

# Oncology Nursing in Singapore: How It Evolved and What Does the Future Hold?

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## ABSTRACT

Cancer is the leading cause of death in Singapore since the early 1980s and has remained so since then, accounting for 29.7% of deaths in 2015. Rapid technological advancements in the treatment of cancer and the development of the specialty of radiation and medical oncology demanded nurses with the knowledge and skills to provide care and support to cancer patients and their families. The evolution of oncology nursing as a specialty in Singapore mirrors many countries due to the increase in cancer incidences as well as the development of medical specialty in the treatment of cancer. This paper traces the development of oncology nursing

as a clinical specialty in Singapore. The historical perspective maps up the factors that caused oncology nursing to develop as a specialty within nursing practice. As cancer continues to be the leading cause of mortality for many years to come in Singapore and cancer care continues to evolve, the roles of oncology nurses will continue to unfold and expand as part of an interdisciplinary team in the fight against cancer.

**Key words:** Cancer incidence, development, oncology nursing, Singapore, technology

## Introduction

Singapore is a small island nation which is densely populated with about 5.82 million people.<sup>[1]</sup> The majority of which is made up of Chinese (76.2%), Malays (15%), and Indians (7.4%). The proportion of those 65 years and above was 14.4% in 2019.<sup>[2]</sup> The median age of the population now stands at 40.2 years.<sup>[1]</sup>

Singaporeans enjoy a high standard of health. The average life expectancy at birth for males is 81 years and 85.4 years for females.<sup>[3]</sup> Although Singapore has a relatively young population with <14.4% over 65, however, this

is predicted to change as life expectancy increases and mortality rate decreases. It is estimated that this figure will increase to 24% by 2030.<sup>[4]</sup>

## Cancer: A Major Health Problem

Cancer is a scourge on people in both developed as well as developing nations. Cancer affects 18.1 million<sup>[5]</sup> and in the year 2018, cancer claimed 9.6 million lives worldwide, accounting for 1 in 6 deaths globally.<sup>[5]</sup> It is estimated that 1 in 5 men and 1 in 6 women worldwide developed cancer in

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their lifetime and one in 8 men and one in 11 dies from the disease.<sup>[6]</sup> The top three most common cancers are lung, 2.09 million; breast, 2.09 million; and colorectal, 1.8 million.<sup>[6]</sup> The top three most common causes of cancer deaths are cancers of lung (1.76 million), colorectal (862,000), and stomach (783,000).<sup>[6]</sup>

Similarly, in Singapore, cancer had overtaken cardiovascular diseases as the top killer since the early 1980s and remains the top killer since then.<sup>[7]</sup> It now accounts for 29.7% of all deaths in Singapore.<sup>[8]</sup> The three most common cancers found in Singapore were colorectal, lung, and prostate in men and breast, colorectal, and lung cancers in women. It is estimated the lifetime risk for developing cancer is approximately 1 to 4 people in the Singapore population.

Unlike many other diseases, cancer is a complex disease and demands intense treatment and its resultant side effects that can be lifelong. The complexity in cancer care demands a high-level of expertise in addressing the needs of this group of patients. This paper traces the development of oncology nursing as a clinical specialty in Singapore. The historical perspective maps up the factors that caused oncology nursing to develop as a specialty within the nursing practice. As cancer continues to be the leading cause of mortality for many years to come in Singapore and cancer care continues to evolve, the roles of oncology nurses will continue to unfold and expand as part of an interdisciplinary team in the fight against cancer.

## Professional Development of Nursing in Singapore

Singapore was once a British colony and much of its nursing training was mirrored after the British system. Nursing was initially delivered by untrained French nuns till 1900 till the arrival of English nurses.<sup>[9]</sup> From structured apprentice-based nursing program conducted by hospital with little theoretical education, it developed into a nursing school-based training program of 3 years in 1941.<sup>[9]</sup> The Singapore Nursing Board was eventually established in 1975 to ensure standards of education and practices of nurses and midwives are maintained.

