should extend throughout the public with the aid of electronic media where possible.

## Key points

1. The three major early detection measures for breast

cancer are breast self-examination, clinical breast examination and mammography

2. The diagnosis of breast cancer is an issue that is not freely discussed due to lack of knowledge among women in Eastern Nigeria.

3. Barriers to use of early detection methods included: economic barriers, lack of knowledge and awareness of breast cancer, attitude of health workers, recommended screening frequency and cultural belief.

4. Perceived health belief of breast cancer and knowledge of its early detection measures among rural women would be improved by campaigns targeting different social groups and using electronic media where possible.

## Authors' contributions

AOH carried out the research work under the supervision of OOA who provided methodological input and drafted the manuscript. The authors provided clinical knowledge of breast cancer, worked on the statistical analysis including statistical expertise. All authors have reviewed the final manuscript

## Competing interests

The authors declare that they have no competing interest in this study.

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*Full Length Research Paper*

# Household food security among pregnant women in Ogun - East senatorial zone: A rural – urban comparison

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The burden of disease caused by adverse pregnancy outcomes, including maternal and child morbidity and mortality, in developing countries, has been enormous. An important contributor to good pregnancy outcome is the nutritional status of the mother, which is a factor of adequacy or otherwise of the dietary intake in pregnancy. Household food security is a determinant of adequate dietary intake. This study assessed and compared household food security among 720 rural and urban pregnant women from Ogun-East senatorial district using semi-structured, interviewer-administered, six-item, short form food security questionnaire. Data analysis was done using International Business Machine (IBM) statistical package for the social sciences (SPSS) version 14.00. The result was presented as proportions, with the relevant test statistic. Household food security was higher among the rural respondents than their urban counterparts. More urban respondents were food insecure without hunger and with hunger compared with their rural counterparts. There was no significant difference ( $p = 0.070$ ) between the household food security status of both groups of respondents. Economic empowerment of women and improvement in food availability even during the planting season will go a long way in improving the food security status of many households.

**Key words:** Household, food, security, pregnant, women.

## INTRODUCTION

Nutrition is an important characteristic of all living things, including man. It is vital to the health and well being of individuals throughout the life cycle. Maternal nutritional status is of great concern to health professionals because

of the effects it has on both the pregnant woman and her unborn child. Many countries in sub-Saharan Africa have recorded very high morbidity and mortality rates among pregnant women and children under five years of age.

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Nigeria has a maternal mortality ratio greater than the regional average (Harrison, 1997; Hill et al., 2007; Federal Ministry of Health (FMOH), 2007). Amongst other important causes of pregnancy-related morbidity and mortality is poor maternal nutritional status. Pregnancy places extra demands on the body systems and processes, increasing the vulnerability of such women to various forms of nutritional disorders, including deficiency states and nutritional anaemia (Bowman and Rusell, 2001; Ladipo, 2000). High malnutrition rates among pregnant women have been reported in sub-Saharan Africa, ranging from 60% in Samburu and 37% in Marsabit districts of Kenya, respectively to almost 20% in South-eastern Nigeria (Carter 2006; Okwu et al., 2007). Malnutrition affects humans throughout the life cycle, with increased vulnerability among those in developing countries. It therefore presents a multi-dimensional challenge, encompassing both physical and psychosocial elements (Erdman et al., 2012).

The Millennium Development Goals recognise the importance of adequate nutrition to sustainable development. The first goal addresses the eradication of extreme poverty and hunger and seeks to half the proportion of people who suffer from hunger by the year 2015. Poverty is the main underlying cause of malnutrition and its determinants (Sachs and McArthur, 2005). Almost half of the world's population live on less than \$2 (USD 2.00) a day. In developed (more affluent) countries, fewer than 5% of all children under five are malnourished, while in poor (developing) countries, as many as 50% are malnourished (Tesfahun, 2009; World Bank, 2001). The United Nations World Food Programme reported an estimated 9 million people to be in need of humanitarian assistance, in the horn of Africa alone. The situation has greatly increased the vulnerability of women, particularly in pregnancy, and children to the adverse consequences of malnutrition (World Food Programme (WFP), 2011). The World Health Organization estimated that over 850 million people are undernourished worldwide, with the vast majority (over 90%) living in developing countries (WHO, 2002). The Food and Agriculture Organization confirms the ever-increasing number of undernourished people worldwide, mainly in the poorer (and developing) nations of the world (Food and Agriculture Organization (FAO), 2004).

