International Journal of Community Medicine and Public Health
Aduayi VA et al. Int J Community Med Public Health. 2015 May;2(2):86-93
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: 10.5455/2394-6040.ijcmph20150504

Research Article

Willingness to accept preventive bilateral mastectomy among women in rural and urban communities in South-Western Nigeria

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Received: 21 March 2015
Accepted: 16 April 2015

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ABSTRACT

Background: Breast cancer is the commonest cancer in women with highest mortality in developing countries due to late presentation. The decision to remove both breasts through preventive bilateral mastectomy among high risk individuals in developing countries would transcend social, cultural and even spiritual boundaries. Preventive mastectomy if considered among women at high risk, can significantly reduces the life time risk of developing breast cancer. The study compared willingness to accept preventive bilateral mastectomy among women who reside in urban and rural communities in South-West Nigeria.
Methods: Both quantitative and qualitative methods were employed. The quantitative study was a cross-sectional comparative survey among 680 women aged 20 years and above selected using a multi-stage sampling technique from two predominantly rural and urban Local Government Areas. Participants were interviewed using semi-structured, interviewer-administered questionnaires. In the qualitative study, focus group discussion sessions were held with the women in both rural and urban areas and analysed using detailed content analysis and results presented with Z-Y tables. Quantitative data were analysed using SPSS software version 16.0.
Results: Results showed that One hundred and sixty seven (49.1%) and 132 (38.8%) of women in urban and rural areas respectively were willing to accept preventive bilateral mastectomy as a primary prevention strategy if they are identified to be at high risk. (χ^2 =7.3, P = 0.007). For those who were unwilling to accept preventive bilateral mastectomy as an option for breast cancer prevention, the commonest reasons were cosmetic-related (disfigurement and scars). The determinants of willingness to accept preventive bilateral mastectomy among women in rural areas were: self-perceived risk in urban areas and level of education (P = 0.035). Respondents at high self-perceived risk of breast cancer in rural areas were 1.94 times more likely to accept preventive bilateral mastectomy compared with those at average self-perceived risk (OR 1.94, CI 1.22-3.08).
Conclusions: The study concluded that respondents with increased knowledge of breast cancer, high level of educational attainment and high self-perceived risk of breast cancer were more likely to accept preventive bilateral mastectomy as a primary prevention strategy if found to be at high risk for developing breast cancer.

Keywords: Breast cancer, Preventive mastectomy, Rural and urban communities

INTRODUCTION

Breast cancer is the commonest cancer in women with highest mortality in developing countries due to late presentation. In Sub-Saharan Africa, mastectomy is usually done for down-staging breast cancer, whereas if done as a preventive measure, it will significantly reduce the life time risk of developing breast cancer. Preventive

mastectomy (also called prophylactic or risk-reducing mastectomy) is the surgical removal of one or both breasts which is done to prevent or reduce the risk of breast cancer in women who are at high risk of developing the disease. Although a desperate preventive option, it is usually proffered to women found to be at high risk (i.e. having a genetic predisposition) and have completed child bearing.[1]

The surgical removal of an organ as a preventive strategy for risk reduction is not novel in the practice of medicine. The removal of the uterus following suspicious screening findings is a classical example. Other examples include removal of precancerous polyps in the colon and oropharynx.[2] However, unlike the removal of these and other internal organ, the female breast is external and a symbol of woman hood. In addition, the female breast is unique by virtue of its anatomical location, physiological role, role in sexuality, socio-cultural and even spiritual function.[3,4] The decision therefore to remove both breast through preventive bilateral mastectomy among the high risk individuals in our environment would transcend social cultural and spiritual boundaries.[5,6] In the developed world where the society is more liberal, the decision to remove the breast is not much of an issue owing to the presence of support groups and post-operative options for example, prosthesis.[7] Notwithstanding, women who undergo this procedure may still experience varying degree of psychological effects on her feminine personality.[8,9]

Existing data suggest, that preventive mastectomy may significantly prevent or reduce the risk of breast cancer by about 100% in moderate-risk women and 90-95% in high-risk women.[10] These figures far exceeds reduction achieved by other preventive measures such as Clinical Breast Examination (CBE) which reduce the risk by 40-45% and mammography by 45-67%.[11,12] In the light of the above, the promotion of preventive mastectomy for women at high risk has a potential to reduce breast cancer related morbidity and mortality among women at high risk in both rural and urban areas.

