# Assessment of Knowledge and Practice of Breast Self-Examination among Student Nurses in Kogi State, Nigeria

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**Abstract**

**Background:** Breast cancer remains a major public health problem among women globally and in Nigeria. Breast self-examination is a simple, low-cost, and accessible breast aware--ness practice that may encourage early detect--ion and prompt health-seeking. Student nur--ses are expected to have adequate knowledge and good practice of BSE because of their future role as health educators.

**Aim:** This study assessed the knowledge and practice of breast self-examination as a preventive measure of breast cancer among student nurses in Kogi State, Nigeria.

**Methods:** A descriptive cross-sectional study was conducted among 320 student nurses in selected nursing institutions in Kogi State. Data were collected using a structured self-administered questionnaire. The questionnaire assessed socio-demographic characteristics, knowledge of BSE, sources of information, practice of BSE, attitude, and perceived barriers. Data were analysed using descriptive statistics, chi-square test, and binary logistic regression. Statistical significance was set at $p < 0.05$.

**Results:** Most respondents were female, 294 (91.9%), and the largest age group was 20–24 years, 178 (55.6%). Overall, 222 (69.4%) respondents had good knowledge of BSE, while 97 (30.3%) had moderate knowledge. Although 191 (59.7%) had ever practised BSE, only 96 (30.0%) practised it monthly. Good BSE practice was recorded among 111 (34.7%) respondents. Knowledge level was significantly associated with good BSE practice ($\chi^2 = 11.166$, $p = 0.004$). Level of study was also significantly associated with BSE practice ($\chi^2 = 7.963$, $p = 0.019$). Logistic regression showed that respondents with good knowledge were more likely to have good BSE practice (AOR = 2.18, 95% CI: 1.20–3.98, $p = 0.011$).

**Conclusion:** Student nurses in Kogi State had good knowledge of BSE, but regular and correct practice was low. The findings show a knowledge-practice gap and suggest the need for practical demonstration, repeated training, and reminder systems to improve BSE practice among student nurses.

**Keywords:**
breast cancer; breast self-examination; knowl--edge; practice; student nurses; Kogi State

## 1. Introduction

Breast cancer remains one of the most serious public health challenges affecting women globally. It is a malignant disease that results from the uncontrolled growth of abnormal breast cells, with the potential to invade surrounding tissues and metastasize to distant organs if not detected and treated early. Globally, breast cancer is the most commonly diagnosed cancer among women and continues to contribute substantially to cancer-related morbidity and mortality. The World Health Organization reported that approximately 2.3 million women were diagnosed with breast cancer in 2022, while about 670,000 deaths occurred from the disease in the same year (WHO, 2024). This burden is not evenly distributed, as women in low- and middle-


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income countries often experience poorer outcomes due to delayed diagnosis, limited screening services, poor awareness, and restricted access to timely and effective treatment. In Nigeria, breast cancer represents a major cancer burden among women. According to the Global Cancer Observatory, Nigeria recorded an estimated 32,278 new cases of breast cancer and 16,332 deaths in 2022, making breast cancer one of the leading causes of cancer morbidity and mortality in the country (IARC, 2024). The high mortality associated with breast cancer in Nigeria is often linked to late presentation, inadequate awareness of early warning signs, fear, cultural beliefs, poverty, limited access to diagnostic facilities, and poor uptake of screening and early detection practices. These factors make breast cancer prevention, awareness, and early detection important public health priorities. Early detection is central to reducing the burden of breast cancer. When breast cancer is detected early and treated appropriately, survival outcomes are generally better. Strategies for early detection include breast awareness, breast self-examination, clinical breast examination, and mammography, depending on age, risk level, and availability of services. In many low-resource settings, mammography services are either unavailable, unaffordable, or underutilized; therefore, breast self-examination remains a simple, inexpensive, non-invasive, and accessible breast awareness practice. Although breast self-examination is not a replacement for clinical screening or diagnostic confirmation, it can help women become familiar with the normal appearance and feel of their breasts and encourage prompt reporting of unusual changes.

Breast self-examination involves the regular observation and palpation of the breasts by an individual to identify possible abnormalities such as lumps, nipple discharge, breast pain, skin dimpling, nipple retraction, swelling, or changes in breast shape and size. It is commonly recommended as a monthly practice, especially a few days after menstruation when the breasts are less likely to be tender or swollen. For women who do not menstruate, choosing a fixed day each month may improve consistency. Correct knowledge of the timing, frequency, and technique of BSE is essential because poor technique or irregular practice may reduce its usefulness as a breast awareness behaviour.

