Assessment of breast cancer screening services uptake amid women of childbearing age in three senate zones of Abia State, Nigeria

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ABSTRACT

Introduction: Globally, Breast cancer is a threat to human life. One of the best techniques in tackling breast cancer disease is to get women screened for the disease earlier enough. Aim: this was a community-based cross-sectional study aimed at assessment of breast cancer screening services uptake amid women of child-bearing age in three senate zones of Abia State, Nigeria. Method: The participants were sampled using a multi-stage technique. A total of 1176 women were studied, a validated questionnaire was administered to obtain information from the respondents that consented to the study. Breast cancer uptake was considered as having been screened with at least one of the three known methods such as breast self-examination (BSE), clinical breast examination (CBE), and mammography. Data analysis was performed using descriptive technique and Chi-square test for association in the data. Results:The overall level of breast cancer screening services uptake was 25.1% and uptake was 23.7% for BSE, 21.3% for CBE, and 3.7% for mammography. Up to 85.1% of those have been screened only once a year. The women (52.2%) are aware of any breast cancer screening services. Significant socio-demographic associating factors of uptake for breast cancer screening services include age ($\chi2$=50.44, p=0.0001), marital status ($\chi2$=47.81, p=0.001), education ($\chi2$=393, p=0.0001) occupation ($\chi2$=319.4, p=0.0001), income ($\chi2$= 268.7, p=0.0001) and age at first pregnancy ($\chi2$=74.8, p=0.0001). Uptake was highest among the 45 -49 years (32.9%), married (31.4%), tertiary education level participants (68.7%), Public / civil servants (66.5%). Family history was also found as another significant associating factor and up to 80.5% among the family history group undertook breast cancer screening services uptake compared to 9.2% among the non-family history group. Conclusion: Uptake in breast cancer screening is quite low among the study group possibly due to low level of knowledge, poor attitude, family history, and other associating factors. To attain better health free from breast cancer among women of childbearing age, these associating factors must be effectively tackled in Abia State, Nigeria.

1. INTRODUCTION

In Nigeria, about two-thirds of women with breast cancer are diagnosed at an advanced stage with the possibility of metastatic spread (Akarolo-Anthony et al., 2010; Nwaneri et al., 2020). Regular breast cancer screening has been suggested as part of an overall health promotion concept, but the problem is the low rate at which it is practiced. This indicates that being aware of a disease prevention technique does not translate to practicing the technique. The practice of breast self-examination, clinical breast examination, and mammography for women at risk is lower (Ibrahim & Odusanya, 2016).

Early diagnosis of breast cancer through breast cancer screening is vital in the treatment of the disease and in

determining prognosis (El Saghir et al., 2011). In a developing country like Nigeria, breast cancer is often characterized by late clinical presentation or advanced stage of the disease when only chemotherapy and palliative care can be given, and this result in high mortality (Anyanwu, 2008; Parkin, 2009). Late diagnosis of breast cancer has been shown to impact differently on survival between affluent groups and those from the socio-economically deprived background (Jemal et al., 2009). Awareness and breast cancer screening practices are poor in developing countries, and this necessitates the need for a proper awareness programme (Onwere et al., 2009).

Breast self-examination (BSE), clinical breast examination, and mammography are important steps in reducing the morbidity and mortality associated with breast cancer. To address this growing public health problem, the American Cancer Society (2015) recommends annual mammograms and clinical mammograms (CBEs) for women over 40 and monthly breast self-examinations for women over 20. The American Cancer Society (2015) also recommends educating women over the age of 20 about the benefits of monthly breast self-examination (BSE). For a woman to be put ahead of time, it is necessary to "recognize the breast". This step remains an effective approach to early detection of precancerous breast lesions to improve prognosis (Anderson et al., 2008).

The effect of breast cancer at a younger age is enormous. It has both social and economic effects as it affects the workforce of the nation. Studies that measure the disability-adjusted life years (DALYs) of breast cancer patients account for the effect of cancer at younger ages when people are more likely to be working, raising children, and supporting other family members. In addition, DALY looks at both years of life lost (YLL) because of premature death from cancer and years lived with cancer-related disability or impairment (YLD). Breast cancer can even lead to absenteeism at the workplace thereby leading to low productivity.

Cancer of the breast has the highest mortality rate among women with any form of cancer in developing countries including Nigeria (IARC, 2018). This is partly due to what has been established to predispose women to develop breast cancer, such as the family history of breast cancer, age at first pregnancy, the number of pregnancies, breastfeeding history, diet, and physical activity. World Health Organization (2016) reported that more than 60% of all cancer cases occur in middle- and low-income countries including Nigeria. Breast cancer has the highest record of cancer among women in developing countries with an incidence rate of about 40/ 100,000 (Ferlay et al., 2013).

Recommended preventive screening services such as breast self-examination (BSE), clinical breast examination (CBE), and mammography have been identified to reduce breast cancer morbidity and mortality (Ojewole & Muoneke, 2017). Regular mammogram screening is utilized to detect breast cancer at an early stage and has shown to be effective in reducing breast cancer death (Lum *et al.*, 2013). Khaliq et al. (2019) stated that women are not engaging in the screening practice thereby resulting in the increased rate of morbidity and mortality from breast cancer. Some barriers to breast cancer prevention screening such as inadequate

knowledge or awareness of screening services, culture, and levels of education of participants have been identified. However, little is known about breast cancer screening services uptake among women of reproductive age 15 – 49 years in Abia State.

