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Financial barriers to utilization of screening and treatment services for breast cancer: An equity analysis in Nigeria

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Abstract

Aim: To determine financial barriers that impede the utilization of screening and treatment services for breast cancer among Nigerian women from different socioeconomic groups.

Materials and Methods: A descriptive study was carried out in 2013 among women attending the oncology clinic of a tertiary institution in Enugu, Southeast Nigeria. Data were collected from 270 women using an interviewer-administered questionnaire. The links between the influence of socioeconomic factors on barriers to the utilization of breast cancer screening and treatment services were examined.

Results: A total of 270 women were studied. The mean age was 34.69 (Standard deviation = 5.07) years. Half of the study participants were single 141 (51.3%), while 105 (38.2%) were married. Cost of medical treatment and not having insurance coverage was major financial barriers to utilization of screening and treatment services. The least poor and poor socioeconomic status (SES) groups utilized screening services and treatment more frequently than the very poor and poorest SES groups (P = 0.034). There was no significant difference in the utilization of the different treatment options among the different socioeconomic groups with the exception of surgery (χ^2 = 11.397; P = 0.000).

Conclusion: Financial barriers limit the ability of women, especially the poorest SES group, to utilize screening and treatment services for early diagnosis and treatment of breast cancer. Interventions that will improve financial risk protection for women with breast cancer or at risk of breast cancer are needed to ensure equitable access to screening and treatment services.

Key words: Breast cancer, financial barriers, inequities, screening and treatment services, socioeconomic status, utilization

Introduction

Breast cancer is the leading cancer affecting women. It is a major contributor to morbidity and mortality globally.[1-3] Whereas breast cancer occurs more frequently in developed countries, the mortality rates are higher in developing countries.[1] It is rarely observed in women under the age of 30, but shows a marked increase especially during postmenopausal years.[1,3] Despite being associated with high morbidity and mortality, breast cancer is a disease that can be diagnosed and treated early through screening programs.[1-3]

The World Health Organization (WHO) estimates that there are 100,000 new cases of cervical and breast cancer each in Nigeria.[4] Although there is paucity of current statistics on breast cancer cases in Nigeria, the International Agency for Research on Cancer, a specialized cancer agency of WHO[5] reports that as many as 1.7 million new cases were diagnosed in 2012 only; and predicts that there will be more than 247,000 new cases of breast cancer in the United States alone by 2015, compared with about 232,000 in 2012.

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Most of the breast cancer cases in Nigeria are detected late due to poor utilization of screening facilities and lack of awareness.[6,7] In many African countries, the true incidence of breast cancer is generally not known,[8] however, several publications indicate a trend towards an increasing incidence of the disease in many parts of Africa.[7,9] Despite the availability of screening programs, various barriers to cancer screening and treatment have been reported in nearly all settings and populations.[10]

Breast self-examination, clinical breast examination and mammography are the most commonly known and used breast cancer screening methods in the world.[3,9] Screening mammography is the most effective screening method in the early detection of breast cancer.[11] It is widely practiced in the developed world;[9] but practice may be low in Nigeria and other developing countries due to cost.[12]

The American cancer society stipulates that women aged 40 years and above should initiate breast cancer screening, at least once a year, in order to detect breast cancer early before any symptom can develop.[13] It is generally accepted that early detection and treatment improves patient outcome.[6] A later and often less treatable diagnosis is likely, when individuals do not adhere to these screening programs.

A number of studies in developed and developing countries have identified socioeconomic, sociodemographic and health-system related characteristics as barriers or facilitators to breast cancer screening and treatment.[14-18] These barriers are mostly due to lower income, lower educational attainment, lack of appropriate health information, distance to services, fear of cancer, lack of health care insurance, and factors related to the healthcare system. Poverty and low income are associated with lack of health insurance and/or lack of access to primary care that in turn lead to low use of mammography screening.[19] Even when there is awareness, the poverty level of a larger group of Nigerians makes it near impossible to utilize the screening and treatment services available. United Nations Report indicates that poverty is still deepening in Nigeria, with over 71.5% of the people earning <1 US dollar a day.[20]