In the wake of the growing realisation that early diagnosis and prompt treatment does not significantly reduce mortality attributed to breast cancer, there is an urgent need for appraisal of the potential benefits of primary prevention strategies such as willingness to accept bilateral preventive mastectomy. The declining trends in age of onset of breast cancer in sub-Saharan Africa coupled with the delay in presentation of patients has necessitated the need to assess how women perceive their risk of developing breast cancer and relating it to their actual risk.

In Nigeria in particular, there are limited studies exploring the willingness to accept preventive bilateral mastectomy among women with perceived high or average risk of breast cancer as most studies have focused on knowledge and secondary prevention practices of women towards breast cancer. Similarly, baseline data on current level of knowledge and willingness to accept bilateral preventive mastectomy will be imperative for planning intensive breast cancer awareness program among women in rural and urban areas.

METHODS

The study was conducted in four Local Government Areas (LGAs) areas namely: Ife-North, Atakumosa west (Rural LGAs), Ife East and Ife-Central LGAs (Urban LGAs) of Osun State South Western part of Nigeria.

The study was a cross-sectional study involving 680 women aged 20 years and above in selected rural and urban Local Government Areas. The lower age limits of 20 years was chosen as these is part of the eligibility criteria for the breast cancer prevention trial,[13] and other studies on knowledge, preventive practice as well as risk factors for breast cancer.[14] It was also adopted due to the sensitiveness and implication of decision making on willingness to accept preventive bilateral mastectomy, as well as ethical consideration.

The respondents were selected using multistage sampling technique. The first stage involved selection of one out of the three senatorial districts using simple random sampling method. The second stage involved the selection of two predominantly rural and two urban Local Government Areas (LGAs) by simple random sampling method from a sample frame of all rural and urban LGA in the selected senatorial district. The third stage involved the listing of wards in each chosen LGA and the selection of five wards by simple random sampling method. The listing of all the settlements in the wards was done in the fourth stage, and two settlements were selected from each ward by simple random sampling technique. The fifth stage involved the listing of streets or compounds in each selected settlement thereafter; three streets were selected using simple random sampling technique. The listing of settlements and streets was done with the assistance of the social mobilisation officer of respective Local Governments Areas. At the street level, respondents were selected using the systematic sampling method. In households where no one met the eligibility criteria, the house number was noted and the next to it visited. In areas without well demarcated streets, a landmark feature of the community (the main market, town hall or palace of the king in some cases) was identified and a bottle spurned round with the tip of the bottle pointing to the starting point.

Questions were drawn up in English language and subsequently translated into Yoruba language (with appropriate back translation) to ensure retention of original meanings. Respondents' self-perceived risk for breast cancer were assessed and grouped into average and high self-perceived risk. Questions on self-perceived risk were graded in ascending order based on the Likerth

scale like questions. i.e. "much lower than an average woman was scored one point" while "much higher than an average woman" was scored five. The maximum obtainable score was 18 while the minimum obtainable score was four points. Respondents who scored nine and below were classed as having "average self-perceived risk". Those with 10 points and above were classed as having "High perceived risk".

Additional data on attitude and willingness to accept preventive bilateral mastectomy was sought by conducting Focus Group Discussions sessions (FGDs), with women who reside in rural and urban areas. A total of four FGD sessions were conducted and each group comprised about 8 participants. The results were used to triangulate findings from the quantitative survey. The quantitative data entry was done using Epi-data version 3.1 with appropriate checks and skip patterns programmed in to the data entry form to minimize errors. Data were exported to SPSS version 16 software, for statistical analysis. Appropriate bivariate and multivariate analyses were carried out. Confounding was assessed by comparing the odds ratios of the model for the variables combined (adjusted OR) with odd ratio for individual variables (crude OR), and confounding was considered present when the difference between crude and adjusted odds ratios was greater than or equal to 10%. The Odds Ratio (OR) was the measure effect, and Chi square test was used as test of significance to determine association between dependent or outcome variables and the independent variables. A P value of 0.05 or less and a 95% confidence interval limits were used to test for statistical significance. The qualitative data collected from the focus group discussion sessions were recorded on tape, translated and transcribed on to text and validated. The outputs were coded and detailed content analysis was performed. Some results of the FGD were presented in pros in the discussion.

