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Knowledge, attitude and practice on breast cancer screening among female nurses in a tertiary hospital in Ghana

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Abstract

Background: Breast cancer is the most common female malignancy worldwide. In Sub-Saharan African countries, there are no national screening programmes for BC. In the absence of sufficient mammograms, breast self-examination and clinical breast examination play an important role. Nurses educate the general public on BC screening.

Objective: The study aimed to evaluate the knowledge, attitude and practices with regard to BC among female nurses at a tertiary hospital in Ghana.

Methods: This was a cross-sectional descriptive study utilising a self-administered close-ended questionnaire carried out among full-time nurses. This assessed knowledge of BC risk factors, signs and symptoms of BC, the attitude one should develop towards BC and the practice of breast self-examination (BSE), clinical breast examination (CBE) and mammography. The level of knowledge was categorised into good (≥ 75%), satisfactory (50 - 74%) and poor (< 50 %). A logistic regression analysis was carried out to determine factors associated with inadequate knowledge (level of knowledge < 50%) and the practice of BSE, CBE and agreeing to mastectomy.

Results: This study found that the knowledge of nurses in BC was adequate. A total of 67% of nurses regularly practised BSE, 39% had previously had a CBE, and 85% of those 40 years and above had never had a mammogram. A total of 60% of nurses admitted they would disagree with a mastectomy in the event of being diagnosed with BC.

Conclusion: This study found that the knowledge of BC among nurses did not translate into good BC screening practices, and they had an overwhelming fear of mastectomy. There is a need for training programs to be directed at improving breast screening practices, also focusing on the curability of BC, its treatment options and survivorship to help overcome the fear and stigma associated with mastectomy.

Keywords: Breast cancer; Breast screening; Mammogram; Nurses

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INTRODUCTION

Breast cancer (BC) is the most common female malignancy. According to the Global Cancer Observatory (GLOBOCAN), about 2.3 million new cases of BC were diagnosed in 2020, and there were 685,000 BC deaths [1]. The incidence is highest in Australia, Europe, and North America, but the mortality rate is highest in Melanesia, West Africa, Polynesia, and the Caribbean. In these less developed countries, women have a 17% higher mortality rate than in developed countries. The differences in global distribution of incidence and mortality have been attributed to differences in socioeconomic development across the globe [1]. GLOBOCAN reports 4,500 new cases of BC diagnosed in Ghana annually, with about 2,000 deaths, thus making it the leading cause of cancer mortality in the country [2]. BC has a 5-year survival rate exceeding 90% in high-income countries (HICs) and 40% - 66% in low-to-middle-income countries (LMICs) [3]. Although BC awareness and education have improved in Ghana, a

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study has revealed that late presentation still characterises BC among Ghanaian women, mostly reporting at stage 3 or 4 of the disease with an average symptom duration of 10 months [4]. Early detection is achieved through screening. In Ghana and all over Sub-Saharan Africa, mammograms are not readily available, being mostly limited to urban areas. Consequently, breast self-examination (BSE) and clinical breast examination (CBE) continue to play an important role, although such options are not as clinically sensitive as mammography and are no longer recommended in advanced countries [5]. Therefore, the BC screening tools accepted in Ghana are BSE, CBE, and mammography.

In Ghana, there is no national screening programme for BC. Individuals are, therefore, encouraged to be "breast aware" and engage in breast screening. Recent years have been characterised by an increase in the activities of some governmental and non-governmental organisations in creating awareness about BC and advocating the benefits of early detection through breast screening and early treatment. Yet more than half of those with BC report late to the hospital [4]. Findings from a study indicate that the late presentation of these BC cases is due to various reasons, including ignorance [6]. A systematic review has revealed a paucity of publications in the sub-Saharan region on the knowledge, attitudes and practices concerning BC. These reviews have discovered varying levels of knowledge among various populations and various categories of women. The resounding trend, however, is the rather poor breast screening practices throughout the sub-region [7].

A few studies conducted among Ghanaian women have further revealed a deficiency in knowledge about the disease [8,9]. Studies conducted in LMIC on the knowledge, attitude and practice of BC screening among healthcare workers have shown that female health professionals need more education on the practice of BC screening [10-16]. To the best of our knowledge, little research has been conducted in Ghana on the knowledge, attitude and practice of BC screening among practising female nurses [1]. One study conducted among Ghanaian nursing students found that good knowledge about BC and BSE is attributable to its inclusion in their curriculum and professional training. However, it was found that the actual practice of BSE by these students was poor [17]. Similarly, two available studies among practising nurses reveal a good knowledge base but a poor uptake of breast screening [18,19].