In developing countries like Nigeria, clinical services for breast cancer are grossly inadequate and poorly distributed. Only few centers have functioning radiotherapy equipment, and where radiological services are available, utilization are seriously limited by high cost.[6,9] In Enugu State, there are only three functional mammography centers. Patients also tend to present in the centers very late, when little or no intervention can be done due to lack of awareness, accessibility and other financial constraints. Most of the financial costs are paid through out-of-pocket, which is still the major healthcare financing mechanism in Nigeria.[21] The direct and indirect costs of obtaining care can account for a substantial proportion of total household income for households of people with breast cancer.[22]

This paper presents new evidence about the barriers that impede the utilization of screening and treatment services for breast cancer among Nigerian women. It shows the socioeconomic barriers in the utilization of breast cancer screening and treatment services and presents the financial constraints that adversely constrain the utilization of breast cancer screening and treatment services by different socioeconomic status (SES) groups.

Materials and Methods

A hospital based descriptive study was conducted between October 2013 and November 2013 at the Oncology Clinic of one of the Foremost Tertiary Institutions in Enugu State, South-East Nigeria. This institution is located at the outskirt of Enugu about 15 km from the city. The Oncology Unit of the hospital serves as a referral center for patients with cancer. This hospital also has specialized cancer diagnostic equipment.

All women visiting the Oncology Unit were used as study population. This was considered appropriate because it has been observed that women with breast cancer (which is a chronic disease) report to the health facility but, usually, at the late stage of the illness.[8]

Power analysis was used to estimate the sample size of 289 from an average of 800 women who were observed to attend the Oncology Unit of the institution within the period of the study. Using the Creative Research Systems survey software of the sample size calculator $ss = (Z2 \times [p] \times [1-p])/C2$; where: $Z = 1.96$, P = percentage picking a choice (expressed as 0.5), C = confidence interval (0.04 ± 4)[23] a sample of 267 was initially estimated. Since data were to be collected directly from the respondents, it was anticipated that as many as 10% might withdraw from the study prior to its completion through possible refusal to continue with the study, incorrect or incomplete filling of the questionnaire and failure to return filled questionnaire. With the formula: $q = ss/1-f$ (where q is adjusted sample size; ss is original sample size; and f is estimated non-response rate)[24] initial sample size estimate was adjusted from 267 to 267/(1-0.1), that is, 289. Two hundred and eighty-nine consecutive women who gave informed consent to participate in the study were enrolled. Ethical approval was obtained for the study from the Ethics Review Board of the institution. Each respondent gave a signed informed consent. The participants who were willing and who could write signed their signatures, while others thumb printed the consent forms.

A pre-tested interviewer-administered questionnaire was used to collect data from each participant recruited into the study. Data obtained included information on personal profile such as age, marital status, education and financial constraints to utilization of screening and treatment services of breast cancer. Information was also collected on household

asset ownership, type of living accommodation and per capita monthly food expenditure to enable classification of respondents into socioeconomic groups. The questions were both open and closed ended. Since some of the respondents could not read or write, contents of the questionnaire were translated to their local dialect to avoid inter-observer error and variation in collecting and documenting data. Four nurses working as permanent staff in the Oncology Clinic of the institution were recruited and trained on the purpose of the study and how to administer both versions of the instrument on the respondents for participants who were not literate, the questionnaire was interpreted to them in the local dialect.

Data analysis

Descriptive statistics was used to analyze the barriers to utilization of screening and treatment. In order to examine the inequities to barrier in access in breast cancer services, principal components analysis was used to create SES index[22] using information on the household ownership of a: Radio, bicycle, motorcycle, car, refrigerator, generator, kerosene lamp together with the per capita food expenditure. The index was used to divide the households into four equal sized SES groups (quartiles): Q1 = poorest; Q2 = very poor; Q3 = poor, and Q4 = least poor. The frequency distributions of the variables by SES were calculated, and cross-tabulations were used to examine the relationships of some of the variables with SES of the respondents. Chi-square tests for trend were used to examine statistical differences in the distribution of the variables across the different SES groups at 0.05 level of significance.[25]

Results

Correctly and completely filled questionnaire were collected from a total of 270 respondents giving a return rate of 93.4%. The age range was 20-60 years and above with a mean age of 34.69 (standard deviation = 5.07) years. Half of the study participants were single 141 (52.2%), while 100 (37.0%) were married. Most 121 (44.8%) of the respondents had secondary education while 15 (5.6%) had no formal education [Table 1].

