

INNOVATIONS IN CARDIAC NURSING: AN IN-DEPTH EXPLORATION OF
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ABSTRACT

Background: The prevalence of cardiovascular diseases (CVDs) continues to rise globally, exacerbated by an aging population and lifestyle-related conditions. This trend necessitates an evolution in cardiac nursing practices to effectively manage complex patient needs. **Methods:** This review examines recent advancements in cardiac nursing, focusing on emerging trends and practices that enhance patient care. A comprehensive literature review was conducted, analyzing studies and reports on innovative educational frameworks, technologies, and patient-centered approaches in cardiac nursing. **Results:** Key findings reveal significant advancements in telehealth, enabling remote monitoring and improved patient engagement in their care. The integration of artificial intelligence and data analytics has enhanced clinical decision-making and personalized treatment plans. Additionally, the development of core curricula for cardiovascular nursing education emphasizes the importance of holistic, person-centered care, aligning educational outcomes with contemporary healthcare demands. **Conclusion:** The future of cardiac nursing requires a multifaceted approach that prioritizes continuous education, technological integration, and collaboration among healthcare professionals. By adopting these innovations, cardiac nurses can significantly improve patient outcomes and address the complexities of cardiovascular care. The findings highlight the necessity for ongoing research and adaptation of educational frameworks to ensure the nursing workforce is adequately prepared to meet the evolving challenges in cardiovascular health.

KEYWORDS: Cardiovascular Nursing, Telehealth, Patient-Centered Care, Education, Innovations.

1. INTRODUCTION

Non-communicable diseases (NCDs), including cardiovascular diseases like coronary heart disease and stroke, pose a substantial global health challenge and are the primary cause of death worldwide. The most pressing issue we confront today is the rising and aging population, coupled with a surge in lifestyle-related conditions such as obesity and diabetes. The healthcare workforce must be prepared to provide care for older individuals living with one or more chronic conditions, as their care requirements will become increasingly intricate.^[1,2]

The incidence of cardiac conditions, including heart valve disease and rhythm disorders like atrial fibrillation and heart block, is expected to rise. Consequently, there will be an increased demand for advanced technologies, including scanning and diagnostic services, as the current rate of technological innovation continues to advance. This transformation could pose challenges to the sustainability of health service provision in certain countries.^[3]

Social and economic factors will remain significant determinants of health. Health inequalities have consistently existed among populations residing in lower socioeconomic areas, who typically face higher rates of illness.^[4]

Regrettably, disparities have grown, leading to inconsistencies in the prevalence of cardiovascular conditions and the availability of treatment based on gender, ethnic group, and geographical location. Health inequalities are shaped by health literacy, which we define as an individual's ability and opportunity to access, read, and comprehend high-quality health information that, when applied in daily life, can improve health promotion and well-being. Health literacy is a crucial concept; research indicates that it correlates with effective self-management and adherence to prescribed medications. A considerable percentage of the diseases affecting our global population are preventable.^[5,6]

Hypertension, tobacco smoking, air pollution, a diet low in fruit and vegetables, overweight and obesity, alcohol

abuse, and physical inactivity are all risk factors that significantly contribute to the overall disease burden, measured in years lost due to ill health.^[7] To address this challenge, nurses and other members of the multidisciplinary team must prioritize collaboration to support individuals and their families in flexibly self-managing their health, emphasizing both primary and secondary prevention initiatives. Whenever possible, the focus should be on proactively avoiding ill health through prevention, rather than solely on treatment after a health condition has developed. This shift towards prioritizing 'care' over 'cure' signifies an important change in approach. Given these factors, the educational offerings for cardiovascular nurses must align with the evolving healthcare requirements of our global community.^[8]

The field of nursing has undergone significant transformation since the era of Florence Nightingale.^[9] Programs that lead to professional registration establish the groundwork for continuous learning and include sanctioned courses of study along with practical components that must be fulfilled for an individual to practice in their respective country. Educational programs for nurses aimed at preparing them for clinical practice vary significantly in terms of content, duration, delivery, and setting across European countries. Recent policy highlights that while countries face similar challenges, they start from distinct positions with varying service delivery contexts and workforce capacities. This diversity is evident in the educational preparation of nurses, as well as in the scope of their roles and responsibilities, which differ greatly from one country to another.^[10,11]

