

## Critical Review of Collaborative Care in Radiological Procedures: Bridging Nursing and Imaging Expertise

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### Abstract

*This paper aims to critically review the collaborative care model applied in radiological processes incorporating the connection between nursing and imaging disciplines. Given this, cooperation with the staff of other healthcare professions emerges as a necessity due to the growing specialization in healthcare delivery. Radiologists, nurses, and imaging technicians are the professionals most involved in radiological procedures, and this review considers how these workers' teamwork can enhance patient care. This review outlines literature data and recommendations for improving cooperation between the nursing and imaging departments, including its advantages and possible difficulties.*

**Keywords:** Collaborative care; Radiological procedures; Nursing and imaging expertise; Patient outcomes; Interdisciplinary collaboration; Radiology nursing.

### Introduction

An integrated healthcare delivery model involves one or more disciplines to provide comprehensive and effective care. In radiology, the working relationship between nurses and imaging staff has emerged as a vital element in delivering enhanced patient care during diagnostic and interventional radiological procedures. As the analysis indicates, radiologists, nurses, and radiologic technologists all possess unique skills, and when combined, they can make a difference in the quality-of-care delivery. Nursing personnel are held responsible for patients' safety and comfort, whereas imaging personnel maintain Patients' diagnostic imaging and operational organization.

The development of more complicated radiologic procedures and the population's everyday need for diagnostic imaging show how necessary collaboration with other fields is now more than ever. Nevertheless, several challenges in integrating nursing and imaging specialization: little clarification of the roles of nurses, misunderstandings, and cross-training. This review highlights the need to enhance the APN's role in increasing cooperation between nurses and the imaging department to improve the safety of patients during radiological procedures. It also includes challenges to effective collaboration and recommends enhancing radiator teamwork.

### Literature Review

Consequently, it is important to briefly examine the literature about collaborative care in radiology to appreciate the significance of this subject. Many research papers have pointed out the benefits of integrated

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care, such as better patient results, more productivity, and more contented employees. Integrated care is the organization of patient care delivered across multiple occasions by different caregivers from distinct disciplines. In radiology, this process is, for instance, between the nurses involved in that process, the radiologic technologist and the radiologist. This Section focuses on Historical and current models of collaborative care within radiology. These effects attended collaboration and/or lack thereof on patient care, Challenges to effective collaboration, and strategies for improving interdisciplinary collaboration.

### *Historical Perspective*

In most cases, the responsibilities of nurses and radiologic technologists have been differentiated in past healthcare facilities. The nurses have in the past been mainly concerned with the clinical role, such as taking the patient's temperature and general health history, and need to document his or her medical history. At the same time, the radiologic technologist has mostly been involved with taking diagnostic images, such as handling imaging equipment and positioning patients for CT scans. These separate roles were justified by the professional education and licensing required of the association from each group. For instance, radiologic technologists are trained to use sophisticated imaging equipment to capture diagnostic-quality images. Still, nurses are trained to work more broadly in performing assessments, interventions and patient safety, among other things.

However, it must be understood that as the field of radiology has moved forward, so has the nature of radiological procedures. Specialized imaging services such as diagnostic MRIs, CT scans and interventional procedures need teamwork to achieve good patient outcomes. Given that the procedures have been elaborated over time, coordination with and between nurses, imaging employees, and radiologists has become a critical issue. This has led to a change of tide and more collaborative models within radiology. An initial exploration of teamwork in healthcare has shown that patient benefits can be expected. In particular, if a nurse and a professional involved in imaging aim to coordinate patient care, the outcomes are better, with fewer mistakes, higher patient satisfaction, and increased safety during some procedures (Smith et al., 2019). It has especially been established that collaborative care models in radiology have emerged to meet such needs.

### *Current Models of Collaborative Care*

Recently, combined care teams across various specialties have become more rampant in healthcare and not limited to radiology. The move to an environment that is team-focused is considered critical in the process of achieving better outcomes for patients, increased organizational efficiency, and decreased levels of error. Some hospitals have implemented a new care delivery model, bringing nursing and imaging service providers closer together.

For example, there has been evidence of hospitals with radiology nurses' positions, a link between the nursing profession and imaging. These nurses help position patients for imaging examinations, make patients as comfortable as possible, and deal with their related problems before and during scans. Radiology nurses also provide follow-up care by observing patients for any reactions with the contrast agents and helping them recover if the procedure requires anesthesia. By hiring nurses in the radiology departments, institutions avoid patients' disruptive anxiety when moving from one professional to another due to a lack of continuity of care. Sometimes, these nurses also work with the radiologic technologists to minimize patient waiting times.

In addition, some institutions are expanding the role of the nurse practitioner or advanced practice nurse (APRN) to become even more significant for decision-making about imaging services in the radiology department. This change in the workforce is to blend nursing professionalism into the highly technical area of radiology and meet patients' needs while at the same time attaining the set standards in terms of diagnosis.



