

## **The Contribution of Radiology Nurses in Addressing Anxiety Among Patients**

**By:**

Abdulhakeem Muhammed Alsalem

Mohammed Hussain Almarzooq

Ali Mohammed Alhajji

## Introduction

Anxiety among patients is a widespread issue in radiology departments globally, affecting those who are undergoing diagnostic imaging treatments. Patients frequently have heightened anxiety levels when they enter an unfamiliar place and have concerns about the operation and potential repercussions. A wide spectrum of patients encounters anxiety levels during invasive procedures, including X-rays, MRIs, and other routine diagnostic tests. This anxiety can appear in different ways, ranging from slight unease to intense anguish, and can have a negative impact on patient participation, image quality, and overall satisfaction with the healthcare experience (Forshaw et al., 2018).

Identifying and dealing with patient anxiety is crucial in radiology environments, as it not only impacts the patient's emotional state but can also impact the effectiveness of imaging treatments. Heightened levels of worry can result in patient agitation, elevated heart rate, superficial respiration, and general unease, all of which have the potential to undermine the quality of images and the accuracy of diagnoses. Moreover, increased anxiety can cause a reduction in patient compliance, necessitating additional imaging and extending the overall duration of the procedure.

Nurses in radiology, as frontline caregivers, have a crucial responsibility in recognizing and managing patient anxiety. By closely interacting with patients during the imaging process, they play a crucial role in providing comfort, support, and reassurance. Nurses can have a considerable impact on the emotional well-being and procedural results of patients undergoing radiological tests by identifying the factors that contribute to patient anxiety and using evidence-based interventions (Halkett et al., 2016).

Radiology nurses are healthcare professionals that possess exceptional critical care abilities. They provide support to patients throughout the examination process and play a vital role as integral members of the radiological team. In addition, radiology nurses have the responsibility to prioritize patient safety and acquire knowledge about the patient's medical background. Prior to each study, the radiology nurses should provide instructions to the patient and convey fundamental facts regarding the length of the examination and the conditions of the testing environment (Rotunda, 2017).

Furthermore, radiology nurses exhibit a distinctive aptitude for building a connection with patients, cultivating an atmosphere of confidence and ease. The medical professionals acknowledge the susceptibility that patients may encounter during imaging procedures and strive to establish a secure environment where patients feel listened to, appreciated, and assisted. Radiology nurses have a crucial role in alleviating anxiety and fostering a sense of tranquility in patients by recognizing and confirming their concerns within the challenging realm of medical imaging.

### 1. Types of Imaging Diagnosis

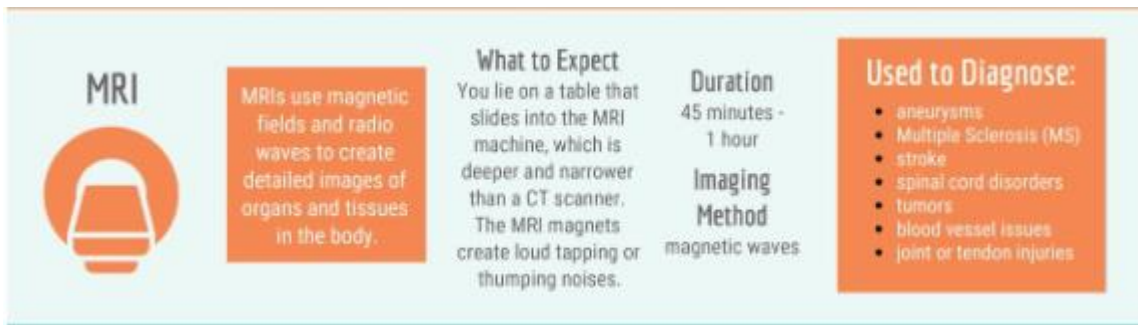
Imaging diagnosis refers to a broad range of diagnostic procedures that are used to visualize internal

structures and organs in the body. Although these treatments are extremely useful for detecting and

monitoring different medical disorders, they can also cause anxiety and anguish in many people since they are unfamiliar, invasive, and have the potential to cause discomfort. Here are several often seen imaging diagnoses that are known to cause anxiety:

- Magnetic Resonance Imaging (MRI)

Magnetic Resonance Imaging (MRI) entails reclining within a spacious, cylindrical apparatus for a prolonged duration, during which powerful magnetic fields and radio waves are utilized to acquire many sequences of images. The limited dimensions of the MRI scanner, the high decibel levels generated during the process, and the requirement to maintain immobility might induce anxiety, especially in patients with claustrophobia (Artykbayeva, 2020).