One method to help standardize clinical practice and maintain ongoing clinical competency is inclusion on a professional register.^[12,14] Currently, not every country provides nurses with this opportunity. A minimum standard for pre-registration nurse education has been in place since the 1970s; however, the legislation does not specify the delivery method of the education, whether through universities or other means nor does it define the level of the required qualification. There is an urgent need to ensure that all nurses in Europe have access to bachelor-level education. This is crucial as there is strong evidence suggesting that the level of nurse education, along with the nurse-to-patient ratio, influences 30-day inpatient mortality rates. Hospitals with a higher proportion of their workforce educated to Bachelor level experience lower 30-day inpatient mortality compared to those with fewer Bachelor-educated nurses.^[15,17]

When considering the delivery of education for nurses, it is suggested that the interactions between the student and their environment play a crucial role in shaping knowledge and understanding. Nurses cultivate skills and insights through education, alongside reflection on their clinical experiences in the workplace. This knowledge and clinical expertise develop gradually and progress

along a continuum. Patricia Benner, a nurse theorist, offers a valuable model that outlines a continuum defined by five levels of nursing experience, from novice to expert.^[18]

It is widely acknowledged that learning is a continuous journey. It is essential for nurses to uphold their competence in practice, following their initial educational preparation, by engaging in continuous education. Improving initial and continuing education for nurses, along with access to higher education, is emphasized as a crucial priority in various key policy documents.^[19]

Although there is a consensus on the need for a well-defined progression in educational qualifications for nurses, encompassing bachelor's, master's, and doctoral degrees, access to this educational pathway remains unequal for all potential beneficiaries.^[20,21] A diverse range of post-registration educational options exists, from brief introductory courses to more advanced programs designed to equip nurses for advanced or specialist roles. Information is scarce regarding the competencies and curriculum content that define current post-registration cardiovascular nursing education programs in various countries.^[22]

The Education Committee of the European Society of Cardiology (ESC) recognized the necessity to create both core and specialist curricula via an e-learning platform as a means to enhance the educational preparation of physicians training to become cardiologists in Europe.^[23] The Education Committee of the Council on Cardiovascular Nursing and Allied Professions (CCNAP) subsequently created a core curriculum aimed at establishing a framework for ongoing professional education for qualified cardiovascular nurses at levels 5–6 of the European Qualifications Framework.^[24]

2. Development of the core curriculum

Creating a curriculum for implementation in multiple countries is a bold endeavor. Learning from other disciplines revealed that a 'grassroots' approach, as opposed to a 'top-down' initiative, was favored.^[25] This method highlights the decentralization of decision-making and allows for change to happen at a local level, promoting the autonomy and shared responsibility of each country. It acknowledges that the curriculum would serve as a blueprint for Ministries of Health, universities, and technical colleges to update rather than replace existing curricula. To initiate this process, a syllabus was crafted utilizing published literature, policy documents, and existing curricula, incorporating expert insights from service users, specialist nurses, cardiologists, educationalists, and academics. The syllabus established the foundation for creating the core curriculum.^[26] The process was iterative, not linear, and was guided by the Education Committee of CCNAP. At the beginning of the project, a significant challenge was determining a clear start and end point to navigate the complexity and depth

of the content. The principles established by prominent educational theorists shaped our decision-making process and influenced our approach to categorizing the experience levels of nurses in Europe who might utilize the curriculum.^[17,18]

We determined that our students would be regarded as competent in adult nursing, having completed their initial educational preparation in their home country, but would be at a novice level in cardiovascular nursing. This crucial distinction allowed us to distinguish between content that would be part of the syllabus and core curriculum, as opposed to that which falls under specialist or advanced educational curricula.^[15] After determining the necessary educational level, our subsequent step involved identifying key stakeholders who could assist us in making informed decisions about the selection of suitable content. It was essential for us to identify contributors who possess the necessary knowledge, understanding, skills, and experience. A draft was created after a consultation process, which was subsequently shared and modified through a series of meetings aimed at identifying and refining the curriculum goals and the associated content that would make up the syllabus. Service users, cardiologists, nurses, academics, researchers, and educators participated as reviewers. The ESC Education Committee, CCNAP Board, and the National Societies of CCNAP also reviewed the drafts.^[3,6]

