Review Article on Oncology Nursing

A review of growth and development of oncology nursing in six European countries

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Abstract: Oncology nursing consists of a branch of nursing specialised in the care of people affected by cancer. Despite its essential contribution in the field of oncology, there is lack or poor recognition as a specialty across Europe. The aim of this paper is to review the development and growth of oncology nursing in 6 diverse countries in Europe. The paper has been developed by drawing on the relevant national and European literature (e.g., in local language and English language) available in the participating countries. European and international literature has been used complementarily to contextualised the findings to the wider field of cancer nursing across the world. Furthermore, this literature has been utilised to demonstrate how the implications of the paper's outcomes can be relevant to other cancer nursing contexts. The paper discusses the pathways of the development and growth of oncology nursing in France, Cyprus, UK, Croatia, Norway, and Spain. This paper will further contribute to raising the awareness on the extent and level of contribution that oncology nurses are making to improve cancer care on a global scale. This also needs to be in accordance to the policy frameworks on a national, European and global context so that the recognition of the vital contribution of oncology nurses is complemented with its full recognition as a distinct specialty.

Keywords: Oncology; nursing; nursing growth; education; curriculum

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Introduction

Nursing has been an essential and integral part of healthcare since its origins. The establishment of modern nursing was based on the principles and ideas envisioned by the pioneer work of Florence Nightingale that have led to the rapid growth and development of nursing. Through her visionary work, she contributed to defining nursing practice by suggesting that nurses did not need to know all about the disease process like the medical field (1). Florence Nightingale believed that through the caring process nurses could work towards maximising the contribution of the person's environment as the means to, helping the patient deal with symptoms and changes in function related to illness (2). The distinct perspective that nursing brings to the care of the person, which is complemented by the humanistic approach, a rational philosophy informed by science, inspired

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by art, and motivated by compassion, that it deeply serves, have also constituted nursing to become the backbone of every healthcare system on a global basis becoming pivotal for efficient delivery of quality healthcare over time.

Background

Within the specific context of cancer, nurses have been increasingly becoming fundamental for driving patient-centered care and integrating shared decision-making across the cancer care continuum including screening, early detection, administration of treatments, supportive care including management of symptoms and adverse events; coordination of care, palliative and end of life care (3). The level and complexity of care being delivered highly varies and includes bedside comfort care delivered by general nurses to advanced (or specialised) practice oncology nurses who perform highly specialised procedures including diagnostic interpretation and screening for cancer prevention (4). Additionally, healthcare is now being practiced in a world immersed with data such as real-world data (RWD) and real-world evidence (RWE) that have increasingly informed and shaped the way care is being delivered. In line with such paramount changes, skills and education in nursing informatics and telemedicine have grown in importance. Telemedicine continues to widen the opportunities for patient care, as the ongoing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has demonstrated, and ongoing challenges include the level of personalised care being delivered (5), improving patient examination techniques and addressing policy barriers (5). The nursing education and training are among the areas that have been touched by the SARS-CoV-2 pandemic. Face-to-face teaching and learning were converted to virtual remote learning and clinical experiences suspended were a few of the measures put in place to protect the students from the pandemic. Despite the fact that the impact of the pandemic on the nursing education and training will take longer to assess accurately, evidence demonstrate that the impact has been significant. A systematic review that explored the prevalence of mental health problems and sleep disturbance among nursing students during the pandemic, showed that a significant number of students experienced sleep disturbances, stress or anxiety, and depression (6). Rosenthal *et al.* (7) reported that these stressors were partly triggered due to their various clinical rotations and changes in their working hours whilst it led some of the students abandoning their studies during the pandemic (8). The disruptions in the nursing education required new thinking, detachment from the past, and innovation to create the nursing workforce of the future (9). Under the lens of the pandemic, successful alignment of remote instruction styles with learning styles, ease of transition to distance learning, were significantly associated with students' confidence in their ability to be successful academically (9).