A major determinant of nutritional status is the dietary intake of an individual which is in turn affected by the availability and utilization of food within the household. Household food security therefore determines to a large extent, the nutritional status of members of the household concerned, particularly for women and children. Food security is the condition in which all have access to sufficient food to live healthy and productive lives (Haile et al., 2005). It is dependent on many factors including food production, importation and donations, household income, intra-household decision-making and resource allocation (Amanor and Amanor, 2009). Food insecurity is not only a limited or uncertain availability of nutritionally

adequate and safe foods but also the inability to acquire acceptable foods in socially acceptable ways. Severe food insecurity and hunger can lead to food intakes that are continuously insufficient to meet dietary energy requirements (Gladwin et al., 2001). Increased food supplies do not automatically enhance access to food by the poorer groups of society (Irumu and Butt, 2004). The Nigeria Food Consumption and Nutrition Survey, carried out between 2001 and 2003, found 60% of severe household food insecurity occurring in the moist savannah regions (southwest) of the country (Maziya-Dixon et al., 2004). A study measuring household food insecurity in selected local government areas of Lagos and Ibadan, southwest Nigeria found a prevalence of 70% for household food insecurity. Food secure households were 28% in Lagos and 23.7% in Ibadan. In Lagos, 37.2% of households studied were food insecure without hunger, compared with 45.7% in Ibadan. Only 12% of households in Lagos and 4.7% in Ibadan were food insecure with severe hunger (Sanusi et al., 2006).

This study therefore assessed household food security among pregnant women accessing ante-natal care services at selected primary health centres in rural and urban areas of Ogun – East senatorial district.

## METHODOLOGY

### Study area

Ogun state has twenty Local Government Areas, spread across the three senatorial districts in the state. It is located in southwestern Nigeria and bounded in the north by Oyo and Osun states, in the east by Ondo state, in the south by Lagos state and in the west by the Republic of Benin. It has a population of 4.2 million people. The Ogun-East senatorial zone is made up of nine Local Government Areas.

### Study design

A cross-sectional comparative study was carried out among pregnant women at selected Primary Health Centres in rural and urban areas of Ogun state, between 4th December, 2012 and 6th May, 2013.

### Study population

Representative samples of pregnant women of reproductive age, utilizing ante-natal care services at selected rural and urban Primary Health Centres were studied.

### Sample size determination

Using a formula for the comparison of two independent proportions,

$$N = (Z_{1-\alpha/2} + Z_{1-\beta})^2 [P_1(1-P_1) + P_2(1-P_2)] / (P_1-P_2)^2$$

$$N = (1.96 + 0.84)^2 [0.3(0.7) + (0.2)(0.8)] / (0.3 - 0.2)^2$$

$$N = 290.008$$

Taking into account 20% non-response rate, incompletely-filled questionnaires and other unforeseen challenges with data collection,

the calculated sample size (N) was rounded up to 360 per group. A total of 720 pregnant women were studied in all.

### Sampling technique

Multi-stage sampling technique was used in this study. The first stage involved the selection of one rural and one urban LGA by simple random sampling. Sagamu LGA was selected as the urban study location, while Remo-North LGA was selected as the rural study location by simple random sampling. The second stage of the sampling involved the selection of two wards from each of the selected LGAs by simple random sampling. In Remo-North LGA, wards 7 and 9 were selected from the 15 existing wards, by simple random sampling (balloting). The Primary health care services (PHCs), located within the selected wards, constituted the rural study sites. In Sagamu LGA, wards 5 and 8 were selected through a process of simple random sampling (balloting). The PHCs located within the two selected wards constituted the urban study sites. Therefore, a total of four PHCs was utilized for the study in both LGAs. All pregnant women who were willing to participate in the study were recruited consecutively till the desired sample size was reached.

### Data collection methods

Five interviewers (research assistants) were trained over a period of two days prior to commencement of the study. They were all undergraduate students of the College of Health Sciences. The interviewer administered semi-structured questionnaires which were used to collect data on respondents' socio-demographic characteristics and household food security status. The questionnaire was translated into the local language (Yoruba) and back into English, to ensure clarity, standard and uniformity.