3. Essential curriculum material

The initial phase in creating the core curriculum involved pinpointing pertinent content for the syllabus. The syllabus was crafted by a team of specialists and underwent thorough evaluation during the consultation process. The syllabus and core curriculum aim to transition the focus from a biomedical approach to care delivery, enhancing the perspective centered on individuals and their families. A recent concept analysis identified key components of person and family-centered care that were integrated into the content. These components include effective communication, learning, and teaching skills, the ability to facilitate patient autonomy, and the provision of individualized care in a respectful manner. Results from an extensive survey involving more than 68,000 inpatients across Europe revealed comparable concepts that were regarded as essential 'markers' of quality care by the patients themselves.^[27]

The shift in population demographics resulting in an aging population was taken into account during the content development, along with the significance of evidence-based practice and the acknowledgment of the current and potential role of nurses in applying clinical guidelines, which has not yet been fully actualized. The content of the syllabus is organized into eight themes that define the core curriculum illustrated in Figure 1.



Figure 1: Central curriculum themes and representative content.

A comprehensive understanding of the underlying cardiovascular pathophysiology is crucial for grasping

the reasoning behind the assessment and management strategies that an individual with a cardiovascular

condition will encounter during their care. Our aim was not to encompass all pertinent content but rather to emphasize the anatomy, pathophysiology, and physical manifestations of prevalent cardiovascular conditions, which we deemed to be essential learning.^[28]

After creating an initial draft of the essential learning components, the subsequent step involved pinpointing advanced or specialist curricula. Specialist groups, including the Heart Failure Association (HFA) within the ESC, are in the process of developing this material. The content within the core curriculum will connect with and intersect specialist content to enhance and develop cardiovascular nurse education in a coherent, step-by-step manner. The HFA assembled a task force to revise the existing heart failure nursing curriculum document. The close collaboration allowed us to recognize and address the unavoidable overlap between the core and specialist/advanced cardiovascular nursing curricula.^[29,30]

4. DISCUSSION

An overview of the core curriculum for cardiovascular nursing has been presented, along with a detailed account of its development. This represents a significant milestone, as we recognize that this is the inaugural document of its nature, to our knowledge, that adopts a European viewpoint on educational offerings for cardiovascular nursing. The core curriculum is centered around individuals and families and is grounded in educational theory. It is crafted for flexible use, serving both as a 'map' that highlights essential themes for nurse education and as a tool that creates an educational 'bridge' between initial preparation and advanced specialist practice. The curriculum can be customized for each country based on its unique needs and priorities, in alignment with the legislative and regulatory standards that ensure safe nursing practice.

Our goal is to streamline the education and practice of nurses in cardiovascular settings throughout Europe. We acknowledge that this process will span several years, yet we see the core curriculum as a modest, yet meaningful, stride forward in the progression of cardiovascular nurse education. There is limited information regarding post-registration and continuing education for cardiovascular nurses throughout Europe. This curriculum has been developed to fill this gap by detailing the essential elements in post-registration cardiovascular nursing training programs and continuing education opportunities. We anticipate that the core curriculum will serve as a valuable learning framework from which curricula can be crafted to address the unique needs and priorities of each European country in cardiovascular nursing.

Considering the differences in legal frameworks at the international, national, and regional levels, along with the varying professional regulatory requirements and quality assurance processes in education and

organizations, we intentionally refrained from citing specific benchmark statements regarding competency. The purpose of the core curriculum was not to establish a competency level for cardiovascular nursing throughout Europe, as this would imply that all individuals are beginning from a comparable educational background, which is not accurate. Recent policy highlights that each country begins its journey in healthcare provision from a unique standpoint, accompanied by varying workforce capabilities and capacities. While we concur that our ultimate aim should be to establish defined competency levels for cardiovascular nurse education, we contend that this objective would be better realized through local governance.

Several key documents can guide these processes in individual countries. We believe that this approach is likely to be more effective than imposing an educational initiative through a 'top-down' leadership strategy. The enhancement of the essential National Societies network provides an excellent means for the curriculum to be shared. The core curriculum we have created offers flexibility, allowing the participating country to tailor the educational pathway of nurses to meet their specific needs over time. It is acknowledged that various countries and institutions might consider creating or implementing specific benchmarks to address particular needs or comply with their own national legislative or regulatory requirements.