Nurses, who are mostly the first point of contact for patients, are strategically front-lined to educate patients on BC and BC screening. Well-informed nurses can create breast awareness and encourage community members within and outside of the hospital environment to get involved in health-promoting behaviours, including regular breast screening. Invariably, this results in early detection and appropriate treatment, eventually leading to reduced BC-related mortality [20,21]. Nurses are, therefore, major stakeholders in this quest. Bailey [20] and Harmer [21] have illustrated the important role of the practising nurse in BC awareness and empowerment of patients. The knowledge base of nurses in Ghana needs to be explored as a basis for developing programmes targeted at equipping nurses to be front liners in BC awareness creation. The aim of this study was to evaluate the knowledge of BC risk factors and symptoms, attitudes towards BC and the BC screening practices among female nurses at a tertiary hospital in Ghana. This study expands the repository of emerging literature on BC awareness and screening practices among healthcare professionals in LMICs.

MATERIALS AND METHODS

Study design and sites

This was a cross-sectional descriptive study utilising a self-administered closed-ended questionnaire including only full-time female nurses at Korle-Bu Teaching Hospital (KBTH) from the departments of Surgery, Medicine, Child Health and Obstetrics and Gynaecology. The study was carried out from October to November 2022. It was pretested among female nurses at the Korle-Bu Polyclinic. Written informed consent was obtained from each participant after the procedure had been explained, and the option was given to withdraw at any stage. Nursing students and male nurses were excluded. The questionnaire comprised four main sections: 6 questions on demography, 15 questions on knowledge of BC risk factors, 7 questions on signs and symptoms of BC, and 5 questions on attitude should a person develop BC and the practice of BSE, CBE and mammography.

Statistical analysis

Stata® 14 software was used to analyse the data. Continuous variables were reported as median with interquartile range (IQR), and categorical variables were presented as frequency and percentages. Knowledge of the signs and symptoms of BC was based on the correctness of a set of 7 non-weighted questions, whilst knowledge of the risk factors of BC was based on a set of 15 non-weighted questions. Descriptive analysis was used to determine the level of knowledge of BC (BC) and breast self-examination (BSE) and the practice of BSE among the study participants. The level of knowledge and practice was categorised into good (≥ 75%), satisfactory (50 - 74%) and poor (< 50%). For the logistic regression analysis, adequate knowledge was determined by correct answers of ≥ 50% (i.e. categories "good" and satisfactory") and inadequate knowledge by category "poor" (< 50%). A logistic regression analysis was carried out to determine the socio-demographic factors associated with inadequate knowledge of the signs and symptoms of BC and the risk factors of BC. In addition, a logistic regression analysis was carried out to determine the socio-demographic factors associated with the practice of BSE, CBE and agreeing to mastectomy. A two-tailed p-value < 0.05 was considered statistically significant.

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RESULTS

A total of 287 nurses were interviewed, with a median age of 30.0 (IQR: 26.0 - 36.0) years. Table 1 shows the socio-demographic characteristics of the study participants.

Knowledge of whether BC is curable

The majority of the nurses (68.6%, n = 197) believed that BC is curable. A total of 106 nurses have experience working with BC patients, of which 64% (n = 68) believed BC to be curable. Of the 181 nurses who had never worked with BC patients, 71% (n = 129) also believed BC to be a curable disease, with no significant statistical difference between the two groups (p = 0.210).

Knowledge of the signs and symptoms of BC

Table 2 shows the knowledge levels on the signs and symptoms of BC, which were mostly good (> 75% correct answers), with breast lump being the most common symptom identified (95.5%). Knowledge was satisfactory (50 – 74% correct answers) for the presence of a lump in the armpit (71.8%) and that BC is not usually associated with pain in its initial stage (70.7%). Table 3 shows an analysis of factors associated with inadequate knowledge of the signs and symptoms of BC among the study participants. The increasing age of the study participants was associated with decreasing odds of inadequate knowledge of the signs and symptoms of BC (OR = 0.91 [95% CI, 0.84 - 0.97], p = 0.006). In addition, study participants with a Nursing Diploma as the highest professional qualification were at increased odds (OR = 3.9 [95% CI, 1.69 - 8.98], p = 0.001) of having inadequate knowledge of the signs and symptoms of BC compared with those with a Nursing Degree (Table 3).