Moreover, studies assessing barriers to breast cancer screening have reported that the rate of breast cancer screening utilization is low and the low utilization is associated with the level of education, socioeconomic status, access to health care, and race (Ojewole & Muoneke, 2017). Various efforts to increase early detection of breast cancer especially among women with low socioeconomic and limited access to health care should be addressed. Consequently, high screening rates will promote the early detection of breast cancer. The utilization of preventive health services such as screening for breast cancer decreases morbidity and mortality effectively. However, several individual factors, as well as cultural factors, are negatively associated with the utilization of screening services (Adonis et al., 2017). There is a need to assess breast cancer screening services uptake among women of reproductive age in Abia State.

There has been little or no assessment of interventions provided to women on breast cancer screening services. This lack of assessment has created problems for policymakers, designers, and implementers of breast cancer prevention programmes. With this lack of assessment, policymakers and implementers may not know whether breast cancer screening services uptake is low or high among women in Abia State. Findings from Ezeonu et al. (2015) stated that the incidence of breast cancer in Nigeria has risen significantly with an incidence in 2009 – 2019 at 54.3 per 100,000, thereby representing a hundred percent increase in the last decade. Some cases have been reported among those aged below 30 years (Azubuike & Okwuokei, 2013). The high incidence of breast cancer necessitates the need to create awareness on the strategies for early detection because this will increase the motivation to seek the treatment options available to affected women. This will thereby improve the survival rate (Foronbi & Abolade, 2012).

Many interventions on breast cancer screening is also going on in many other parts of the country such as the step-down workshop at State levels developed by the wives of the Governors of the 36 States of the Federation as a follow up on the action plan by the United Nations Population Fund (UNFPA) in April 2008 at the Federal Capital Territory Abuja. The need to preserve lives and ensure a steady decrease in the level of maternal mortality resulting from breast cancer has been very salient. The pet project of the Miss University Nigeria (MUN) which was an awareness and sensitization campaign against breast cancer was hosted in Makurdi, Benue State capital in December 2010. In fact, MTN Foundation has breast cancer screening centres within Teaching Hospitals, Federal Medical Centres (FMCs), and State General Hospitals across Nigeria (Omerigwe, 2018).

Studies by Omatara et al. (2012) revealed that only 56.4% of the participants have heard of breast self-examination while in Odusanya (2011) in suburban and urban communities 52.8 in suburban and 52.8% in urban communities have heard about breast self-examination. Uche (2010) in his

study of female secondary school students found that only 38.7% were aware of breast self-examination as a screening method for early detection of breast cancer. Isara and Ojedokun (2011) noted that 56.4% of those studied have heard of breast self-examination. These findings on knowledge of breast self-examination constitute a worrisome situation that needs prompt intervention to help increase women's knowledge capable of reducing morbidity and mortality associated with breast cancer among women at risk of breast cancer in Nigeria.

It is worrisome to note that most of these studies concentrated in the urban areas and little or nothing done in the rural areas. One may be free to assume that little or no breast cancer screening services are accessible to women in rural areas. This study will therefore concentrate on the rural areas. Realizing that the most prominent cause of cancer death in low- and middle-income countries including Nigeria is breast cancer accounting for 269,000 deaths (12.7% of all cancer deaths) in 2008 (Ferlay et al., 2010). It becomes necessary to provide breast cancer screening services to women in rural areas. The global burden of breast cancer in women is enormous in the developed and developing world. It is estimated that over 508,000 women died in 2011 globally due to breast cancer (WHO, 2016). A study on knowledge, attitude, and practices by Onwuchekwa et al. (2021) showed that breast cancer screening is quite low among women of reproductive age (15 – 49 years) in Abia State. Therefore, this study is aimed at assessment of breast cancer screening services uptake amid women of child-bearing age in three senate zones of Abia State, Nigeria.

METHODS

Study Design

This study is a community-based cross-sectional descriptive survey designed for the assessment of breast cancer screening services usage amid women of child-bearing age in three senate zones of Abia State, Nigeria using a validated structured questionnaire. This design was considered suitable for the study because it helped to obtain various information about the women's socio-demographic characteristics, patterns of breast cancer screening and awareness

Study Area

The study involved selected six (6) Local Government Areas (LGA) comprising of Aba South, Obingwa, Isiala Ngwa North, Ikwuano, Isuikwuato and Ohafia. These LGAs are in Abia South, Central, and North of Abia State in the South East region of Nigeria. The State is situated within latitude 4' 40' and 14' North and longitude 7' 10' and 8 East. The land area of Abia is 5,237 square kilometers with Umuahia as the capital city. The State of Abia has seventeen (17) Local Government Areas with a population of 3,938,006 comprising of both males and females as reported by NPCC (2006). The State of Abia borders, the State of Ebonyi to the North, Rivers to the South and Southeast, and the State of Cross River, Akwa Ibom, and Anambra to the East, Southeast and West, respectively.
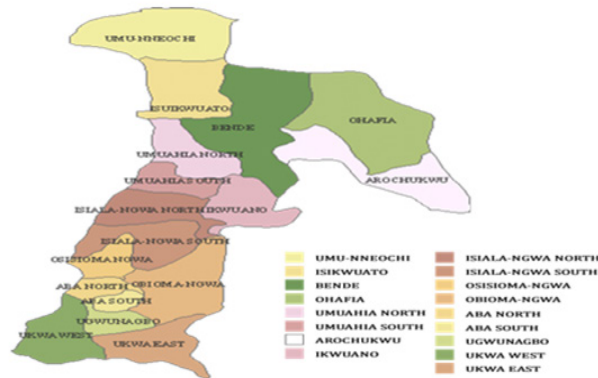

Fig. 1: Map of Abia State. Onwuchekwa *et al.* (2021).

Study Population

The target population of this study is women of child-bearing age between 15 – 49 years, selected from six Local Government Areas (Aba South, Obingwa, Isiala Ngwa North, Ikwuano, Isuikwuato and Ohafia). The LGAs were randomly selected from the three senatorial zones of the State of Abia.

