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Brio Innovative Journal of Novel Research (BIJNR) Jul - Dec 2024 Issue: 2 Volume: 1 ISSN: 0766-3242

"Role of Nurses in Screening and Early Detection of Cervical and Breast Cancer"

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https://doi.org/10.5281/zenodo.17140911

Abstract: Cervical and breast cancers are two of the leading causes of cancer-related morbidity and mortality among women worldwide. Early detection and timely intervention remain the most effective strategies to reduce mortality rates and improve survival outcomes. Nurses, forming the largest workforce in healthcare and often the first point of contact for patients, play a central role in screening and early detection programs. Their responsibilities span across patient education, counselling, performing screening procedures, ensuring follow-up, community mobilisation, and advocacy. This article explores in detail the multifaceted role of nurses in cervical and breast cancer screening, the barriers they face, and strategies to strengthen their contributions. Drawing on global and regional evidence, it underscores the importance of empowering nurses through education, supportive policies, task-shifting, and use of technology. Ultimately, nurses' active engagement is critical for achieving equitable access to cancer screening services, improving early detection, and reducing preventable deaths among women.

Keywords: *Cervical cancer; Breast cancer; Nurses; Screening; Early detection; Health education; Community mobilisation; Task shifting; Patient navigation; Cancer prevention.*

Introduction

Cancer remains a major global public health challenge. Among women, cervical and breast cancers represent two of the most significant causes of cancer-related illness and death. According to the World Health Organization (WHO), breast cancer is the most common cancer among women globally, with over 2.3 million new cases diagnosed in 2020 alone (1). Cervical cancer, largely preventable through vaccination and screening, still causes more than 300,000 deaths annually, most of which occur in low- and middle-income countries (LMICs) (2).

The key determinant of outcomes in both cancers is the stage at which they are diagnosed. Early detection through organized screening programs can significantly reduce mortality and improve quality of life. For cervical cancer, Pap smears, HPV testing, and visual inspection with acetic acid (VIA) are proven tools for early detection. For breast cancer, mammography, clinical breast examination (CBE), and breast awareness initiatives are commonly used strategies (3).

Nurses are central to the delivery of these interventions. In many countries, especially LMICs, nurses are the first and

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often the only health professionals available to women in community and primary care settings. They are trusted figures within communities, making them uniquely positioned to deliver culturally sensitive education, encourage screening uptake, perform screening procedures, and ensure follow-up of abnormal results (4).
This article discusses in detail the role of nurses in the screening and early detection of cervical and breast cancer, explores barriers to effective implementation, and suggests strategies for strengthening nursing contributions to cancer control efforts.

1. Epidemiology and Rationale for Early Detection

Breast and cervical cancers account for a significant proportion of the global cancer burden. Breast cancer has become the most commonly diagnosed cancer worldwide, overtaking lung cancer in 2020 (1). Despite advances in treatment, disparities in survival persist between high-income and low-income settings. For example, the 5-year survival rate for breast cancer is over 90% in high-income countries but drops to less than 40% in some LMICs due to late diagnosis and limited treatment access (5).
Cervical cancer presents a different challenge. It is the fourth most common cancer in women globally, yet it is almost entirely preventable through HPV vaccination and regular screening (2). The disease has a long pre-cancerous phase, allowing multiple opportunities for intervention. Organized screening programs in countries such as the United States, Canada, and the UK have drastically reduced cervical cancer incidence and mortality over the last decades (6). However, LMICs continue to bear the highest burden, largely due to lack of screening infrastructure and limited awareness among women.
The rationale for early detection is clear: cancers diagnosed at early stages are more likely to be treated successfully, with less aggressive interventions, lower costs, and improved quality of life. Nurses, by virtue of their reach and accessibility, play a key role in realizing these benefits through their involvement in cancer screening programs.

2. Overview of Screening Modalities

Cervical Cancer

Screening for cervical cancer relies on detecting pre-cancerous changes in cervical cells. The most widely used methods include:

- **Pap smear (cytology-based screening):** Involves collection of cervical cells and microscopic examination for abnormalities. While highly specific, it requires laboratory infrastructure and skilled cytotechnologists, which may be lacking in resource-poor settings (7).
- **HPV testing:** Detects high-risk HPV types responsible for cervical cancer. It is more sensitive than cytology and can be performed on self-collected samples, making it feasible for large-scale implementation in diverse settings (8).
- **Visual Inspection with Acetic Acid (VIA):** A low-cost method in which the cervix is examined with acetic acid application; pre-cancerous lesions appear as white patches. VIA provides immediate results, making it suitable for “screen-and-treat” approaches in LMICs (9).