Knowledge of risk factors for developing BC

Table 2 shows the knowledge levels of the risk factors for developing BC. A total of 93.7% correctly identified family history as a risk factor. Knowledge of late menopause (47%), nulliparity (39%) and childbirth after age 35 (40.8%) risk factors was poor (< 50% correct answers). Knowledge of increasing age (58.9%), early menarche (50.5%), obesity (56.4%), not breastfeeding (50.5%), and oral contraceptive use (58.2%) as risk factors were all on the lower border of satisfactory. A proportion of nurses had a misconception that putting objects such as money (42.2%) and mobile phones (47.4%) in brassiere are risk factors, as well as wearing underwire brassieres (20.9%), sleeping with brassieres (26.8%) and using deodorant (8.4%) could also cause BC.

Logistic regression analysis indicated that increasing age was marginally associated with decreased odds of inadequate knowledge of the risk factors for BC (OR = 0.97 [95% CI, 0.97 - 1.00], p = 0.045) (Table 3). Further analysis

Table 1. Demographic characteristics of study participants

Characteristic	Frequency (N= 287)	Percentage (%)
Age, median [IQR], years	30.0 [26.0-36.0]	
Age groups (years)		
20 – 30	138	50.5
31 – 40	98	35.9
41 – 50	18	6.6
>50	19	7.0
Marital Status		
Married	149	51.9
Single	132	46.0
Widowed/divorced	6	2.1
Religion		
Christianity	274	96.1
Islam	10	3.5
Traditional	1	0.4
Nursing Qualification		
Nursing Diploma	138	48.1
Nursing Degree	149	51.9
BC OPD		
Yes	106	36.9
No	181	63.1
Working years		
< 10 years	222	77.4
11 – 20 years	40	13.9
21 – 30 years	13	4.5
> 30 years	12	4.2

IQR=Interquartile range; BC=BC; OPD=Out-patient department

Table 2. Knowledge on signs and symptoms and risk factors of BC

Characteristic	Correct answer n, %[1]	Incorrect answer n, %[1]
Signs and Symptoms of BC		
Usually painful	203 (70.7)	84 (29.3)
Breast lump	274 (95.5)	13 (4.5)
Lump in armpit	206 (71.8)	81 (28.2)
Ulcer on breast	220 (76.7)	67 (23.3)
Swelling of breast	230 (80.1)	57 (19.9)
Bloody nipple discharge	233 (81.2)	54 (18.8)
Deformation of breast shape	237 (82.6)	50 (17.4)
Risk factors of BC		
Family history	269 (93.7)	18 (6.3)
Increasing age	169 (58.9)	118 (41.1)
Early menarche	145 (50.5)	142 (49.5)
Late menopause	135 (47.0)	152 (53.0)
Nulliparity	112 (39.0)	175 (61.0)
Obesity	162 (56.4)	125 (43.6)
Not breastfeeding	145 (50.5)	142 (49.5)
Oral contraceptive pill	167 (58.2)	120 (41.8)
Hormone replacement therapy	178 (62.0)	109 (38.0)
First childbirth after 35 years	117 (40.8)	170 (59.2)
Money in brassiere	166 (57.8)	121 (42.16)
Mobile phone in brassiere	151 (52.6)	136 (47.4)
Use of deodorant	263 (91.6)	24 (8.4)
Brassiere with underwire	227 (79.1)	60 (20.9)
Sleeping with brassiere	210 (73.2)	77 (26.8)

[1] Row percentage

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Table 3. Factors associated with inadequate knowledge on signs & symptoms and risk factors of BC