Student nurses are a particularly important group in breast cancer prevention and early detection research. As future health professionals, they are expected to have adequate knowledge of breast cancer and demonstrate appropriate preventive health practices. They are also expected to educate patients, families, and communities on breast health, early warning signs, and the importance of timely health-seeking. Therefore, their level of knowledge and practice of BSE may influence not only their personal health behaviour but also their future role as health educators and advocates. If student nurses have poor knowledge or inconsistent practice of BSE, this may limit their ability to effectively promote breast cancer awareness among the wider population. Studies conducted among female students and health trainees in Nigeria have shown that awareness of BSE does not always translate into regular and correct practice. For example, recent Nigerian evidence indicates that educational intervention can significantly improve knowledge, attitude, and practice of breast self-examination among female university students, suggesting that structured education plays an important role in improving breast health behaviour (Uruntie et al., 2024). However, despite awareness campaigns and inclusion of breast health topics in health-related programmes, gaps may still exist in students' knowledge of correct BSE technique, timing, and monthly practice.

In Kogi State, student nurses represent a strategic population for promoting breast cancer awareness because of their training, clinical exposure, and future professional responsibilities. However, there is limited documented evidence on their knowledge and practice of breast self-examination as a preventive measure against breast cancer. Understanding their knowledge level, practice pattern, and factors influencing BSE practice is important for improving nursing education and strengthening breast cancer prevention programmes. This study therefore assessed the knowledge and practice of breast self-examination as a preventive measure of breast cancer among student nurses in Kogi State, Nigeria.


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## 2. Literature Review

### 2.1 Conceptual Review

#### 2.1.1 Concept of Breast Cancer

Breast cancer is a malignant disease that occurs when abnormal breast cells grow uncontrollably and acquire the capacity to invade surrounding tissues or spread to distant organs. It remains a major public health challenge because of its high incidence, treatment cost, psychological burden, and mortality, especially when diagnosis occurs at advanced stages. Globally, breast cancer is one of the most frequently diagnosed cancers among women and one of the leading causes of cancer-related death (WHO, 2026; Sung et al., 2021; American Cancer Society, 2024). Although the disease predominantly affects women, men can also develop breast cancer, although male breast cancer accounts for a very small proportion of total cases (WHO, 2026).

The burden of breast cancer varies across regions. High-income countries often have higher incidence rates because of population ageing, reproductive patterns, screening availability, and lifestyle-related risk factors. However, mortality is disproportionately high in low- and middle-income countries because of delayed diagnosis, inadequate awareness, weak referral systems, poor access to screening, financial barriers, and limited availability of specialized oncology care (Sung et al., 2021; WHO, 2026; Lei et al., 2021). This difference between incidence and mortality highlights the importance of early detection and timely treatment. In Nigeria, breast cancer remains the leading female cancer and a major contributor to cancer mortality. The Global Cancer Observatory reported that Nigeria recorded over 32,000 new breast cancer cases and more than 16,000 breast cancer deaths in 2022 (IARC, 2024). The Nigerian breast cancer burden is worsened by late presentation, cultural misconceptions, poor screening uptake, inadequate awareness of warning signs, limited diagnostic services, and fear of diagnosis (IARC, 2024; Gabriel et al., 2016; Yusuf et al., 2023). These contextual challenges make prevention education and early detection practices highly relevant.

#### 2.1.2 Breast Cancer Risk Factors and Warning Signs

Breast cancer is influenced by both non-modifiable and modifiable risk factors. Non-modifiable risk factors include being female, increasing age, family history of breast cancer, genetic predisposition, early menarche, late menopause, and previous history of breast disease (American Cancer Society, 2024; WHO, 2026). Modifiable or lifestyle-related risk factors include obesity, physical inactivity, alcohol use, some reproductive patterns, and hormonal exposures (Sung et al., 2021; Lei et al., 2021). Although many women diagnosed with breast cancer may not have a strong family history, awareness of risk factors can improve personal risk perception and encourage preventive health behaviours (WHO, 2026).

Common warning signs of breast cancer include a painless breast lump, change in breast size or shape, nipple discharge, nipple retraction, breast pain, skin dimpling, swelling, redness, thickening of the breast skin, and lump in the armpit. Knowledge of these warning signs is essential because breast cancer outcomes are generally better when symptoms are recognized early and reported promptly to a health facility (WHO, 2026; Gabriel et al., 2016; Yusuf et al., 2023). Among young women and students, awareness of warning signs may also encourage breast awareness and reduce delays in health-seeking.