RESULTS

Six hundred and eighty respondents, 340 in rural and 340 in urban areas were recruited. The age of respondents ranged from 20-60 years with mean age (Standard deviation) of women in rural and urban areas as 33.81 ± 10.50 and 32.06 ± 7.59 years respectively.

Table 1: Socio-demographic characteristics of respondents by place of residence.

Characteristic	Local government areas, n (%)		Total n=680 (100)	Statistical tests
	Rural n=340 (100)	Urban n=340 (100)		
Age (years)				
20-29	131 (38.5)	143 (42.1)	274 (40.3)	χ^2 = 16.68, df=4 P = 0.002*
30-39	133 (39.1)	145 (42.6)	278 (40.9)	
40-49	38 (11.2)	37 (10.9)	75 (11.0)	
50-59	21 (6.2)	14 (4.1)	35 (5.1)	
≥60	17 (5.0)	1 (0.3)	18 (2.6)	
Level of education				
None	26 (7.6)	3 (0.9)	30 (4.4)	χ^2 = 216.46, df=3 P = 0.0001**
Primary	217 (63.8)	12 (3.5)	82 (12.1)	
Secondary	70 (20.6)	117 (34.4)	334 (49.1)	
Tertiary	27 (7.9)	208 (61.2)	234 (34.4)	
Occupation				
Professional	10 (2.9)	86 (25.3)	96 (14.1)	χ^2 = 145.22, df=4 P = 0.0001**
Technical/managerial	29 (8.5)	84 (24.7)	113 (16.6)	
Skilled	29 (8.5)	41 (12.0)	70 (10.3)	
Partially-skilled	82 (24.1)	24 (7.1)	106 (15.6)	
Unskilled	190 (56.0)	105 (30.9)	295 (43.4)	
Marital Status				
Single	53 (15.3)	87(25.6)	140 (20.6)	χ^2 = 10.40, df=1 P = 0.001*
Married	287 (84.7)	253(74.4)	540 (79.4)	
Religion				
Christian	247 (73.1)	300 (88.2)	547 (80.7)	χ^2 = 24.99, df= 1 P = 0.0001**
Islam	91 (26.9)	40 (11.8)	131 (19.3)	
Parity				
Nil	48 (14.1)	131 (38.5)	179(26.3)	χ^2 = 52.24, df= 1 P = 0.0001**
One or more	292 (85.9)	209 (61.5)	501(73.7)	

χ^2 = Pearson Chi-square, *Statistically significant at P value <0.05, **Statistically significant at P value <0.001

The difference in mean age between women recruited from rural and urban areas was statistically significant (t = 2.49, P = 0.013). A higher proportion (95.6%) of respondents in urban areas had at least secondary education compared to 28.5% in rural areas (P <0.0001). The distribution in educational attainment between rural and urban areas was statistically significant. A higher proportion (84.7%) of respondents were married in rural areas compared to 74.4% in urban areas (P = 0.0001). As regards respondent's religion, they were predominantly Christians in both rural (73.1%) and urban (88.2%) areas. Almost all the respondents were of Yoruba ethnicity (Table 1). Majority of respondents (67.9%) in rural areas were unaware of preventive bilateral mastectomy as a risk reducing strategy compared to 41.5% of respondents in urban areas (Figure 1). In addition, 49.1% of women in rural areas were unwilling to accept bilateral mastectomy compared to 38.8% in urban areas. This difference was statistically significant (P = 0.007). About, 42.1% and 45.9% of women in rural and urban areas respectively supported provision of mastectomy for women at high risk. Overall, 38.8 % and 49.1% of women in rural and urban areas respectively were willing to accept bilateral mastectomy if they were found to be at high risk. This difference in willingness to accept preventive bilateral mastectomy was statistically significant (P = 0.009) (Table 2).

