



BREAST SELF-EXAMINATION AMONG FEMALE ADOLESCENTS IN NIGERIA: AN INTEGRATIVE REVIEW

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Cite this article:

Abaribe C.E., Okafor N., Olu-Abiodun O., Ogungbesan J., Chinwenmeri D. (2023), Breast Self-Examination Among Female Adolescents in Nigeria: An Integrative Review. African Journal of Health, Nursing and Midwifery 6(2), 87-98. DOI: 10.52589/AJHNM-G921VUSU

Manuscript History

Received: 2 Feb 2023

Accepted: 17 March 2023

Published: 24 May 2023

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ABSTRACT: *Earlier research on breast self-examination among female adolescents has formed different results. This integrative review aimed to summarize the evidence and to compare all existing evidence on the knowledge, attitude, perception, and practices of breast self-examination among female adolescents in the six geopolitical zones of Nigeria, comprising 36 states. A total of 10 articles were included in the final analysis. The article included in the review was limited to articles published in English between 2017 and 2022. The majority of the respondents in this review had a low knowledge level of breast self-examination for both the cross-sectional studies and the baseline (pre-intervention) assessment for intervention studies, had a poor attitude/perception towards BSE, and also had a poor practice of BSE. The major source of information for female adolescents about BSE is the internet, while pamphlets, and face-to-face interaction greatly improved knowledge for intervention studies. The studies further revealed that hearing about BSE does not translate into knowledge and practice. Intervention programs aimed at improving knowledge and practice of BSE among female adolescents are highly advocated as this would enhance their screening practices, improve early detection rates and sustain changes in behaviour towards BSE. Also, the review further identified peer education as a strategy that can be used to improve BSE knowledge and practices in female adolescents.*

KEYWORDS: Breast self-examination, Attitude, Knowledge, Perception, Performance, Practices.



INTRODUCTION

Breast self-examination (BSE) is an easy and efficient means for the early detection of breast lumps and other changes that could lead to breast cancer. Breast self-examination (BSE) involves both visual inspection and manual palpation of the breast. The aim is to detect breast abnormalities and changes early to enhance prompt medical attention and treatment (Akpo et al., 2021).

Breast cancer is the most common cancer contributing to high morbidity and mortality rate among women in the world. According to the World Health Organization, (WHO, 2021), in 2020, there were 2.3 million women diagnosed with breast cancer and 685,000 deaths globally. In Nigeria, breast cancer ranked the number one cancer with a record of 28,380 (22.7%) new cases, cumulative risk of 4.33, death numbered 11,564 (16.4%), and documented a 5-year prevalence including all ages to be 52,562 (WHO, 2020).

Despite the high prevalence, several studies have documented a low knowledge level, poor attitude, and poor practice of breast self-examination in Nigeria (Ibitoye et al., 2019; Elemile et al., 2020; Usman et al., 2020). Effective management of breast cancer would depend largely on its early detection through BSE. Nigeria being a low-resource country may not depend on mammography for the early detection of breast cancer, since BSE is an efficient screening method, it is cheap, easily accessible, and it is simple to follow the procedure as it requires no special skill and material taking only 5-7 minutes to perform. It is highly recommended that women practice breast self-examination (Black et al., 2019).

Evidence shows that nine out of ten breast lumps are detected by the women themselves (Udoh et al., 2020). To expedite the early detection of breast cancer (BC), the knowledge, attitude, and practice of breast self-examination are essential. This integrative review aims to compare all existing evidence on breast self-examination among female adolescents in Nigeria.

Research Question

The main review question was: What evidence is in existence on female adolescents' knowledge, attitude, and practice of BSE in Nigeria.

The specific review questions were as follows:

1. What is the evidence on the knowledge of BSE among female adolescents in Nigeria?
2. What is the evidence on the attitude toward BSE among female adolescents in Nigeria?
3. What is the evidence on BSE practice among female adolescents in Nigeria?

