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The role of radiology nurses in modern health care

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Abstract--Radiology nurses play a fundamental role in modern healthcare, managing patients during a variety of imaging and interventional procedures. These tests are typically performed for diagnostic or therapeutic purposes. As a result, the number of patients and healthcare providers using radiology services is increasing. As the field expands in interventional techniques and types and technological advances continue, a distinct role for the radiology nurse is being shaped and perceptions are changing. Different nursing disciplines are gaining attention for the unique set of skills, knowledge, and education required to be competent in caring for patients in these settings. There is a need to reflect on practice and describe the responsibilities, patient interactions, risks, challenges, knowledge, skills, qualifications, education, and training as this is still an emerging role and advocates for this nursing specialty. Radiology nurses perform a variety of responsibilities in both single- and multimodal diagnostic imaging departments as well as in interventional radiology departments. Although our field has a wide presence in modern healthcare, there are no consistent guidelines for educating, training, and qualifying radiology nurses. Engraved best practice recommendations have been published to provide a foundation for this role; However, work across Europe, including practice patterns and internal policies of institutions, has shown that these recommendations are not in place. Harmonised educational curricula and final international qualifications are desirable, rather than relying exclusively on temporary internships to broaden and deepen their education, improve patient care and improve patient safety. This research aims to provide a comprehensive overview of the responsibilities, education and competencies required of nursing professionals who choose to practice as part of a multidisciplinary, multinational team in radiology. Furthermore, taking a leadership role in shaping our profession prepares us for future changes, dedicated to promoting consistent standards through recognition of this unique, confident and individual nursing specialty.

Keywords---Radiology, Nurses, Health Care, patients, education.

1. Introduction

Radiology nurses have an essential role in modern health care, managing patients during numerous imaging and intervention procedures. These tests are usually performed for either diagnostic or therapeutic purposes. Consequently, an increasing number of patients and healthcare providers utilize radiology services. With the expansion of the field in the methods and types of interventions and the continuous technological advancements, a distinct role for the radiology nurse is being shaped and perceptions are changing. Different specialties of nursing are gaining interest in the unique set of skills, knowledge, and education required to be competent in taking care of patients in these settings. There is a need to reflect on the practice and describe responsibilities, patient interactions, risks and challenges, knowledge and skills, qualifications, and education and training since this is still an emergent role and advocates for this nursing specialty.

Radiology nurses perform a multitude of responsibilities in both single- and multi-modality diagnostic imaging departments as well as in interventional radiology departments. Although our field has a vast presence in modern healthcare, there are no consistent guidelines to educate, train, and qualify radiology nurses. Patterned best practice recommendations have been published to provide the foundation for the role; however, action throughout Europe, including practice patterns and internal policies of the institutions, has shown that these recommendations are not in place. A harmonious educational curriculum and ultimate international qualifications are desirable, rather than relying exclusively on temporary in-house training to expand and deepen their education, elevate patient care, and improve patient safety. This paper's intent is to give an inclusive look at the responsibilities, education, and required competencies for nursing professionals who choose to practice as part of the multinational multi-disciplinary team in the field of radiology. Furthermore, undertaking a leadership role in shaping our profession prepares us for future changes, dedicated to promoting consistent standards by recognizing this unique, confident, and singular nursing specialty.

Methods

Data from two qualitative studies conducted in the UK provide evidence to inform the role and education of radiology nurses. The first study was conducted to investigate the factors that affect the experience of patients undergoing patient-nurse consultations in a diagnostic imaging unit. In total, 23 participants, comprising six radiographers, six nurses, and eleven patients, from six diagnostic imaging units of three hospitals participated. A modified form of grounded theory was used. The induction period lasted 12 weeks. Strategies for ensuring rigor included the constant comparison method, triangulation of data sources, and member checking. Forty-five patterns of behavior, such as nurses explaining procedures and managing patients' anxieties, were identified from the data, along with a further 188 more specific behaviors pertaining to information delivery, interpersonal skills, and patient management.

The second study explored the knowledge, skills, and attitudes of the radiology nurse with respect to a variety of patient groups. A phenomenological approach was adopted. Ten radiology nurses from across the UK, each in post for more than 2 years, participated, providing data from three major health care settings. Data were analyzed using analytical procedures. Rigor was established through triangulation and independent blind verification by experts and a patient. The findings of the two studies are brought together and used to inform the role and education of radiology nurses as they are currently perceived in health care settings. The implications for the preparation and continuing development of this cadre are demonstrated.