Rationale and knowledge gap

This rapid evolution of cancer nursing has been driven by a significant number of unprecedent changes in the global scene. The increase of the population as well as its major shifts in certain geographical regions, changes in the delivery of cancer care which includes shorter inpatient hospital stays, the constant breakthrough in the cancer treatment which adds to its overall complexity as well as the increased integration of digital solution in healthcare (10,11). The evolution has also been driven by current fiscal challenges in the global economy, a global crisis in workforce shortages and cancer becoming one of the leading causes of death globally (3). Worldwide, an estimated 19.3 million new cancer cases occurred in 2020 whilst even with modest estimations, it is expected that the global cancer burden will be 28.4 million cases in 2040, a 47% rise from 2020 (12). This increase in cancer burden will require oncology nurses to become even more versatile in order to utilise to the maximum the nursing resources who are already spread too thin to meet efficiently the care needs of cancer patients. This situation has a global; the role of oncology nurses is expanding and adapting to care needs and scarce resources internationally (13,4).

Objective

This manuscript aims to bring an overview of the growth and development of cancer nursing across six countries from diverse geographical regions in Europe (East, South, West, North). Through this overview the authors aim to highlight the progress made over time but also to demonstrate the different pathways and some of the challenges faced in the oncology nursing development journey in France, Cyprus, UK, Croatia, Norway, and Spain. This review

adds to the existing knowledge by mapping the current growth and development in the aforementioned countries. Furthermore, it can serve as the basis against which any future developments in these countries can be compared to. Similarly, such comparisons can be made with other countries in Europe in this field.

Review of oncology nursing development

Oncology nursing development in France

Despite the Bologna agreements of 19 June 1999 (14), the training leading to the State nursing diploma in France has only been subject to a reorganisation known as the "diplomas re-engineering", which led to the publication of the order relative to the State Nursing Diploma on 31 July 2009 (15), i.e., 10 years later. The creation of the Advanced Practice Nursing diplomas dates back to 2018 (16), including the Oncology/Onco-HematologyOHO branch. It took 19 years from the Bologna agreements, for the French government to comply with these recommendations concerning the nursing profession. However, these diplomas are only recognised in terms of "Rank Master", and not as Full Master.

The Association Française des Infirmier(e)s de Cancérologie, French Oncology Nurses society—AFIC (17) was created in 1981 by nurses working with cancer patients, and is a European Oncology Nursing Society (EONS) National Society member since its creation in 1984. Recognised at a national and international level, AFIC has been committed to improve quality and safety of oncology nursing. All nurses working in the field of cancer care are at the heart of AFIC's work and thoughts for the benefit of cancer patients. Regarding the evolution of cancer care, AFIC's presentation of the vision of Oncology Nursing Advanced Practice was a key political issue in France. The Advanced Practitioner Oncology Nurse (APON) will have to implement specific contribution to optimise patient care and thus gain in efficiency. In March 2018, AFIC published the "White Paper" on the advanced practice nurse (APN) in cancerology (18), which includes 8 recommendations for its deployment in France.

Today, 4 years following the instigation of these new diplomas, there is only an estimated number of about 600 APONs, mainly practicing in General Hospitals and Cancer Centers (19). In France, universities would highly benefit from grouping together around the various aspects of their training in order to combine and enhance teaching approaches. Almost 1/3 of public universities (25 out of 66) propose this teaching pathway for the Master degree in France (19).

As far as the institutions employing these new professionals are concerned, it must be said that they are facing major difficulties in financing these new functions. The framework for their remuneration remains uncertain, and it highly depends on each establishment. The remuneration framework is also linked to the type of activities that can receive financing by the French social security system. This remuneration framework is the same as the one implemented for out of hospital activities, which does not allow fair remuneration of their roles and missions (i.e., approximately 170 euros per year and per patient, and for clinical activities alone, restricted to one consultation per quarter). Furthermore, this is only linked to clinics, and nothing can be reimbursed for peers' education, research and leadership. Despite the many challenges and barriers to the wide implementation of the APON in clinical practice, their introduction has been correlated to the better understanding of the patients' needs and hence better care (19).

Advanced practice is a new nursing function in France, with societies working daily for its fair recognition, yet it is highly appreciated by the patients and their significant others who benefit from it.

