

Influence of Educational Level on Knowledge and Practice of Breast Self-examination Among Women in Sokoto, Nigeria

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ABSTRACT

Background: Breast cancer is the leading cause of cancer death among women worldwide. Breast self-examination (BSE) remains the most effective means of early detection of breast cancer among women in middle- and low-income countries where mammography is neither available nor affordable. **Aim:** This study explored the influence of educational level on knowledge and practice of BSE among women in Sokoto, Nigeria. **Subjects and Methods:** A quantitative cross-sectional design was employed using structured questionnaire. A sample of 400 participants was selected for the study using multistage sampling technique among educated women in Sokoto. Statistical Package for Social Sciences (SPSS version 20.0, IBM Corp, New York) was used for data analysis. Chi-square was used to establish significant relationships. **Results:** Findings showed that 75% (294/392) of women had average knowledge of BSE, but only 34.4% (135/392) practiced BSE regularly. Moreover, there was a significant relationship between educational level and the knowledge and practice of BSE. **Conclusion:** Findings of this study suggest that though women may have knowledge about BSE, the practice of BSE is sporadic. Therefore, there is a need for health care practitioners to provide women with BSE education and emphasize on the need for regular practice of BSE.

KEY WORDS: Breast cancer, breast self-examination, educational level, knowledge, practice

INTRODUCTION

Breast cancer is the most common cancer affecting women worldwide (25.2%), and the second leading cause of cancer deaths (15%) in women.^[1] About half of breast cancer cases and 60% of the deaths are estimated to occur in middle- and low-income countries.^[2] Global cancer statistics indicate rising global incidence of breast cancer and the increase is occurring at a faster rate in populations of the middle- and low-income countries, which may be due to increase in population growth and aging.^[1,2]

In Africa, breast cancer is the most commonly diagnosed cancer and the second leading cause of cancer death among women. Southern African women have the highest breast cancer incidence rates of all African regions^[1,2] because of a higher prevalence of reproductive risk factors for breast

cancer, including early menarche and late childbearing among more affluent women.^[2]

Breast cancer is the most commonly diagnosed cancer in women in several sub-Saharan African countries, a shift from previous decades in which cervical cancer was the most commonly diagnosed cancer in many of these countries.^[1] The reasons for this shift are unknown but may include increases in the prevalence of risk factors for breast cancer such as early menarche, late childbearing, having fewer children, obesity, and increased awareness and detection,

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which are associated with urbanization and economic development.^[2,3]

In Nigeria, breast cancer is the most common form of cancer affecting women.^[1,2,4] The overall incidence of breast cancer in Nigeria is about 15.3/100,000 women. A number of risk factors for the development of breast cancer are identified, which most often include age, menarche, parity, menopausal status, age at first live birth, family history, use of exogenous hormones, alcohol consumption, breastfeeding, genetic mutations, and benign breast disease.^[5]

Lack of definitive preventive methods for breast cancer has made early diagnosis the most important protective factor. Early diagnosis decreases mortality and increases quality of life.^[6] Breast self-examination (BSE) is one of the important tools for early diagnosis,^[7] because it creates breast cancer awareness and promotes self-responsibility for health care among women.^[8,9] The American Cancer Society and the European Commission recommend annual mammograms and clinical breast examinations for healthy women over 40 years of age, and BSE once a month for all women over 20 years of age.^[10,11]

BSE is a noninvasive adjuvant screening method for detection of early breast cancer. BSE is a useful measure when mammography screening is not available in the rural and poor urban areas. There is evidence that a woman who correctly practices BSE monthly is more likely to detect a lump at the early stages of development.^[12] Early diagnosis has been reported to influence early treatment of breast cancer among women.^[12] The sensitivity and specificity of BSE are 58.3% and 87.4%,^[9] while the sensitivity and specificity of mammography are 56% and 14%, respectively.^[9,13]

Moreover, education plays an important role in behavior modification and may lead to cues to action. Studies conducted in high-income countries where majority of women have higher level of education indicate that there is no significant association between educational level and the knowledge and practice of BSE.^[14,15] Meanwhile, studies conducted in middle- and low-income countries indicate a significant relationship between educational level and knowledge and practice of BSE. Women with higher educational level have more knowledge of BSE, better performance and more likely to practice BSE regularly.^[8,16,17] Thus, in the middle- and low-income countries, fewer women are literate, and may interfere with early diagnosis of breast cancer.