Sample Size

A total of 1176 respondents were used as the sample size for this study. This was obtained from the summation of the sample of women of child-bearing age in the six Local Government Areas using the formula below:

$$n = Z^2$$

Where:
Z = Standard normal deviation of 1.96 when the critical limit is at 95 confidence interval, usually expressed as 1.96.

p = Prevalence 15% incidence of breast cancer.

d = Degree of accuracy desired or minimum allowable margin of error set at 95% (0.05).

Sampling Technique

In this study, using a multi-stage sampling procedure, the initial sampling phase of Abia was divided into three categories based on the three senate constituencies that make up the state, and then two LGAs were randomly selected from each ballot. So, the name of all the LGAs in each area was written on a piece of paper, folded them into a box, shuffled and selected.

In the second phase of the sampling, communities were sampled from the already selected LGAs of which 3 communities each were randomly selected (18 communities in all) from the sampled LGAs. Three communities were also randomly selected through balloting with replacement. The names of all the communities were written on paper, folded and shuffled in a box so that each community will have an equal opportunity of being selected.

The next sampling was the selection of study participants from the communities at a village gathering, and health clinics through systematic sampling technique. The number

of the participants needed from each community was divided by the number of those that attended the gathering to obtain an interval number which was used to systematically select the women included in the study.

Instrument for Data Collection

The data collection tool is a questionnaire consisting of closed and open-ended questions depending on the purpose of the survey. The questionnaire consists of parts: sociodemography, used to determine the risk of breast cancer based on abnormal signs and symptoms in women of childbearing age, and breast cancer screening methods, used to determine the risk of breast cancer. To ensure consistency in responses, in which both educated and uneducated women participated, the questionnaire was completed and maintained in English.

Validity of the Instrument

The instrument was developed by researchers and made available to authorities to validate people and their contents. Customized and modified. We also got data from two cancer treatment experts. The importance of all these is to ensure that the instrument measured what it was supposed to measure.

Reliability of the Instrument

A pilot study was conducted to determine instrument reliability. Thirty copies of the questionnaire were distributed to 30 women from the Umuchichi community in Osisioma Ngwa, who did not belong to the study area. After the pilot study, the issue was resolved by removing the ambiguous question. The results of the preliminary testing were used to improve the quality of the questionnaire. The reliability of the questionnaire was assessed using the Chronbach alpha test and a reliability factor of 0.77 was obtained.

Data collection method

The survey was conducted among women who were gathered together in their village halls. The objectives of the study were explained to them. A questionnaire was given. This should ensure consistency of responses since educated and illiterate women were included in the study. The questionnaire was written in English but has been translated into their native language. In some communities' data was obtained from Primary Health Care Centres during Routine immunization and Antenatal Clinic (ANC) days.

Breast cancer screening uptake

Breast cancer uptake was considered as having been screened with at least one of the three known breast cancer screening methods: Breast Self Examination (BSE), Clinical Breast Examination (CBE), and Mammography. Care was taken so that participants, who were screened for breast cancer with more than one method, were only counted once.

Data analysis

Collected data were analyzed in IBM SPSS Statistics Version 23 (IBM Co., Armonk, NY, USA) and Microsoft Excel (Ms. Excel 2010) was used for graphing. In a preliminary analysis of the data, descriptive methods were used to generate a table of frequency distributions expressed as a percentage of the distribution. Graphical charts such as pie and bar graphs are also used to display some distributions. The average score is calculated based on the scaled data.

The association between the uptake of breast examination and other factors was inferentially tested using the Chi-Square test method. The likelihood ratio test was used to test class variables of more than two classes in situations where the assumptions of the Chi-square test could not be met. All tests were performed at a 5% significant level and probability value (p) was used to interpret significance, hence p less than 0.05 were considered significant.

Ethical Consideration/Consent

Permission was sought from the Research and Ethics Committee of the Abia State University Teaching Hospital (ABSUTH), Aba (ABSUTH-MAC-117-VOL. 58). The objectives of the study were adequately explained to the respondents, and verbal consent was obtained from all before participating in the study.

RESULTS

Socio-demographic characteristics of the study participants

Table 1 represents the distribution for socio-demographic characteristics of the women of child-bearing age in Abia State. The age classification was such that the largest age group overall is the 30 -34 years with 272 (23.1%) participants, followed by the 25 -29 years with 223 (23%). The 30-34years were largest in Abia South (98: 25%) and Abia Central (81: 20.6%) while the 25-29 years were the largest group in Abia North (104: 26.6%). The 45-49 years were the smallest of all the groups in each of the three zones with 25 (6.4%), 30 (7.6%), and 24 (6.1%) respectively for Abia South, Abia Central and Abia North.

Majority of the women were married (Overall=771: 65.6%; Abia South = 272: 69.4%; Abia Central = 207: 52.7%; Abia North= 292: 74.7%), reasonable number of them were singles married (Overall= 307: 26.1%; Abia South = 93: 23.7%; Abia Central = 142: 36.1%; Abia North= 72: 18.4%), while some few were separated (Overall= 21: 1.8%; Abia South = 5:1.3%; Abia Central =12: 3.1%; Abia North=4: 1.0%) and divorced (Overall= 27: 2.3%; Abia South = 10: 2.6%; Abia Central = 9: 2.3%; Abia North= 8: 2.0%).

The participants were predominantly Christians with a total of 1156 (98.3%) and a similar proportion for each zone. Many had secondary education level (Overall= 61.3%; Abia South = 57.4%; Abia Central =70%; Abia North= 56.5%) while only a few did not have formal education with 2.6% in all, comprising of less than one percent (0.8%) in Abia South, 4.3% in Abia Central and 2.6% in Abia North. They do engage in all sorts of occupations such as trading (34.2%) civil or public service (21.6%) and artisan (13.4%).