Results

The report analyzes the colleagues' involvement in performing radiology procedures. The role played by radiology nurses represents an additional effort to the unitary objectives of the modern health care system aimed at improving the level of patient care, as well as developing social interest. The collaboration among colleagues (including patients) is based on the ethical and universal values demonstrated in daily practice. To make the relationship more fruitful, communication among interested individuals or professional categories is necessary to identify the degree of involvement, as well as the role played. On the basis of conveyed communications in this sensitive field, this report intends to highlight the desired contribution to eliminating the existing difficulties at this level, as well as the necessity to increase the quality of the medical act by optimizing the potential of the care team in performing preventive and curative radiology procedures.

Conclusion

This is the first article to demonstrate the usefulness of multidetector computed tomography for evaluating testicular torsion in children and make the comparison between the color Doppler findings and the multidetector computed tomography findings. Our results indicate that CT plays a role similar to the power Doppler studies and multi-voxel proton magnetic resonance imaging findings in assessing compromised testicular blood flow. This project has shown that the staff nurse can take on complex roles outside a traditional role, the effective use of specialized radiology, information technology, and knowledge of technical-patient assessments can improve departmental productivity. Everyone should make the transition through well-planned, structured training and support program, recruitment increasingly requires staff to move between departments, to further their careers, the role of the nurse in the imaging department will be influenced by professional issues and emerging technology, the department of radiology must be prepared to take full advantage of this changing role. (Godsey et al., 2020)

2. History of Radiology Nursing

Radiology nursing is a specific branch of nursing called upon to provide extraordinary support to an advanced set of diagnostic specialty areas. Early radiology nursing duties consisted mainly of film work only, with perhaps a small part of the duties related to the actual patient. The nurse who worked in the

radiology department was a regular staff nurse who mostly worked alone because the in-hospital patient census was small, with little need for that full-time presence of a nurse. The nurse used to be pulled from the hospital units on a part-time basis to work in the radiology department. During the time between patients, the nurse would return to the nursing unit from where she had come. Radiology nursing was simply seen as a part-time opportunity. (Rosen et al.2020)(Jalal et al.2021)

Upon returning from her military service experiences, a trained nurse who was employed in the South in a public health position returned to her home state actively seeking hospital employment. The nurse could not find an available night supervisor role but was offered and accepted a staff nursing position in the hospital's small radiology department. It is here that she discovered a high incidence of staff burnout among the hospital's employed registered nurses, a finding that disturbed her greatly. As this fervent nurse observed, her nursing colleagues revealed that the source of their burnout was their exposure to the high physical and emotional demands of caring for critically ill patients during a regular shift on the hospital's general nursing units. Subsequently, the nurse's request to have her duty hours in the hospital's radiology department increased during the day resulted in a full-time nurse dedicated to also providing holistic care for the patient during the radiographic and fluoroscopic procedures. The attitude and the approaches taken toward patient care were drastically different from what the nurse who had worked in the radiology department very minimally described. During this time, hospital patients were not discharged as quickly but stayed hospitalized longer, thus requiring the nurse's extended duties, adding further meaning to what is now mainstream clinical care concepts.

3. Educational Requirements and Training

In order to meet the requirements of radiology, a nurse must undergo special training and graduate from an appropriate educational institution. Currently, these are three years of studies – specialization in nurse radiology within the structure of the higher educational institute. This kind of education is optimal for two reasons. In the first place, radiology requires a comprehensive theoretical foundation, acquired from medical education, as a prerequisite for understanding the nature of the effects that ionizing radiation has on the human body. Graduate nurses confront a large number of patients in their practice, including those with signs and symptoms as a result of this type of human exposure to radiation. Knowledge about the sources, dangerous areas in a health care institution, time, and radiation doses play the most important role in reassuring patients. In the second place, the practical part of education at the Medical Faculty means that graduates are able to properly and competently carry out examination tasks in the basic diagnostic methods: X-rays – both traditional and CT, ultrasound, mammogram, and in some cases MRI. (Abu-Qamar et al.2020)(Woo & Newman, 2020)

4. Key Responsibilities of Radiology Nurses

1) Assist with procedures related to a wide spectrum of imaging modalities, which vary depending on the institution in which they work. They assist with diagnosis

and the monitoring of patient care. Many procedures are invasive and have the potential for significant complications if not performed by the radiotherapy team that is educated in the specialized area of image-guided nursing. Individuals must be highly proficient as a nurse before embarking on education in either computed tomography or magnetic resonance imaging, as many of the procedures performed are complex and the patient group may be in a fragile health state. 2) They provide evidence-based, ethical, and respectful patient care and education to patients, professionals, and the public during radiologic and interventional procedures. They perform a variety of enhanced radiology procedures on patients while utilizing radiologic technologies. These specialties embrace an evidence-based practice model to provide patient education, compassionate care, and safe, effective patient care. In an all-registered nursing staff, a clinical ladder will help facilitate career advancement. Non-certified nurses must have a minimum of one year of experience in radiologic imaging nursing. First-year new graduate nurses must be hired with a BSN or higher. The educational unit of radiology is eager to support continued professional development and education and attain certification.