Characteristic	Knowledge status on signs and symptoms of BC		Odds ratio [95% CI]	p-value	Knowledge status on risk factors of BC		Odds ratio [95% CI]	p-value
	Inadequate n, %[1]	Adequate n, %[1]			Inadequate n, %	Adequate n, %[1]		
Age, median [IQR], years	26.0 [25.0-33.0]	31.0 [27.0-36.0]	0.91 [0.84-0.97]	0.006	30.0 [27.0-34.0]	31.0 [26.0-37.0]	0.97 [0.93-1.00]	0.045
Age groups, years								
21 – 30	21 (15.2)	117 (84.8)	1.00		53 (38.4)	85 (61.6)	5.30 [1.18-23.87]	0.030
31 – 40	6 (6.1)	92 (93.9)	0.36 [0.14 – 0.94]	0.036	29 (29.6)	69 (70.4)	3.57 [0.78-16.47]	0.102
41 – 50	1 (5.6)	17 (94.4)	0.33 [0.04 – 2.60]	0.291	5 (27.8)	13 (72.2)	3.27 [0.54-19.62]	0.195
>50	0 (0.0)	19 (100.0)	N.E	0.078*	2 (10.5)	17 (89.5)	1.00	
Marital Status								
Married	15 (10.1)	134 (89.9)	1.00		51 (34.2)	98 (65.8)	1.00	
Single	18 (13.6)	114 (86.4)	1.41 [0.68 – 2.92]	0.355	45 (34.1)	87 (65.9)	0.99 [0.61 – 1.63]	0.981
Widower/ divorced	0 (0.0)	6 (100.0)	NE	1.000*	1 (16.7)	5 (83.3)	0.38 [0.04 – 3.38]	0.389
Religion								
Christianity	32 (11.7)	242 (88.3)	1.00		94 (34.3)	180 (65.7)	1.00	
Islam	1 (10.0)	9 (90.0)	0.84 [0.10 – 6.85]	0.871	2 (20.0)	8 (80.0)	0.48 [0.10 -2.30]	0.358
Traditional	0 (0.0)	1 (100.0)	NE	1.000*	1 (100.0)	0 (0.0)	N.E	0.346*
Nursing qualification								
Nursing Degree	8 (5.4)	141 (94.6)	1.00		41 (27.5)	108 (72.5)	1.00	
Nursing Diploma	25 (18.1)	113 (81.9)	3.90 [1.69 – 8.98]	0.001	56 (40.6)	82 (59.4)	1.80 [1.10 – 2.95]	0.020
BC OPD								
Yes	11 (10.4)	95 (89.6)	1.00		28 (26.4)	78 (73.6)	1.00	
No	22 (12.2)	159 (87.8)	1.19 [0.55 – 2.57]	0.649	69 (38.1)	112 (61.9)	1.72 [1.01 – 2.90]	0.044
Working years								
< 10 years	30 (13.5)	192 (86.5)	1.71 [0.53 – 5.47]	0.368	82 (36.9)	140 (63.1)	2.93 [0.63-13.69]	0.172
11 – 20 years	2 (5.0)	38 (95.0)	1.50 [0.41 – 5.48]	0.540	12 (30.0)	28 (70.0)	2.14 [0.41-11.29]	0.369
21 – 30 years	1 (7.7)	12 (92.3)	0.63 [0.13 – 3.07]	0.562	1 (7.7))	12 (92.3)	0.42 [0.03 – 5.30]	0.500
> 30 years	0 (0.0)	12 (100.0)	1.00		2 (16.7)	10 (83.3)	1.00	

*Fisher's two-sided exact test; [1]Row percentages; NE=Not estimable; IQR=Interquartile range; BC=BC; OPD=Out-patient department

Table 4. Factors associated with disagreeing to mastectomy if diagnosed with BC

Characteristic	Will disagree to Mastectomy n, %[1]	Will agree to Mastectomy n, %[1]	Odds ratio [95% CI]	p-value
Age, median [IQR], years	30.0 [26.0-35.0]	32.0 [27.0-37.0]	0.97 [0.96-1.00]	0.083
Age groups, years				
21 – 30	93 (67.4)	45 (32.6)	2.30 [0.87 – 6.05]	0.092
31 – 40	46 (46.9)	52 (53.1)	0.98 [0.37 – 2.63]	0.973
41 – 50	12 (66.7)	6 (33.3)	2.22 [0.59 – 8.41]	0.240
>50	9 (47.4)	10 (52.6)	1.00	
Marital Status				
Married	81 (54.4)	68 (45.7)	1.00	
Single	86 (65.2)	46 (34.9)	1.57 [0.97-2.54]	0.067
Widowed/divorced	5 (83.3)	1 (16.7)	4.20 [0.48-36.80]	0.195
Religion				
Christianity	164 (60.1)	109 (39.9)	1.00	
Islam	5 (50.0)	5 (50.0)	0.66 [0.19 – 2.34]	0.520
Traditional	0 (0.0)	1 (100.0)	N.E	0.402*
Nursing Qualification				
Nursing Degree	77 (51.7)	72 (48.3)	1.00	
Nursing Diploma	95 (68.8)	43 (31.2)	2.07 [1.27 – 3.35]	0.003
BC OPD				
Yes	61 (57.5)	45 (42.5)	1.00	
No	111 (61.3)	70 (38.7)	1.16 [0.72 – 1.95]	0.529
Working years				
< 10 years	138 (62.2)	84 (37.8)	1.64 [0.51 – 5.26]	0.403
11 – 20 years	20 (50.0)	20 (50.0)	1.00 [0.28 – 3.63]	1.000
21 – 30 years	8 (61.5)	5 (38.5)	1.60 [0.33 – 7.85]	0.562
> 30 years	6 (50.0)	6 (50.0)	1.00	

*Fisher's two-sided exact test; [1]Row percentages; NE=Not estimable; IQR=Interquartile range; BC=BC; OPD=Out-patient department

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indicated that study participants with Nursing Diploma (OR = 1.80 [95% CI, 1.10 - 2.95], p = 0.020) and those who did not have any BC working experience (OR = 1.72 [95% CI, 1.01 - 2.90], p = 0.044) were significantly associated with increased odds of inadequate knowledge of the risk factors for BC (Table 3).