As large as 64.5% in all among the participants were poor

with a monthly income level below the 20-thousand-naira minimum wage in Nigeria. A total of 155 (13.2%) earn between 21,000 to 30.000 naira monthly while only 7.1% in all earn a monthly income of more than 50,000 naira.

While one quarter in all (294: 25%) indicated that they were yet to be pregnant for the first time, among those that have experienced pregnancy, the average age at which they had their first pregnancy is 22 years. A total of 29.9% had their first pregnancy at 20 -24 years, and 32.5% had their first pregnancy within 25 -29 years.

Table 1: Socio-demographic characteristics of breast cancer screening services uptake amid women of child-bearing age in Abia State

Socio-Demographics	Abia South (n=392)		Abia Central (n=392)		Abia North (n=391)		Total (n =1179)	
	Freq	%	Freq	%	Freq	%	Freq	%
Age (years): mean=30.8, st. dev = 8.7								
15 -19	42	10.7	93	23.7	35	9.0	170	14.5
20-24	39	9.9	42	10.7	29	7.4	110	9.4
25-29	71	18.1	48	12.2	104	26.6	223	19.0
30-34	98	25.0	81	20.6	93	23.8	272	23.1
35-39	69	17.6	52	13.2	70	17.9	191	16.2
40-44	48	12.2	47	12.0	36	9.2	131	11.1
45-49	25	6.4	30	7.6	24	6.1	79	6.7
Marital								
Single	93	23.7	142	36.1	72	18.4	307	26.1
Married	272	69.4	207	52.7	292	74.7	771	65.6
Divorced	10	2.6	9	2.3	8	2.0	27	2.3
Separated	5	1.3	12	3.1	4	1.0	21	1.8
Widow	12	3.1	23	5.9	15	3.8	50	4.3
Religion								
Christianity	381	97.2	391	99.5	384	98.2	1156	98.3
Islam	4	1.0	0	0.0	0	0.0	4	0.3
Traditional	7	1.8	2	0.5	7	1.8	16	1.4
Education								
Primary	46	11.7	28	7.1	60	15.3	134	11.4
Secondary	225	57.4	275	70.0	221	56.5	721	61.3
Tertiary	118	30.1	73	18.6	100	25.6	291	24.7
None formal	3	0.8	17	4.3	10	2.6	30	2.6
Occupation								
Civil/Public servants	92	23.5	64	16.3	98	25.1	254	21.6
Trading	133	33.9	106	27.0	163	41.7	402	34.2
Artisan	56	14.3	67	17.0	35	9.0	158	13.4
Housewife	20	5.1	23	5.9	23	5.9	66	5.6
Unemployed	42	10.7	28	7.1	32	8.2	102	8.7
Student	49	12.5	105	26.7	40	10.2	194	16.5
Income								
≤ 20,000	241	61.5	252	64.1	266	68.0	759	64.5
21,000 -30,000	79	20.2	62	15.8	14	3.6	155	13.2
31,000 – 40,000	29	7.4	31	7.9	57	14.6	117	9.9
41,000 – 50,000	21	5.4	12	3.1	29	7.4	62	5.3
≥ 51,000	22	5.6	36	9.2	25	6.4	83	7.1
Age of 1st pregnancy (years) mean=22.0, std dev=3.59								
15-19	12	3.1	17	4.3	85	21.7	114	9.7
20-24	110	28.1	106	27.0	136	34.8	352	29.9
25-29	160	40.8	127	32.3	95	24.3	382	32.5
30+	11	2.8	9	2.3	14	3.6	34	2.9
Not pregnant yet	99	25.3	134	34.1	61	15.6	294	25.0

Overall uptake of breast cancer screening services amid women of child-bearing age

Figure 1 represents the overall population for the uptake and non-uptake of breast cancer screening services in the population studied. It shows that there were a total of 295 (25.1%) women that have been screened for breast cancer while as many as 881 have not to be screened for the disease. Hence the level of uptake among women of reproductive age is quite low, as it represents only about a quarter of the population (25.1%). In terms of different zones of Abia state, the breast cancer screening uptake undertaken among the studied women seems to vary slightly.
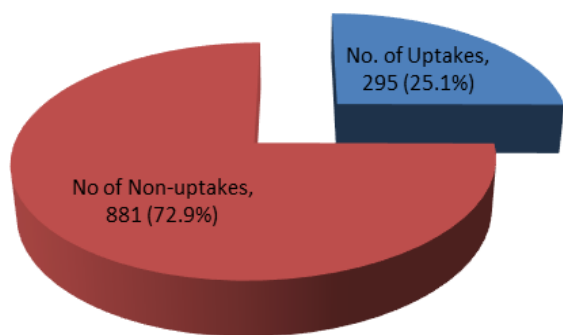

Figure 1: Overall uptake of breast cancer screening services among women of child-bearing age

In table 2, the level of the uptake was lowest among the women of child-bearing age in Abia central at 14.2% compared to 26.3% obtained in Abia North and 34.7% obtained in Abia South.

Table 2: Breast Cancer Screening Uptake among Women of Child-Bearing Age in the three zones of Abia State

Breast screening Uptake Class	Abia South		Abia Central		Abia North		Total	
	n	%	n	%	n	%	n	%
Uptake	136	34.7	56	14.2	103	26.3	295	25.1
Non-uptake	256	65.3	337	85.8	288	73.7	881	74.9
Total	392	100	393	100	391	100.0	1176	100

Uptake for breast self-examination (BSE), clinical breast examination (CBE) and mammography test among studied group

Table 3 showed the uptake on classification for different types of breast cancer screening among the studied population.