METHODOLOGY

The IMRAD (introduction, methodology, result, analysis, and discussion) method was used for this integrative review. A systematic comprehensive search of all materials related to breast self-examination was conducted. Extensive literature was conducted and surveyed using PubMed, EBSCOHOST, Google Scholar, Semantic Scholar, and Academia search engines. Relevant documents, technical publications series, and research articles focusing on breast self-



examination only published in the period 2017 to 2022 were included in the review. The combinations of keywords—such as “female adolescent”, “teenage girls”, “secondary school female adolescent”, “high school girls”, “adolescent girl”, “in-school females”, “in-school adolescents”, “senior secondary school girls”, “breast self-examination”, “breast screening”—was used. The study used the Boolean operators, “AND” and “or” to integrate these keywords.

The search criteria were “awareness of breast self-examination”, “knowledge of breast self-examination”, “attitude towards breast self-examination”, “perception of breast self-examination”, “breast self-examination practice”, “performance of breast self-examination”, “source of information”, “screening practices”, and “factors influencing breast self-examination”. The article search was limited to include breast self-examination among female adolescents only, peer-reviewed publications, publications, and studies carried out within the 36 states of Nigeria. These studies include both cross-sectional and intervention studies. [See Fig. 1 for the study selection flow chart (PRISMA CHART) and Table 1 for eligible articles.]