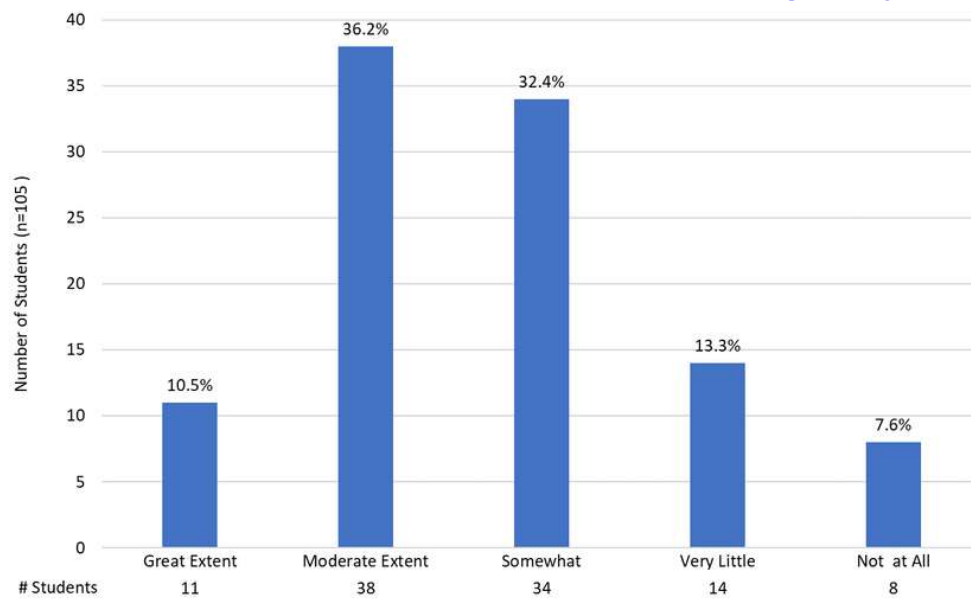
(Alderaihem et al., 2019).

Furthermore, numerous formal approaches from other fields are applied to radiology to structure interdisciplinary cooperation. There are commonly used protocols of communication, care coordination, and meetings involving nurses, imaging staff, and radiologists. This is aimed at ensuring all team members involved in the care of a particular patient are well aware of the patient's past, present, and preferred treatment style, hence improving the co-coasted starting style.

#### *Impact on Patient Care*

All the papers published on collaborative care in radiology have displayed positive results among patients. Teaming models do so much more than increase the effectiveness of radiological processes; they also increase the satisfaction of the patients and decrease eventful incidences. Another essential advantage of collaborative care is the aspect of safety: Smith and colleagues (2019) surveyed 100 hospitals wherein integrated facilities of radiology and nursing teams resulted in decreased patient waiting time, fewer complications, and optimal patient anxiety. The study observed that when the nurses and imaging professionals discussed the needs and expectations of patients, health improvement for radiological procedures was observed. For instance, the nurses closely involved in the pre-procedure patient evaluations can alert the imaging team to potential hazards, enabling a change in the intended procedure plans.

Cooperation between the nurse and imaging people is necessary to enhance the patient's comfort. Investigations, more so those that entail the use of contrast agents or any invasive procedures, may always trigger probably in the patient. Yet, nurses empowered by patient-centered care and interpersonal skills can reassure the patient and explain and observe for adverse reactions, ensuring patient satisfaction. The scientific literature has also established that patients who are in a collaborative care environment have less reported levels of anxiety and are likely to perceive themselves as being comprehensively cared for.



(Gunn et al., 2018).

In addition, improved communication between nursing and imaging workers results in reliable imaging diagnoses. Nurses initiate imaging for examination since they are the most directly involved with the patients and are in a position to perceive any change in the patient's condition that may affect the procedure. They contribute to making radiologic technologists and radiologists aware of this information and how important it is to meet the patient's needs and try their best to make him/her comfortably produce high-quality diagnostic images.