Knowledge of BC screening methods

The majority of nurses correctly identified the methods of BC screening as breast self-examination (95.8%), clinical breast examination (95.1%), and mammography (87.1%). Only 36.2% of the nurses correctly identified mammography as a diagnostic and screening tool, 48.4% thought it was purely for diagnosis, and 15.3% for screening. A total of 45.8% correctly knew the age to start mammographic screening to be 40 years. There was good knowledge of the technique for breast self-examination. A total of 95.1% knew the procedure involved standing in front of a mirror, 88.8% used the finger pads to examine the breast, 81.9% examined the armpit and 84.3% checked for nipple discharge. However, 55.4% wrongly identified fingertips for examination of the breast. Whilst 77% correctly knew BSE is done monthly, 79.4% also knew that BSE is done 1 week after the menses, and 11.8% believed the timing was unrelated to the menstrual cycle.

Attitude to BC

A total of 88.5% of nurses would see a doctor within a month of noticing a breast lump, and 10.1% within 3 months. A total of 80% of nurses admitted they would be scared if they were diagnosed with BC, and as much as 60% would refuse a mastectomy. However, 4% responded that they would not consult a doctor, 4% would go to a prayer house, and 3.5% would use traditional medicine. Further analysis revealed that nursing qualification was significantly associated with the acceptance of mastectomy (p-value 0.003), and Diploma Nurses were twice at increased odds of refusing mastectomy compared with Degree Nurses (Table 4).

The practice of BC screening methods

A total of 67.2% of nurses perform BSE regularly, and 32.7% do not. For those who do perform BSE, 64.5% do so monthly, 8.8% weekly, 6.2% daily, and 16.6% admit that the intervals vary. Most of the study participants who performed BSE (71%) did it one week after their menses, 22% did not time it with their menstrual cycle, 5% did so midcycle, and 2% did it during their menses. The analysis of data in Table 5 did not reveal any socio-demographic factors significantly associated with BSE performance. Regarding clinical breast examination, 39.3% (n = 112) had previously done a clinical breast examination. Young age (21 - 30 and 31 - 40 years) was found to have an increased odds of not having done a clinical breast examination compared with older study participants (> 50 years) (p < 0.05) (Table 5). A total of 58 nurses were aged 40 years and