Oncology nursing development in Cyprus

Over the last hundred years, cancer care has come a long way from general nurses caring for patients with cancer, using primarily bedside and comfort measures (20), to the development of oncology nursing as a specialty, with a defined knowledge base, supported by research and expert practice (4). Nursing in Cyprus was officially established as a profession on 11th of January 1951, under "The Nursing and Midwifery Law, 1951" during the colonial domination, almost one hundred years after Florence Nightingale founded the scientific basis of the nurse vocation (21,22). This law categorized nurses as follows: general nursing, mental nursing, tuberculosis nursing, nursing as a Cyprus Registered Nurse, and nursing as a student nurse. The education and training were provided by the Nursing School of Cyprus that was first established in 1945, which provided a 2-year diploma program for assistant nurses, and by 1954, with the help of the World Health Organization, this was upgraded to a three-year program of General Nursing (23). In 2003, the Republic of Cyprus acceded to the European Union (EU) (1/5/2004) and in 2003 after an amendment for the harmonization of the law with all relative EU directives, categorized nurses as: register general nurses, mental nurses, and midwives. The register

for second-level nurses was closed.

The specialty of oncology nursing began in the mid-1970s, and an oncology unit was created in the Nicosia General Hospital with the aim of meeting the many unique needs of this patient population, by general nurses with limited to no specialized education. In the same period, non-governmental charity organizations were established with the aim to provide care to patients with cancer at the home setting (i.e., not specialised care): the Cyprus Anti-Cancer Society (CACS) (24) in 1971, the Cyprus Association of Cancer Patients and Friends (PASYKAF) (25). Arodaphnousa Hospice was established in Nicosia by CACS, in 1976, with the purpose of offering palliative care to patients with cancer. In 2000 this hospice centre became a palliative care centre. Since 1992, community home nursing care has been provided solely by PASYKAF and CACS, by specially trained independent nurses, on a home-based model. One of the primary objectives of the two non-governmental charity organizations, is to educate healthcare professionals in oncology and palliative care (e.g., through funded training programs).

In 1992 and 1993 the paediatric-oncology and haemato-oncology departments were created in the Makarios III Hospital in Nicosia. Without specialized education or training in oncology, nurses were responsible to prepare and administer chemotherapy regimens and provide care to patients with various chemotherapy-induced complications. A small number of nurses working with cancer patients undertook short courses abroad (e.g., in the UK) on how to safely administer chemotherapy and manage associated symptoms. In the same period [1993], the Limassol hospital started operating its oncology and haemato-oncology departments, offering chemotherapy and hormone-therapy services.

With the foundation of the new Department of Nursing at the Cyprus University of Technology (CUT), in 2008, the Nursing School of Cyprus was transferred to the University and a 4-year undergraduate nursing education program was established. During this period, a nationwide effort started aiming at providing high-quality, comprehensive intensive program to diploma holders aiming to obtain their bachelor degrees (i.e., including nurses caring for cancer patients). The year 2010, marked the introduction of the first Master's degree program in Advanced Oncology Nursing and the creation of specialized education and training for oncology nurses, by CUT. This represented the beginning of a shift in oncology nursing education. Research work in the field of oncology was also intensified with the foundation of the Euro-Mediterranean Oncology and Palliative Care Center within the CUT. In the meantime, the National Society of Nurses in Cancer Care was founded in 2010. Such evidence shows the nationwide effort that has started, aiming to the full recognition of cancer nursing. According to the European Cancer Nursing Index (26), Cyprus obtained the highest score in recognition of cancer nursing across Europe (38 countries involved), because Cyprus has: a post-graduate program specializing in oncology nursing (CUT), a cancer nursing society to support nurses and share oncology nursing knowledge; a national cancer plan that includes nursing care, also, cancer centers whose board positions are dedicated for cancer nursing {Bank of Cyprus Oncology Center, Nicosia [1998] (27), Ygia Polyclinic Private Hospital, Limassol [2017] (28) and German Oncology Centre, Limassol [2017] (29)}.

Oncology nursing development in UK

The UK has the longest history of professional nursing in the world. In 1860 Florence Nightingale opened the Nightingale Training School at St. Thomas's Hospital in London on returning from the Crimean War. Nightingale revolutionised nursing care and is regarded as the first nursing theorist. Prior to the mid-19th century hospital care was very rare, with the sick cared for at home by, family members or servants (if they were wealthy enough).

By the early 20th century cancers were being treated more successfully with surgery and with radiation. Cytotoxic chemotherapy agents were developed in the 1940s and 1950s with the UK leading development of refined agents, some of which are still in use today.

Patients required ongoing care and the nursing of patients undergoing these treatments needed to be thorough, skilled and increasingly specialist. This increasing specialisation was driven in the UK by the establishment of specialist cancer hospitals such as The Royal Marsden Hospital (established 1851), The Christie [1892] in England, and, in Scotland The Beatson [1890].