Studies have shown that the majority of Turkish women do not practice regular BSE.^[18,19] The reasons for the low rate of BSE practice among Turkish women include fear of finding that they have breast cancer, inadequate knowledge

regarding how to perform BSE, and lack of awareness about what to do if a lump is found. These barriers can be eliminated by BSE education.^[20]

The Nigerian literacy level is 61%, and the literacy level among women is only 50%.^[21] Northern Nigeria, especially Sokoto State, is among the less educationally developed states. Studies conducted in the Southern part of the country where literacy level is higher than the Northern part indicate that there is a significant relationship between educational level and knowledge and practice of BSE among women.^[22,23] However, there are no studies that determine the influence of educational level on the knowledge and practice of BSE among women in Northern Nigeria. Therefore, this study examined the influence of educational level on the knowledge and practice of BSE among women in Sokoto, Nigeria.

SUBJECTS AND METHODS

A quantitative descriptive cross-sectional design was employed to examine the influence of educational level on knowledge and practice of BSE among women in Sokoto. Women who were 18 years and above, who attended at least primary school and can read and write simple English (read and understand the questionnaire) and women who lived in Sokoto for at least 6 months were included in the study. Women who had suffered breast cancer or had undergone mastectomy and women who were non-Nigerians or women who were Nigerians but were on a visit to Sokoto were excluded from the study.

Sokoto is one of the thirty-six states of the Federal Republic of Nigeria. The state has a land mass of about 32,000 km² with a population of 4,427,760 according to 2006 Census. Sokoto is a city located at the extreme North-Western part of Nigeria, near the confluences of Sokoto River and Rima River. It is the modern-day capital city of Sokoto State and the seat of the caliphate: The capital of the Nigerian Muslim leader; the Sultan of Sokoto. Sokoto town is made up of four local government areas of Sokoto State: Sokoto North, Sokoto South, Wamakko, and Dange-Shuni. Sokoto has one teaching hospital, one specialist hospital, one orthopedic hospital, two women and children hospitals and several private hospitals and primary health centers. Sokoto city has several educational institutions such as two universities: Usmanu Danfodiyo University Sokoto and Sokoto State University Sokoto owned by the federal and state government, respectively. Other tertiary institutions include Sokoto State Polytechnic, Shehu Shagari College of Education, School of Nursing, Usmanu Danfodiyo University Teaching Hospital Sokoto and Sokoto State College of Nursing and Midwifery Sciences. Sokoto town has a population of 527,760. Sokoto has several areas

such as Mabera, Kanwuri, Gawon-Nama, Farfaru, Dange, Shuni, Old-Airport; the data were collected in the following areas: Mabera, Farfaru, Runjin Sambo, Shuni, and Gawon Nama. Mabera in Sokoto South Local Government, Farfaru in Wamakko Local Government, Runjin Sambo in Sokoto North Local Government and Shuni in Dange-Shuni Local Government.

The target population of the study was educated women of Sokoto city who are within the reproductive age group. According to the National Population and Census Commission of Nigeria (2006), women of childbearing age constitute 22% of the population. There are no data as to the number of educated women in Sokoto, but the literacy level of Nigeria among women is 50%.

A multistage sampling technique was employed because the population (women in Sokoto) is large and there is no sampling frame as to the exact number of educated women in Sokoto.^[24] The following sampling methods were used:

- Cluster sampling of Sokoto into the existing cluster of four local government areas of Sokoto city
- Simple random sampling (balloting) of one district area from each local government area of Sokoto city
- Purposive sampling of respondents from each selected district area of Sokoto city.

A total of 400 women were recruited based on a power analysis using Raosoft®. A structured questionnaire developed by the researchers after extensive review of literature was used for data collection. The questionnaire comprised thirty-three items with close-ended questions. The questionnaire was piloted using twenty female undergraduate students of the Psychology Department, University of Ghana. The Cronbach's alpha in this study was 0.75. Ethical approval was sought from Noguchi Memorial Institute for Medical Research at the University of Ghana. A written consent was obtained from the participants.