### Data management

Data analysis was done using the IBM Statistical Package for the Social Sciences (SPSS) version 14.00. Proportions, means and frequencies were calculated, presented as tables, charts and was compared between the two groups using the appropriate statistical tests. Chi square test and Fisher's exact test were used to test for association between categorical variables. Level of significance was placed at  $p = 0.05$ . Respondents' household food security was assessed using the short form six-item questionnaire. All responses in the affirmative (yes) were given a score of one (1), while negative responses were given a score of zero (0) as documented in literature (Gulliford, 2004). The first item on the short form household food security questionnaire was split into two due to its double barrel nature in order to avoid ambiguities noticed during the pretest. A score of two or less qualified the respondent to be classified as food security; a score of three to five was classified as food insecure without hunger; while a score of six to seven was classified as food insecurity with hunger.

### Ethical considerations

Ethical approval was obtained from the Ogun State Primary Health Care Board, Ogun State Ministry of Health, as well as the Health Research and Ethics Committee of Olabisi Onabanjo University Teaching Hospital, Sagamu. Written approval was also sought from the Local Government Health Authorities in Sagamu LGA and Remo-North LGA, through the Medical Officer for Health/Director, Primary Health Care Department. Participants' informed consent was obtained verbally and by thumb printing, prior to the

commencement of the study. Strict confidentiality was ensured throughout the course of the research. Participants were free to withdraw from the study, if they deemed it necessary and were assured that such would not affect the quality of care received at the facility.

## RESULTS

A total of 720 pregnant women participated in the study at the selected primary health centres.

### Age and marital status of respondents

Majority (51.7 of rural and 53.9% of urban) respondents were aged between 26 and 33 years. This was followed by those aged 18 to 25 years, comprising 27.2 and 26.45% of rural and urban respondents, respectively. The mean age of rural women ( $28.14 \pm 5.49$  years) was not significantly different ( $p=0.553$ ) from that of the urban women ( $28.38 \pm 5.53$  years). Most (over 95%) of respondents in both urban and rural areas were married. Both areas had an equal proportion (3.1%) of single respondents (Table 1).

### Respondents' level of education

Among both groups of respondents, only 3.3 and 3.4% of rural and urban women, respectively had no formal education; 14.5% of the rural respondents and 17.3% of the urban had primary/Koranic education. Majority (61.3 rural and 63.7% urban) of respondents had secondary education; while 20.9% of rural women compared with 15.6% of urban women had some form of tertiary education or the other.

### Household monthly income and decision making on spending pattern

The mean household income of rural respondents (NGN 25,061  $\pm$  12,458) was significantly lower ( $p = 0.004$ ) than the mean household income (NGN 28,124  $\pm$  10,585) of urban respondents. Most rural (64.7%) and urban (69.4%) respondents reported household incomes between NGN 20,001.00 and NGN 40,000.00. Only 0.2% of rural respondents compared with 2.8% of their urban counterparts reported household incomes greater than NGN 60,000.00. There was a significant difference ( $p > 0.001$ ) between the household income of rural and urban study participants. Decision making on spending pattern of the household income was done jointly by respondents and their spouses in 46.7% of the rural households and 49.4% of the urban households. About 38% of respondents in both groups reported that their spouses alone determined the pattern of household spending. In 5.2% of rural households and 3.9% of urban households, the spouses'

**Table 1.** Age and marital status of respondents.

Age (years)	Location		Test statistic
	Rural	Urban (n=360)	
	Frequency (%)	Frequency (%)	
18 – 25	98 (27.2)	95 (26.4)	$\chi^2=0.561$ ; $df=3$ ; $p=0.905$
26 – 33	186 (51.7)	194 (53.9)	
34 – 41	70 (19.4)	64 (17.8)	
42 – 49	6 (1.7)	7 (1.9)	
Mean age	28.14 ± 5.49	28.38 ± 5.53	$t=0.593$ ; $p=0.553$
<b>Marital status</b>			
Single	11 (3.1)	11 (3.1)	$\chi^2=0.113$ ; $df=2$ ; $p=0.945$
Married	344 (95.6)	345 (95.8)	
Separated	3 (0.8)	4 (1.1)	
Divorced	2 (0.5)	0 (0.0)	

Rural; n=360. Urban; n=360.