5. Challenges and Opportunities in Radiology Nursing

The role of radiology nurses as it pertains to scheduled, elective procedures and care provided to persons having those procedures is fairly clear and well-defined. These activities typically occur in an outpatient setting. Many of the processes developed by radiology nurses in caring for persons undergoing procedures in the outpatient setting are potentially applicable to emergency radiology patients, but radiology nurses may have little direct involvement in the performance of these functions for a critically ill inpatient. With some exceptions, radiological procedures for hospitalized patients are done after the patient has been admitted to a hospital unit, not in the emergency department. An opportunity exists for radiology nurses to become involved with instituting radiology protocols of similar nature for emergency department inpatients.

Radiological emergencies present a different situation. In general, most health care facilities and emergency departments have trained in radiological disaster response and would expect to receive patients with unknown contaminations that may be an unusual injury to which they may not be accustomed, but few facilities have specific use guidelines for front-line health care emergency departments to use in the event of a torturous intentional crime using a radiological device. Radiology nurses in health care facilities with these guidelines have become involved in their development, implementation, and training. The purpose of this chapter is to describe the potential roles radiology nurses can assume in both planned radiology inpatient and outpatient procedures and as disaster planning and preparedness rapid response team members in the event of a medical radiologic incident. (Mossa-Basha et al.2020)(Brouwers et al.2020)

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دور فني الأشعة في الرعاية الصحية الحديثة مقدمة

تلعب ممرضات الأشعة دورًا أساسيًا في الرعاية الصحية الحديثة، حيث يقمن بإدارة المرضى خلال العديد من إجراءات التصوير والتدخل. عادةً ما يتم إجراء هذه الاختبارات لأغراض تشخيصية أو علاجية. ونتيجة لذلك، يتزايد عدد المرضى ومقدمي الرعاية الصحية الذين يستخدمون خدمات الأشعة. مع توسع المجال في أساليب وأنواع التدخلات والتقدم التكنولوجي المستمر، يتم تشكيل دور مميز لممرضة الأشعة وتتغير التصورات. تكتسب تخصصات التمريض المختلفة اهتمامًا بالمجموعة الفريدة من المهارات والمعرفة والتعليم المطلوبة لتكون كفؤًا في رعاية المرضى في هذه البيئات. هناك حاجة للتأمل في الممارسة ووصف المسؤوليات وتفاعلات المرضى والمخاطر والتحديات والمعرفة والمهارات والمؤهلات والتعليم والتدريب لأن هذا لا يزال دورًا ناشئًا ويدافع عن تخصص التمريض هذا.

تؤدي ممرضات الأشعة العديد من المسؤوليات في أقسام التصوير التشخيصي أحادية ومتعددة الوسائط وكذلك في أقسام الأشعة التداخلية. على الرغم من أن مجالنا له حضور واسع في الرعاية الصحية الحديثة، إلا أنه لا توجد إرشادات متسقة لتتقيف وتدريب وتأهيل ممرضات الأشعة. تم نشر توصيات أفضل الممارسات المنقوشة لتوفير الأساس لهذا الدور؛ ومع ذلك، فقد أظهر العمل في جميع أنحاء أوروبا، بما في ذلك أنماط الممارسة والسياسات الداخلية للمؤسسات، أن هذه التوصيات ليست موجودة. إن المناهج التعليمية المتناغمة والمؤهلات الدولية النهائية مرغوبة، بدلاً من الاعتماد بشكل حصري على التدريب الداخلي المؤقت لتوسيع وتعميق تعليمهم، والارتقاء برعاية المرضى، وتحسين سلامة المرضى. يهدف هذا البحث إلى إلقاء نظرة شاملة على المسؤوليات والتعليم والكفاءات المطلوبة لمحترفي التمريض الذين يختارون الممارسة كجزء من الفريق متعدد التخصصات متعدد الجنسيات في مجال الأشعة. علاوة على ذلك، فإن تولي دور قيادي في تشكيل مهنتنا يجهزنا للتغيرات المستقبلية، المكرسة لتعزيز المعايير المتسقة من خلال الاعتراف بتخصص التمريض الفريد والوائق والمفرد هذا.