#### 2.1.3 Concept of Breast Self-Examination

Breast self-examination is a process through which an individual regularly observes and palpates the breasts to identify unusual changes. It involves looking at the breasts in a mirror, checking for changes in shape or skin appearance, palpating the breast tissue using the finger pads, examining both breasts, and checking the armpit area for lumps or swelling (Masawa & Mboineki, 2024; Udoh et al., 2020). BSE is simple, low-cost, private, non-invasive, and can be performed without specialized equipment. These characteristics make it particularly relevant in low-resource settings where access to mammography and clinical breast examination may be limited (Udoh et al., 2020; Gabriel et al., 2016).

Breast self-examination is best understood as a breast awareness practice rather than a replacement for clinical screening or diagnostic evaluation. It helps women become familiar with the normal appearance and feel


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of their breasts, making it easier to notice new or unusual changes. When abnormalities are detected, prompt presentation to a health facility is necessary for clinical examination, imaging, and further diagnosis where indicated (WHO, 2026; Udoh et al., 2020). Therefore, the value of BSE depends not only on performance but also on correct technique, regularity, confidence, and appropriate health-seeking after detecting abnormalities.

The recommended practice is usually monthly examination. For menstruating women, BSE is commonly advised a few days after menstruation when breast tenderness and swelling are reduced. For women who do not menstruate, choosing a fixed date every month may improve consistency (Masawa & Mboineki, 2024; Udoh et al., 2020). Knowledge of timing and technique is important because irregular or incorrect performance may limit the usefulness of BSE.

## 2.2 Theoretical Review

### 2.2.1 Health Belief Model

The Health Belief Model provides a useful framework for explaining breast self-examination behaviour. The model proposes that health behaviour is influenced by perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Sharifirad et al., 2011; Masawa & Mboineki, 2024). In relation to BSE, a student nurse may be more likely to practise regularly if she believes that breast cancer is serious, perceives herself as potentially at risk, understands the benefits of early detection, has confidence in her ability to perform BSE correctly, and receives reminders or educational prompts.

Perceived barriers are especially important in BSE practice. Barriers may include fear of finding a lump, embarrassment, forgetfulness, lack of time, lack of privacy, uncertainty about technique, and the belief that young women are not at risk (Udoh et al., 2020; Sarker et al., 2022a; Israel et al., 2023). Even when knowledge is high, these barriers may prevent regular practice. Therefore, educational interventions should not only provide information but also address fear, misconceptions, confidence, and practical skills. Self-efficacy is another important element of the Health Belief Model. Students who are confident in their ability to perform BSE correctly are more likely to practise than those who lack confidence. Studies have shown that practical demonstration, return demonstration, visual teaching aids, and structured health education can improve knowledge, attitude, confidence, and practice (Sharifirad et al., 2011; Sarker et al., 2022b; Uruntie et al., 2024; Ogunmodede et al., 2024). The Health Belief Model is therefore appropriate for studies examining knowledge, attitude, perceived barriers, and BSE practice among student nurses.

## 2.3 Empirical Review

### 2.3.1 Global Evidence on Breast Cancer Awareness and BSE

Global studies have shown that breast cancer awareness varies widely across populations. In many settings, women may have heard of breast cancer but lack detailed knowledge of warning signs, risk factors, screening methods, and appropriate health-seeking actions (Sung et al., 2021; Lei et al., 2021; American Cancer Society, 2024). Among students, awareness is often influenced by field of study, level of education, prior exposure to health campaigns, family history of breast cancer, and access to health information (Sarker et al., 2022a; Masawa & Mboineki, 2024).

Sarker et al. (2022a), in a cross-sectional study among female university students in Bangladesh, reported gaps in knowledge of breast cancer and breast self-examination, as well as barriers to practice. The study emphasized that awareness alone may not be enough to ensure regular BSE. In another Bangladeshi study, Sarker et al. (2022b) found that an educational intervention improved breast cancer knowledge and BSE-related outcomes among female university students. These findings support the importance of structured educational programmes in improving breast health behaviour.

Mihret et al. (2021) assessed knowledge and practice of BSE among female students at the University of Gondar, Ethiopia, and found that BSE practice was low and associated with knowledge-related factors. Similarly, studies among female undergraduates in Tanzania and other African settings have documented poor or inconsistent practice despite positive attitudes toward BSE (Masawa & Mboineki, 2024; Mengie et al., 2020). These studies suggest that the knowledge-practice gap is not unique to Nigeria but is a broader challenge among young women in tertiary institutions.