In more recent times one could argue that the major contributions that the UK has made to the progress of cancer nursing internationally has been both the development and embedding of Clinical nurse specialist (CNS) roles in cancer care and the accurate structuring and documentation of nursing assessment and documentation.

The development of cancer CNS began in the 1970s and 1980s with the creation of specialist roles to support patients, particularly in breast cancer. These roles were not widely available nor was access to these nurses equitable. A review of UK cancer services reflected on the Calman-

Hine report (30) and the subsequent NHS Cancer Plan (31) provided recommendations that cancer treatments should be more site-specialised and that specialist teams should be supported by specialist nurses. In 2000, these recommendations were put into practice with site-specialist CNSs being a requirement of case discussion at all multi-disciplinary team meetings and being available to support patients during their cancer treatment. The widespread introduction of these roles, and the fact that they were built into national standards has driven the recruitment and retention of high numbers of specialist nurses integrated with cancer care across the UK to this day although much of this work-force is now aging.

A major contribution made by UK oncology nursing is the move to formalising and structuring nursing assessment and education. The 'UK Oncology Nursing Society (UKONS) Triage Tool' is used to assess risk in cancer patients receiving treatment who call 24 hours 'helplines' and is used in many countries around the world. The UKONS Systemic Anti-Cancer Treatment Passport is a credential which ensures that nurses who are competent to administer anti-cancer agents can transfer workplaces without having to repeat education.

Further innovations from the UK include the development of acute oncology services (largely delivered and supported by highly trained oncology nurses), and nurse-led oncology services including the nurse prescribing of systemic anti-cancer treatment (SACT).

Despite our current challenges in recruiting and retaining a trained nursing workforce UK oncology nursing will continue to innovate and deliver the highest standards of cancer care.

Oncology nursing development in Croatia

Nurses play a key role in providing the best possible quality of patient care. Their education alongside with evidence-based practice directly impacts on patient and overall healthcare outcomes (32).

Nursing education in Croatia dates from 1921, and is regulated by The Act on Scientific Activity and Higher Education (33). Nurses in Croatia have oncology nursing care implemented in the curriculum of nursing study only as their elective course on their second year of undergraduate programme (out of 3 years of bachelor's and additional 2 years of master's programme) (34,35). Specialist graduate professional study is offered at Zagreb's University of Applied Health Sciences. This includes a clinical nursing module of hematologic and oncologic nursing. Professional graduate part time study has a duration of 2 semester(s) (36). Professional graduate study applicants are eligible to attend after they have obtained bachelor's diploma of nursing (general nursing). Nursing high schools do not have oncology nursing care represented in their curriculum (37).

Specialisation in oncology nursing as such, does not exist in practice but only on theoretical grounds, with no official specialised education or recognition from the Ministry of Health, Science and Education or Nursing Council in Croatia (38). According to the Rulebook on specialist training of nurses—medical technicians regulated by Croatian Ministry of Health and Social Welfare in 2009 "specialization or narrower specialization can be granted to a nurse who is employed in a health institution by the Nursing Council and Ministry of Health, if the ministry estimates the need for it, based on the annual plan for necessary specializations and narrower specializations evaluated on the proposal of health institutions" (39). In addition to the requirements from Article 5 of this Ordinance, the candidate for approval of specialization or narrower specialization needs to obtain specific requirements that are not thoroughly described (e.g., not defined amount of experience or duration of specialisation, no existing curriculum in the specific area of expertise, special mentor who also needs specific requirements never met or implemented in practice, determined according this ordinance) (40). Nurses who have been working in the field of health care for at least 15 years, and in a health institution for which specialization or narrow specialization has been determined for at least 10 years, are recognized as specialists, or narrow specialists of that field of specialty, or narrow specialties—unfortunately only written on paper, never implemented by law in clinical practice or regulated by healthcare institutions and nursing council. The roles of oncology nurses vary from bone marrow transplantation, surgery, intensive care, focus of cancer screening, detection, and prevention and several other.

