

Emerging Clinical Nursing Specialty: The Role of the Cancer Control Nurse (CCN) in Preventive Oncology

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Abstract: The burden of cancer continues to rise globally, with low- and middle-income countries (LMICs) like India witnessing disproportionate morbidity and mortality due to late diagnosis and limited preventive services. In this context, the emergence of a new clinical nursing role—the Cancer Control Nurse (CCN) or Preventive Oncology Nurse Specialist—offers a transformative approach to strengthen cancer prevention, screening, health promotion, and early detection at the population level. This article explores the scope, competencies, training needs, and impact of this specialized role, particularly in the Indian setting, while advocating for formal recognition within national cancer control frameworks. The integration of CCNs into multidisciplinary oncology teams has the potential to reduce cancer incidence, improve early detection, and facilitate continuity of care across prevention, screening, and treatment pathways.

Key Words: Cancer Control Nurse, Preventive Oncology, Oncology Nursing, Cancer Screening, Cancer Prevention, Preventive Oncology Nurse Specialist, HPV Vaccination

Introduction

Cancer is now a major cause of death under the age of 70 in more than 100 nations [1]. The World Health Organization (WHO) states that over 30–50% of cancers are preventable by lifestyle changes, early screening, immunization, and targeted risk reduction programs [2]. Nevertheless, in most low- and middle-income countries (LMICs), Preventive Oncology is underdeveloped, with most of the resources focussed towards treatment rather than prevention. This disparity is a critical lacuna in inclusive cancer control strategies.

Moreover, India faces healthcare workforce issues too. According to the National Health Profile 2021, India has a doctor-to-population ratio of approximately 1:834 and a nurse-to-population ratio of 1:559 [3]. These ratios are inferior when compared to WHO

norms, which reflects the healthcare burden in rendering preventive care, including cancer control.

To address these challenges, a unique clinical nursing specialty, Preventive Oncology Nursing or Cancer Control Nursing has started to evolve. These specialists are trained to offer cancer screening and prevention services, facilitate healthy lifestyle habits, coordinate community outreach activities, and provide pre- and post-screening counselling. As Cancer Control Nurses (CCNs), they play a key role in bridging over the gaps existing between clinical practice, community health, and public health initiatives. This shifts the focus from reactive cancer treatment to proactive cancer prevention, contributing meaningfully to reducing the global cancer burden.

Global recognition of the cancer control nurse (CCN) or preventive oncology nurse:

Cancer Control Nurses (CCNs) has gained momentum globally, especially in high-income economies with established models of cancer prevention and early detection. In such nations, specialist nursing roles have been incorporated into cancer control plans as a means of emphasizing the important roles played by nurses in prevention, early detection, and patient navigation.

United Kingdom (UK):

In UK, Clinical Nurse Specialists (CNSs) play a critical role in cancer screening programs. They are actively engaged in coordinating patient education, endorsing pathways for early cancer detection, and coordinating timely follow-up for those with aberrant results. They are the primary contact, who guides patients through intricate diagnostic and preventive processes in the National Health Service (NHS) [4].

Canada:

In Canada, Oncology Nurse Navigators (ONNs) play an important role in cancer prevention and early detection. ONNs are the part of multidisciplinary team, who support individuals to move along cancer prevention paradigm facilitating timely screenings, risk-reduction counselling, and diagnostic care. They are pivotal in reducing delays in cancer care, increasing health literacy, and optimizing prevention protocol adherence [5].

United States of America (USA):

In US, public health nurses are incorporated in national cancer prevention programs like Centers for Disease Control and Prevention (CDC) and National Breast and Cervical Cancer Early Detection Program (NBCCEDP). They partake in community outreach activities, facilitate access to screening for the underserved, provide education, and render culturally competent care for early detection [6].

Global Nursing Organizations:

The Oncology Nursing Society (ONS) and the International Society of Nurses in Cancer Care (ISNCC) have called for the formalization and enhancement of the nurse's role in

cancer control, globally. They urge to promote nurses in shaping health seeking behaviour of the individual, early detection and prevention of cancers, screening and survivorship care, thereby minimizing the variations in cancer outcomes globally [7].

Background: the need for preventive oncology nursing

Global Epidemiology and Gaps in Prevention

As per GLOBOCAN 2020, breast, lung, colorectal, prostate, and stomach cancers are the most prevalent cancers across the globe [1]. These cancers are either preventable or may be diagnosed at early stages by proper screening and risk-reduction interventions. India, being a low- and middle-income country, cancer burden is worse. It is seen that more than 75% of the cancers in India are diagnosed at later stages, with poor survival rates and increased mortality [8].