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### 2.3.2 Evidence from Sub-Saharan Africa

A scoping review by Udoh et al. (2020) mapped evidence on women's knowledge, attitude, and practice of breast self-examination in sub-Saharan Africa. The review concluded that although many women had heard of BSE and generally expressed favourable attitudes, actual practice was often inadequate or irregular. The review also identified limited knowledge of correct timing, poor technique, fear, and low perceived risk as common barriers to practice. This evidence is relevant to the current study because Nigeria shares many of the same health-system and sociocultural challenges seen across sub-Saharan Africa.

In Ethiopia, Mihret et al. (2021) found that knowledge and practice of BSE among female students were influenced by exposure to information and understanding of BSE. Israel et al. (2023), in a study among women attending pastoralist health facilities in southern Ethiopia, reported that BSE practice was affected by perceived health status, fear of diagnosis, and awareness-related factors. These findings show that both knowledge and psychosocial variables influence BSE behaviour.

In Ghana, studies have also reported low or inconsistent BSE practice among women despite awareness of breast cancer. For example, research among women in the Volta region found low levels of BSE awareness and practice, suggesting the need for targeted community-based education (Aboagye et al., 2019). Similarly, studies among tertiary students in Ghana have emphasized the influence of knowledge, attitudes, perceived risk, and barriers on BSE performance (Sarfo et al., 2013; Abdul-Manan et al., 2025). These findings are consistent with the idea that educational level does not automatically translate into correct preventive practice.

### 2.3.3 Evidence from Nigeria

In Nigeria, many studies have examined knowledge, attitude, and practice of breast cancer screening and BSE among female students, nurses, and women in different settings. A systematic review on breast cancer awareness in Nigeria reported that knowledge levels vary widely across populations and that late presentation remains a major concern (Adebamowo et al., 2017). Another Nigerian systematic review on BSE knowledge, attitude, and practice concluded that knowledge is often average or moderate, attitudes may be positive, but BSE practice remains poor (Afolayan et al., 2022).

Yusuf, Okafor, Olubodun, and Onigbogi (2023) assessed breast cancer knowledge and screening practices among 350 female undergraduates in a tertiary institution in southwest Nigeria. The study reported poor overall knowledge and poor screening practice, although attitudes toward screening were positive. This finding is similar to the pattern observed in many student populations, where favourable attitude does not necessarily translate into regular BSE practice. Uruntie et al. (2024) conducted an educational intervention study among female students in a private university in southern Nigeria and found that structured education improved knowledge, attitude, and practice of BSE. This indicates that BSE behaviour can be improved when students receive planned, targeted, and repeated educational exposure. The finding is important for nursing institutions because BSE education should be practical and competency-based rather than purely theoretical.

Ogunmodede et al. (2024) compared two didactic tools for promoting breast health among female adolescents in southwest Nigeria and reported that teaching methods could influence knowledge and practice regarding BSE. This supports the use of innovative educational strategies such as demonstrations, videos, peer education, and breast models. Such approaches may be more effective than lectures alone because they improve confidence and skill acquisition.

Studies among Nigerian nurses and student nurses provide additional evidence. Gabriel et al. (2016) assessed awareness and practice of self-breast examination among female nurses at the Federal Teaching Hospital, Ido-Ekiti, Nigeria. The study showed that even among nurses, knowledge and correct practice were not always adequate. This is important because nurses are expected to serve as health educators, yet they may require additional training and reinforcement to practise and teach BSE effectively.

Aluko, Onasoga, Marie Modeste, and Ani (2024) examined student nurses' practice and willingness to teach relatives BSE in Nigeria. The study emphasized that student nurses are strategically positioned to teach BSE to relatives and women in the community, but


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they need adequate knowledge, practice skills, and motivation. Similarly, Brotobor and colleagues (2020) studied awareness and practice of BSE among undergraduate student nurses at Ambrose Alli University, Ekpoma, and noted the importance of educating student nurses because they are future health professionals who will enlighten the public.