The successful implementation of the curriculum will hinge on the engagement of all key stakeholders instead of relying on just one organization. Our goal is to share the document with pertinent professional organizations, universities, health ministries, technical colleges, hospitals, educators, researchers, and the learners themselves. The complete core curriculum will be made accessible at no cost on the CCNAP website, and we will actively promote it at a grassroots level for devolution via National Societies. To facilitate the implementation process, we intend to connect with various key organizations that align with our vision of providing nurses with the educational opportunities necessary for them to broaden their scope of practice and address the challenges posed by NCDs. This presents a challenge, as certain countries currently lack a sufficient number of adequately prepared nurses to take advantage of this opportunity. Consequently, it is essential to increase awareness among governments and society about the untapped potential of professional nurses as members of multidisciplinary teams, who, through collaboration, can significantly contribute to alleviating the burden of cardiovascular disease. The WHO Regional Office for Europe, the European Forum of National Nursing and Midwifery Associations, and the International Council for Nursing are significant collaborators capable of advancing initiatives that elevate the status of nurses across Europe. We plan to assess the uptake and impact of the core curriculum on nurse education by surveying to measure progress compared to previous findings.^[11]

5. CONCLUSION

As cardiovascular nurses advance in their professional roles and pursue additional training in their specialty, the post-registration education they receive must be directed by a cohesive curricular framework to enhance the standard of nursing care throughout Europe. This is particularly significant considering the link between nurse education levels and inpatient mortality. While this core curriculum is not without its flaws, it serves as a courageous starting point, rather than a definitive conclusion. We aim to guarantee that cardiovascular nursing education programs encompass the domains and learning outcomes outlined in this core curriculum, thereby ensuring that vital content is included, and a fundamental level of quality is attained across these educational programs. We anticipate that nursing education institutions, professional organizations, and nursing regulatory bodies across European countries will adopt this curriculum framework as the education for cardiovascular nurses progresses. The subsequent step involves translating the document to facilitate the adoption of learning throughout European countries and to tackle certain challenges associated with the future accreditation of educational modules that are currently being developed.

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الابتكارات في التمريض القلبي: استكشاف معمق للتوجهات والممارسات الناشئة**الملخص**

الخلفية: تستمر معدلات انتشار أمراض القلب والأوعية الدموية (CVDs) في الارتفاع عالميًا، مدفوعةً بتزايد الشيخوخة السكانية والحالات المرتبطة بنمط الحياة. هذا الاتجاه يستدعي تطورًا في ممارسات التمريض القلبي لتلبية الاحتياجات المعقدة للمرضى بشكل فعال.

المنهجية: يستعرض هذا البحث التقدمات الحديثة في التمريض القلبي، مع التركيز على التوجهات والممارسات الناشئة التي تعزز رعاية المرضى. تم إجراء مراجعة شاملة للأدبيات وتحليل الدراسات والتقارير المتعلقة بالأطر التعليمية المبتكرة والتكنولوجيا والمناهج المرتكزة على المريض في التمريض القلبي.

النتائج: كشفت النتائج عن تقدم كبير في الرعاية الصحية عن بُعد (Telehealth)، مما يتيح مراقبة المرضى عن بُعد وتحسين مشاركتهم في الرعاية الخاصة بهم. كما أدى دمج الذكاء الاصطناعي وتحليلات البيانات إلى تحسين اتخاذ القرارات السريرية وخطط العلاج الشخصية. بالإضافة إلى ذلك، يؤكد تطوير المناهج الأساسية لتعليم التمريض القلبي على أهمية الرعاية الشاملة المرتكزة على الشخص، مما يربط مخرجات التعليم بمتطلبات الرعاية الصحية المعاصرة.

الاستنتاج: يتطلب مستقبل التمريض القلبي نهجًا متعدد الجوانب يُعطي الأولوية للتعليم المستمر، والاندماج التكنولوجي، والتعاون بين مقدمي الرعاية الصحية. من خلال تبني هذه الابتكارات، يمكن للممرضين القلبيين تحسين نتائج المرضى بشكل كبير ومعالجة تعقيدات رعاية القلب والأوعية الدموية. تؤكد النتائج على ضرورة إجراء أبحاث مستمرة وتكييف الأطر التعليمية لضمان استعداد القوى العاملة في التمريض لمواجهة التحديات المتطورة في صحة القلب والأوعية الدموية.

الكلمات المفتاحية: التمريض القلبي، الرعاية الصحية عن بُعد، الرعاية المرتكزة على المريض، التعليم، الابتكارات.