Table 5. Factors associated with practice of BSE and CBE

Characteristic	Do not perform BSE n, %[1]	Performs BSE n, %[1]	Odds ratio [95% CI]	p-value	Do not perform CBE n, %[1]	Performs CBE n, %[1]	Odds ratio [95% CI]	p-value
Age, median [IQR], years	30.5 [26.0-35.3]	30.0 [26.0-36.0]	0.98 [0.95-1.01]	0.249	30.0 [26.0-35.0]	30.0 [27.0-38.0]	0.97 [0.94-1.00]	0.056
Age groups								
21 - 30	45 (32.6)	93 (67.4)	2.58 [0.72 – 9.31]	0.148	85 (61.6)	53 (38.4)	2.75 [1.02 – 7.42]	0.046
31 - 40	37 (37.8)	61 (62.2)	3.23 [0.88-11.86]	0.076	65 (66.3)	33 (33.7)	3.38 [1.22 – 9.38]	0.020
41 - 50	5 (27.8)	13 (72.2)	2.05 [0.41-10.24]	0.381	11 (61.1)	7 (38.9)	2.69 [0.71-10.18]	0.144
>50	3 (15.8)	16 (84.2)	1.00		7 (36.8)	12 (63.2)	1.00	
Marital Status								
Married	50 (33.6)	99 (66.4)	1.00		90 (60.4)	59 (39.6)	1.00	
Single	44 (33.3)	88 (66.7)	0.99 (0.60 – 1.63)	0.968	83 (62.9)	49 (37.1)	1.11 [0.69 – 1.80]	0.670
Widowed/divorced	0 (0.0)	6 (100.0)	N.E	0.178*	2 (33.3)	4 (66.7)	0.33 [0.06 – 1.85]	0.206
Religion								
Christianity	87 (31.7)	187 (68.3)	1.00		164 (59.8)	110 (40.2)	1.00	
Islam	5 (50.0)	5 (50.0)	2.15 [0.61 – 7.62]	0.236	9 (90.0)	1 (10.0)	6.04 [0.75-48.32]	0.090
Traditional	1 (100.0)	0 (0.0)	NE	0.320*	1 (100)	0 (0.0)	N.E	1.000*
Nursing Qualification								
Nursing Degree	48 (32.2)	101 (67.8)	1.00		90 (60.4)	59 (39.6)	1.00	
Nursing Diploma	46 (33.3)	92 (66.7)	1.05 [0.64 – 1.72]	0.840	85 (61.6)	53 (38.4)	1.05 [0.65 – 1.69]	0.836
BC OPD								
Yes	31 (29.3)	75 (70.7)	1.00		60 (56.6)	46 (43.4)	1.00	
No	63 (34.8)	118 (65.2)	1.29 [0.77 – 2.17]	0.333	115 (63.5)	66 (36.5)	1.34 [0.82 – 2.18]	0.246
Working years								
< 10 years	73 (32.9)	149 (67.1)	2.45 [0.52-11.47]	0.255	140 (63.1)	82 (36.9)	1.71 [0.53 – 5.47]	0.368
11 – 20 years	14 (35.0)	26 (65.0)	2.69 [0.52-14.04]	0.240	24 (60.0)	16 (40.0)	1.50 [0.41 – 5.48]	0.540
21 – 30 years	5 (38.5)	8 (61.5)	3.12 [0.47-20.58]	0.236	5 (38.5)	8 (61.5)	0.63 [0.13 – 3.07]	0.562
> 30 years	2 (16.7)	10 (83.3)	1.00		6 (50.0)	6 (50.0)	1.00	

*Fisher's two-sided exact test; 1Row percentages; NE=Not estimable; IQR=Interquartile range; BSE=Breast self-examination; CBE=Clinical breast examination

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Table 6. Reasons for not screening breasts; BSE, CBE and Mammogram

Reason for not screening breast	Frequency	Proportion (%)
Reason for not performing Breast Self-Examination	N=94	
Do not have enough time	4	4.3
Forget to perform it	56	59.6
Do not know how to perform it	9	9.6
Think it is an unnecessary examination	2	2.1
No reason for not doing it	21	22.3
Do not have any risk factor for developing BC	2	2.1
Reason for not performing Clinical Breast Examination	N=174	
Do not have enough time	20	11.5
Forget to get it done	26	14.9
Will be embarrassed to expose my breast	19	10.9
Think it is an unnecessary examination	5	2.9
No reason for not doing it	97	55.8
Do not have any risk factor for developing BC	7	4.0
Reason for not performing mammogram	N=49	
Do not think I'm qualified	2	4.2
Do not have enough time to perform it	2	4.2
Forget to perform it	11	22.9
Think it is an unnecessary	1	2.0
Have no lump in my breast	6	12.5
No reason for not doing it	26	54.2

above, and of these, 15.5% (n = 9) had done a mammogram previously, and the remaining 84.5% (n = 49) had never done a mammogram (Table 6). Reasons for not having had a mammogram done (for study participants with age ≥ 40 years), BSE and CBE are shown in Table 6.

DISCUSSION

This study explored the knowledge, attitude and practices among female nurses at a tertiary hospital in Ghana. The study reports that nurses had good knowledge of BC signs and symptoms, good knowledge of risk factors and good knowledge of the practice of BSE. However, it revealed that there were poor BC screening practices, particularly mammography and also discovered that a large proportion of nurses would not consent to having a mastectomy in the event of being diagnosed with BC. This study has identified age, nursing qualification, and years of working experience with BC patients significantly influence knowledge (on signs and symptoms and risk factors of BC), attitude (towards agreeing to mastectomy if diagnosed with BC) and practices (of breast self-examination and clinical breast examination) of female nurses with regard to BC.

The median age of nurses in this study (30 years) was comparable with other investigations conducted in the western and eastern parts of Africa [11,19]. The nursing workforce is mostly of a young age group, with fewer older and experienced nurses in supervisory positions. In this study, 31% of nurses did not believe that BC is a curable disease, as similarly reported in other countries [10,11], but not as high as 60% of nurses in a Nigerian study [22]. This belief was irrespective of whether they had experience working with BC patients or not. The perception that BC is not curable could be due to the exposure of nurses to the countless late-stage diseases on admission in hospitals and their limited interaction with the very few BC survivors. It is ironic, though, that a smaller proportion (10%) of women in the Ghanaian public rather believe BC to be non-curable [9]. In Ethiopia, only 5.6% of nurses believed that BC was not curable [23].