In total, the uptake for breast self-examination (BSE), recorded 279 (23.7%), while it was 250 (21.3%) and 44 (3.7%) on clinical breast examination (CBE) and mammography test respectively. In Abia South, the uptake were 33.7% for BSE, 29.8% for CBE and 3.6% for a mammogram, while it recorded 14.2% for BSE, 13.7% for CBE and 4.3% for mammogram in Abia central, and then 23.3% for BSE, 20.2% for CBE and 3.3% for mammogram in Abia North.

Table 3: Uptake for breast self-examination (BSE), clinical breast examination (CBE) and mammography test among studied group

Up-take	Abia South		Abia Central		Abia North		Total	
	n	%	N	%	n	%	n	%
BSE Uptake								
Yes	132	33.7	56	14.2	91	23.3	279	23.7
None	260	66.3	337	85.8	300	76.7	897	76.3
Total	392	100.0	393	100.0	391	100.0	1176	100.0
CBE uptake								
Yes	117	29.8	54	13.7	79	20.2	250	21.3
None	275	70.2	339	86.3	312	79.8	926	78.7
Total	392	100.0	393	100.0	391	100.0	1176	100.0
Mammography Uptake								
Yes	14	3.6	17	4.3	13	3.3	44	3.7
None at all	378	96.4	376	95.7	378	96.7	1132	96.3
Total	392	100.0	393	100.0	391	100.0	1176	100.0

The patterns of breast cancer screening services uptake among women of child-bearing age in Abia State that have taken any type of breast cancer screening uptake is presented in Figure 2. In total, 251 (85.1%) out of the 295 that have undertaken breast cancer screening uptake were screened once in a year, 16 (5.4%) were screened two times in a year while 26 (8.8%) were screened once in every two years.

Across the zones among the participants going for uptake of breast cancer screening, those who engage in the uptake once in a year made up 91.9% of the uptakes in Abia South, 82.1% of the uptakes in Abia central and 77.7% of the uptakes in Abia North. The proportion for twice in a year is only 2.2% of the uptakes in Abia South, 3.6% of the uptakes in Abia central and 10.7% of the uptakes in Abia North.
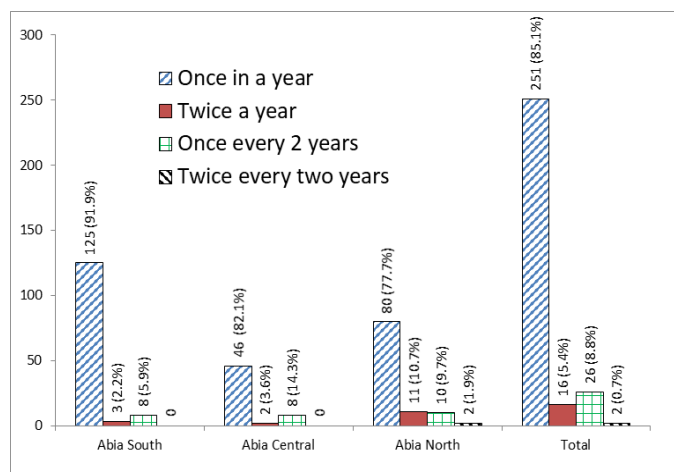

Figure 2: Patterns of breast cancer screening services uptake among women of childbearing age studied in Abia State.

Awareness of breast cancer

Table 4 shows that only about half of the women studied

(614: 52.2%) are aware of any breast cancer screening services. The awareness level was lowest at Abia North with 181 (46.3%) and was highest in Abia Central with 224 (57.0%). The awareness for mammography technique recorded only about one-quarter of the women (298: 25.3%), with the highest level of 36.5% obtained in Abia South and the lowest level of 14.5% obtained in Abia Central.

Table 4: Awareness and family history of breast cancer screening services

Awareness and Family History	Abia South		Abia Central		Abia North		Total	
	N	%	N	%	n	%	N	%
Aware of any breast cancer Screening services								
Aware	209	53.3	224	57.0	181	46.3	614	52.2
Not Aware	183	46.7	169	43.0	210	53.7	562	47.8
Total	392	100	393	100	391	100	1176	100
Aware of Mammography								
Yes	143	36.5	57	14.5	98	25.1	298	25.3
No	249	63.5	336	85.5	293	74.9	878	74.7
Total	392	100	393	100	391	100	1176	100

Readiness for constant breast cancer screening uptake

Table 5 shows that only 288 (24.5%) in the overall (Abia South = 35.5%, Abia Central= 14.2%, Abia North= 23.8%) expressed their readiness to go for such screening services for Breast Self Examination (BSE). Those who were ready to go for Clinical Breast Examination were 23.8% in all comprising of 33.4% in Abia South, 14.2% in Abia Central and 23.8% in Abia North. In terms of readiness to go for mammography test, only 12.3% in all were ready (Abia South = 11.9%, Abia Central= 10.7%, Abia North= 14.3%).

Those who expressed their readiness to go for breast cancer treatment if found positive in breast cancer test were only 23.8%, 7.7% in all expressed that they were not willing to go for treatment while majority stated that they are yet to decide whether they will go for such test or not.