The GLOBOCAN 2022 India-specific data has spot lighted this burden. In India, common cancers include breast, cervix uteri, lung, oral cavity, and colorectal cancers [9]. While the Breast cancer has the highest incidence among women, tobacco-associated cancers like Oral cavity cancer and Lung cancer predominates in men. This mirrors the dual burden of lifestyle related and infectious cancers in India. Early detection initiatives are rudimentary in its reach and scope, paving to delayed diagnosis and excessive mortality rates.

These findings necessitate preventive oncology nursing services in the nation, which will substantiate early detection and prevention of cancers. The trained nurses in cancer control can empower the community and bridge communities and the health care system through awareness, early detection, vaccination, and advocating healthy lifestyles which may lower the burden of cancer.

National Challenges

India has varied challenges in promoting cancer prevention. Perhaps the greatest challenge is the low level of health literacy and cancer awareness among the general public. Majority of the Indian population lack awareness about early warning signs, benefits of screening, and preventive services availability. This knowledge gap leads to delayed diagnosis and treatment inefficacy [8].

Another major challenge is the stigma and fear associated with cancer, which deter individuals from seeking timely medical help. Cultural beliefs and misconceptions about cancer often result in people hiding their symptoms or avoiding screening services altogether. Such attitudes contribute to the high proportion of cancers being detected at advanced stages [10].

The nation also lacks adequate coverage and access to organized cancer screening programs, particularly in rural and underserved areas where healthcare infrastructure is already strained. Urban areas can be potentially provided with greater access to preventive and diagnostic services, while the rural populations often experience geographical, transportation, as well as service-related barriers [11].

In addition, there exists a dire shortage of trained health workers at the primary healthcare level, including those with expertise in cancer prevention and early detection. Nurses, who are central to primary care provision, frequently do not have formal training in oncology-specific preventive services, thus restricting the scope and impact of early detection activities [12].

Though the Government of India has initiated population-based oral, breast, and cervical cancer screening programs under the Ayushman Bharat program through its Health and Wellness Centres (HWCs), there are still gaps in its implementation. Nurses deployed as Community Health Officers (CHOs) are the front-line workers of these HWCs and are tasked with implementing cancer screening and prevention services. These CHOs are, however, normally tasked with a variety of other healthcare responsibilities outside cancer prevention, and frequently do not have specialized training in preventive oncology. Consequently, there continues to be a dearth of specially dedicated nursing staff devoted solely for systematic cancer prevention and control, at the community level. This shortfall considerably lessens the scope for HWCs to contribute to reducing India's rising cancer burden [13].

Scope of the Cancer Control Nurse (CCN) Role

Cancer Control Nurse (CCN) is a developing specialty in oncology, community health nursing, and public health. CCNs respond to the rising global cancer burden through a pre-emptive prevention, health promotion, early detection, vaccination, psychosocial care and patient navigation. Strategically placed in midst of primary healthcare, oncology care, and public health systems, CCNs are key actors in the successful roll-out of national and international cancer control plans, especially in LMICs, where the health infrastructure is over-stretched and under-funded [14-15]. They are key in propelling WHO's Global Cancer Control Framework and invigorating the preventive pillars of Universal Health Coverage (UHC).

1. Health Promotion and Risk Communication

Health education, health promotion, and risk reductive activities are critical roles of Cancer Control Nurse. They arrange community cancer awareness campaigns to educate about modifiable cancer risk factors like tobacco use and alcohol intake, unhealthy eating habits, sedentary life, obesity, cancer-related infectious diseases (e.g., HPV, HBV, HCV) etc. CCNs are assigned to tailor communication styles to meet cultural and local needs of the community, dispelling myths and misconceptions, thereby strengthening health-seeking behaviour. The screening participation, HPV vaccination, and other preventive measures can be facilitated only through alterations in health seeking behaviour [13,16]. CCNs also work with schools, workplaces, and community organizations to build supportive environments that promote healthy behaviours.

2. Cancer Screening and Early Detection

CCNs are trained to perform evidence-based screening tests for prevalent cancers in primary care and community practice. These include:

- Visual Inspection with Acetic Acid (VIA), Pap Smear and HPV DNA testing for preventing and early detection of cervical cancer [17].
- Clinical Breast Examination (CBE) to detect early signs of breast cancer in asymptomatic women.
- Oral cavity Visual Examination (OVE) to identify Oral Potentially Malignant Disorders (OPMDs), premalignant lesions of the mouth etc especially in tobacco-dominated areas [18].
- Encouragement of low-dose CT screening for lung cancer in high-risk patients (e.g., long-term smokers, family history of lung cancer etc.).
- Encouragement of Faecal Immunochemical Tests (FIT) and arrangement of referrals for colonoscopy among patients at risk for Colorectal cancer [19].