The nursing council and the Croatian Oncology Nursing Society (CONS) have been recently in close collaboration with the Croatian Ministry of Health, Science and Education in developing the oncology nursing curriculum for specialisation of Croatian oncology nurses. These efforts have been supported by the EONS and informed by its Cancer Nursing Education Framework and other influential papers (41,42). Planned specialisation would be available for all nurses who have obtained nursing high school diploma or healthcare professionals obtained with bachelor's diploma of nursing. In spite of curriculum and specialisation

programme for oncology nurses are still in development, the CONS has been organising educational events online and in-person for all nurses in Croatia, providing educational literature in the field of oncology nursing, acknowledged by Croatian Nursing Council and accredited with educational points which are obligatory for nurses in Croatia to obtain and renew their Nursing licence (32,43). In the end of 2019, the Young Cancer Nurses Network in Croatia has been developed, empowered and supported by EONS and its Young Cancer Nurses Network.

The National plan against cancer 2020–2030 in Republic of Croatia has been developed by different experts within the working groups, covering specific fields of oncology care including oncology nursing, with defined aims, mission and vision in compliance with official data from the Cancer Registry of the Croatian Institute of Public Health in the Republic of Croatia (43).

Considering all the information above, oncology nursing in Croatia has made great progress in accordance to increased demands of its profession, taking all the steps needed to move forward to the next level and to be in line with European oncology nursing care system, delivering and implementing specialised patient-centered care as a golden standard in everyday practice.

Oncology nursing development in Spain

Because cancer touches all lives, both directly to patients, or through impact on family/caregivers or societies, the oncology nurses are the key professionals to provide the necessary supportive care to patients. Nurses' provide care that is holistic and free of iatrogenic side-effects across the cancer continuum and, also proven to be cost-effective (44). But the situation of lack of nursing professionals in Spain, as many other countries, was frankly worrying before the pandemic and, now has worsened dramatically (45). Practicing nurses in Spain (per 1,000 population), in the last report by Organisation for Economic Co-operation and Development (OECD), was described as 5.9 nurses per capita, far away from other European countries where average was 8.8 nurses (2019 data) (46).

Oncology nurses, as specialty, has not been yet recognized in Spain, although has been largely reclaimed in the past. Royal decree in 2005 recognizes 7 specialties, namely midwifery, community, mental health, occupational, geriatric, medical-surgical care and paediatric. Oncology nursing was not recognised as a distinct specialty but was included into the medical-surgical speciality.

However, the reality today in the Spanish cancer units in hospitals and cancer centres, in their daily practice is that there are several nurses with advanced competencies that develop roles to adapt the work position to effectively respond to cancer patients' needs, in multidisciplinary teams and, along the whole patient journey, from prevention, diagnosis, treatment to survivorship, rehabilitation or palliative. Thus, there are oncology nurses, recognized as experts and consultants in the different units, that provide expert help to multidisciplinary teams and patients to decide about central lines or are able and competent to control chemotherapy or immunotherapy related toxicities, or to prevent emergencies and complications. Other nurses help population to participate in colorectal, cervical or breast screening campaigns. All are experts in their area and have developed advanced competencies in patient education, research, management, or clinical competencies in symptom control (47). Also, some nurses are in the genetic counselling teams that assess families' members and persons with risk of cancer helping to deal with uncertainty. Some other nurses have relevant roles with patients undergoing clinical trials, guiding them through huge diversity of proves and samples or nurses that are able to teach about smoking cessation and help citizens to quit tobacco.

In summary, Spanish cancer nurses are vital to reduce inequalities involving people with low socioeconomic status and disadvantaged groups, such people with disabilities, geriatrics (48) or from minority racial or ethnic background, and ensuring gender-balanced participation. Despite the fact that oncology nursing is not yet recognised as a distinct speciality in Spain, its contribution to healthcare is pivotal stressing the need for the efforts to acquire this recognition to intensify. Nursing education is the best tool to empower patients increasing their health literacy and decreasing the digital gap that is a European priority for the future (49,50).

Oncology nursing development in Norway

In 1982, education in oncology nursing was established at the Norwegian Radium Hospital (NRH) in Oslo due to need for trained nurses with specialist expertise to care for patients with cancer. The education was linked to the teaching department at the hospital, not to the university system. The head of the nurses at NRH lead a group making a one-year program for nurses who had completed their basic nursing education (3 years) and holding 2 years of clinical practice. The program consisted of knowledge, skills and attitudes necessary to take care of patients when treated in hospitals. The clinical staff at the hospital served as teachers

and two nursing teachers were coordinators and responsible for running the program. Later, other hospitals established oncology units and recruited nurses from the NRH-program.