Table 5: Readiness for constant breast cancer screening services uptake

Screening and Readiness	Abia South		Abia Central		Abia North		Total	
	n	%	n	%	n	%	n	%
BSE								
Ready	139	35.5	56	14.2	93	23.8	288	24.5
Not Ready	222	56.6	307	78.1	273	69.8	802	68.2
Undecided	31	7.9	30	7.6	25	6.4	86	7.3
Total	392	100.0	393	100.0	391	100.0	1176	100.0
CBE								
Ready	131	33.4	56	14.2	93	23.8	280	23.8
Not Ready	245	62.5	313	79.6	281	71.9	839	71.3
Undecided	16	4.1	24	6.1	17	4.3	57	4.8
Total	392	100.0	393	100.0	391	100.0	1176	100.0
Mammography								
Ready	47	11.9	42	10.7	56	14.3	145	12.3
Not Ready	288	73.5	322	81.9	303	77.5	913	77.6
Undecided	57	14.5	29	7.4	32	8.2	118	10.0
Total	392	100.0	393	100.0	391	100.0	1176	100.0
Readiness to go for treatment if found positive								
Ready	131	33.4	56	14.2	93	23.8	280	23.8
Not Ready	216	55.1	308	78.4	282	72.1	806	68.5
Undecided	45	11.5	29	7.4	16	4.1	90	7.7
Total	392	100.0	393	100.0	391	100.0	1176	100.0

Association between breast cancer screening services uptake and socio-demographic characteristic of women

Table 6 shows the association between breast cancer screening services uptake and socio-demographic characteristic of women of child-bearing age in Abia State. Significant socio-demographic characteristics associating with uptake of breast cancer screening services in this study include age (χ^2=50.44, p=0.0001), marital status (χ^2=47.81, p=0.001), education (χ^2=393, p=0.0001) occupation (χ^2=319.4, p=0.0001), income (χ^2= 268.7, p=0.0001) and age at first pregnancy (χ^2=74.8, p=0.0001). The age did not follow a particular trend but uptake was highest among the 45 -49 years (32.9%) and was closely followed by the 25 -29 years (32.7%) and the 40-44 years (31.3%). Uptake was largest among the married (31.4%) followed by the separated (19%) in the overall, and also very high among the tertiary education level participants (68.7%) compared to other levels, such as primary (8.2%), secondary (11.5%) and non-formal (3.3%).

The highest level of uptake was found among the public / civil servants 66.5%, followed by the artisans 26.6%. It was high among the high-income earners 74.7% compared to a very low rate among the poorest earning below minimum wage (12.6%). Uptake was high on the women that were up to 30years or between 25 -29 (41.2% and 41% respectively) compared to the very younger ones of 15 -19 years old whose breast cancer screening uptake was just at 15.3%.

Table 6: Association between breast cancer screening services uptake and socio-demographic characteristics of women of repro childbearing age in Abia State

Socio-Demo-graphics	Abia South (n=392)				Abia Central(n=393)				Abia North (n=391)				Total (n =1176)			
	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%
Age (years)																
15 -19	6	14.3	36	85.7	0	0.0	93	100	4	11.4	31	88.6	10	5.9	160	94.1
20-24	9	23.1	30	76.9	4	9.5	38	90.5	6	20.7	23	79.3	19	17.3	91	82.7
25-29	35	49.3	36	50.7	10	20.8	38	79.2	28	26.9	76	73.1	73	32.7	150	67.3
30-34	28	28.6	70	71.4	20	24.7	61	75.3	28	30.1	65	69.9	76	27.9	196	72.1
35-39	25	36.2	44	63.8	10	19.2	42	80.8	15	21.4	55	78.6	50	26.2	141	73.8
40-44	22	45.8	26	54.2	7	14.9	40	85.1	12	33.3	24	66.7	41	31.3	90	68.7
45-49	11	44.0	14	56.0	5	16.7	25	83.3	10	41.7	14	58.3	26	32.9	53	67.1
Statistical Test	χ^2=22.0, p=0.0001				χ^2=26.37, p=0.0001				χ^2=9.87, p=0.0001				χ^2=50.44, p=0.0001			
Marital Status																
Single	19	20.4	74	79.6	5	3.5	137	96.5	16	22.2	56	77.8	40	13.0	267	87.0
Married	113	41.5	159	58.5	48	23.2	159	76.8	81	27.7	211	72.3	242	31.4	529	68.6
Divorced	1	10.0	9	90.0	1	11.1	8	88.9	1	12.5	7	87.5	3	11.1	24	88.9
Separated	1	20.0	4	80.0	1	8.3	11	91.7	2	50.0	2	50.0	4	19.0	17	81.0
Widow	2	16.7	10	83.3	1	4.3	22	95.7	3	20.0	12	80.0	6	12.0	44	88.0
Statistical Test	χ^2=20.35[†], p=0.0001				χ^2=32.97[†], p=0.0001				χ^2=3.21[†], p=0.524				χ^2=47.81, p=0.001			
Religion																
Christianity	134	35.2	247	64.8	56	14.3%	335	85.7	56	14.2	337	85.8	393	25.3	864	74.7
Islam	0	0.0	4	100	-	-	-	-	102	26.6	282	73.4	384	0.0	4	100
Traditional	2	28.6	5	71.4	0	0.0	2	100	1	14.3	6	85.7	7	18.8	13	81.3
Statistical Test	χ^2= 3.56[†], p=0.168				p=0.735[††]				χ^2= 0.33[†], p=0.32				χ^2=1.70[†], p=0.427			
Education																
Primary	2	4.3	44	95.7	0	0.0	28	100	9	15.0	51	85.0	11	8.2	123	91.8
Secondary	40	17.8	185	82.2	7	2.5	268	97.5	36	16.3	185	83.7	83	11.5	638	88.5
Tertiary	94	79.7	24	20.3	49	67.1	24	32.9	57	57.0	43	43.0	200	68.7	91	31.3
None formal	0	0.0	3	100	0	0.0	17	100	1	10.0	9	90.0	1	3.3	29	96.7
Statistical Test	χ^2= 169.8[†], p=0.0001				χ^2=164.2, p=0.0001[†]				χ^2=65.3, p=0.0001				χ^2=393, p=0.0001			