Statistical Package for Social Sciences (SPSS version 20.0, IBM Corp, New York) was used for data analysis. Chi-square was used to establish significant relationships. All tests were conducted with a confidence level of 95% and a significant level of 0.05. The practice of BSE was categorized into regular and irregularly practice. Women that practiced BSE monthly were categorized into regular practice while those that did not practice BSE monthly were grouped into irregular practice of BSE.

RESULTS

Four hundred questionnaires were distributed to the women, but three hundred and ninety-five were retrieved and three were incompletely filled and were not analyzed.

Therefore, three hundred and ninety-two were analyzed which represent a response rate of 98.0% (392/400).

Demographic characteristics of the respondents

Table 1 shows the demographic characteristics of the respondents (age, educational level, occupation, marital status, religion, and ethnicity or tribe). The results showed that majority (57.7%, 226/392) of the respondents were within the age of 18–30 years. The educational level of the respondents showed that majority (40.3%, 158/392) of the respondents had university education and 34.7% (136/392) were teachers. Majority (69.1%, 271/392) of the respondents were married, while 76.0% (298/392) of the respondents were Muslims and Hausa/Fulani accounted for 64.8% (254/392) as the largest ethnic group of the respondents.

Level of knowledge of breast self-examination

The knowledge scores of the respondents were categorized to assess the level of knowledge of the respondents on BSE. Table 2 describes the respondents' level of knowledge of BSE. Majority of the respondents (45.4%, 178/392) had average level of knowledge of BSE, approximately 30% (116/392) had good knowledge of BSE, and only 25% (98/392) had inadequate knowledge. This indicates that the respondents had average level of knowledge of BSE.

Table 1: Demographic characteristics

Demographic characteristics	Frequency	Percentage
Age distribution of the respondents		
18-30	226	57.7
31-40	122	31.1
41-50	38	9.7
51-60	6	1.5
Total	392	100
Educational level of the respondents		
Primary	38	9.7
Secondary	112	28.6
National Teachers Certificate/polytechnics	84	21.4
University	158	40.3
Total	392	100
Occupation of the respondents		
Homemaker	104	26.8
Teachers	136	34.7
Trader	78	19.9
Administrator	46	11.7
Health practitioner	26	6.6
Others	2	0.5
Total	392	100
Marital status of respondents		
Married	271	69.1
Single	95	24.2
Widow	16	4.1
Divorced/separated	10	2.6
Total	392	100
Religion of the respondents		
Islam	298	76.0
Christianity	94	24.0
Total	392	100
Ethnicity of the respondents		
Hausa/Fulani	254	64.8
Igbo	53	13.5
Yoruba	53	13.5
Others	32	8.2
Total	392	100

Frequency of practice of breast self-examination

Approximately 65% (256/392) of the respondents practiced BSE, while 35% (136/392) did not practice BSE. Meanwhile, among the 65% (256/392) of the respondents that practiced BSE, only 52.7% (135/256) practiced BSE monthly which represented only 34.4% (135/392) of the total respondents. The percentage of the respondents that did not practice BSE gave reasons for not performing BSE as follows: That they did not know how to perform BSE, they had never heard any information about BSE, they did not have time to perform BSE, and finally they thought it was unnecessary to do BSE as indicated in Table 3.

Relationship between educational level and knowledge of breast self-examination

Table 4 presents a cross-tabulation for the analysis of the relationship between educational level and the knowledge of BSE. Majority (84.2%, 32/38) of the respondents with primary level of education had inadequate knowledge of BSE, while only 5.3% (2/38) had good knowledge of

BSE. Among the respondents with secondary educational level, 50% (56/112) had average knowledge level of BSE as compared to 37.5% (42/112) with inadequate knowledge and 12.5% (14/112) with good knowledge of BSE, respectively. For National Teachers Certificate (NCE)/polytechnic level of education, majority (54.8%, 46/84) of the respondents had average knowledge of BSE while only 21.4% (18/84) had good knowledge of BSE. Moreover, 51.9% (82/158) of the respondents with university level of education had good knowledge of BSE, while 45.5% (74/158) of the respondents had average knowledge of BSE and only 2.5% (4/158) of the respondents with university educational level had inadequate knowledge of BSE.

A Chi-square test conducted established a significant relationship between educational level of the respondents and the respondents' knowledge of BSE ($\chi^2 = 157.827$, $df = 6$, $P < 0.001$). Moreover, a significantly strong positive relationship exists between educational level of the respondents and the knowledge of BSE with a contingency coefficient of 0.622.