### 2.3.4 Knowledge of BSE among Student Nurses

Knowledge of BSE among student nurses includes awareness of breast cancer, understanding of breast cancer risk factors and warning signs, ability to define BSE, knowledge of the correct timing and frequency, and understanding of the steps involved in BSE. Student nurses are expected to demonstrate higher knowledge than non-health students because of their exposure to anatomy, physiology, community health, reproductive health, and clinical nursing courses (Aluko et al., 2024; Gabriel et al., 2016; Masawa & Mboineki, 2024). However, empirical evidence suggests that being a health student does not always guarantee correct knowledge or practice. Some student nurses may have heard of BSE but may not know the correct timing, may not examine the armpit, may not use the finger pads correctly, or may not perform the examination monthly (Gabriel et al., 2016; Brotobor et al., 2020; Aluko et al., 2024). This indicates that BSE education should include practical demonstration and evaluation of competence.

Knowledge may also increase with level of study. Students in higher levels are more likely to have had greater exposure to clinical postings, health education sessions, and reproductive health content. This may explain why some studies report better awareness or practice among senior students than junior students (Masawa & Mboineki, 2024; Aluko et al., 2024). For the current study among student nurses in Kogi State, level of study is therefore an important variable to examine.

### 2.3.5 Practice of BSE among Student Nurses

Practice of BSE refers to whether an individual performs breast self-examination, how often it is performed, whether it is performed at the correct time, and whether the correct steps are followed. Evidence from Nigeria and other African countries shows that BSE practice is often lower than awareness (Udoh et al., 2020; Yusuf et al., 2023; Uruntie et al., 2024). Many students report having heard of BSE, but only a smaller proportion practise it monthly. Among student nurses, poor or irregular practice is concerning because nurses are expected to model preventive health behaviour and educate patients. Aluko et al. (2024) emphasized that student nurses' willingness and ability to teach relatives BSE depend partly on their own practice and confidence. Gabriel et al. (2016) similarly showed that professional exposure does not always result in adequate BSE practice. Therefore, student nurses need repeated practical sessions, reminders, and assessment of BSE competence. The low practice of BSE among students may be explained by several factors. Some students may forget to practise monthly; others may believe they are too young to be at risk. Fear of discovering a lump, embarrassment, lack of privacy, lack of confidence, and poor knowledge of technique may also discourage regular practice (Udoh et al., 2020; Israel et al., 2023; Sarker et al., 2022a). These barriers should be considered when designing educational interventions.

### 2.3.6 Sources of Information on BSE

Sources of information about BSE include classroom teaching, health workers, textbooks, journals, social media, television, radio, friends, relatives, and public health campaigns. Among student nurses, formal teaching and health workers are expected to be major sources because of their training environment. However, social media and the internet are increasingly important sources of health information among students (Yusuf et al., 2023; Masawa & Mboineki, 2024).

The source of information can influence the accuracy and depth of knowledge. Information from formal classroom teaching, health workers, and evidence-based materials may be more reliable than informal sources. However, classroom teaching that is purely theoretical may not be sufficient to improve skill-based practices such as BSE. Studies have therefore recommended practical demonstrations, breast models, audiovisual aids, peer education, and repeated reinforcement (Sarker et al., 2022b; Uruntie et al., 2024; Ogunmodede et al., 2024).

### 2.3.7 Factors Associated with BSE Practice


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Several factors have been associated with BSE practice. Knowledge is one of the most consistent predictors. Students with good knowledge of BSE are more likely to practise than those with poor knowledge (Mihret et al., 2021; Udoh et al., 2020; Yusuf et al., 2023). However, knowledge alone may not be sufficient, since some students with good knowledge still fail to practise regularly. Attitude is another factor. Positive attitude toward BSE may encourage practice, but studies show that positive attitude does not always result in actual behaviour (Udoh et al., 2020; Yusuf et al., 2023). This suggests that attitude must be supported by self-efficacy, practical skill, reminders, and reduction of perceived barriers. Family history of breast cancer may also influence BSE practice. Students with relatives who have had breast cancer may perceive themselves to be at greater risk and may therefore be more motivated to perform BSE (Masawa & Mboineki, 2024; Israel et al., 2023). Similarly, previous training, clinical exposure, and level of study may influence BSE practice among student nurses (Aluko et al., 2024; Gabriel et al., 2016). Perceived barriers are important determinants of poor practice. These barriers include fear of detecting cancer, forgetfulness, not knowing the correct technique, lack of time, shyness, and the belief that BSE is unnecessary (Udoh et al., 2020; Sarker et al., 2022a; Israel et al., 2023). Addressing these barriers requires more than information.

It requires behavioural strategies, such as reminders, counselling, practical demonstrations, peer support, and confidence-building activities.