Unsurprisingly, we found breast lumps to be the most commonly known symptom of BC (96% of respondents), as in other countries [23,24]. However, it should be common knowledge among nurses that early BC is usually painless, but this was so for only 71% of respondents, though it was better than for nurses in Ethiopia and Iran [23,24]. It is not surprising, then, that a cross-section of women in Ghana believed breast pain to be the most common symptom, second only to breast lump [9]. This widely held perception that cancer is a painful disease has misled numerous women to present with advanced disease. Like other studies, the commonest risk factor identified by respondents is family history [16,23]. In tandem with information in the non-hospital community, other risk factors were perceived to be due to putting objects such as money and mobile phones in a brassiere, wearing underwire brassieres, sleeping with brassieres and using deodorant. Other perceived risk factors were tight brassieres, prolonged breastfeeding, cracked nipples, spiritual causes, men sucking breasts [8,17,22,23,25] and trauma to the breasts [26]. In comparison to previous studies among the Ghanaian general public, nurses' knowledge of signs, symptoms and risk factors for BC was found to be higher [8,9].

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Almost all nurses successfully identified BSE, CBE and mammography as BC screening methods, which was higher than reported for student nurses [17]. However, less than half of the nurses in this study knew the recommended age to start screening mammograms (40 years), which was better than the 28% reported for Ethiopian nurses [23] but not comparable with the 73% reported for nurses in a Saudi Arabian study [27]. Knowledge of the technique of BSE was good, with the majority (77%) of nurses being aware that it is performed one week after menstruation (79%), similar to nurses' knowledge in previous publications [23,27]. Comparing the findings of this study with previous work done in Ghana, knowledge about BC is higher among nurses than the general public [8,9]. Research done in Nigeria clearly demonstrated that despite nurses being more knowledgeable on all aspects of BC, they did not have better breast screening practices than non-health professionals. Ironically, the non-health professionals had higher mammography uptake levels than nurses, but the difference was not statistically significant. In addition, it was found that approximately 40% of both groups of women shared the belief that prayer is a treatment option for BC [28]. It is encouraging that about 67% of nurses in this study do regularly perform BSE, mostly at monthly intervals and a week after menstruation, as did a cross-section of University nursing students (17); this finding was higher than the BSE rate in a cross-section of Ghanaian women [8,9,25]. A systematic analysis has revealed differing knowledge levels of BSE across sub-Saharan Africa and rather low levels of BSE practice [7]. The BSE rate in Poland is 56% [29].

A total of 39% of participants previously had a CBE, which was only a little higher than their counterparts in other Ghanaian hospitals (32%) [19] and even less in other studies [27]. Study participants above 40 years were aware they were candidates for screening mammograms, although the majority (85%) of them had not done so for no particular reason, or due to forgetfulness or because they were asymptomatic, as similarly reported among the general public [8] and similar to the behaviour of nurses in other Ghanaian hospitals [19], Nigeria [16] and Eritrea [11]. A study among female health professionals (doctors, nurses, and pharmacists) reported an impressive BSE uptake of 91%, but CBE was only 38% and none of those who qualified had done a mammogram [22]. The generally low levels of BSE, CBE and mammography practices among nurses in Ghana have been found to be due to their belief that BC screening is not beneficial, in addition to the reasons found in this study [19]. A recent publication from Sudan studied medical and non-medical female workers in a hospital. BC knowledge levels were higher in the medics. Positive attitude was comparable in both groups, the practice of BSE and CBE was very poor, and mammographic screening was not practised by either group [30].