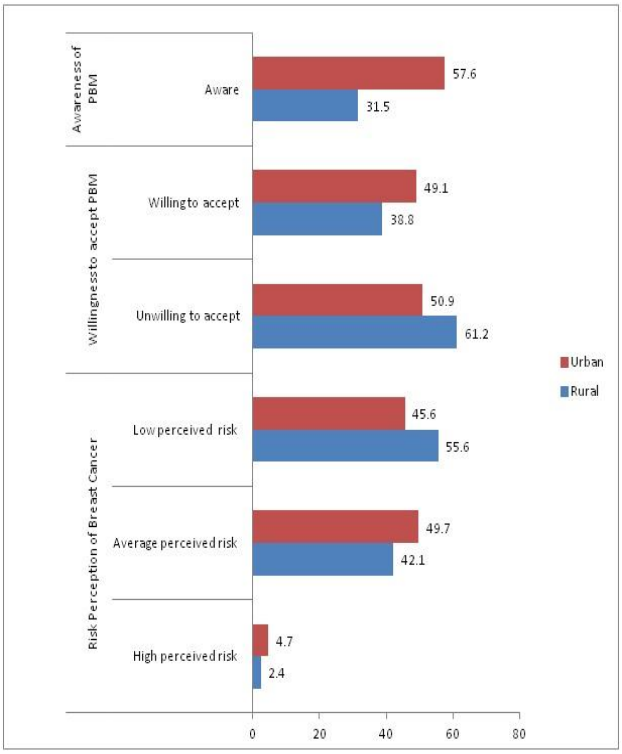

Figure 1: Respondents awareness and willingness to accept preventive bilateral mastectomy and self-risk perception for breast cancer.

Table 2: Respondent's attitude towards and willingness to accept prophylactic bilateral mastectomy as a measure for breast cancer prevention in women at high risk.

	Place of residence, n (%)		Total n=680 (100)	Statistical tests
	Rural n=340 (100)	Urban n=340 (100)		
Attitude				
Supported	143 (42.1)	156 (45.9)	299 (43.9)	χ^2 = 4.18, df=2 P = 0.124
Indifferent	49 (14.4)	61 (17.9)	110 (16.2)	
Opposed	148 (43.5)	123 (36.2)	271 (39.9)	
Willingness				
Accept	107 (31.5)	147 (43.2)	254 (37.4)	χ^2 = 13.67, df=2 P = 0.001**
Indifferent	29 (8.5)	37 (10.8)	66 (9.7)	
Reject	204 (60. 0)	156 (46.0)	360 (52.9)	
Overall willingness				
Willing	132 (38.8)	167 (49.1)	299 (44.0)	χ^2 = 7.31, df=1 P = 0.009*
Unwilling	208 (61.2)	173 (50.9)	381 (56.0)	

χ^2 = Pearson Chi-square, *Statistically significant at P value < 0.05, **Statistically significant at P value <0.001

The commonest reason for rejecting this risk reducing procedure in urban areas were cosmetic reason (36.5%) especially the fear of developing a scar with attendant disfiguring consequence compared to 25.3% in rural areas. This was closely followed by religious and cultural related beliefs (28.5%) proffered by respondents in rural areas compared to those in urban areas (26.6%) (Figure 2). Binary logistic regression model of willingness to accept preventive bilateral mastectomy and socio-demographic factors in urban areas showed that respondents with high self-perceived risk in urban areas were 4.08 times more likely to accept preventive bilateral mastectomy compared to respondents at low or average self-perceived risk (OR 4.08, CI 1.23-13.51) (Table 4).

Table 3: Showing awareness about the management of dog bite case among the study population.