Table 2: Level of knowledge of breast self-examination

Level of knowledge	Scores	Frequency	Percentage
Inadequate knowledge	0-19	98	25.0
Average knowledge	20-29	178	45.4
Good knowledge	30-40	116	29.6
Total		392	100

Table 3: Practice of breast self-examination

Variable	Frequency	Percentage
Respondent's practice of BSE		
Yes	256	65.3
No	136	34.7
Total	392	100
Respondents' frequency of practice of BSE		
Monthly	135	52.7
Quarterly	18	7.0
Bi-annually	8	3.1
Annually	22	8.7
Once in a while	73	28.7
Total	256	100
Respondents' reasons for not practicing BSE		
Never heard of BSE	30	22.1
Embarrassing to do	12	8.9
Do not know how to do	25.0	
Do not have time	30	22.1
Wrong to touch breast	10	7.3
Unnecessary to do	20	16.6
Total	136	100

BSE=Breast self-examination

Relationship between educational level and the practice of breast self-examination

Table 5 shows the cross-tabulations on the relationship between the educational level of the respondents and frequency of practice of BSE. In terms of educational level, majority (46.8, 120/256) of the respondents that practiced BSE had university education, and only 3.1% (8/256) of the respondents had primary education. Among the respondents that practiced BSE, 52.7% (135/256) of the respondents practiced BSE regularly, while 47.3% (121/256) practiced BSE irregularly.

In terms of frequency of practice of BSE, among the respondents that practiced BSE regularly, 55.6% (75/135) had university education, and only 4.4% (6/135) had primary education. Moreover, among the respondents that practiced BSE irregularly, 37.2% (45/121) had university education, 36.4% (44/121) had secondary education, and only 1.7% (2/121) had primary level education.

A Chi-square test established a significant relationship between the educational level of the respondents and the frequency of the practice of BSE ($\chi^2 = 12.572$, $df = 3$, $P < 0.01$).

Table 4: Relationship between educational levels and knowledge of breast self-examination

Educational level of the respondents	Respondents' level of knowledge of BSE							
	Inadequate		Average		Good		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Primary	32	8.2	4	1.0	2	0.5	38	9.7
Secondary	42	10.7	56	14.3	14	3.6	112	28.6
National Teachers Certificate/polytechnic	20	5.1	46	11.7	18	4.6	84	21.4
University	4	1.0	74	18.4	82	20.9	158	40.3
Total	98	25.0	178	45.4	116	29.6	392	100

$\chi^2=157.827$, $df=6$, $P<0.001$ BSE=Breast self-examination

Table 5: Relationship between educational level and the practice of breast self-examination

Educational level of the respondents	Respondent's practice of BSE					
	Regular practice		Irregular practice		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Primary level	6	2.3	2	0.8	8	3.1
Secondary level	36	14.1	44	17.2	80	31.3
National Teachers Certificate/polytechnics level	18	7.0	30	11.7	48	18.8
University level	75	29.3	45	17.6	120	46.8
Total	135	52.7	121	47.3	256	100

$\chi^2=12.572$, $df=3$, $P<0.01$ BSE=Breast self-examination

DISCUSSION

The knowledge of breast cancer and BSE is very important in early detection and diagnosis of breast cancer. This is because 80% of women detect breast cancer by themselves either through regular BSE, by chance or accidentally through medical examinations.^[25,26] This study suggests that many women in Sokoto have at least average knowledge of BSE as found in previous studies.^[27-29] However, this finding is in contrast with the findings of Bellgam and Buowari, who reported that more than 60% of the women in the Rivers State of Nigeria had inadequate knowledge of breast cancer and BSE.^[30] Similarly, the findings of this study contradict the findings of Okobia *et al.*, who reported that only 22.9% of community dwellers in the Edo State of Nigeria had good knowledge of BSE.^[12] The high prevalence of average knowledge level of the women reported may be due to the fact that Sokoto is the capital city of Sokoto State where health care facilities are available, and women can have easy access to the health care resources. Moreover, the fact that women in this study are educated may probably facilitate easy access to information about breast cancer and BSE.