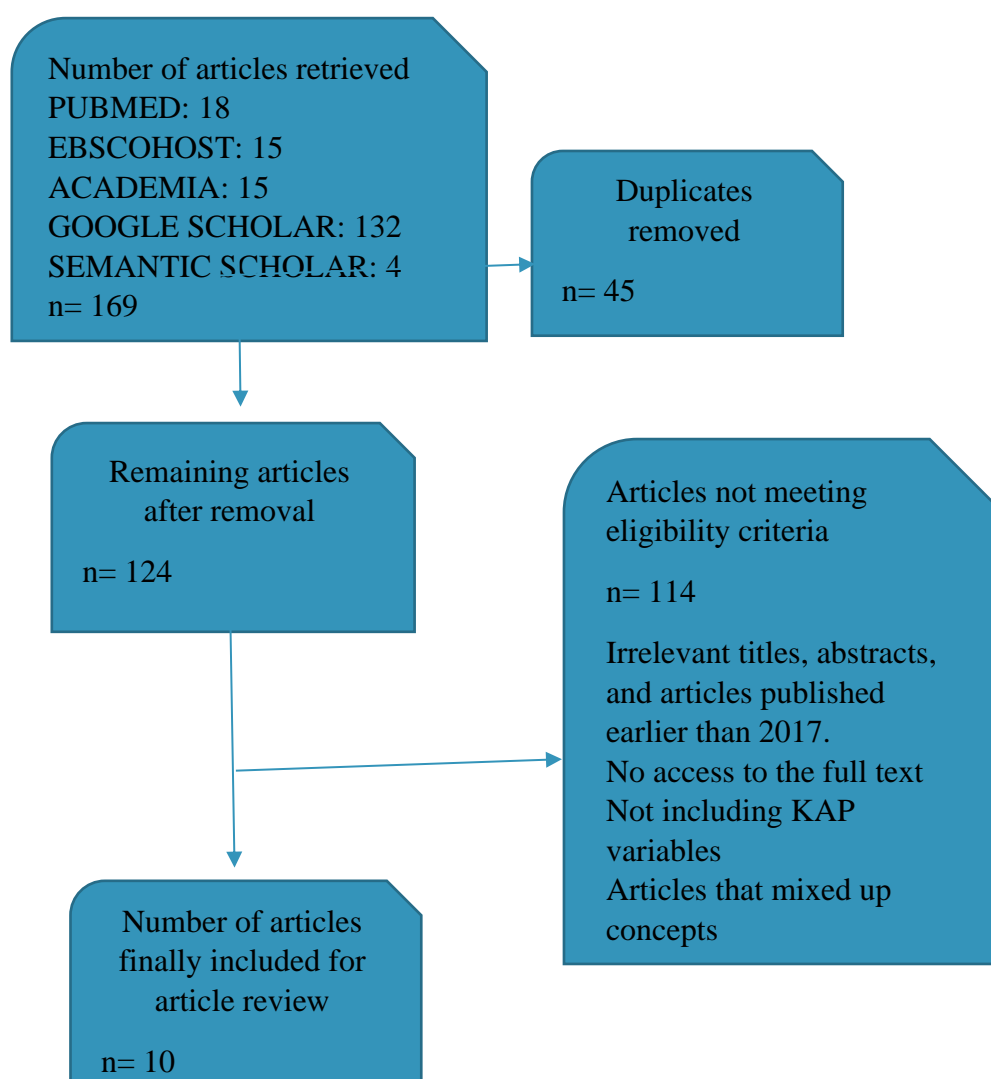


Figure 1: Article Extraction Flow Chart



RESULT ANALYSIS

One hundred and sixty-nine (169) studies, which included 10 articles (4,431 participants), were eligible for inclusion in the final integrative review. Characteristics of the 10 included studies are: three (3) were descriptive cross-sectional (Usman et al., 2020; Akpo et al., 2021; Elemile et al., 2020), while seven (7) were intervention studies (Ibitoye et al., 2019; Amosu et al., 2021; Ogun, 2019; Sadoh et al., 2021; Ifediora et al., 2019; Akpo et al., 2021; Azuonwu et al., 2022).

Out of the 10 studies, one (1) was conducted in Ondo State (Ibitoye et al., (2019), one (1) from Osun State (Usman et al., 2020), one (1) from Oyo State (Ogun, 2019), one (1) from Edo State (Sadoh et al. 2021), one (1) from Anambra State (Ifediora et al., 2019), one (1) from Rivers State (Azuonwu et al., 2022), one (1) from Ekiti State (Elemile et al., 2020) and three (3) from Delta State (Amosu et al., 2021; Akpo et al., 2021; Akpo et al., 2021). There are three (3) cross-sectional studies and seven (7) intervention studies included in this review.

Table 1 presents a summary of the characteristics and findings of the included studies.

Study Findings

Of the 10 studies, two studies reported evidence of knowledge, attitude, and practice (Ibitoye et al., 2019; Usman et al., 2020), three studies reported on knowledge and practice (Amosu et al., 2021; Akpo et al., 2021; Ifediora et al., 2019), one study reported on knowledge, perception, and practice (Ogun, 2019), one study reported on knowledge only (Sadoh et al., 2021), and one study reported on knowledge and perception (Akpo et al., 2021). One study reported on performance only (Azuonwu et al., 2022) while one reported on awareness and practice (Elemile et al., 2020).

Knowledge of Breast Self-Examination

Of the eight (8) included studies that presented evidence on female adolescents' knowledge of BSE, six are intervention studies while two are cross-sectional studies. The intervention studies reported a significant difference in knowledge between pre- and post-intervention assessment as "60% to 91.7%"; "(BPAM=5.20±2.28 to 21.56±1.85, t=29.44, 29p<.05; BPAME=7.03±1.13 to 21.73±1.26, t=31.77, p<.05)"; ".20.61 ± 13.4 to 55.93 ± 10.86"; an increase of 10.8%; and "5.20±2.28 to 21.56±1.85, p=0.000)".

The other two studies which are cross-sectional, reported inadequate/poor knowledge of the correct procedures of breast self-examination (BSE), which has resulted in poor attitude and practice of breast self-examination (BSE).

Awareness of Breast Self-Examination

One (1) of the studies reported on awareness of BSE that only 43% of respondents had a moderate level of awareness of BSE.

