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BEYOND BREAST SELF-EXAMINATION: ADVANCING BREAST HEALTH LITERACY AND PREVENTIVE EDUCATION AMONG ADOLESCENT GIRLS—A CRITICAL REVIEW

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ABSTRACT Breast cancer remains the most common malignancy among women worldwide and a major public health challenge. Although breast cancer is uncommon during adolescence, this developmental period offers an important opportunity to establish lifelong preventive health behaviours. Contemporary breast health promotion is shifting from routine breast self-examination (BSE) towards breast self-awareness (BSA) and broader breast health literacy, emphasizing informed decision-making and timely health-seeking behaviour. This critical review synthesized evidence on breast health literacy, determinants of breast health behaviour, educational interventions, and emerging digital approaches among adolescent girls. A structured literature search was conducted in PubMed/MEDLINE, Scopus, Web of Science, CINAHL, ScienceDirect, and Google Scholar. Peer-reviewed English-language studies published between 2015 and 2026 were considered. Evidence indicates that breast health literacy remains inadequate despite increasing awareness of breast cancer. School-based, nurse-led, interactive, and digital interventions generally improve knowledge, self-awareness, confidence, and attitudes, although evidence for sustained behavioural change remains limited. Family support, school environments, healthcare accessibility, cultural factors, and digital health literacy also influence behaviour. Strengthening breast health literacy during adolescence may support lifelong preventive practices. Future research should use standardized tools, longitudinal designs, culturally appropriate interventions, and multidisciplinary approaches integrating nursing, education, digital innovation, and public health.

KEYWORDS : Breast health literacy; Breast self-awareness; Breast self-examination; Adolescent girls; Breast cancer prevention; Health education; Nursing; Health promotion.

1. INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among women worldwide and remains a major public health concern. Delayed diagnosis, limited healthcare access, and disparities in awareness contribute to poorer outcomes in many low- and middle-income settings (Sung et al., 2021; WHO, 2024). Prevention therefore requires more than clinical treatment; accurate health information can promote informed decisions, appropriate healthcare utilization, and healthier behaviours.

Adolescence is a critical period for establishing lifelong health habits. Although breast cancer is rare in adolescents, puberty involves normal breast changes and provides an appropriate time to introduce age-appropriate breast health education. However, breast health education may be limited in school curricula, while cultural taboos, inadequate parent–child communication, and unreliable online information can contribute to misconceptions (UNICEF, 2021; WHO, 2024).

Breast health literacy extends beyond awareness of breast cancer or knowledge of BSE. It involves the ability to access, understand, evaluate, and apply reliable information to make informed decisions. Higher health literacy can support body awareness, recognition of unusual changes, and timely professional advice, whereas limited literacy may increase susceptibility to misinformation and delayed care (Nutbeam, 2000; Sørensen et al., 2012).

A contemporary distinction is made between BSE and BSA. BSE involves a structured, technique-based examination, whereas BSA encourages familiarity with the normal appearance and feel of the breasts and prompt reporting of persistent or unusual changes. For adolescents, BSA is particularly appropriate because physiological breast changes are common and breast cancer is uncommon. Education should therefore emphasize normal development, warning signs, confidence, and appropriate health-seeking behaviour rather than creating unnecessary anxiety (ACS, 2024; WHO, 2024).

Existing literature has largely focused on knowledge, attitudes, and practices related to BSE, with less emphasis on breast health literacy, self-awareness, and health-seeking behaviour. Evidence on educational interventions is also fragmented across settings. This review therefore synthesizes evidence on breast health literacy, behavioural determinants, educational interventions, and emerging approaches among adolescent girls, with implications for nursing practice and public health.

2. Methodology

This study used a critical narrative review supported by a structured literature search. A critical review approach was selected to integrate findings from diverse study designs and identify research gaps (Grant & Booth, 2009; Snyder, 2019). Searches were conducted in PubMed/MEDLINE, Scopus, Web of Science, CINAHL, ScienceDirect, and Google Scholar using combinations of "breast health literacy," "breast self-awareness," "breast self-examination," "breast cancer awareness," "adolescent girls," "health education," "health promotion," and "nursing." Boolean operators AND and OR were used.

Peer-reviewed English-language studies published from 2015 to 2026 were considered. Eligible studies focused on girls aged 10–19 years and addressed breast health literacy, BSA, BSE, breast cancer awareness, educational interventions, or related preventive behaviours. Editorials, conference abstracts, case reports, dissertations, and unrelated studies were excluded. Retrieved records were screened by title and abstract followed by full-text assessment. Relevant study characteristics, populations, interventions, methods, and principal findings were extracted. Methodological quality was critically appraised using appropriate tools, and findings were synthesized narratively because of heterogeneity in study designs and outcomes (Page et al., 2021; Higgins et al., 2022).

3. Evidence Synthesis

3.1 Breast Health Literacy Among Adolescent Girls

Evidence indicates that breast health literacy among adolescents remains inadequate despite widespread awareness of breast cancer. Many adolescents have heard of breast cancer but have limited understanding of normal development, warning signs, risk factors, and appropriate preventive practices. Cultural taboos, inadequate school education, limited family communication, and unreliable online information can contribute to these gaps (Omrani et al., 2020; WHO, 2024).