Characteristic	Willingness to accept BPM, n (%)		Total N=340	Statistical tests
	Willing n=132 (38.8)	Unwilling n=208 (61.2)		
Age (years)				
20-29	51 (38.9)	80 (61.1)	131	LRχ^2 = 5.73, df=4 P = 0.221
30-39	53 (39.8)	80 (60.2)	133	
40-49	19 (50.0)	19 (50.0)	38	
50-59	5 (23.8)	16 (76.2)	21	
≥60	4 (23.5)	13 (76.5)	17	
Level of education				
None	4 (19.0)	17 (81.0)	21	LRχ^2 = 10.31, df=3 P = 0.035*
Primary	31 (43.2)	40 (56.3)	71	
Secondary	81 (37.3)	136 (62.7)	217	
Tertiary	16 (51.6)	15 (48.4)	31	
Marital status				
Single	25 (47.2)	28 (52.8)	53	χ^2 = 5.58, df=1 P = 0.062
Married	17 (37.3)	18 (62.7)	287	
Parity				
Nil	114 (39.0)	178 (61.0)	292	χ^2 = 0.41, df=1 P = 0.839
One or more	18 (37.5)	30 (62.5)	48	
Positive family history				
Yes	7 (46.7)	8 (53.3)	15	χ^2 = 0.41, df=1 P = 0.524
No	125 (38.5)	200 (61.5)	325	
Hormonal contraceptive use				
Never used	83 (37.9)	136 (62.1)	219	χ^2 = 0.00, df=1 P = 0.991
Ever used	49 (40.5)	72 (59.5)	121	
Knowledge of breast cancer				
Poor	74 (35.7)	133 (64.3)	207	χ^2 = 2.11, df=1
Good	58 (43.6)	75 (56.4)	133	P = 0.091
Self-perceived risk				
Average	128 (38.6)	204 (61.4)	332	Fisher's Exact probability = 0.378
High	4 (50.0)	4 (50.0)	8	

χ^2 = Pearson Chi-square,*Statistically significant at P value <0.05, **Statistically significant at P value <0.001

Table 4: Logistic regression model of willingness to accept preventive bilateral mastectomy and significantly determining socio-demographic factor in urban areas.

Predictor variables	Willingness to accept preventive bilateral mastectomy			
	$OR^{(adj)}$	95% CI for OR		P value
		Lower	Upper	
Age				
Below or above 40 years	1.00			
<40 years	0.80	0.43	1.51	0.494
Level of Education				
None	1.00			
primary	1.94	0.13	28.9	0.630
Secondary	2.36	0.20	27.45	0.492
Tertiary	2.20	0.18	25.78	0.529
Marital status				
Single	1.00			
Married	1.10	0.66	1.86	0.710
Knowledge of breast cancer				
Poor	1.00			
Good	0.62	0.32	1.19	0.15
Self-perceived risk				
Average	1.00			
High	**4.08**	**1.23**	**13.51**	**0.021***

$OR^{(adj)}$ adjusted OR, *Statistically significant at P value <0.05, **Statistically significant at P value <0.001

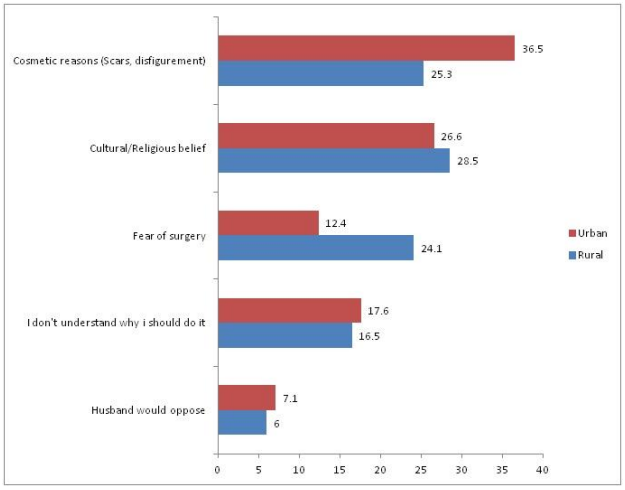

Figure 2: Unwillingness to accept bilateral mastectomy by place residence.