[†]: Likelihood ratio test;   [††] : Fisher exact test

Socio-Demo-graphics	Abia South (n=392)				Abia Central(n=393)				Abia North (n=391)				Total (n =1176)			
	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%
Occupation																
Civil/Public servants	72	78.3	20	21.7	40	62.5	24	37.5	57	58.2	41	41.8	169	66.5	85	33.5
Trading	13	9.8	120	90.2	4	3.8	102	96.2	24	14.7	139	85.3	41	10.2	361	89.8
Artisan	28	50.0	28	50.0	8	11.9	59	88.1	6	17.1	29	82.9	42	26.6	116	73.4
Housewife	4	20.0	16	80.0	0	0.0	23	100.0	3	13.0	20	87.0	7	10.6	59	89.4
Unemployed	12	28.6	30	71.4	4	14.3	24	85.7	5	15.6	27	84.4	21	20.6	81	79.4
Student	7	14.3	42	85.7	0	0.0	105	100.0	8	20.0	32	80.0	15	7.7	179	92.3
Statistical Test	χ^2=130.9, p=0.0001				χ^2=153.0, p=0.0001				χ^2=68.8, p=0.0001				χ^2=319.4, p=0.0001			
Income																
≤ 20,000	51	21.2	190	78.8	6	2.4	246	97.6	39	14.7	227	85.3	96	12.6	663	87.4
21,000 -30,000	32	40.5	47	59.5	4	6.5	58	93.5	1	7.1	13	92.9	37	23.9	118	76.1
31,000 – 40,000	18	62.1	11	37.9	12	38.7	19	61.3	28	49.1	29	50.9	58	49.6	59	50.4
41,000 – 50,000	16	76.2	5	23.8	8	66.7	4	33.3	18	62.1	11	37.9	42	67.7	20	32.3
≥ 51,000	19	86.4	3	13.6	26	72.2	10	27.8	17	68.0	8	32.0	62	74.7	21	25.3
Statistical Test	χ^2=72.13, p=0.0001				χ^2=173.32, p=0.0001				χ^2=78.0, p=0.0001				χ^2=268.7, p=0.0001			
Age of 1ˢᵗ pregnancy																
15-19	1	3.3	29	96.7	1	2.7	36	97.3	31	20.9	117	79.1	33	15.3	182	84.7

continued...

	N	%	n	%	N	%	n	%	N	%	n	%	N	%	n	%
20-24	41	32.3	86	67.7	14	12.4	99	87.6	30	31.6	65	68.4	85	25.4	250	74.6
25-29	70	53.0	62	47.0	33	31.4	72	68.6	26	33.3	52	66.7	129	41.0	186	59.0
30+	2	50.0	2	50.0	2	50.0	2	50.0	3	33.3	6	66.7	7	41.2	10	58.8
Not pregnant yet	22	22.2	77	77.8	6	4.5	128	95.5	13	21.3	48	78.7	41	13.9	253	86.1
Statistical Test	χ^2=40.15, p=0.0001				χ^2=44.37, p=0.0001				χ^2=6.55, p=0.162				χ^2=74.8, p=0.0001			

Distribution for family history of breast cancer among women of childbearing

The distribution for family history of breast cancer among women of child-bearing age is in Table 3.7. A total of 113 (9.6%) comprising 41 (10.5%) in Abia South, 33 (8.4%) in Abia central and 39 (10%) in Abia North have a family history of breast cancer among the women studied while 121 (12.3%) in total responded that they do not know whether they have a family history or not.

Among the women studied about the respondents with a family history of breast cancer in Abia State, 49 (4.2%) obtained their information about their family history from family members while 37 (3.1%) obtained information from family doctors.

Table 7: Distribution for family history of breast cancer among the women

Awareness and Family History	Abia South		Abia Central		Abia North		Total	
	N	%	n	%	n	%	N	%
Having Family History of breast cancer								
Yes	41	10.5	33	8.4	39	10.0	113	9.6
No	307	78.3	300	76.3	335	85.7	942	80.1
Don't Know	44	11.2	60	15.3	17	4.3	121	10.3
Total	392	100	393	100	391	100	1176	100
Source of information								
Friends	0	0.0	0	0.0	2	0.5	2	0.2
Family members	14	3.6	20	5.1	15	3.8	49	4.2
Nurses	7	1.8	4	1.0	14	3.6	25	2.1
Family Doctors	20	5.1	9	2.3	8	2.0	37	3.1
No family history	351	89.5	360	91.6	352	90.0	1063	90.4
Total	392	100	393	100	391	100	1176	100

Association between family history of breast cancer and uptake for breast cancer screening services among the women

Family history of breast cancer is significantly associated with breast cancer screening uptake among the study group (χ^2= 207.12, p=0.0001) as shown in Table 8. Overall, 91 (80.5%) of those with a family history had breast cancer screening uptake compared to just 19.2% among the non-family history members. Similar results were obtained across the zones for which uptake among those with family history were 36 (87.8%) in Abia South, 25 (78.1%) in Abia

Central and 30 (75%) in Abia North. Significant association was also observed in each zone (Abia South: χ^2=57.03, p=0.0001, Abia Central: χ^2=116.54, p=0.0001, Abia North: χ^2=56.06, p=0.0001).

DISCUSSION

Uptake to breast cancer screening services is a form of breast examination required to assess the breast for possible development of breast cancer, hence lack of uptake could lead to inability to prevent or treat breast cancer at an early stage of the disease. The present study was primarily aimed at the assessment of breast cancer screening services usage amid women of child-bearing age in three senate zones of Abia State, Nigeria. The level of uptake was found to be low in the study with only about a quarter (25.1%) of the women utilising the services. This is rather lower than 34.3% established in Odusanya and Tayo (2013) for clinical breast examination and 50% found in Oluwole (2012) from breast self-examination, but higher than 9.5% found in Nasiru and Olumuyiwa (2013) on breast self-examination.