The timely screening and early diagnosis may promote patient outcomes and decrease the mortality rates associated with cancers.

3. Vaccination Services

CCNs play a crucial role in vaccination programs, especially HPV vaccination programs for girls between 9–26 years as a first-line preventive method against cervical cancer. They perform functions beyond administering vaccinations; they are also involved in

- Pre-vaccination counselling, resolving parental concerns regarding vaccine and obtain written informed consent.
- Assessing medical eligibility and identifying risk factors.
- Managing Adverse Events Following Immunization (AEFI).
- Post-vaccination monitoring and follow-up to maximize coverage and compliance.
- Cold chain management, Infection Prevention and Control (IPC) practices, biomedical waste management etc [20-21].
- Advocacy and awareness campaigns to enhance vaccine acceptability and address vaccine hesitancy among communities.

4. Patient Navigation and Referral

Cancer Control Nurses serve as patient navigators, facilitating seamless referrals between primary care, diagnostic services, tertiary oncology centers, and palliative care providers. They expedite the timely referral of individuals with positive or suspected screening results to appropriate diagnostic and treatment services. CCNs also guide patients to various government welfare programs, e.g., Ayushman Bharat, State Cancer fund etc and monetary support programs, thereby reducing the economic burden of cancer treatment. Effective follow-up processes organized by CCNs are essential in order to avoid loss to follow-up, which is a frequent problem in LMIC settings [22,23].

5. Counselling and Psychosocial Support

CCNs offer comprehensive, patient-focused counselling services throughout the continuum of cancer prevention and care. This involves pre- and post-screening

counselling to psychosocially and emotionally prepare individuals, explain procedures, and set realistic expectations. They intervene with common issues of anxiety, fear of diagnosis, stigma, denial, and cultural myths about cancer. Cancer Control Nurses also provide family-centred counselling, facilitating participatory decision-making processes that take into account individuals' and cultural values. These interventions enhance mental well-being, treatment plan adherence, and patient satisfaction, especially in resource-constrained environments where official psychosocial services might be limited [10].

6. Data Collection, Monitoring, and Research

Reliable data management is an important CCN role. CCNs handle screening registers, patient records, referral tracking, and follow-up logs necessary for program monitoring and assessment. CCNs contribute to population-based cancer registries, reporting essential epidemiological information that guides policy making, resource planning, and research priorities. Additionally, they engage in operational research, quality improvement activities, and audits that drive improved efficiency and effectiveness of cancer control programs [24]. Through evidence generation, CCNs bridge the gap between clinical practice and public health policy.

Why Nurses Should Be Appointed As Preventive Oncology Screeners?

Nurses are well-suited to be Preventive Oncology Screeners because of their recognized roles in community outreach, health education, screening, and counselling. Through their foundation in whole-person, patient-focused care, nurses possess the ability to engage individuals and communities in preventive health actions, provide evidence-based cancer screening interventions, and follow up on positive cases. Nurses tend to have more access and acceptability within populations than physicians, especially in low- and middle-income nations (LMICs) where there are shortages of physicians. There is evidence that nurse-initiated screening programs for breast, cervical, and oral cancer have been successful in enhancing rates of early detection, decreasing the stage at diagnosis, and enhancing engagement with screening programs [13,17]. In addition, nurses help narrow the gap between healthcare services and people through culturally appropriate education, stigma reduction counselling, and facilitation of health system navigation, and therefore play a crucial role in cancer prevention.

Nurses' Role in Cancer Care

Nurses are at the forefront of integrated cancer care, particularly in palliative and end-of-life care, where they offer physical, emotional, psychological, and spiritual care to patients and families. Their ongoing presence enables them to evaluate and monitor pain, symptoms, nutrition, skin integrity, and psychological distress, promoting a more improved quality of life for those with advanced cancer. Nurses have an important role to play in communication, advance care planning, bereavement, and family counselling in palliative care environments. Research has revealed that nurse-initiated palliative care interventions have profound benefits, including the improvement of symptom

control, prevention of unnecessary hospitalization, and increased patient and family satisfaction [25,26]. In India, models such as Can Support and home-based palliative nursing services also exemplify the nurses' role in providing empathetic, culturally sensitive care to individuals with advanced cancer and families through the dying process.