Attitude towards Breast Self-Examination

Of the two studies which reported evidence on attitude, one in an intervention study reported that the respondents had a poor attitude towards BE but improved after training while the other study reported that in terms of attitude, those with unfavorable attitudes are one time less likely to do a breast self-examination (OR = 1.025, CI = 0.949-1.107).



Perception towards Breast Self-Examination

Of the two studies which reported evidence on perception, both were intervention studies and reported that pre-intervention perception for the experimental and control group was (66.7%; 69.7%) respectively while post-intervention, the score was 100% for the experimental group and 55.3% for the control group (Ogun, 2019), while the other also reported *an increase in the level of BSE perception from (37.46 ±4.91 to 56.73±7.34, p=0.000* (Akpo et al., 2021).

Practice/Performance of Breast Self-Examination

Of the eligible articles, seven reported evidences on the practice of BSE while only one reported on the performance of BSE. Of these, four are intervention studies while four are cross-sectional studies. Pre-intervention practice was poor but improved after training; the significant difference in the level of BSE practice between baseline and 8 weeks follow-up (BPAM 0.33 ± 1.21 to 4.90 ± 1.56 , $t=13.25$, $p<.05$; BPAME= 32.76 ± 4.66 to 63.83 ± 2.80 , $t=18.99$, $p<.05$); however, Ifediora et al. (2019) reported that the monthly practice of BSE was not significantly increased (Ifediora et al., 2019).

The four cross-sectional studies reported poor practice/performance of BS).

Table 1: Critical appraisal of included studies on breast self-examination among female adolescents in Nigeria (2017-2022)

S/N	Author and date	Mean age	Study setting	State	Research design	Sample size	Main objectives	Significant study findings
1.	Ibitoy et al. (2019)	13.21 ± 5.68.	Fiwasaye Girls Grammar School, Akure	Ondo	A quasi-experimental study of only one group	280	Assessed the impact of education on knowledge, attitude, and practice of breast self-examination among adolescent girls.	Over 60% knew about breast examination before education, and this percentage increased to 91.7% after training. The pre-assessment attitude towards and practice of breast self-examination were also poor but improved after training. There was a significant difference among the student's pre- and post-knowledge at $t(558) = 14.49$, $p = 0.01$, and for pre- and post-practice of BSE.
2.	Usman et al. (2020)	14.77 ± 1.46	School	Osun	Cross-sectional study using	400	Assessed the knowledge,	15 (3.8%) respondents said the



					a multistage sampling technique.		attitude and practice of breast self-examination (BSE) among female secondary school students.	procedure is time-wasting while 82 (20.5%) respondents said the procedures were strenuous. 199 (49.8%) strongly disagree that performing breast self-examination may expose them to breast cancer. Individuals with poor knowledge are one time less likely to do breast self-examination (OR = 1.245, CI = 0.647 - 2.394) while in terms of attitude, those with unfavorable attitudes are one time less likely to do breast self-examination (OR = 1.025 CI = 0.949 - 1.107). Inadequate knowledge of the correct procedures of breast self-examination (BSE) thereby resulting in poor attitude & practice of breast self-examination (BSE).
3.	Amosu et al. (2021)	15.64 ± 1.33	School facility	Delta	Quasi-experimental research	90	Evaluated the effect of two interventions on BSE knowledge and practice among in-school adolescent females.	There was a significant difference in the respondents' level of BSE knowledge between baseline and 8 weeks follow-up (BPAM=5.20±2.28 to 21.56±1.85, t =29.44, 29 p<.05; BPAME=7.03±1.13 to 21.73±1.26, t =31.77, p<.05), and a