Educational interventions generally improve knowledge, confidence, and attitudes. However, meaningful health literacy also requires self-efficacy, critical evaluation of information, communication skills, and appropriate health-seeking behaviour. Most studies assess short-term outcomes; evidence regarding sustained changes is limited. Longitudinal and multicentre research using standardized tools is needed.

3.2 Determinants of Breast Health Behaviour

Breast health behaviour is influenced by individual, social, educational, and environmental factors. Health literacy, self-efficacy,

motivation, perceived susceptibility, fear, embarrassment, and misconceptions can affect behaviour. Family support and open communication, supportive school environments, and structured health education can facilitate positive practices, whereas stigma and cultural taboos may act as barriers (Berkman et al., 2011; Omrani et al., 2020).

Digital resources can improve access to information but may also expose adolescents to misinformation. Consequently, breast health promotion should follow a socioecological approach in which individual knowledge is reinforced by family engagement, school education, healthcare support, and reliable digital resources.

3.3 Educational Interventions

Structured educational programmes consistently improve knowledge, breast self-awareness, confidence, and positive attitudes. Interactive approaches—including demonstrations, group discussion, audiovisual materials, simulation, peer learning, and digital platforms—can improve engagement and knowledge retention more effectively than information delivery alone (Ogunmodede et al., 2024; Sivagami & Padihar, 2024).

School-based programmes involving nurses, teachers, and community health professionals provide supportive environments for discussion and health-seeking. Programmes should be developmentally appropriate, culturally relevant, and focused on practical skills and critical thinking. Evidence remains limited regarding long-term sustainability.

3.4 Digital Health and Emerging Approaches

Mobile applications, e-learning modules, videos, social media campaigns, and web-based resources provide accessible and flexible opportunities for adolescent health education. Interactive and repeated learning may improve knowledge, attitudes, and confidence (Mancone et al., 2024). However, misinformation and unequal digital literacy remain challenges. Digital interventions should therefore teach adolescents how to identify credible health information as well as provide accurate content. Artificial intelligence, personalized learning, and mobile decision-support tools are promising, but evidence concerning effectiveness, acceptability, cost-effectiveness, ethics, and equity remains limited.

3.5 Future Research Priorities

Future studies should prioritize longitudinal designs to determine whether improvements in breast health literacy are sustained from adolescence into adulthood. Standardized and validated assessment tools are needed to improve comparison across studies. Research should also examine culturally tailored interventions, particularly in low- and middle-income countries, and evaluate hybrid models combining school-based nursing education with digital learning. Multidisciplinary collaboration among nurses, educators, public health professionals, and policymakers is essential.

4. DISCUSSION

The review demonstrates a shift from a narrow emphasis on BSE towards a broader framework of breast health literacy, BSA, and preventive education. Adolescents may have general awareness of breast cancer but lack the knowledge and confidence required to interpret breast changes and seek appropriate care. Educational interventions improve immediate outcomes, but knowledge alone does not guarantee sustained behavioural change. Self-efficacy, critical thinking, communication skills, and supportive environments must also be addressed.

The findings are consistent with previous evidence showing benefits of structured education, while extending the focus from knowledge and BSE practice to health literacy and informed decision-making. For adolescents, BSA is more developmentally appropriate than presenting BSE as an isolated routine. Education should promote understanding of normal breast development, awareness of unusual changes, and timely professional consultation.

The findings also support a socioecological and multidisciplinary approach. Families, schools, nurses, healthcare services, and digital platforms all influence adolescent breast health behaviour. Digital education offers considerable potential, but misinformation and unequal digital access must be addressed.

For nursing practice, nurses can promote breast health literacy through school health programmes, adolescent clinics, community outreach, and health education campaigns. Interventions should be age-appropriate, culturally sensitive, evidence-based, and focused on BSA, critical health literacy, and informed health-seeking behaviour. Public health programmes should integrate breast health education into school and adolescent health initiatives while strengthening digital health literacy.

Strengths of this review include integration of breast health literacy, BSA, preventive education, nursing, and digital approaches. Limitations include restriction to English-language studies, heterogeneity of interventions and outcome measures, and predominance of short-term studies, which limits assessment of sustained behavioural change.

5. CONCLUSION

Breast health promotion among adolescent girls is evolving from isolated BSE education towards comprehensive breast health literacy and BSA. Although awareness of breast cancer has increased, gaps remain in understanding normal breast development, recognizing unusual changes, and seeking appropriate care. School-based, nurse-led, interactive, and evidence-based digital interventions can improve knowledge, confidence, self-awareness, and attitudes, particularly when they are culturally and developmentally appropriate.

Long-term improvement requires reinforcement through supportive families, schools, accessible healthcare, and reliable digital information. Future research should emphasize standardized assessment tools, longitudinal evaluation, culturally tailored interventions, and multidisciplinary strategies. Strengthening breast health literacy during adolescence may establish lifelong preventive behaviours and contribute to improved breast health outcomes across the life course.

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