Of the 270 respondents, 184 (68.1%) claimed to have participated in breast screening programs. The distribution for the various screening methods utilized was: Self-breast examination 168 (62.2%), mammogram 115 (49.6%) and clinical examination 160 (59.3%).

All the respondents agreed that they were experiencing financial constraints in accessing screening (mammogram) service. Major constraint was cost of screening/treatment 208 (77.5%) followed by lack of health insurance coverage 194 (71.8%) [Table 2].

Although utilization of screening services showed no difference among the different socioeconomic groups,

Table 1: Sociodemographic characteristics of respondents *n*=270

Variable	F (%)
Age group (in years)	
20-29	96 (36.5)
30-39	87 (32.2)
40-49	40 (14.8)
50-59	34 (12.6)
≥60	13 (4.8)
Mean (SD)	34.69 (5.07)
Marital status	
Single	141 (52.2)
Married	100 (37.0)
Divorced	5 (1.9)
Widowed	13 (4.8)
Separated	11 (4.1)
Education	
No formal	15 (5.6)
Primary	63 (23.3)
Secondary	121 (44.8)
Tertiary	71 (26.3)
Occupation	
Civil servant	103 (38.4)
Farming	55 (20.4)
Trading	84 (31.1)
House wife	15 (5.6)
Unemployed	13 (4.8)

SD=Standard deviation

Table 2: Financial barriers to utilization of screening services

Barriers	F (%)
Cost of screening/treatment	208 (77.5)
No health insurance coverage	194 (71.8)
Transport difficulties	183 (66.5)
Lack of funds	166 (61.7)

NB=Multiple responses were allowed

Table 3: Influence of SES on utilization of screening services for breast cancer *n*=184

SES	Poorest	Very poor	Poor	Least poor	Chi-square (*P*)
Utilization	43 (62.3)	43 (62.3)	49 (71.0)	49 (71.0)	2.407 (0.492)
Frequency of utilization					
Weekly	32 (74.4)	24 (55.8)	31 (63.3)	32 (80.0)	18.108 (0.034)
Monthly	10 (23.3)	11 (25.6)	6 (12.2)	5 (12.5)	
Yearly	1 (2.3)	6 (14.0)	6 (12.2)	2 (2.5)	
When necessary	0 (0)	2 (4.7)	6 (12.2)	1 (2.5)	

SES=Socioeconomic status

there were significant differences in the frequency of utilization among the different SES groups (χ^2 = 18.108; P = 0.034) [Table 3].

Table 4: Influence of SES on the various treatment options utilized

Treatment received	n	n (%)				Chi-square (P)
		Poorest	Very poor	Poor	Least poor	
Chemotherapy	208	48 (70.6)	51 (75.0)	51 (76.1)	58 (86.6)	5.230 (0.156)
Surgery	185	33 (49.3)	44 (65.7)	53 (77.9)	55 (80.9)	19.397 (0.000)
Radiotherapy	161	36 (53.7)	38 (56.7)	39 (57.4)	48 (70.6)	4.743 (0.192)
Prayer	156	36 (52.9)	42 (62.7)	35 (52.2)	43 (63.2)	2.987 (0.394)
Traditional/ herbs	47	17 (25.0)	9 (13.4)	8 (11.9)	13 (19.1)	4.994 (0.172)
None	11	2 (2.9)	4 (6.0)	1 (1.5)	4 (5.9)	2.551 (0.466)
All options	7	1 (1.5)	0 (0.0)	1 (1.5)	5 (7.4)	8.545 (0.036)

SES=Socioeconomic status

Table 4 shows the various treatment options utilized by the different socioeconomic groups: There was no significant relationship in the different treatment options among the different socioeconomic groups with the exception of surgery ($\chi^2 = 11.397$; $P = 0.000$).