The possible reason for this low uptake is poor awareness. Only about half of the women in the present study are aware of any breast cancer screening services. This is within the range of findings in Omatara et al., (2012), where only 56.4% of the participants have heard of breast self-examination, and also while in Odusanya (2011) which found that 52.8% have heard about breast self-examination. It is rather higher than 38.7% obtained in Uche (2010) among female secondary school students. On the other hand, only a quarter of the studied group was aware of mammography tests for detecting breast cancer which is far below the 84% awareness level obtained in another Nigerian study (Oche et al., 2015). In Okojie & Aigbekaen (2008) 22.2% had heard about the mammography screening and that was only possible to many of them because they had the test.

Significant socio-demographic associating factors of uptake for breast cancer screening services include age, marital status, education, occupation, income and age at first pregnancy. Uptake was highest among the 45 -49 years possibly because they are usually at higher risk (Egenti, 2016), and that alone could motivate them for screening. It has been shown that older women had better knowledge of the risks of breast cancer than younger women (Pace, 2016). Uptake was also higher among married women than single and this is similar to findings in Christou and Thompson (2012). Very likely because many of the older women were married who may also be getting information and encouragement to screen for breast cancer through their male partners. They are usually more careful of the changes in their breast than the singles. The tertiary education level participants also showed the highest level of uptake

Table 8: Association between family history of breast cancer and uptake for breast cancer screening services among the women

Family History of breast cancer	Abia South (n=392)				Abia Central(n=393)				Abia North (n=391)				Total (n =1176)			
	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%	Uptake	%	None	%
Yes	36	87.8	5	12.2	25	78.1	7	21.9	30	75.0	10	25.0	91	80.5	22	19.5
No	87	28.3	220	71.7	27	9.0	274	91.0	67	20.1	266	79.9	181	19.2	760	80.8
Unknown	13	29.5	31	70.5	4	6.7	56	93.3	6	35.3	11	64.7	23	19.0	98	81.0
Total	136	34.7	256	65.3	56	14.2	337	85.8	103	26.4	287	73.6	295	25.1	880	74.9
Statistical Test	χ^2=57.03, p=0.0001				χ^2=116.54, p=0.0001				χ^2=56.06, p=0.0001				χ^2= 207.12, p=0.0001			

than any other level. It has been shown that a higher level of education is associated with greater uptake of breast cancer screening (Serah & Anna, 2009; Opoku et al., 2012; Nwaneri et al., 2020).

The highest level of uptake was found among the public and civil servants, and this is not a surprise since they are the group most likely to obtain higher education and improved awareness. Those that had first pregnancy age at up to 30 years old have higher uptake possibly to the fact that they may be having an advantage if they are married or based on the earlier identified risk associated with age.

The higher income earners afford the cost and greater uptake for breast cancer screening in this study than the lower-income earners. In Opoku (2012), low mammography uptake was reported among women of low socioeconomic status.

Family history of breast cancer was found to be significantly associated with breast cancer screening uptake among the study group. Those with a family history had higher breast cancer screening uptake compared to the women without such family history. This finding is in line with other results on the influence of the family history of breast cancer on breast cancer screening uptake (Obaji et al., 2013; Pace, 2016). This could be as a result of consciousness to get screened earlier enough to know their status. In Othman et al. 2012, women with a family history of breast cancer are more likely to initiate screening earlier enough and on regular basis than women without any history of the disease, while in Pace *et al.* (2016), women with a family history are more likely to undergo mammography than clinical breast examination and breast self-examination.

Conclusion

The result of the study showed that there is a gross deficiency in screening practices even among those who were aware of the screening methods. Awareness of breast cancer and its clinical features is also low. These results suggest that much more needs to be done to raise awareness of breast cancer, especially in the areas of screening methods, screening schedules, and suitability for each diagnostic or screening method. This study highlights that early detection of breast cancer through adequate screening is the key to prevention and treatment.

Recommendations

• There should be training and retraining programmes for health care providers to improve the content and quality of care, especially via health education intervention.

• Women's education should be encouraged; this is because the tendency to practice breast self-examination is higher with educational status.

• The government should create, equip and adequately fund the screening centres and the screening centres should be accessible to women of reproductive age.

• Periodic intervention programmes targeting women of reproductive age (15 – 49 years) should be undertaken. This could comprise of talks and demonstrations carried out by interest groups. Relevant non-governmental organizations (NGOs) can make a significant contribution to breast cancer and screening methods education by sponsoring health talks and workshops.

Limitations of the Study

This study was limited to the fact that most of the information was directly obtained from the respondents through the use of a questionnaire which could be affected by recall bias, the questionnaire was properly validated before been utilised in the study.

The study involved examination of the breast from the subject and some of the participants were not comfortable exposing their breast to the expert researchers especially as the study was being conducted during the period of Covid-19 disease. However, the researchers used a lot of expertise techniques including observing the recommended covid-19 preventive techniques in performing the task.

Suggestions for Further Studies

This study has revealed that the uptake for breast cancer screening services is still low in the studied area despite awareness, education, and training that are offered by some governmental and non-governmental agencies. Future research should focus on interventional studies in a related study background of this kind to investigate the impact of breast health education on the population to improve uptake for breast examinations

Authors Contribution

Roseline O. Nwokoro: Initiate the study concept and supervised the data collection and analysis. **Uzochukwu G. Ekeleme**: Designed the study, formal analysis, prepared the first manuscript draft. **Onuigbo C. Martin:** Carried out data collection. **Elendu C. Onwuchekwa**: Supervised the data collection, analysis, reviewed and edited the final manuscript. **Oha Ndubuisi**: Reviewed and edited the final manuscript. **Maduagwu Queen Chinyere**: Formal analysis, prepared the first manuscript draft. **Ikwuagwu Vivian:** Carried out data collection.

Competing interest

The authors declare no competing financial interests.

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