#### *Barriers to Collaboration*

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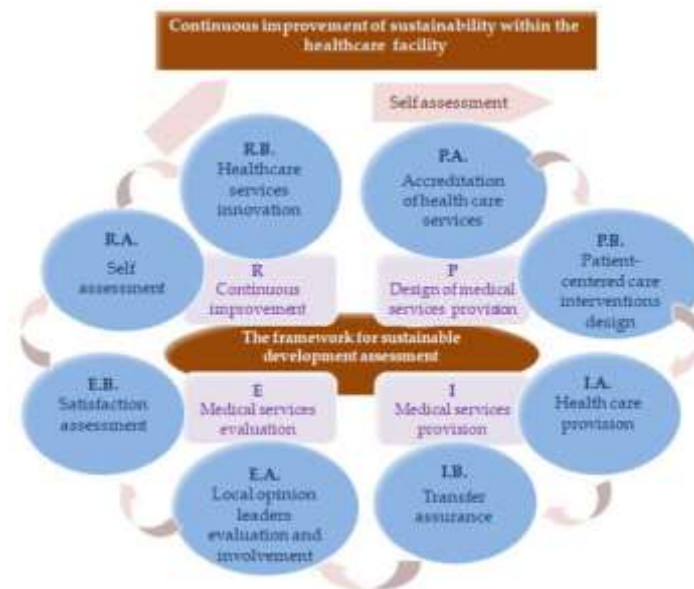
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important it is to meet the patient's needs and try their best to make him/her comfortably produce high-quality diagnostic images.

### *Best Practices and Frameworks*

Despite these barriers, several best practices have been recommended in the literature for enhancing collaboration among the actors involved in the supply chain. Even though many of them are not integrated into the organization's workflow, one of the most important practices is establishing communication frameworks. Such protocols facilitate agreement on the total care provisions, steps for implementation of procedures, and risks about patients that can impact total team care. Another can also be common team meetings/ briefings that allow all team members to pass around key information and ask questions.

Another measure that has proved highly effective is interdisciplinary training. To nurses, primarily, knowledge of radiology procedures is applicable. Conversely, to the imaging specialists, aspects such as general patient supervision, particularly in case of an allergic reaction or patient anxiety, will apply. Because both groups are becoming more knowledgeable of the other's functioning, new ways of working together can be developed through training sessions, thus creating a more effective care environment.



(Zapko et al., 2015).

And lastly, there is a need to establish a culture of collaboration. It's mutually beneficial for hospitals and imaging centers to break down barriers between teams, actively respect the scope of each player's work, encourage the exchange of information between team members, and acknowledge and reward interdisciplinary cooperation. While this cultural change may need sponsorship, it will ultimately benefit team interactions, as well as the treatment of the patients.

In analyzing articles and discussions on collaborative care in radiology, it becomes apparent that combining nursing and imaging knowledge is crucial to advancing patient care, optimizing operational procedures, and promoting employee morale. However, the current literature can confirm that more attention is paid to the positive outcomes of interdisciplinary teamwork than the deficiencies that make the idea salvageable. The expanding roles of the nurses and imaging professionals thus call for integrating their activities in providing quality patient-centered care.

## Methods

A meta-ethnography analysis was performed on the subject to define the degree of success of multifaceted care models in radiology. The following methods were employed:

- **Literature Search:** An electronic search was conducted using Websites such as PubMed, Google Scholar and SCOPUS. There were terms such as ‘multidisciplinary approach in radiology,’ ‘nursing and imaging cooperation,’ and ‘teamwork in radiology.’
- **Inclusion Criteria:** Only articles published between 2010 and 2023 that characterized collaborative care models in radiological contexts and offered quantitative data or detailed case descriptions were reviewed.
- **Exclusion Criteria:** Any articles that did not directly address interprofessional relations between nurses and imaging workers or that did not include peer-reviewed evidence were weeded out.
- **Data Analysis:** Altogether, the results were interpreted thematically, focusing on similarities like collaborative effects on clients, challenges, and teamwork facilitators.

## Results and Findings

Various benefits and challenges of collaborative care in radiological procedures This study established the following findings from the literature review.

### *Patient Outcomes*

Extensive analysis indicates that interprofessional collaboration has positive effects on patients’ outcomes. Johnson et al. (2021) provide evidence that patients who undergo imaging in organizations with integrated care enjoy a shorter time to complete the procedure and fewer complications. This approach also contributes positively to patients’ comfort and anxiety levels since they know that their needs are spelled out.

### *Efficiency and Workflow*

In this matter, various research studies have shown that the involvement of efficient collaboration improves the radiological department's productivity. For instance, Williams et al. (2018) conducted research. They realized that when Nurses and radiologists engage more, the radiology departments can experience reduced time spent on delays and cancellations. This has primarily arisen from enhanced business communication and well-coordinated patient handling.