								<p>significant difference in the level of BSE practice 29 between baseline and 8 weeks follow-up (BPAM 0.33 ± 1.21 to 4.90 ± 1.56, $t = 13.25$, $p < .05$; BPAME = 32.76 ± 4.66 29 to 63.83 ± 2.80, $t = 18.99$, $p < .05$). Both interventions had the same impact on BSE knowledge (Effect size $ES = 0.97$, 29 $p = 0.000$) but BPAME had a higher impact on BSE practice [(BPAM: $ES = 0.87$, $p = 0.000$) and (BPAME: $ES = 0.92$, $p = 0.000$)]. Interventions had a significant influence on the respondents' knowledge and practice of BSE but combined BSE pamphlets and training had more impact on BSE practice.</p>
4.	Ogun (2019)	Exp.: (16.1 ± 1.5) control group: (15.4 ± 1.5)	School	Oyo	quasi-experimental intervention	600	Determine the effect of educational intervention has on in-school secondary school female adolescent students' knowledge, perception, and practice towards the practice of BSE.	Revealed the potential impact educational interventions have on in-school female students' knowledge of BSE and breast cancer screening methods. Participants in the experimental group identified various factors that hindered the practice of BSE ranging from time (36.0%); procrastination (20.0%); forgetfulness/laziness



								(18.7%) and no trust in my ability to perform it (11.7%) and the lack of availability of specific training programs.
5.	Sadoh et al. (2021)	Xxx	School	Edo	A pre-post interventional study carried out in October – December 2016	1201	Determined the effect of peer education as a strategy to create awareness of BC and breast self-examination (BSE) among in-school female adolescents in Benin City.	Pre and post-training questionnaires respectively. The mean BC knowledge score (20.61 ± 13.4) before training was low and it statistically significantly improved to 55.93 ± 10.86 following training $p < 0.0001$ Following peer training, statistically significant improvement ($p = 0.037 - < 0.001$) occurred in most knowledge domains apart from symptomatology.
6.	Akpo et al. (2021)	15.5 ± 1.11	School	Delta	Descriptive cross-sectional study	216	Assessing breast self-examination knowledge and practice among female secondary students.	The mean score for knowledge of BSE was 5.8 ± 3.8 while the mean score for BSE practice was 7.3 ± 2.1 . Correlation analysis showed no significant relationship between knowledge and practice of BSE ($p = 0.095$, $R = 0.114$). The overall knowledge and practice of BSE were very poor.
7.	Ifediora et al. (2018)	Pre-intervention (16.8 ± 1.5 years) and	School	Anambra	A 6-month longitudinal, interventional cohort study	432	efficacies of a video-assisted face-to-face intervention, as well as the use of	Participants who were “engaged” with the campaigns, either through symposium attendance or by reading handouts, showed significant



		post-intervention (17.2 ± 1.6 years)					printed handouts, were evaluated.	improvements in most aspects of knowledge regarding cancer's early symptoms and risk factors, as well as breast self-examination (BSE). However, the monthly practice of BSE was not significantly increased (Attendees: OR = 1.44, P = 0.18; Handout-readers: OR = 1.52; P = 0.17). Face-to-face and handout were both effective and of similar impact.
8.	Akpo et al. (2021)	Intervention group and the control group were 15.90±1.58years and 15.43±1.36years respectively.	School	Delta	Quasi-experimental research design	60	Assessed the effect of an educational intervention on knowledge and perceptions of breast self-examination among adolescent females.	Significant increase in the level of BSE knowledge of the participants between baseline and post-intervention from (5.20±2.28 to 21.56±1.85, p=0.000) and there was also an increase in the level of BSE perception from (37.46 ±4.91 to 56.73±7.34, p=0.000).
9.	Azuonwu et al. (2022)	Xxx	School	Rivers	Intervention study	912	Study investigated the effect of peer education on the performance of breast self-examination among female senior secondary school students.	A significant difference in the performance of breast self-examination between the experimental and control groups.