The practice of BSE gives a woman the ability to become breast aware and the opportunity to detect any changes in her breast and report to the hospital early which may influence the treatment decision and the prognosis of breast cancer. The practice of BSE reflects the practical application of the knowledge of BSE. Findings of this study indicate that 65.3% of the respondents practiced BSE, but only 34.4% practiced BSE regularly as found in other parts of Nigeria.^[31] This finding is consistent with the findings of Bilge and Keskin in Turkey,^[32] Buranaruangrote *et al.* in Thailand,^[33] and Dahlu *et al.* in Malaysia.^[27] According to these authors, majority of women practiced BSE occasionally but only few practice BSE regularly.

Moreover, the findings showed that only few women practiced BSE despite BSE being a simple procedure.^[28,30,34,35] The increase in the percentage of women that practiced BSE in this study may be due to increased knowledge of BSE among women, and this shows the influence of education in providing behavioral change because all the respondents had formal education.

This study also found that women who did not practice BSE reported reasons for their non practice as lack of knowledge and information on how to do the procedure, lack of time, and BSE being an embarrassing procedure. Others thought that it was wrong to touch their breast and unnecessary to do BSE. These reasons are similar to the findings of Alharbi *et al.*, in which female teachers reported lack of knowledge, dislike to touch their breast, fear of finding a lump, and forgetfulness as the reasons for nonperformance of BSE. These reasons suggest that there is the need for health workers to intensify their efforts toward providing women with the information on breast cancer and BSE in order to increase the regular practice of BSE and to correct their misconceptions about breast cancer and BSE.^[29]

Education plays an important role in behavior modification. Women with higher education are more likely to participate in health and educational programs. The findings of this study suggest that there is a significant relationship between educational level and the knowledge of BSE. This means that women with higher educational level are more likely to have adequate knowledge of BSE than those with lower educational level. As the educational level of women increases, there is the likelihood that their knowledge of BSE may increase. This is because education gives women more opportunity to become aware of their environment and health. Higher education among women also provides an opportunity for easy access to health information and health promotion. This finding is similar to the findings of Olowokere *et al.*, in Nigeria, Bilge and Keskin in Turkey, Onwere *et al.*, in Nigeria and Bellgam and Buowari, who reported that women with higher educational level have an adequate level of knowledge on BSE.^[22,28,30,32]

On the other hand, Register and Porterfield in the USA and Amasha in Jordan reported that there is no significant relationship between educational level and knowledge of BSE.^[14,15] Probably because majority of women in developed countries have higher educational levels than those in developing countries; their findings may be culturally specific. However, the relationship between the knowledge of BSE and educational level among women in Africa may be different as found in the present study.

The findings of this current study show that there is a significant positive relationship between educational level and the practice of BSE. This means that women with higher educational level are more likely to practice BSE regularly than those with lower educational level. This also means that as the educational level of women increase, the likelihood of regular practice of BSE may also increase. This finding is in line with the findings of Bilge and Keskin among Turkish populations,^[32] Olowokere *et al.*, among rural communities in Southern Nigeria,^[28] and Okobia *et al.*, who reported that women with higher educational level are 4 times more likely to practice BSE as compared to women with lower educational levels.^[12] Therefore, it can be inferred that women with higher educational levels are more likely to adhere to recommendations of health practices and engage in health promotional activities.

Limitations of the study

The research was conducted in an urban community where healthcare and information services are easily accessible to the participants unlike the rural communities where these services are limited. Therefore, the knowledge and practice of BSE among women from rural communities may be different from our findings so could limit generalization to rural women. Moreover, the study was conducted among educated women of Sokoto city and did not explore the knowledge and practice of BSE among uneducated women of Sokoto.

The study employed cross-sectional design which involves conducting a research at one point in time. Therefore, this design could not provide any cause-and-effect relationships between education and BSE.

CONCLUSION

Breast cancer is a devastating disease that has no immunizations yet, but can be prevented through early diagnosis and treatment with the help of BSE. Findings of this study suggest that though women may have knowledge about BSE, the practice of BSE is sporadic. Therefore, healthcare workers need to provide women with information on breast cancer, BSE, and the importance of regular practice of BSE to facilitate early diagnosis and treatment of breast cancer. This study was conducted in the urban setting, therefore there is need to explore such relationships among women living in rural communities.

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Conflicts of interest

There are no conflicts of interest.

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