**Table 2.** Household monthly income and decision making on spending.

Household income (Naira)	Location		Test statistic
	Rural	Urban	
	Frequency (%)	Frequency (%)	
1 – 20,000	122 (33.8)	80 (22.2)	$\chi^2 = 25.693$ ; $df=3$ ; $p=0.000$ .
20,001 – 40,000	233 (64.7)	250 (69.4)	
40,001 – 60,000	5 (1.3)	20 (5.6)	
60,001 – 80,000	1(0.2)	10 (2.8)	
Mean income	25,061±12,458	28,124±10,585	$t=-2.013$ ; $p=0.004$
<b>Decision making on household spending</b>			
Respondent alone	37 (10.3)	33 (9.2)	$\chi^2=1.279$ ; $df=3$ ; $p=0.734$
Respondent and spouse	168 (46.7)	178 (49.4)	
Spouse only	136 (37.8)	135 (37.5)	
Spouse's relatives	19 (5.2)	14 (3.9)	

Rural; n=360. Urban; n=360.

relatives were involved in the decision making process on household spending. There was no significant difference ( $p = 0.734$ ) between both groups (Table 2).

### Respondents' ability to spend earnings on food and household size

Most respondents in the rural (56.1%) and urban (59.2%) areas were able to spend their earnings freely on food. Only 12.8% of rural women and 14.4% of urban women were able to spend freely occasionally. A greater proportion of rural (31.1%) and urban (26.4%) were not able to spend as they desired on feeding. There was no significant difference ( $p = 0.358$ ) between both groups. The mean household size among rural respondents was 3.65,

while that of the urban women was 3.69. There was no statistically significant difference between the means ( $p = 0.753$ ). Almost 27% of rural respondents had a household size of less than three people compared with 24.7% of urban respondents. More rural respondents (4.4%) also had a household size of 10 or more persons compared with 2.8% of urban respondents. There was no significant difference ( $p = 0.165$ ) between both groups (Table 3).

### Proportion of income spent on feeding and household food security status

Most respondents (38.3%) in the rural and urban areas spent 50 to 74% of their income on feeding. Only 32.3%

**Table 3.** Respondents' ability to spend earnings on food and household size.

Ability to spend on food	Location		Test statistic
	Rural	Urban	
	Frequency (%)	Frequency (%)	
Yes	202 (56.1)	213 (59.2)	$\chi^2=2.055; df=2; p=0.358$
No	112 (31.1)	95 (26.4)	
Sometimes	46 (12.8)	52 (14.4)	
<b>Household size</b>			
Less than 3	97 (26.9)	89 (24.7)	$\chi^2=10.442; df=7; p=0.165$
3– 5	221 (61.5)	215 (59.7)	
6– 8	26 (7.2)	46 (12.8)	
10 and above	16 (4.4)	10 (2.8)	
Mean	3.65±1.56	3.69±1.56	t=0.315; p=0.753

Rural; n=360. Urban; n=360.

**Table 4.** Proportion of income spent on feeding and household food security status.

Proportion spent (%)	Location		Test statistic
	Rural	Urban	
	Frequency (%)	Frequency (%)	
90 and above	40 (11.1)	37 (10.3)	$\chi^2 = 6.292; df=4; p=0.178$
75 – 89	66 (18.3)	87 (24.2)	
50 – 74	138 (38.3)	138 (38.3)	
25 – 49	80 (22.3)	59 (16.4)	
Less than 25	36 (10.0)	39 (10.8)	
<b>Household food security status</b>			
Food secure	223 (61.9)	193 (53.6)	$\chi^2=5.330; df=2; p=0.070$
Food insecure without hunger	113 (31.4)	141 (39.2)	
Food insecure with hunger	24 (6.7)	26 (7.2)	

Rural; n=360. Urban; n=360).

of rural respondents and 27.2% of urban respondents spent below 50% of their income on feeding. There was no significant difference ( $p=0.178$ ) between the proportion spent by rural and urban respondents. Household food security was higher (61.9%) among the rural respondents compared with the urban (53.6%) women. Food insecurity without hunger was reported among 31.4% of rural respondents compared with 39.2% of their urban counterparts. Food insecurity with hunger was reported by only 6.7% of rural women and 7.2% of urban women. There was no significant difference ( $p=0.070$ ) between the household food security status of the rural women and their urban counterparts (Table 4).