This education was transferred from the hospital to the university system in 2000. The first national regulation on professional content, assessment schemes and admission requirements for post graduate education in cancer nursing was made (51), required for all Norwegian universities. The one-year full time program consisted of nursing and medical treatment of cancer and societal perspectives. One third of the program was practical training.

In 2005, a new framework-plan for post graduate education in cancer nursing (52) was implemented. This regulation was extended from 20 to 60 European Credit Transfer and Accumulation System (ECTS) harmonizing the system; however, still a one-year program. The content was detailed but included only chemotherapy and radiation-therapy as treatment strategies. The integration of knowledge-/evidence-based approaches and computer-based literature search was in its infancy.

The statistics showed that the death rate from cancer was high, and a post graduate program in palliative care, recruiting mainly nurses, was established as part of a master's program (53,54). In 2014, Oslo Metropolitan University (OsloMet) approved the first cancer nursing program integrated in the master's program in clinical nursing, inspired by this possibility of a track in an established master. Later, several universities followed the same module model.

The cancer nursing profession has undergone development from being a practically oriented to a research-based subject, and in 2021 Norway implemented national guidelines for cancer nursing (55). This comprehends a 120 ECTS (2-year) master's program in cancer nursing, with a temporary possibility to take only 90 ECTS and become a cancer nurse. This guideline consists of eight areas of expertise with learning outcomes and approximately one sixth as practical training.

From 2022 OsloMet offers a separate master's program in cancer nursing. Currently, we need CNSs in cancer nursing due to improved treatment strategies and cancer survivors in need of treatment, support, and follow-up at home. Norwegian white papers (56,57) require municipal healthcare service to treat and support patents in their home. Cancer nurses hold competence appropriate for this recommendation. In a way, we are at the same status as in 1982. The 1980-ties needed qualified cancer nurses in hospitals, while in the 2020-ties the municipalities also need such specialist education to serve the patients during their cancer trajectory.

Strengths and limitations

This review should be read in light of specific limitations. The main limitation lays in the fact that the review has been based on the national literature and perspectives of the participating countries. However, this review includes six diverse countries in terms of cancer nursing growth and development as well as diverse healthcare contexts that allow the reader to critically navigate through their differences and similarities. Prospectively, this review can form the basis for reviewing and comparing the growth and development of cancer nursing in other countries in Europe.

Conclusions

The paper has demonstrated how oncology nursing has evolved and is still evolving over time in different countries in Europe showcasing the differences as well as the commonalities in this process (*Table 1*). Cancer nursing as a versatile profession is required to perform constant transformations to effectively allow it in adjusting to the demanding landscape of cancer care. As discussed, the increased introduction of digital technologies across the clinical pathways of cancer care and its increased complexity due to the breakthroughs in cancer care are but some of the influential aspects that affect the evolution of the role and practice of the cancer nurse. Cancer nurses as integral part of the interdisciplinary and multidisciplinary team are essential in the provision of high-quality cancer care for European citizens. This can be achieved by preparing cancer nurses based on the principles of high-end and current specialised cancer nursing education that reflect the current and future needs of those affected by cancer in a highly demanding and complex context. As the cancer care is becoming increasingly complex, highly sophisticated and digitally driven, the level of cancer nursing education needs to be designed in such a way to prepare well-educated, competent and specialised cancer nurses (3).

Given the nature of the cancer care landscape more oncology nurses will be needed to correspond to the present and future needs. Cancer nursing and overall nursing are already facing significant shortages across specialties, and the recent SARS-CoV-2 pandemic has exacerbated their turnover (58). Adding to these roadblocks is the challenges in relation to the full recognition of oncology nursing. The paper although it demonstrated that there were aspects of

Table 1 Similarities and differences in the growth and development of cancer nursing in six European countries

Development milestones	France	Croatia	UK	Spain	Norway	Cyprus
Adoption of the Bologna Treaty	√	√	√	√	√	√
Advanced nurse practitioners roles	√	×	√	×	√	√
Specialization in oncology nursing	√	√ (in progress)	√	√ (not recognized as independent)	√	√ (in progress)
Advanced responsibilities attained by cancer nurses (e.g., diagnostic interpretation and screening for cancer prevention)	√	√	√	√	√	√
Recognition of cancer nursing	√ (for rank purposes)	√ (only in theory)	√	√ (only in theory)	√	√ (for rank purposes)
Country-specific curriculum	×	× (informed by EONS framework)	×	×	×	× (informed by EONS framework)

×, no; √, yes. EONS, European Oncology Nursing Society.

oncology nursing recognised in the six countries, only in the UK the national authority recognised cancer nursing as a distinct specialty (*Table 1*).