Breast Cancer

Breast cancer screening aims to detect tumors before symptoms appear. Major methods include:

- **Mammography:** The gold standard in breast cancer screening, particularly effective in women aged 40–69. However, it requires sophisticated equipment and trained radiologists (10).
- **Clinical Breast Examination (CBE):** Performed by trained nurses or doctors, CBE is useful where mammography is not widely available. It increases

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awareness and may detect palpable tumors earlier (11).

- **Breast Self-Examination (BSE) and Awareness:** Although BSE alone has not been proven to reduce mortality, promoting breast self-awareness encourages women to recognize changes and seek medical evaluation promptly (12).

3. Roles of Nurses in Screening and Early Detection

a) Education, Awareness, and Counselling

One of the most significant contributions of nurses is educating women about cervical and breast cancer. Many women are unaware of the risk factors, signs, and symptoms associated with these cancers. Nurses provide clear and culturally appropriate information that empowers women to participate in screening programs. For instance, nurses explain the role of HPV in cervical cancer and emphasize the importance of regular Pap smears or HPV testing. They also counsel women about HPV vaccination for themselves and their daughters (13).

In the case of breast cancer, nurses encourage women to attend mammography appointments, teach breast self-awareness, and clarify myths surrounding cancer. This educational role is especially vital in rural areas, where misconceptions and stigma often prevent women from seeking preventive services (14).

b) Screening Procedures and Sample Collection

In many health systems, trained nurses perform Pap smear tests, collect HPV samples, or conduct VIA screenings for cervical cancer. Studies from Africa and Asia have shown that nurse-led VIA programs are both feasible and effective in increasing screening coverage (9). Similarly, for breast cancer, nurses often perform CBEs during routine health visits. In high-resource settings, advanced practice nurses may even interpret mammograms or assist radiologists in screening programs (15). By taking on these tasks, nurses reduce the burden on physicians and expand access to early detection services.

c) Facilitating Access and Referrals

Nurses also play an essential role in bridging the gap between screening and treatment. Abnormal screening results require follow-up diagnostic procedures such as colposcopy, biopsy, or imaging. Nurses act as patient navigators, ensuring women understand their results, schedule follow-up appointments, and access necessary care.

This navigation role is particularly critical in LMICs, where health systems are fragmented and patients may face multiple barriers such as transportation, cost, and stigma. By providing reminders, coordinating appointments, and linking women to support services, nurses help reduce loss-to-follow-up rates (16).

d) Follow-up and Continuity of Care

Screening is only effective when women with abnormal results receive timely diagnosis and treatment. Nurses are instrumental in maintaining continuity of care. They track patient records, conduct reminder calls, and follow up with women who miss appointments.

Additionally, nurses provide emotional support, addressing the fear and anxiety associated with abnormal results. Their counselling skills help women cope with the psychological impact of cancer screening and motivate adherence to further diagnostic or treatment procedures (17).

e) Community Mobilisation and Outreach

Nurses often extend their work beyond health facilities into communities. Through health talks, group sessions, and outreach programs, they raise awareness about cervical

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and breast cancer and mobilise women to participate in screening.

Community mobilisation is particularly effective when nurses collaborate with community leaders, women's groups, and schools. In resource-limited settings, nurse-led mobile clinics or outreach camps bring screening services closer to under-served populations, significantly improving coverage (18).

f) Advocacy, Leadership, and Policy Involvement

Nurses are not only service providers but also advocates for better healthcare. They lobby for improved access to screening programs, equitable distribution of resources, and inclusion of cancer screening in national health policies.

In several countries, nurses hold leadership positions in cancer prevention programs, contributing to the development of guidelines, training curricula, and quality assurance systems. Their frontline experience gives them unique insights into practical challenges and potential solutions, making their input invaluable for policy-making (19).

g) Use of Technology and Innovation

With the rapid advancement of digital health, nurses are increasingly using technology to enhance screening. Mobile health (mHealth) platforms allow nurses to send reminders, deliver educational messages, and track follow-ups.

Telehealth initiatives also enable nurses in rural areas to consult specialists for interpretation of screening results, such as digital mammography or HPV test results. Moreover, nurse-led distribution of HPV self-sampling kits has proven to increase participation in cervical cancer screening, especially among women who are reluctant to undergo pelvic examinations (20).

4. Barriers to Effective Nursing Roles

Despite their critical role, nurses face numerous barriers in carrying out effective screening and early detection.