Specialization in nursing commenced in tandem with technological advancement and medical specialization. With the assistance of the World Health Organization, a number of postbasic nursing specialty courses were started. These included midwifery, psychiatric nursing, tuberculosis nursing, pediatric nursing, operating theater nursing, ward administration, intensive care nursing, cardiovascular, coronary and thoracic nursing, renal nursing, and community Health nursing.<sup>[9]</sup>

## Clinical Career Path and the Nurse Specialist Scheme

The traditional career ladder was limited to administration and education. Good clinical nurses were promoted to take up these positions. Recognizing the need to keep good clinical nurses in the clinical areas where their contributions are most needed, the first master of nursing in advanced nursing was commenced at the National University of Singapore (NUS) in 2003.<sup>[10]</sup> It is also envisaged that the implementation of the clinical tract will increase job satisfaction and retention of nurses; reduce practice variability; improve standard of patient care; increase clinical effectiveness; and profile the role of nurses.

## Oncology Nursing: Professional Development as a Clinical Specialty in Singapore

Oncology Nursing is a very young specialty in Singapore. It grew in tandem with the scientific developments in Singapore, namely chemotherapy and radiation therapy in the early 1950s and 1960s. The first extended roles for nurses in cancer care were undertaken by nurses working in the radiation department in the provision of care to patients receiving external radiation therapy as well as the administration of intravenous cytotoxic medications prior to the development of the medical oncology specialty. Oncology nursing training was nonexistent locally and the first nurse received her Radiation nursing training at the Mount Vernon Hospital, Middlesex, in the United Kingdom (UK) in 1972. This was followed by a nurse from the Singapore General Hospital being sent to the National Cancer Centre in Tokyo, Japan, for specialized cancer nursing training. The years that followed saw more nurses being sent for specialized training in centers such as the Royal Marsden Hospital in the UK. To meet the increasing demand for oncology nurses, a certificate course in cancer nursing was commenced in the school of nursing in 1989. Following the establishment of the first certificate course in cancer nursing, the oncology nurses' chapter was established under the umbrella of the Singapore Nurses Association, the only nongovernmental body representing nurses in Singapore in 1990. The aim of the society is to provide continuous education in oncology to nurses in Singapore, create awareness to public on prevention and early detection of cancer, and raise funds for cancer-related activities. As education for registered nurses shifted from the School of nursing to the tertiary institution at Nanyang polytechnic, the certificate program was revised to an advanced diploma course in 1996.<sup>[9]</sup>

With the rapid technological advances in cancer care delivery and the developing recognition of the importance of nursing within cancer care, nurses were sent to obtain tertiary education in Australia, and the first masters trained in oncology graduated in 1997. In 2003, the NUS commenced the first master of nursing in advanced practice nursing<sup>[10]</sup> with three oncology nurses graduated in 2007. These nurses were equipped with advanced clinical skills and trained to be advanced practice nurses (APNs).

The subspecialization within the specialty evolves as the roles and scopes of oncology nurses expanded in order to provide more personalized care to a special group of patients. Improved chemotherapy delivery systems and changing health-care economics also affected the roles of the cancer nurse with the shift to ambulatory care. The role of intravenous chemotherapy administration was taken over by oncology trained nurses from 1989. In 1992, the first breast care nurse was trained in Royal Marsden Hospital, and over the years, these role expansions include but not limited to bone marrow transplant nursing, stoma nursing, venous access device nursing, thoracic nursing, head-and-neck nursing, and palliative care nursing.

## Anticipating the Future

The increase in cancer incidences and scientific and technological advances have dramatically impacted on cancer care and resulting in the development of oncology nursing as a specialty in Singapore. Looking to the future, it can be expected that the increase in cancer incidences and scientific and technological advances will continue to affect the nursing practice and the way care is provided.

New drugs, new regimens, and new technological innovations will impact on how cancer care is delivered. For example, targeted therapies or “Precision Medicine” uses drugs such as trastuzumab, lapatinib, and pertuzumab to target a particular genetic mutation or pathway based on the genetic characteristics of both the tumor and the patient to interfere with cancer growth.<sup>[11]</sup> Furthermore, the advances in cancer immunotherapy with its potential immune-mediated side effects<sup>[12]</sup> would generate an array of new and altered symptoms with which oncology nurses would need to keep pace with in order to deliver safe and competent care.