## DISCUSSION

The mean age of rural respondents was  $28.14 \pm 5.49$  years while that of urban respondents was  $28.38 \pm 5.33$  years. There was no statistically significant difference

between both means ( $p = 0.553$ ), among both groups of pregnant women, more than 50% were aged between 26 and 33 years. Majority (over 95.0%) of respondents in both rural and urban locations were married, a finding similar to those from other studies involving antenatal care clients (Okwu and Ukoha, 2008).

The importance of household food security to good nutritional status has been emphasized over several years by the international community as well as local researchers (World Food Programme (WFP), 2011; FAO, 2004; United Nations Children's Fund (UNICEF), 2009; Sanusi et al., 2005). A higher proportion (61.9%) of rural respondents was food secure, compared with 53.6% of urban respondents. More urban respondents were food insecure without hunger (39.2% urban; 31.4% rural) and with hunger (7.2% urban; 6.7% rural). Household food security status was not significantly associated with participants' location ( $p = 0.070$ ). These findings are somewhat similar to those from a Nigerian study, in which household food security was 52% in the rural areas surveyed.

and food insecurity was reported as 48%. The difference however is that in this study the rural respondents had a higher value (61.9%) of food security (Obamiro et al., 2003). The household food security status recorded in this study was far higher than that reported by researchers in Ile-Ife, Nigeria, where as many as 65% of households were food insecure (Ajao et al., 2010). The Nigeria Food Consumption and Nutrition Survey results also buttress the food insecurity status of many households in southwest Nigeria, as reported in this study. However, the proportion of household food insecurity with hunger is only 6.7% for rural households and 7.2% for urban households in this study, in contrast to findings from the national survey (Maziya-Dixon et al., 2004). Other studies from southwestern and south-south regions of Nigeria reported food insecurity levels as high as 70 and 61.8%, respectively in contrast to findings from this study (Sanusi et al., 2006; Omuemu et al., 2012). In Oromiya Zone of Ethiopia, researchers found household food insecurity to be as high as 73.1%, which sharply contrasts with findings from this study. Determinants of food security in their study included household size, educational status, average farm land size as well as average per capita production of food in Kilograms (Haile et al., 2005).

It is also important to note that in Nigeria, like in many other developing countries of sub-Saharan Africa and Asia, a wide seasonal variability in food supply and availability exists, due to the poor food storage and preservation practices in these regions (FAO, 2004). Also some researchers are of the opinion that variables related to food supply are more potent determinants of food security than those related to food demand. Food insecurity is further viewed as a demand concern affecting the poor's access to food, than a supply concern affecting availability of food at the national level (Feleke et al., 2005). Food insecurity has also been associated with reduced quality and variety of dietary intakes and a number of poor developmental outcomes in children as well as underweight in adults (Tarasuk, 2001; Saha et al., 2009; Gulliford et al., 2004). The Federal Government through the Federal Ministry of Agriculture and Rural Development, made efforts to address the rising food insecurity in the country. It operated a pilot project in Kano, with three sites, tagged "Supporting Programmes for Food Security" (SPFS). The success recorded in this pilot scheme has led to a scale-up to the national level, which was formally launched in 2001, with a mandate to reach at least thirty thousand (30,000) households (FAO). Due to the multi-dimensional issues related to food security, many institutions and governments avoid optimal investment of their scarce resource to tackle it (Bogale and Shimelis, 2009).

Despite the numerous challenges regarding food security at national, local and household levels, governments and community leaders must show commitment to increase food production, storage, distribution, price

regulation and limitation of family size, women empowerment, gender mainstreaming and other factors associated with household food security. Health education targeted at community leaders, opinion leaders, policy makers and even women themselves, on the importance of household food security to health, need to be instituted and evaluated at regular intervals, in order to stir up sustainable actions.

## Conclusion

Household food security was higher among rural respondents than their urban counterparts. economic empowerment of women and strategies to improve food availability and distribution within households, will go a long way in ensuring that many more families are food secure, thereby improving the chances of survival of mothers and their children.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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