The paper recorded the existence of specialised cancer nursing education programs, with a variation in type of education or training (e.g., master's programs, post-graduate programs) and the duration (i.e., ranging from 1 to 2 years). Most of the programs are provided by academic institutes or university hospitals, and the first one recorded was back to the 80's (UK). What needs to be emphasised in the context of these programs is their diversity, stressing that a common curriculum does not exist across these six countries or across Europe to this matter.

Furthermore, what is also evident from the review in these European countries is the lack of a coordinated effort for recognising cancer nursing across all European countries. This is reflected in the different pathways by which oncology nursing is seeking to achieve its recognition. In this context, the RECaN project, driven by the European Oncology Nursing Society, is a good example of oncopolicy in action and it addresses the pathway (e.g., influencing national and European policy makers) to achieve the recognition of cancer nursing across Europe (59). The aim is to complement the current EU Directive 2013/55/EU (60) which provides the regulatory contextual framework on the recognition of professional qualifications based on an established system of automatic recognition across Europe for seven professions including doctors—generalists and specialists—and nurses in general practice. The outcomes of the RECaN project are hoped to provide the contextual basis for extending the EU Directive 2013/55/EU to include specialized cancer nursing, however this will rely heavily on the member states willingness to push this agenda forward.

In the current context of cancer care, oncology nurses continue to undertake multiple and increasingly complex roles in a variety of settings across the care continuum. These demanding roles require a considerable breadth of theoretical knowledge, clinical expertise in many specialist areas of clinical cancer care, as well as advanced research skills. This paper provides an insight to enhance our current understanding of oncology nurses' specialised roles across settings, cancer populations and diverse healthcare systems for the delivery of complex interventions.

Implications for cancer nursing practice: although it has been found that the reviewed countries do not share a common curriculum for cancer nursing education, similarities between these curriculums do exist. For example, they all emphasise on the principles of person-centre care across the disease continuum embracing the complex impact of the disease on all aspects of the person (e.g., psychosocial, spiritual/emotional). A common curriculum should not be the ultimate goal for cancer nursing in Europe as these educational programmes should also take into consideration the specificities of the society, the culture and the contextual background where care is been delivered. Instead, what we could feasibly aim at is that these programmes encompass a common core additional to specific modules that will be adjusted to the realities of each country. Such an educational core can be served by

the European Oncology Nursing Society's Cancer Nursing Education Framework [2022] (40) or the World Health Organisation [2003] Cancer Nursing Curriculum (61). Such core areas might include communication in cancer care, supportive care in cancer, leadership and management in cancer nursing.

The SARS-CoV-2 pandemic, has offered the opportunity to nurse leaders in the profession to challenge norms on how nurses are prepared for their duties by investing more on remote education with an adequate transformation of the teaching methods. Remote education allows and offers the opportunity for an increased collaboration and experience sharing in terms of nurses' training and practicing between countries. Such opportunities can contribute also to the development of shared educational frameworks among countries.

The field of cancer nursing and overall cancer is becoming increasingly demanding and complex, cancer nurses are required to hold specific knowledge and specialised skills. These need to be relevant and current to the fast-evolving field of cancer care and applicable across the cancer care continuum. Reviewing the growth and development of cancer nursing in six countries in Europe demonstrated the differences as well as the similarities across the education, training and practice of cancer nurses. Recent developments as well as the recent SARS-CoV-2 pandemic has provided opportunities to transform the way that cancer nurses are educated and prepared reflecting an increasing influx of remote learning and introduction of novel teaching methods. We envisioned that this paper will further contribute to raising the awareness on the extent and level of contribution that oncology nurses are making to improve cancer care on a global scale. However, this also needs to be in accordance to the policy frameworks on a national, European and global context so that the recognition of the vital contribution of oncology nurses is complemented with its full recognition as a distinct specialty.

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