## 3. Materials and Methods

### 3.1 Study Design

This study adopted a descriptive cross-sectional research design to assess the knowledge and practice of breast self-examination as a preventive measure of breast cancer among student nurses in Kogi State, Nigeria. The design was appropriate because data were collected from respondents at a single point in time.

### 3.2 Study Area

The study was conducted in three selected nursing institutions across the three senatorial districts of Kogi State, Nigeria. The institutions were Kogi State College of Nursing and Midwifery, Obangede, representing Kogi Central; NANA College of Nursing and Midwifery, Ayingba, representing Kogi East; and the Department of Nursing, Federal University Lokoja, representing Kogi West. Kogi State is located in the North-Central geopolitical zone of Nigeria. The inclusion of institutions from the three senatorial districts provided representation across the major geographical zones of the state. The selected institutions train student nurses and midwives who are expected to acquire knowledge and skills in preventive, promotive, curative, and rehabilitative health care.

### 3.3 Study Population

The study population consisted of student nurses from three selected nursing institutions representing the three senatorial districts of Kogi State. These included Kogi State College of Nursing and Midwifery, Obangede, representing Kogi Central; NANA College of Nursing and Midwifery, Ayingba, representing Kogi East; and the Department of Nursing, Federal University Lokoja, representing Kogi West. Eligible respondents were student nurses enrolled in the selected institutions during the period of data collection.

### 3.4 Inclusion and Exclusion Criteria

Student nurses who were enrolled in the selected institutions, available during data collection, and willing to give informed consent were included in the study. Students who declined consent, were absent during data collection, or submitted incomplete questionnaires were excluded.

### 3.5 Sample Size

A total of 320 student nurses participated in the study. The respondents were selected from the three nursing institutions across the three senatorial districts of Kogi State. The sample size was considered adequate for assessing knowledge and practice of breast self-examination among student nurses in the study area.

### 3.6 Sampling Technique

A multistage sampling technique was used. First, one nursing institution was selected from each of the three senatorial districts of Kogi State: Kogi Central, Kogi East, and Kogi West. Second, students in each selected institution


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were stratified according to level of study. Third, proportionate allocation was used to determine the number of respondents selected from each institution and level of study. Finally, eligible respondents were selected using simple random sampling.

**3.7 Instrument for Data Collection**

Data were collected using a structured self-administered questionnaire. The questionnaire contained sections on socio-demographic characteristics, knowledge of breast cancer and breast self-examination, sources of information, practice of breast self-examination, attitude toward BSE and early detection, and perceived barriers to regular practice.

**3.8 Validity and Reliability of Instrument**

The questionnaire was reviewed by experts in nursing science, public health, and research methodology to ensure face and content validity. A pre-test was conducted among student nurses in a nursing institution outside the selected study institutions. Necessary corrections were made before the final administration. The internal consistency of the instrument was assessed using Cronbach's alpha.

**3.9 Measurement of Variables**

Knowledge of breast self-examination was assessed using knowledge-related questions. Correct responses were scored 1, while incorrect or "not sure" responses were scored 0. The total knowledge score was categorized into good, moderate, and poor knowledge. Practice of breast self-examination was assessed using questions on whether respondents had ever practised BSE, frequency of practice, timing of practice, examination of both breasts and armpit, use of mirror, and use of finger pads. Practice scores were categorized into good, fair, and poor practice. Attitude was assessed using Likert-type items on perceptions of BSE, early detection, and breast cancer prevention. Attitude scores were categorized into positive, neutral, and negative attitude.

**3.12 Ethical Considerations**

Ethical approval was obtained from the appropriate institutional ethics committee. Permission was also obtained from the management of Kogi State College of Nursing and Midwifery, Obangede; NANA College of Nursing and Midwifery, Ayingba; and the Department of Nursing, Federal University Lokoja. Participation was voluntary, and informed consent was obtained from all respondents. Confidentiality and anonymity were maintained throughout the study. Respondents were informed that they could withdraw from the study at any time without penalty.

## 4. Results

### 4.1 Socio-demographic Characteristics of Respondents

A total of 320 student nurses participated in the study. Their socio-demographic characteristics are presented in Table 1.