By virtue of their professional training, it is a reasonable expectation that, unlike the public, nurses would report any breast symptoms promptly to the hospital and comply fully with treatment if diagnosed with BC. An unconventional metric introduced in this study was asking the respondents what their reaction would be if they were diagnosed with BC. This study discovered that approximately as much as 10% of nurses would wait for more than a month before reporting a breast lump to a doctor. This is similar to what has been reported to the general public [17]. Furthermore, an overwhelming 60% would refuse a mastectomy. The observation was in sharp contrast with 20% of nurses in an Eritrean study who would also not agree with a mastectomy [11]. This aversion to mastectomy may be attributed to the deeply held beliefs in the community, of which fear of mastectomy and spiritual beliefs are a significant cause of delayed presentation to the hospital and defaulting from treatment [6,8]. Unfortunately, this means nursing training/education has not transformed the fundamental beliefs and behaviour of female nurses regarding breast health. Nurses with diploma were twice as likely to refuse mastectomy (compared with degree nurses), even though a large proportion (52%) of degree nurses also would refuse mastectomy. This observation suggests the need for intensive BC education among nurses at all levels of nursing training institutions in the country. Anecdotally, in Ghana, it is known that various categories of health professionals have been known to hide huge breast lumps and refuse various treatment options, especially chemotherapy and mastectomy. It is not surprising that this study found that 4% of respondents would rather not see a doctor, would go to a prayer house and/or would use unapproved traditional medicine. An insightful study from Turkey revealed that there were high levels of fear in 72% of nurses, and this was not influenced by adequate knowledge levels about BC. Ninety-four (94%) of respondents admitted that spirituality was important in dealing with disease. The majority of nurses opted for spiritual coping mechanisms, and fewer opted for alternate coping mechanisms [31].

This study has identified age, nursing qualification, years of experience working with BC patients, and years of experience working with knowledge of BC signs, symptoms and risk factors among nurses (Tables 3 and 5). Older nurses were at increased odds of having had a clinical breast examination (compared with the younger nurses), which reflects their better knowledge of BC issues. We also found that diploma nurses had twice the odds of refusing mastectomy compared with degree nurses (Table 6), which is probably a likely reflection of their poor knowledge of BC. Nurses and other health professionals in the community are usually the first point of contact, and a person's next line of action is influenced by their opinion. Indeed, a study revealed that approximately 40% of newly diagnosed BC patients had already had a previous medical consultation before reporting to a treatment centre [6]. It is crucial, then, that nurses put out accurate, evidence-based information in order to guide decision-making. Publications by Bailey [20] and Harmer [21] highlight the

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pivotal role of nurses in BC screening and prevention through teaching breast awareness and health-promoting behaviours. They advocate that nurses play a central role in encouraging women to perform regular BSE, mammograms and other health-promoting behaviours [20,21]. In this study, we similarly align with the postulation that many female nurses render a unique opportunity to identify with women and empower them to be responsible for their health. Well-trained and well-informed nurses can teach (through demonstration) how to correctly perform BSE, give accurate information on signs, symptoms and risk factors of BC and what to do to find any relevant symptoms whilst emphasising the importance of CBE and mammograms. In the absence of national screening programs, this will lead to early detection, which gives the patient an excellent chance of getting a cure. In the event of a BC diagnosis, nurses are required to give the necessary counsel and support to encourage patients to comply with treatment and, hence, avert the myths and misconceptions surrounding treatment that have pervaded society.

The limitations of this present study include the fact that only female full-time nurses at a single facility were recruited, which may limit the generalizability of the study findings to the broader nursing population of Ghana. Additionally, a comparative analysis with other female health professionals and non-health professionals was not done. This study is also limited by the lack of a qualitative analysis to explore the underlying reasons for the poor screening practices, fear of mastectomy and possible systemic barriers to screening.

Conclusion

This study found that the knowledge of nurses on BC regarding signs and symptoms, risk factors and the practice of BSE does not translate into good BC screening practices, particularly mammography. An overwhelming 60% of nurses admitted they would disagree with a mastectomy in the event of being diagnosed with BC. Accordingly, we recommend that nursing training programs include curricula to improve breast screening and overall breast health practices. In addition, hospital staff welfare/healthcare programs should include annual breast screening and mammography. Nursing education should focus on the curability of BC, its treatment options and survivorship to help overcome the fear and stigma associated with mastectomy.

Future research should include other health professional groups and in-depth interviews to explore the reasons for these findings.

DECLARATIONS

Ethical consideration

Ethical approval was obtained from the Institutional Review Board of Korle-Bu Teaching Hospital for Medical Research (KBTH-IRB) (protocol ID KBTH-STC/IRB/000158/2021). Written informed consent was obtained from each participant after the procedure had been explained, and the option was given to withdraw at any stage.

Consent to publish

All authors agreed on the content of the final paper.

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Competing Interest

The authors declare no conflict of interest

Author contribution

JN and YBA conceived and designed the study. JN and ETN gave conceptual advice. ETN and JN did the statistical analysis and drafted the manuscript. JN, YBA and ETN reviewed and edited the manuscript. All authors read and approved the final version of the manuscript.

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Availability of data

Data is available upon request to the corresponding author

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