Discussion

Majority of the women with breast cancer were quite young (20-49 years) and were mostly single. This may imply that younger women are being affected by breast cancer, in contrast to previous studies that indicated older women (35-70 years).[1-3] However, the finding appears to support Yip *et al.*[26] which indicated that the age difference in the occurrence of breast cancer could be as a result of lower lifespan among the lower- and middle-income countries' population than their counterparts in the high-income countries This age variance may also be attributed to ethnicity as white people are more likely to develop breast cancer at a later age than blacks.[10] Lifestyle-related factors such as increased awareness and use of oral contraceptive as well as recent increase in technology with frequent use of chemicals as cosmetics, preservatives in foods and exposure to radiation and radio-active substances may be implicated in age variances among this study population.

Although all the various SES groups utilized one form of screening services in this study, there were significant differences in the frequency of utilization among the different SES groups. This may be attributed to the fact that breast cancer is a life-threatening disease; both the rich and the poor do everything possible to seek for and initiate treatment. The finding that the least poor SES group was more likely to utilize screening services compared to the poorest SES group is consistent with findings from other studies in the literature where low SES was observed as a barrier to cancer screening and treatment.[14-16] The poorest SES group has lower income, lower educational attainment and menial occupation and lack health insurance coverage, all of which determine how regular and how capable a woman can seek for care.[14-18]

Socioeconomic status had influence on the type of treatment for breast cancer. Even though, physicians recommend treatment options, the least poor SES group was more likely to sustain their treatment with chemotherapy, surgery and radiotherapy than the poorest SES group. However, all the SES groups at one time or the other resorted to traditional herbs and prayers. This inability of the different SES groups to sustain orthodox treatment could be due to other constraints apart from finance that needs further investigation.

Cost of medical treatment was a major financial barrier to the continued benefit from screening and treatment services to all the different SES groups more especially with the poorest and very poor SES groups. This finding is in agreement with Egwuonwu *et al.*[12] Economic and social factors such as poverty have been directly linked with low usage of mammography screenings.[19] Similarly, low income and/or, education have been linked to poor utilization of screening services.[14-16] with subsequent late diagnosis and delayed follow-up. Women of low SES are significantly more likely to be diagnosed with a later-stage of breast cancer than their higher SES peers.[6,10]

Majority of the respondents did not have health insurance coverage. In Nigeria and in most sub-Saharan African countries where there is absence of financial risk protection mechanism, payments for treatment are made wholly through out-of-pocket spending.[21] Studies have shown that women with inadequate or lack of health insurance have lower rates of mammography utilization than do women with health insurance.[10,14-16,19] thus preventing early detection of breast cancer and subsequent treatment. Social health insurance has been shown to improve access to health care.[21,27] In this study, the few women that had access to health insurance were mainly civil servants. Increasing the rate of health insurance coverage would especially improve the health of women, especially the most disadvantaged in terms of access to health care and would likely reduce health disparities among socioeconomic groups.[28]

Transportation was also found to be another barrier to screening and treatment services in this present study. This is not surprising as the area of study is located at the outskirt of Enugu about 15 km from the city. Geographic barriers are especially important for women who live in rural areas. These women may be unable to obtain regular screening because they do not have access to health.[10] The travel time and cost of transportation can be considered as a complement to accessing screening services and may affect a woman's attitude towards screening and her ability to receive treatment. Mackinnon *et al.*[18] also reported that transportation and commuting time played major positive roles on whether a woman would seek cancer screening and receive treatment. To increase access, a transportation system could be developed for people who find it difficult

to access treatment for breast cancer as well as making the services affordable.

Limitations of the study

The study was carried out in an oncology clinic which provided access to the target women however; it did not cover information from women who did not attend the clinic. This may have introduced selection bias, as those who did not attend the clinic may have perceived barriers to breast cancer screening and treatment differently. The respondents were recruited from one hospital only and therefore the study cannot be generalized.

Conclusion

Majority of the participants with breast cancer in this study were young and single. All the various SES groups utilized one form of screening program; however the least poor utilized screening services most than other SES groups. Major financial barrier was cost of treatment followed by lack of insurance coverage. Understanding the barriers and challenges in breast cancer screening and treatment could help in developing interventions and strategies that will address them thereby increasing utilization rate and decreasing morbidity and mortality from breast cancer. To this effect, healthy lifestyle campaigns and government-sponsored public health initiatives are necessary to highlight the adverse effects of chemicals in cosmetics and radio-active substances. Urgent steps should be taken to provide universal health coverage to women more especially to the disadvantaged group.

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