**Table 1: Socio-demographic characteristics of respondents**

| Variable | Frequency | Percentage |
|---|---|---|
| Age group | | |
| 15–19 years | 100 | 31.2 |
| 20–24 years | 178 | 55.6 |
| 25–29 years | 31 | 9.7 |
| 30 years and above | 11 | 3.4 |
| Sex | | |
| Female | 294 | 91.9 |
| Male | 26 | 8.1 |
| Marital status | | |
| Single | 284 | 88.8 |
| Married | 30 | 9.4 |
| Divorced | 5 | 1.6 |
| Widowed | 1 | 0.3 |
| Level of study | | |
| Year 1 | 120 | 37.5 |
| Year 2 | 107 | 33.4 |
| Year 3 | 93 | 29.1 |

### 4.2 Knowledge of Breast Self-Examination

The respondents' knowledge of breast self-examination is shown in Tables 2 and 3. The


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mean knowledge score was 11.23 ± 1.79 out of 15.

**Table 2: Knowledge of BSE among respondents**

| Knowledge item | Correct n | Correct % |
|---|---|---|
| Heard of breast cancer | 308 | 96.2 |
| Heard of BSE | 292 | 91.2 |
| Correctly defined BSE | 230 | 71.9 |
| Knew BSE should be done monthly | 220 | 68.8 |
| Knew correct timing after menstruation | 185 | 57.8 |
| Knew abnormality should be reported | 260 | 81.2 |

**Table 3: Overall knowledge level**

| Knowledge level | Frequency | Percentage |
|---|---|---|
| Good | 222 | 69.4 |
| Moderate | 97 | 30.3 |
| Poor | 1 | 0.3 |

### 4.3 Sources of Information on BSE

**Table 4: Sources of information on BSE**

| Source | Frequency | Percentage |
|---|---|---|
| School/classroom teaching | 124 | 38.8 |
| Health worker | 74 | 23.1 |
| Social media/internet | 49 | 15.3 |
| Books/journals | 23 | 7.2 |
| Friends/relatives | 12 | 3.8 |
| Television/radio | 10 | 3.1 |
| Not applicable | 28 | 8.8 |

### 4.4 Practice of Breast Self-Examination

The mean practice score was 2.92 ± 2.53 out of 7. Details are presented in Tables 5 and 6.

**Table 5: Practice of BSE among respondents**


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| Practice item | Frequency | Percentage |
| --- | --- | --- |
| Ever practised BSE | 191 | 59.7 |
| Practises BSE monthly | 96 | 30.0 |
| Performs BSE at correct time | 108 | |
| Examines both breasts | 153 | 47.8 |
| Examines armpit | 144 | 45.0 |
| Uses mirror | 143 | 44.7 |
| Uses finger pads | 148 | 46.2 |

**Table 6: Overall practice level**

| Practice level | Frequency | Percentage |
| --- | --- | --- |
| Good | 111 | 34.7 |
| Fair | 76 | 23.8 |
| Poor | 133 | 41.6 |

### 4.5 Attitude towards BSE and Early Detection

The mean attitude score was 19.08 ± 1.84 out of 24.

**Table 7: Attitude level of respondents**

| Attitude level | Frequency | Percentage |
| --- | --- | --- |
| Positive | 260 | 81.2 |
| Neutral | 60 | 18.8 |
| Negative | 0 | 0.0 |

### 4.6 Barriers to Regular BSE Practice

**Table 8: Barriers to regular BSE practice**

| Barrier | Frequency | Percentage |
| --- | --- | --- |
| Belief that BSE is not necessary | 124 | 38.8 |
| Fear of finding a lump | 123 | 38.4 |
| Forgetfulness | 120 | 37.5 |
| Belief that one is not at risk | 116 | 36.2 |


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| Does not know how to do BSE properly | 107 | 33.4 |
|---|---|---|
| Lack of time | 107 | 33.4 |
| Shyness | 104 | 32.5 |

### 4.7 Association between Selected Variables and Good BSE Practice

**Table 9: Association between selected variables and good BSE practice**

| Variable | Good practice n/N | Good practice % | $\chi^2$ | p-value |
|---|---|---|---|---|
| Knowledge level | | | 11.166 | 0.004 |
| Good knowledge | 90/222 | 40.5 | | |
| Moderate knowledge | 21/97 | 21.6 | | |
| Poor knowledge | 0/1 | 0.0 | | |
| Level of study | | | 7.963 | 0.019 |
| Year 1 | 30/120 | 25.0 | | |
| Year 2 | 43/107 | 40.2 | | |
| Year 3 | 38/93 | 40.9 | | |
| Family history of breast cancer | | | 6.048 | 0.049 |
| No | 84/253 | 33.2 | | |
| Not sure | 9/33 | 27.3 | | |
| Yes | 18/34 | 52.9 | | |

