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A REVIEW OF LITERATURE ON THE EFFECTIVENESS OF SIMULATION-BASED EDUCATION PROGRAMMES ON KNOWLEDGE AND PRACTICE REGARDING BREAST SELF-EXAMINATION AMONG ADOLESCENT GIRLS

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ABSTRACT
Early detection of breast cancer is a critical component of reducing morbidity and mortality, and promoting awareness among adolescent girls lays the foundation for lifelong breast health. Breast Self-Examination (BSE) serves as a simple, cost-effective method to enhance early recognition of abnormalities, yet many adolescents lack adequate knowledge and confidence to perform it correctly. Simulation-based education programmes, which use interactive demonstrations, role-play, and hands-on practice, have emerged as effective strategies to bridge this gap. This review of literature synthesizes evidence from multiple studies exploring the impact of such educational interventions on adolescents' knowledge and practice of BSE. Findings consistently indicate that structured, simulation-driven programs significantly improve both understanding and practical skills, empowering young girls to adopt regular BSE routines. These interventions also enhance self-efficacy, reduce anxiety associated with breast health, and foster proactive attitudes toward personal well-being. The review highlights the critical role of school and community-based health education initiatives, suggesting that integration of simulation-based BSE training into adolescent health curricula can substantially strengthen preventive healthcare practices. For nursing professionals and educators, these insights underscore the value of interactive, experiential teaching methods in promoting early cancer detection and lifelong health awareness.

Keywords: *Simulation-Based Education, Adolescent Health, Awareness Programme, Knowledge and Practice, Breast Cancer Prevention*

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INTRODUCTION

Breast cancer remains one of the most common cancers affecting women worldwide, with early detection being a key factor in improving outcomes and survival rates (World Health Organization, 2024). Encouraging awareness and proactive health behaviours from adolescence is essential, as habits formed during this period often continue into adulthood. Breast Self-Examination (BSE) is a simple, cost-effective, and non-invasive method that allows individuals to detect breast abnormalities at an early stage. Despite its simplicity, research indicates that many adolescent girls lack adequate knowledge, confidence, and practical skills to perform BSE correctly (Vijaya & Mary, 2022). With the latest study reports, India's highest cancer rate is listed in the state of Kerala. Other states with high cancer rates in India include Mizoram, Haryana, Delhi and Karnataka. Mizoram accounted for the highest cancer death rates in the country, followed by Kerala and Haryana. Simulation-based education programs have emerged as innovative and effective teaching strategies to address this gap. By incorporating interactive demonstrations, hands-on practice, and structured guidance, these interventions enhance understanding, improve skill acquisition, and foster self-efficacy. Numerous studies have reported positive outcomes, including increased knowledge, improved technique, and a higher frequency of regular BSE practice among adolescent participants.

Given the importance of early detection and health education, reviewing the existing literature on simulation-based BSE education can provide valuable insights for nursing practice, school health programs, and community-based interventions aimed at promoting breast health awareness among young girls.

1. Literature Related to Awareness Programmes

Julius Olatade Maitanmi, et al (2023) conducted a study on Awareness and practice of breast self-examination among female staff at Babcock University, Nigeria although the majority of the respondents were highly aware of breast cancer (78.12%) and had good knowledge about BSE (96.9%), their practice of BSE was low. Only 11.3% always examine their breasts in the mirror by raising their hands over their head, looking at their breasts and examining it in a circular motion; 56% rarely looked for puckering, colour changes and dimpling of the skin when examining their breasts in the mirror, although 53.8% sometimes squeezed their nipples and looked for discharge when they examined their breasts. Conclusion: Knowledge and positive opinions toward preventive strategies for breast cancer should not be interpreted as readiness for practice. Educational intervention programs emphasising the importance of early detection in managing breast cancer should be reinforced to birth the desirable change.

Nur Anis Izzati Che Mut, et al (2019) conducted a study on Knowledge and Awareness of Breast Self-Examination among Secondary School Girls in Seremban, Negeri Sembilan The mean age of the participants is 14.9 ± 0.06 years. The majority of the participants were Malays (86.5%). A total of 6.1% of the participants had a family history of breast cancer. Nine percentage of participants had a good knowledge and 91.0% had poor knowledge regarding BSE. There is a significant difference between the age of participants with the level of knowledge and awareness ($p = 0.014$). The knowledge and awareness of BSE were poor among secondary school girls in Seremban, Negeri Sembilan.