First, knowledge and skill gaps remain a major challenge. Studies have shown that while nurses are generally aware of cervical and breast cancer, many lack up-to-date knowledge of screening guidelines, HPV vaccination schedules, or technical expertise in procedures like VIA (21). This highlights the need for continuous training.

Second, cultural and social barriers often limit women's willingness to undergo screening. In some cultures, women perceive cervical exams as embarrassing or unnecessary unless symptomatic. Fear of a cancer diagnosis and associated stigma also reduces participation (22). Nurses, therefore, require skills in culturally sensitive communication.

Third, infrastructure and resource constraints are common in LMICs. Many facilities lack basic supplies such as speculums, cytology labs, or mammography equipment. Nurses working in such settings are unable to provide effective screening even when they are trained (23).

Additionally, regulatory and policy restrictions in some countries prevent nurses from performing certain procedures, limiting their scope of practice. Workload pressures, understaffing, and lack of incentives further hinder their ability to prioritise cancer screening activities (24).

5. Strategies to Strengthen Nursing Contributions

To overcome these barriers, several strategies have been proposed and implemented.

1. **Enhanced Education and Capacity Building:** Incorporating cancer screening and prevention into nursing curricula is essential. In-service training and refresher workshops keep nurses updated on evolving guidelines. Mentorship

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programs, peer learning, and simulation-based training can further enhance competency (25).

2. **Task Shifting and Expanded Scope of Practice:** In resource-limited settings, task shifting allows nurses and midwives to take on responsibilities traditionally reserved for physicians. Evidence shows that nurse-led VIA and CBE programs significantly improve screening coverage without compromising quality (26).
3. **Community-Based Strategies:** Outreach programs, mobile clinics, and home visits are effective in increasing screening uptake. Nurses should be supported with resources to conduct such initiatives, particularly in rural areas. Engaging community leaders and tailoring messages to local beliefs improves acceptability (27).
4. **Leveraging Technology:** mHealth platforms can deliver reminders and educational messages, while telehealth facilitates remote consultations. HPV self-sampling, distributed and supervised by nurses, has shown promise in increasing participation in cervical cancer screening (28).
5. **Strengthening Systems and Quality Assurance:** Establishing cancer registries, standardized protocols, and monitoring systems helps ensure continuity of care. Nurses can play a central role in data collection and monitoring outcomes, contributing to program evaluation (29).
6. **Policy and Institutional Support:** Governments and health organizations must recognize nurses' contributions and create supportive policies. Adequate funding, incentives, and supportive supervision are essential to sustain nurse-led initiatives (30).

6. Case Examples and Evidence from Practice

Several successful initiatives highlight the potential of nurses in cancer screening.

In **England**, trained nurses administer most cervical smear tests. Regular competency assessments and continuing education ensure quality. This nurse-led model has achieved high screening coverage and improved outcomes (6).

In **India**, studies have shown that training staff nurses in VIA significantly improved cervical cancer screening rates in rural communities. Nurse-led outreach programs also increased breast cancer awareness and encouraged women to undergo CBE (31).

In **Sub-Saharan Africa**, task-shifting strategies enabled nurses and midwives to deliver VIA and immediate treatment of pre-cancerous lesions using cryotherapy. This "screen-and-treat" approach, led primarily by nurses, proved effective in reducing loss to follow-up (32).

In **Canada and the United States**, advanced practice nurses act as patient navigators, helping women navigate complex healthcare systems, ensuring timely follow-up, and reducing disparities in cancer outcomes among minority groups (33).

These examples demonstrate that when adequately trained and supported, nurses can effectively deliver cancer screening services, even in resource-constrained settings.

Summary / Conclusion

Cervical and breast cancers continue to pose a significant health burden on women worldwide. Early detection through screening offers the best chance of reducing mortality and improving survival. Nurses, as the backbone of healthcare systems, are uniquely positioned to deliver these services. Their roles encompass education,

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screening, referrals, follow-up, community mobilisation, advocacy, and the use of technology.

However, barriers such as knowledge gaps, cultural stigma, inadequate resources, and restrictive policies limit the full potential of nursing contributions. Addressing these barriers through education, task-shifting, community outreach, technology, and supportive policies is essential. Ultimately, empowering nurses to take leadership in cancer screening programs can transform outcomes, particularly in LMICs where the burden of cervical and breast cancer remains highest. Strengthening their roles will not only improve screening coverage and early detection rates but also contribute to achieving global goals in cancer control and women's health equity.

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