DISCUSSION

Primary prevention strategy involves interventions that reduce the risk of developing breast cancer. The emergence of preventive bilateral mastectomy as a primary prevention measure in the overall reduction of breast cancer mortality is now attracting widespread consideration as an option for the reduction of breast cancer morbidity and mortality.[15,16] It is the only known method of accomplishing a risk reduction rate of greater than 95%.[10] In this study, 38.8 % and 49.1% of women in rural and urban areas respectively were willing to accept bilateral mastectomy, connoting that four in ten of women who reside in rural areas and five in ten of those who reside in urban areas were willing to accept preventive bilateral mastectomy as a risk reducing strategy if found to be at high risk. This is in agreement with findings from a study conducted among Austrian women at high risk in which about three in ten (29%) considered preventive mastectomy.[17] About half (49.1%) of respondents in urban areas who were willing to accept preventive bilateral mastectomy had a higher knowledge, higher educational attainment, self-perceived risk compared with those in rural areas. This may partly be explained by better knowledge, awareness and access to information on breast cancer including its risk factors among respondents in urban areas compared to rural areas. This further highlights the conclusion by Haroun et al.[18] that among women at high risk by virtue of a history of breast cancer in a first-degree relative, high perception of personal breast cancer risk was a predictor of willingness to have preventive bilateral mastectomy. Other studies have affirmed this position.[19-21]

The decision to remove the breast through preventive bilateral mastectomy among the high risk individuals has cosmetic, social, cultural and spiritual implications because it is a unique organ by virtue of its anatomical location, physiological role, role in sexuality, socio-cultural and even spiritual function.[3,4] Despite outstanding benefit of preventive bilateral mastectomy, the procedure has its attendant consequences as women who have had removal of both breasts experienced varying degree of psychological effects and consequences on their feminine personality.[8,9,22] Putting in place mechanisms to improve information on breast cancer including its risk factors especially in rural areas would in prospect improve the health seeking behaviour thereby influencing early presentation of patient with breast cancer.

A popular reason for the low acceptability of preventive bilateral mastectomy as a risk reducing procedure in urban areas was related to cosmetics, especially the fear of developing a scar with attendant disfiguring consequence. About 36% of respondents in urban areas and 25% in rural areas expressed concerns about its effect on their body image. This assertion was further buttressed from results of the focused group discussion with a quote from a farmer in a rural community; "Removal of the breast is not good. Beauty just starts after a woman has completed her family." A petty trader in a rural community also commented "Foam or any other prosthesis can come off. It is essential that the breast stands. I will not agree." This was also affirmed by findings from the focused group discussion sessions. This is in agreement to the study done by Meiser et al. among Australian women where body image related factors were a stronger determinant of intention to undergo prophylactic mastectomy.[19] In addition studies by den Heijer et al, Nelson et al and Didier also reiterated the role of body image on acceptance, satisfaction and psychological adjustment following mastectomy.[8,9,23] Other reasons proffered were fear of surgery, husband opposition to such a procedure and lack of understanding of the benefits of the surgery. This finding was comparable to a study by Stefanek et al. when he assessed the interest of women at average-risk and high-risk in preventive bilateral mastectomy.[21] Stefanek found that approximately 25% of the sample selected bilateral prophylactic mastectomy as the preferred option.[21,24,25] Therefore, as cosmetic and body image remains major concerns among women, the promotion of prosthesis to limit disfiguring consequences of preventive mastectomy may influence acceptance of the risk reducing option. In essence, improved knowledge and self-perceived risk are important motivators for protective health-related behaviours and improved risk prevention practices among women, thereby ultimately reducing morbidity and mortality attributed to breast cancer.

CONCLUSION

The study concluded that women in rural areas had poorer knowledge of breast cancer and exhibited a negative attitude towards breast cancer and its preventive practices compared to those in urban areas. Respondents with good knowledge of breast cancer, higher level of educational attainment and high self-perceived risk were more willing to accept preventive bilateral mastectomy as

a risk reducing strategy. Cosmetic reasons and body image were among other reasons why respondents rejected preventive bilateral mastectomy. Women who are at high risk should have access to more information on preventive bilateral mastectomy and option of prosthesis in other to minimize the cosmetic concerns. Health education interventions are advocated by health programmers, to increase the knowledge of breast cancer, its risk factors and early detection measures among women in underserved communities. Members of the community, households and individuals should be aware of any family history of breast cancer and seek enlightenment on preventive measures from appropriate health personnel.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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DOI: 10.5455/2394-6040.ijcmph20150504
Cite this article as: Aduayi VA, Onayade AA, Aduayi OS, Ijadunola MY. Willingness to accept preventive bilateral mastectomy among women in rural and urban communities in South-Western Nigeria. Int J Community Med Public Health 2015;2:86-93.