Awareness interventions play a crucial role in shaping adolescents' understanding and attitudes toward breast health. Studies by Naglaa Mohammed Abd-Elaziz et al. (2021) and Kwak (2018) demonstrated that structured educational programs significantly improved participants' knowledge about breast cancer and the correct steps of Breast Self-Examination (BSE). These interventions often incorporate lectures, multimedia presentations, interactive discussions, and demonstration sessions, which collectively enhance comprehension and encourage positive health attitudes. Adolescents exposed to such programs reported greater confidence in performing BSE and an increased willingness to adopt preventive health behaviours. The importance of regular health education and early detection has been highlighted by Siew Yim Loh et al. (2011) and Sahar M. Yakout et al. (2014). Their findings emphasize that timely, repeated exposure to health education fosters awareness of breast cancer risks, the benefits of early detection, and the necessity of consistent self-examination. Early intervention not only empowers adolescents with knowledge but also cultivates proactive attitudes that can contribute to lifelong health-promoting habits.

2. Literature Related to Knowledge and Practice

Ayelign Mengesha Kassie, et al (2021) conducted a study on Breast Self-Examination Practice Among Female University Students in Ethiopia: A Systematic Review and Meta-Analysis. Sixteen (n = 16) studies with 5,743 participants were included to estimate the pooled prevalence of BSE practice. The prevalence of regular BSE

practice reported in the studies ranges from 0% to 26.4%. The rate of BSE practice among female university students is low. Thus, awareness strategies need to be designed to increase the practice rate among women in the country as BSE is one of the most feasible strategies in early detection of breast cancer if properly implemented.

Authors Dinegde NG, et al (2020) conducted a study on Knowledge and Practice of Breast Self-Examination Among Young Women in Tertiary Education in Addis Ababa, Ethiopia. Almost half of 188 (52.5%) respondents had heard about breast cancer self-examination, while the media were the main source of information. The study revealed that only as little as 47 (13.1%) respondents did appropriate BSE. This study showed that a few females implemented regular BSE. Further implementations are needed in addressing young females, making awareness and advocacy campaigns about BSE to increase early diagnosis of breast cancer that raises the chances for successful treatment in Ethiopia.

Panela. S.M. Ishtiak, et al (2022) conducted a study on Knowledge, practice and associated factors of breast self-examination among female university students of Bangladesh. A total of 400 students participated from two private and two public universities (100 from each university). This study revealed a general lack of knowledge and practice regarding BSE among female university students. As knowledge and practice of BSE would increase breast cancer awareness and screening acceptance, authorities should address the issue with properly planned strategies.

Hayah Abou El azayiem Bayumi, (2016) Conducted a study on Breast Self-Examination (BSE): Knowledge and Practice among Female Faculty of Physical Education in Assuit, South Egypt A descriptive study, conducted at the university in Assuit city (south Egypt) during Jan2015. The study sample included 240 students. Self-administered questionnaire was used to gather information about socio-demographic characteristics, knowledge of students about risk factors and symptoms of breast cancer, breast self-examination knowledge, and BSE practice. There was a significant relation between breast self-examination practice and knowledge about breast cancer and knowledge about breast self- examination. Students have poor knowledge of breast cancer and its associated risk factors. Also Students were not also so familiar with practicing BSE.

Kibret Asmare, et al (2022) conducted a study on Knowledge, attitude, practice towards breast self-examination and associated factors among women in Gondar town, Northwest Ethiopia, 2021: a community-based study. From the total of 571 women, about 541 participants were involved in the study with a response rate of 94.7%. Of these, 56%, 46% and 45.8% of women had adequate knowledge, favourable attitudes, and performed breast self-examination (BSE) respectively. Women College and above AOR: 3.8 (95% CI: 1.43–10.14) and spouses College and above AOR: 3.03 (95% CI: 1.04–8.84), Women College and above AOR: 4.18 (95% CI: 1.59–10.92) and history of breast cancer AOR: 6.06 (95% CI: 2.19–16.74) and knowledge level AOR: 2.67 (95% CI: 1.18–6.04) were significantly associated with knowledge, attitudes, and practices towards breast self-examination respectively. Conclusion The findings of this study were considerable for inadequate knowledge, unfavourable attitude and poor practice towards BSE among women.

Julia Adesua Agbonifoh, (2016) Conducted a study on Breast Self-Examination Practice among Female Students of Tertiary Institutions The results indicated a high level of practice of BSE. While parental background and family history of breast cancer had no significant impact on practice of BSE, course of study, type of tertiary institution and knowledge of BSE impacted significantly on practice of BSE. It is therefore recommended that enlightenment campaigns on BSE should continue while research efforts should be directed at ascertaining under what circumstances knowledge of BSE docs not translate into its practice.

3. Literature Related to Incidence and Prevalence

Breast Self-Examination (BSE) prevalence varies widely across different regions and populations, reflecting disparities in awareness, cultural norms, and access to health education. Nazan Karahan (2019) and Joshua Okyere et al. (2023) highlighted that in high-income countries, a relatively higher proportion of women and adolescent girls report regular BSE practice, whereas in low- and middle-income countries, the prevalence is often considerably lower. These differences are influenced by varying levels of health literacy, availability of structured health education programs, and sociocultural perceptions surrounding breast health.