Education and Training for Cancer Control Nurses (Ccns)

In order to enhance cancer prevention, there is a pressing need for formal education and professional training for nurses in cancer screening and early detection. Suggested training models are certificate courses (3–6 months), postgraduate diplomas in Preventive Oncology Nursing, and Continuing Nursing Education (CNE) programs provided by cancer centres. Training must adequately address issues like cancer epidemiology, causes of cancer, potential dangers of screening, HPV vaccination, communication skills, and counselling skills, navigation of the patient, infection control, and management of data, legal matters, and community outreach. Attention must also be given to the attainment of soft skills such as leadership, collaboration, and stress management so that nurses are properly skilled to provide high-quality, evidence-based preventive oncology services in accordance with local and international cancer control plans [7, 13].

Example: AIIMS New Delhi's Preventive Oncology Nursing initiatives have trained staff nurses in VIA, CBE, and oral screening and deployed them in NCD clinics and screening camps [27].

Case Example: CCN in Action

Scenario: 42-year-old woman from rural India receives care at a nearby HWC. The Cancer Control Nurse does VIA, which is positive. The nurse counsels her, refers her to colposcopy, and follows up with phone calls to ensure she returns for follow-up. The woman is diagnosed with CIN II and is treated with cryotherapy.

Impact: Pre-cancerous lesion is identified and treated, and cervical cancer is prevented.

This illustration shows how a CCN is able to change the direction of disease through making an early diagnosis and treatment

Barriers and Facilitators for Cancer Control Nurses (Ccn) In India

Barriers in India

The integration of the Cancer Control Nurses (CCNs) into India's cancer control and prevention efforts effectively remains hampered by several entrenched barriers despite increased awareness of cancer as a public health priority. Lack of well-defined job roles, cadres, or policy that acknowledges the role of nurses as cancer screeners and educators still holds back progress. At present, nurses who work as Community Health Officers (CHOs) in Health and Wellness Centres (HWCs) under Ayushman Bharat have a plethora of responsibilities, but no formal cadre or career progression for nurses fully committed to preventive oncology [13]. In addition, poor budgetary allocations and

chronic human resource shortages in primary healthcare systems further constrain HWCs' capacity for providing regular, high-quality cancer screening services. Lacking coordination between healthcare, education, and social services at the intersectoral level and fragmented referral links between primary and secondary or tertiary care result in inefficiencies and loss of opportunities for early detection [22]. In addition, cultural barriers, gender dynamics, stigma, and fear around cancer diagnoses keep numerous people, especially women, from reaching screening services, even though they are available [10]. Such barriers disproportionately hit rural and disadvantaged populations, whose health literacy and awareness of cancer prevention are low.

Enablers in India

Despite the problems, a number of enablers provide opportunity to reinforce the function of CCNs in India. India's current infrastructure under the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) offers a proven platform for reaching scale with cancer prevention under HWCs, Sub-Health Centres, and District Hospitals [28]. Major cancer centres like Tata Memorial Centre (TMC), Mumbai, and AIIMS, New Delhi have introduced specialized nursing programs and training models that have proven the possibility of enhancing the CCN role in organized systems [29]. In addition, collaboration with nongovernmental organizations (NGOs) and international bodies like PATH, WHO, and the International Agency for Research on Cancer (IARC) offer technical assistance, finances, and education to strengthen screening programs and advance healthcare worker competency [30]. Notably, India's nursing force is increasingly showing a readiness to seek upskilling opportunities in preventive health and oncology, as evident from the rising number of nurses undertaking advanced training programs, workshops, and certification courses on cancer prevention and screening [14]. These enablers highlight the potential for India to build a skilled nursing cadre dedicated to preventive oncology, provided these efforts are supported by clear policies, adequate resources, and strategic planning.

Policy Implications and Recommendations

- **Role Recognition:** Establish “Cancer Control Nurse or Preventive Oncology Nurse” as a distinct cadre under state health missions.
- **Curriculum Inclusion:** Integrate preventive oncology modules in BSc and MSc Nursing programs.
- **Forced Screening Roles:** Deploy CCNs in HWCs, NCD clinics, and cancer departments.
- **Monitoring and Evaluation:** Incorporate nursing-led indicators into screening program monitoring and evaluation.
- **Research Promotion:** Involve CCNs in research on community cancer.

Conclusion

The Cancer Control Nurse is a new and essential player on the oncology continuum of care, particularly in LMICs where prevention is the most important. Through educating and empowering nurses with knowledge, skills, and independence in preventive oncology, health systems can facilitate earlier diagnosis, decrease cancer-related deaths, and enhance population outcomes. Formalizing this position, developing capacity, and incorporating it into national cancer control plans are urgently needed.

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