### 4.8 Predictors of Good BSE Practice

**Table 10: Logistic regression analysis of predictors of good BSE practice**

| Predictor | AOR | 95% CI | p-value |
|---|---|---|---|
| Good knowledge of BSE | 2.18 | 1.20–3.98 | 0.011 |
| Year 2 versus Year 1 | 1.92 | 1.05–3.49 | 0.033 |
| Year 3 versus Year 1 | 1.64 | 0.87–3.10 | 0.126 |
| Family history: Yes versus No | 2.00 | 0.94–4.24 | 0.070 |
| Positive attitude versus neutral attitude | 1.43 | 0.76–2.71 | 0.269 |

## 5. Discussion

This study assessed the knowledge and practice of breast self-examination as a preventive measure of breast cancer among student nurses in Kogi State. The findings showed that most respondents had good knowledge of BSE, as 69.4% were classified as having good knowledge. This may be linked to their exposure to classroom teaching, health workers, and nursing-related training. Similar findings have been reported among health-related students and nurses, where awareness of BSE was relatively high due to professional or academic exposure (Gabriel et al., 2016; Aluko et al., 2024). Despite the high level of knowledge, BSE practice was low. Only 30.0% of respondents practised BSE monthly, while 34.7% had good overall practice. This


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shows a knowledge-practice gap among the respondents. The finding is consistent with previous studies which reported that many students and young women may be aware of BSE but do not practise it regularly or correctly (Udoh et al., 2020; Yusuf et al., 2023). This suggests that knowledge alone may not be sufficient to ensure regular BSE practice. The study also found that some respondents did not perform BSE correctly. Less than half reported examining both breasts, examining the armpit, using a mirror, or using the finger pads. This indicates that although many respondents had heard of BSE, their practical skill may still be inadequate. Similar observations have been made in other studies, where poor technique and irregular practice were common among female students (Mihret et al., 2021; Sarker et al., 2022).

Knowledge level was significantly associated with good BSE practice. Respondents with good knowledge were more likely to have good practice than those with moderate or poor knowledge. Logistic regression also showed that good knowledge independently predicted good BSE practice. This finding agrees with previous studies which identified knowledge as an important factor influencing BSE behaviour (Udoh et al., 2020; Israel et al., 2023). It suggests that improving knowledge remains important, but should be supported with practical training. Level of study was also significantly associated with good BSE practice. Year 2 and Year 3 students had higher levels of good practice than Year 1 students. This may be because students in higher levels have had more exposure to nursing courses, clinical postings, and health education activities. This finding supports the need to introduce breast health education early in nursing training and reinforce it throughout the programme.

Family history of breast cancer was significantly associated with good BSE practice at the bivariate level. Respondents with a family history of breast cancer had the highest proportion of good practice. This may be because personal or family experience with breast cancer increases perceived risk and encourages preventive health behaviour. This is consistent with the Health Belief Model, which suggests that perceived susceptibility can influence health-related actions (Sharifirad et al., 2011).

The major barriers to regular BSE practice were the belief that BSE was not necessary, fear of finding a lump, forgetfulness, low perceived risk, lack of proper technique, lack of time, and shyness. These barriers are similar to those reported in previous studies among female students and women in sub-Saharan Africa (Udoh et al., 2020; Sarker et al., 2022; Israel et al., 2023). This shows that interventions should not only provide information but also address fear, misconceptions, and lack of confidence. Most respondents had a positive attitude towards BSE and early detection. However, attitude was not significantly associated with good BSE practice. This suggests that having a positive attitude may not automatically lead to regular practice. Practical skill, confidence, reminders, and perceived risk may play a stronger role in determining whether student nurses practise BSE consistently.

## 6. Conclusion

The study concluded that student nurses in Kogi State had good knowledge of breast self-examination, but their practice was relatively poor. Although many respondents were aware of BSE, only a minority practised it monthly and correctly. Knowledge level, level of study, and family history of breast cancer were significantly associated with good BSE practice. The findings show a knowledge-practice gap and suggest the need for improved practical training on BSE among student nurses.

## 7. Recommendations

1. Nursing institutions should strengthen practical teaching of BSE through demonstration and return demonstration.
2. Breast health education should be introduced from the first year of nursing training.
3. Regular reminders should be used to encourage monthly BSE practice.
4. Health educators should address fear, low perceived risk, and misconceptions about BSE.
5. Student nurses should be trained as peer educators to promote breast cancer awareness in schools and communities.
6. Further studies should assess the effect of structured BSE training on knowledge and practice among student nurses.


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