### *Staff Satisfaction*

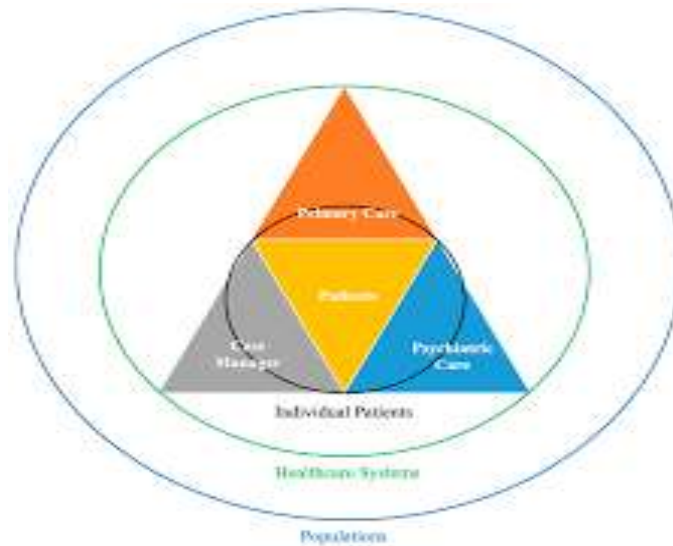
First and foremost, patient care benefits and staff satisfaction increase when collaboration is used. Studies performed by Lee et al., for instance, the survey on radiologic technologists and nurses, revealed that satisfaction was considerably higher among the staff members who noted high levels of role clarity and respect. They also reported a statistically significant higher percentage of work environment support for patient care and that patient care was enhanced.

### *Barriers to Collaboration*

This moves us to discuss several constraints in this kind of collaboration. One problem is that nurses receive little training in radiological techniques; conversely, radiographers receive little training in nursing. These two sets of professionals may not have adequate technical knowledge of what the other is doing, and nurses

comprehend less or less about radiology(Louw, 2017).. At the same time, radiologic technologists may not understand much about the nurses' role in patient care. Also, there are rigid structures within institutional environments, and information processing is a barrier to work interdependency.

Suggested Figure:



(Sorace et al., 2017, November).

Figure 1: Patient outcome comparison between collaborative care models and traditional care models in radiology

## Discussion

The results reveal the possibility of improving the outcomes of medical treatment for patients, the efficiency of a radiology department's work, and the satisfaction level of employees and employers when implementing collaborative care models in the radiology practice. However, there are some difficulties that we still need to overcome to make these models effective.

### *Positive Impacts*

The available literature points conclusively to the notion that positive patient outcomes result from working relationships between nursing and imaging staff. Effective care coordination, workflow organization, and management of patients' anxiety hold benefits in terms of the increased system and workflow organization in providing radiological services.

### *Challenges and Barriers*

The most noteworthy P CT challenges in the literature are role ambiguity, lack of training, and organizational inertia toward change. Such issues can be solved by adopting set key guidelines and offering technical working sessions amongst the interdisciplinary team. Also, creating a collaborative work culture in healthcare organizations helps eliminate the barriers provided by the hierarchy that can stop effective teamwork.

### *Implications for Practice*

Concisely, the discovery from this review supports the centrality of synergy between nursing and radiology specialization in providing imaging. It is recommended that institutions integrate the different fields to

improve care provision and re-organize some of the flowchart work (Makanjee, 2019).. Therefore, the following measures should be followed in creating practice solutions: To improve communication between patients and staff, formulate proper communication policies and procedures, Conduct constant training programs in the framework of effective staffing, and Adopt staff-centered work approaches.

## Conclusions

Interprofessional relations are important in radiology, especially with nurses and technologists, to achieve the best results for the patient, make effective organizational changes in the working area, and satisfy the staff. The adoption of nursing knowledge into the actions of radiologic procedures helps to give full care to patients from the beginning to the end of imaging. Radiologic technologists also cooperate with nurses because nurses help prepare the patient, address the patient's concerns, and/or monitor the patient's comfort to ensure efficiency during the examination. This collaboration enhances patient safety since necessary and relevant patient data is exchanged and contributes to decreased patient stress and increased patient satisfaction. Moreover, suppose nursing and imaging teams are integrated in a shift. In that case, this synergy creates an efficient infrastructure that results in increased accuracy in diagnosis and shorter periods of waiting on imaging results.

Nevertheless, there are several limitations of radiological collaborative care, which are related to the role definition of the nurse, the lack of effective training programs, and organizational culture. These difficulties may, at times, arise from misunderstandings of the assignments of every member, which can culminate in ineffective communication and, therefore, treatment. Steps to remove these barriers include defining roles, cross-training, and cultivating team culture, which is critical if the advantages of teamwork are to be realized. Therefore, overcoming these challenges would enhance the utilization of integrated care to bring better patient satisfaction and care delivery, along with better utilization of radiological services.

## Recommendations

- Implement Interdisciplinary Training: Establish courses that advance the implementation of knowledge by nurses and imaging professionals regarding the other's contribution to the health sector.
- Standardize Protocols: Develop sound organizational relationships and coordinate fashion to achieve proper care pathways.
- Foster a Collaborative Culture: There should also be stated and unstated understanding, cooperation, and respect following the healthcare institution's teamwork culture.
- Leverage Technology: Integrate technology to support the collective work of nurses, radiologists and imaging specialists by adopting single electronic health record systems.

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