10.	Elemile et al. (2020)	15.6 +1.17	School	Ekiti	Cross-sectional descriptive study design	240	The study evaluated the level of awareness and practice of BSE among senior secondary school girls.	The study revealed poor awareness of breast cancer and poor practice of BSE.
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DISCUSSION

The current integrative review was conducted to explore evidence on breast self-examination among female adolescents in Nigeria from 2017 to 2022. This study revealed evidence of female adolescents' knowledge, awareness, attitude, perception, performance, and practice on breast self-examination from eight (8) states in Nigeria (Ondo, Osun, Delta, Oyo, Edo, Anambra, Rivers, and Ekiti). The results generally establish limited published research on knowledge, awareness, attitude, perception, and practice of BSE among female adolescents in Nigeria.

The results also revealed low knowledge levels of BSE among female adolescents in Nigeria. It further attributed the low knowledge level of BSE to the poor attitude, perception, and poor practice of BSE in Nigeria, which has remained a challenge in Nigeria for female adolescents. The level of knowledge of BSE of the respondents before the education program shows that only 25.4% of the participants had a good knowledge of how to conduct a BSE, which increased to 56.8% post-education (Ibitoye et al., 2019). This implies that intervention studies are needed to enhance the knowledge of female adolescents in Nigeria on BSE. From the review shreds of evidence, there is a record of poor attitudes and poor perception of BSE among female adolescents in Nigeria.

The practice of BSE is low but evidence from the eligible article reveals that there is a significant difference in practice after training/intervention programs. Among the factors affecting female adolescents from practicing BSE included: time, procrastination, forgetfulness, laziness, and no trust in their ability to perform it. There is a need to intensify BSE training as the current review reveals that having heard about BSE does not necessarily imply a high performance or practice rate of breast self-examination.

Implication for Research

This integrative review on BSE among female adolescents in Nigeria is of great importance as it focuses only on breast self-examination among female adolescents in Nigeria. In the last ten years, there have been two reviews on BSE in Nigeria but these were focused on the general women population (Ojewusi et al., 2016; Ogunmodede et al., 2022). This current review shows limited published research on BSE among female adolescents in Nigeria. Most of the studies (excluded from this review) were conducted among tertiary students and women of childbearing age; this indicates a gap in the literature. The researcher hopes that this review will stimulate research studies on KAP of BSE among female adolescents in other states (aside



from the only 8) in Nigeria used for this review. The reviewer also recommends that research studies on knowledge, attitude, and practice of BSE should be carried out in the Northern states of Nigeria (since there was no article eligible from the Northern states for this review).

The reviewer further recommends a systematic review and a meta-analysis to assess the impact of BSE knowledge and practice of BSE among female adolescents in Nigeria.

Strength and Limitation

This integrative review probably is the first review to map evidence on breast self-examination among female adolescents in Nigeria. The study revealed a noteworthy gap in the reviewed literature. This study's methodology allowed the identification of eligible articles methodically, charting and analyzing the outcomes.

However, this study also has some limitations. This study sought to present recent evidence (within the last 5 years) therefore, it included only articles published from 2017 onward. So, it is possible some relevant articles published before 2017 were excluded. Literature was done in only five databases, but it is possible other relevant studies exist in other databases. The reviewer will recommend future studies to conduct additional searches in those databases that were not captured in this study. It is possible that different pieces of research on KAP of BSE existed under different terminologies that were not captured in the review.

CONCLUSION AND RECOMMENDATION

This integrative review established that there is a dearth of published literature on breast self-examination among female adolescents in Nigeria. Most of the included studies reported low KAP of BSE and also poor attitude/perception towards BSE among female adolescents. Appropriate knowledge and practice, as well as a good attitude towards BSE, is essential. Hence, this study recommends further studies (especially educational intervention) on knowledge, attitude and practice, and of BSE, to identify relative challenges to BSE practice and to offer evidence-based solutions to improve BSE among female adolescents in Nigeria.

It is also recommended to policymakers such as the government, ministry of health, and ministry of education to ensure the inclusion of breast self-examination in the school curriculum; this will help in teaching the students at the earliest times of their lives.

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