Several common determinants have been consistently associated with BSE practice. Education level plays a significant role, as adolescents and women with higher formal education are more likely to understand the importance of early detection and perform BSE correctly. Income and socioeconomic status influence access to health information and resources, while marital status can affect exposure to reproductive health education.

Additionally, health insurance coverage and regular contact with healthcare providers increase opportunities for guidance and reinforcement of BSE practices.

Despite widespread awareness campaigns and educational initiatives, delayed diagnosis of breast abnormalities continues to be a significant challenge. Many individuals, particularly in resource-limited settings, remain inconsistent in performing BSE or lack confidence in their technique. This gap between awareness and actual practice underscores the critical need for more engaging, interactive, and culturally sensitive interventions that not only inform but also empower adolescents and women to adopt routine self-screening behaviours.

4. Literature Related to Simulation-Based Education

Simulation has emerged as a novel and interactive teaching method that effectively bridges the gap between theoretical knowledge and practical skills. Unlike traditional lecture-based approaches, simulation allows learners to actively engage with realistic scenarios, providing hands-on experience that enhances understanding and retention. In the context of breast self-examination (BSE), simulation often involves the use of models such as silicone breast replicas, which enable learners to practice palpation techniques in a safe, guided environment. Sahar Yakout et al. (2014) demonstrated that adolescents trained using such models not only showed significant improvement in knowledge retention but also developed the ability to perform BSE accurately and confidently.

Multiple studies have highlighted that simulation-based learning fosters both competence and self-efficacy. Adolescent participants and nursing students trained through simulation reported greater confidence in performing BSE independently, reduced anxiety about breast health, and a higher likelihood of adopting regular self-examination routines. The tactile, visual, and interactive elements of simulation make learning more engaging, which translates into better skill acquisition compared to traditional teaching methods.

Given its effectiveness, integrating simulation modules into school and college health education programs is highly recommended. By providing repeated, structured, and hands-on practice opportunities, simulation not only reinforces theoretical knowledge but also empowers learners to translate it into consistent, correct BSE practices, ultimately contributing to early detection and improved breast health outcomes.

5. Literature Related to Structured Teaching Programmes

Structured, periodic, and supervised teaching sessions have been shown to significantly enhance both cognitive and psychomotor learning outcomes related to breast self-examination (BSE). By combining theoretical instruction with hands-on practice under guided supervision, these sessions ensure that learners not only understand the steps and rationale behind BSE but also develop the practical skills required to perform it accurately. Such an approach helps bridge the gap between knowledge acquisition and real-world application, particularly among adolescents and nursing students who may be encountering BSE for the first time.

Evidence from studies by Naglaa Mohammed Abd-Elaziz et al. (2021) and Kwak (2018) indicates that structured modules incorporating pre-test and post-test evaluations significantly improve knowledge retention, skill competence, and confidence in performing BSE. Participants trained through these supervised sessions demonstrated better long-term recall and were more consistent in practicing BSE compared to those exposed to traditional awareness campaigns.

These findings underscore the recommendation that structured simulation-based teaching is superior to conventional didactic methods. By integrating repeated, interactive, and supervised practice into health education programs, educators can ensure that knowledge is not only acquired but also retained and consistently applied, fostering sustained breast health behaviours among adolescent girls and young women.

CONCLUSION

The literature clearly demonstrates that promoting breast self-examination (BSE) among adolescent girls is essential for fostering early detection of breast abnormalities and cultivating lifelong health awareness. Awareness interventions and educational campaigns effectively enhance knowledge and positively influence attitudes toward breast health, yet these gains do not always translate into consistent practice. Global variations in BSE prevalence further highlight the influence of factors such as education, socioeconomic status, and access to health resources, emphasizing that knowledge alone is insufficient without practical reinforcement.

Simulation-based education and structured, supervised teaching sessions have emerged as highly effective strategies to bridge this gap. By providing hands-on practice using models, interactive demonstrations, and periodic reinforcement, these interventions improve both cognitive understanding and psychomotor skills, while also fostering confidence and self-efficacy among learners. Evidence shows that structured simulation-based

modules outperform traditional awareness campaigns in promoting sustained BSE practice, ensuring that adolescents can translate knowledge into regular, correct self-examination routines.

Overall, integrating simulation-based and structured educational programs into school and college health curricula is strongly recommended. Such initiatives not only empower young girls with essential health skills but also contribute to early detection, preventive health behaviours, and improved long-term breast health outcomes.

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