The advent and the rapid development of information technology would also continue to affect how oncology nurses deliver care. For instance, with internet widely accessible in Singapore,<sup>[13]</sup> and with a more educated population, cancer patients,<sup>[14]</sup> and their caregivers are resorting to the internet to find quickly accessible information to meet their information needs. Although the Internet is a rapid source for obtaining health-related information, however, the quality of health information

that is being posted online is a concern.<sup>[15-17]</sup> In addition, information seekers may not possess the ability to effectively search, comprehend, and discern the voluminous and highly variable quality of information.<sup>[18,19]</sup> As such, besides being the provider of information, the oncology nurses’ role would need to include being a consultant for patients to assess their retrieved health-related information.<sup>[20]</sup> To better reach out to the technological savvy and to enhance the delivery of care, oncology nurses would also need to innovate, adapt and adopt information technology for the delivery of care such as the development and delivery of computer-based educational materials, decision aids,<sup>[21]</sup> and monitor care. Besides, academic and clinical settings could also consider embracing such technologies to broaden/enhance teaching abilities, e.g., clinical simulation and e-learning and web-based clinical instructions<sup>[22]</sup> to students or staff. Artificial intelligence (AI) would also revolutionize care delivery by leading to highly sophisticated systems for clinical monitoring and decision-making<sup>[23]</sup> and will have a major impact on nursing. Understanding the implications and potentials of AI and staying abreast by embracing such technology by inserting nursing knowledge into these systems and processes they enable<sup>[24]</sup> would help oncology nursing to progress and remain a valuable member of the interdisciplinary team at the forefront of cancer care.

With an aging population and as the incidence of cancer rises with age, it can be predicted that cancer would remain the top killer for many years to come. Early detection and new and better treatments would also result in substantial increases in the number of cancer survivors. The Institute of Medicine in “From Cancer Patient to Cancer Survivor: Lost in Transition”<sup>[25]</sup> outlined the followings as essential components of survivorship care: (1) prevention and detection of new cancers and recurrent cancer, (2) surveillance for cancer spread, recurrence, or second cancers, (3) intervention for consequences of cancer and its treatment, and (4) coordination of care between specialists and primary care providers. As such, the need for the management of long-term side effects, education, surveillance for disease progression<sup>[26]</sup> and the smooth transition of care become priorities as cancer survival rates increased. Since oncology nurses are essential in every phase of patient care, thus they are in the unique position for the provision of survivorship care. Oncology nurses can play a significant role in developing innovative survivorship programs to educate and support these cancer survivors, as they transit from acute survivorship to extended survivorship and progress through the cancer journey.

As treatment for cancer continues to evolve, the care oncology patients require is expected to be more complex, thereby demanding a high level of expertise. Oncology nurses will require continued education to provide the

care, education, and support needed by cancer patients. An increase in the number of specialist nurse clinicians and APNs will be needed as they function to meet both the medical and nursing needs of patients as well as functioning as clinical experts, consultants, educators and mentors to provide education, and oversight of nurses providing cancer care.<sup>[27]</sup> In addition, one of the hallmarks for achieving excellence in a profession is both the evidence of research activity and incorporation of best available evidence into clinical practice<sup>[28]</sup> in order to provide high-quality care. The establishment of evidence-based practice may be facilitated by the existence of more APNs in clinical practice, through their provision of support, clinical expertise, and knowledge of current research findings.<sup>[29]</sup> In addition, with the increased in the complexity of care and to safeguard the nurses and the patients, it is timely to develop the scope and standards for oncology nursing practice including practice guidelines. This initiative could be taken by the Oncology Nurses' Chapter with key representatives from the clinical and education fraternities.

## Conclusion

The development of oncology nursing in Singapore arises due to the increasing numbers of cancer patients and the complexity of cancer care. Over the years, as cancer care expanded, the training of oncology nursing was transferred from foreign scholarships to the local setting to meet the increasing demands for oncology nurses. As the population of Singapore ages and with improved technological advances in the detection and treatment of cancer resulting in more cancer survivors, the demand for oncology services is expected to rise. While it is difficult to predict the future, it can be anticipated that advancement in technology and innovations in cancer care will continue to evolve and impact on nursing care. As cancer care continues to evolve, oncology nursing is in a unique position to build a preferred future by contributing and growing professionally in Singapore.

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## Conflicts of Interest

There are no conflicts of interest.

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