**Figure (1): Overview of Magnetic Resonance Imaging (MRI)**

- Computed Tomography (CT) Scan

CT scans employ X-rays and computer technologies to generate cross-sectional images of the body. Although CT scans are typically quicker than MRI scans, patients may feel anxious due to worries about radiation exposure, the requirement to remain motionless during the operation, and the confined environment of the scanner.



**Figure (2): Overview of Computed Tomography (CT) Scan**

- X-ray Imaging

X-rays are frequently employed to generate images of bones, tissues, and organs by transmitting minimal

doses of radiation through the body. Although X-rays are generally fast and do not need any intrusive procedures, patients may nonetheless feel anxious due to worries about radiation exposure and discomfort caused by the need to be positioned for the imaging.



**Figure (3): Overview of X-ray Imaging**

- Ultrasound Imaging

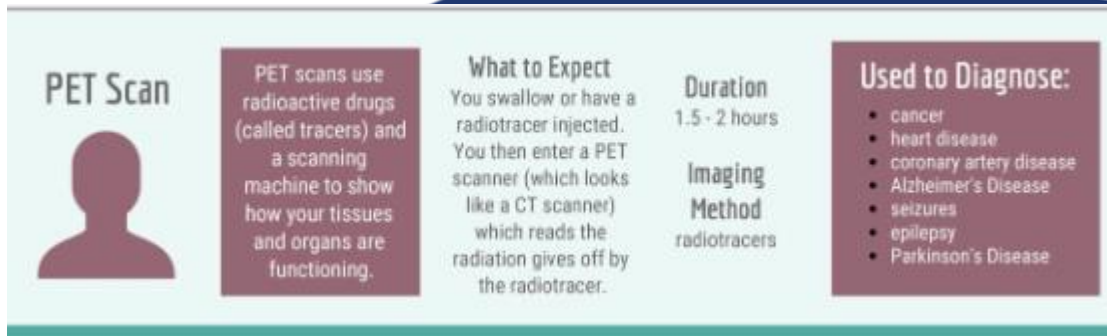
Ultrasound imaging employs high-frequency sound waves to generate live images of interior structures. Although ultrasonography is typically regarded as safe and devoid of pain, individuals may suffer anxiety due to apprehensions about the procedure's results, especially when it is employed for prenatal imaging or to explore suspected abnormalities (Gross et al., 2021).



**Figure (4): Overview of Ultrasound Imaging**

- Positron Emission Tomography (PET) Scan

PET scans entail the administration of a radioactive tracer via injection into the circulation, which then gathers in certain regions of the body. The method necessitates patients to remain still for an extended duration while pictures are acquired. Anxiety can be triggered by worries about radiation exposure, discomfort caused by the injection, and ambiguity regarding the outcome.



**Figure (5): Overview of Positron Emission Tomography (PET) Scan**

## 2. Factors Contributing to Patient Anxiety Undergoing Imaging

Many factors contribute to patient anxiety prior to, during, and following imaging diagnosis. Comprehending these aspects is crucial for healthcare workers, such as radiology nurses, to efficiently handle patient issues and offer suitable assistance. Several prevalent causes that contribute to patient anxiety include:

A major cause of anxiety in the field of radiology is the apprehension stemming from uncertainty. A significant number of patients lack knowledge about the imaging process, the apparatus employed, and the anticipated experience throughout the treatment (Eltawil et al., 2023). The lack of certainty might result in increased levels of worry as patients struggle with inquiries regarding the time, discomfort, and prospective results of the operation. Moreover, the clinical setting of radiology departments, which is distinguished by new apparatus, sterile surroundings, and procedural procedures, might intensify patients' emotions of anxiety and susceptibility.

Claustrophobia is a major cause of patient concern in radiology, especially during procedures that involve confined environments like MRI and CT scans (Lawal et al, 2023). Individuals with claustrophobic tendencies may experience intense sensations of terror and discomfort when placed in a tight hole or tunnel-like apparatus. Restricted mobility and the sensation of being confined exacerbate claustrophobia, leading to heightened physiological stress reactions and reduced image quality caused by patient motion. Prior adverse encounters with radiological procedures or healthcare interactions might also contribute to increased levels of anxiety among patients. Past experiences of pain, discomfort, or a sense of inadequacy in healthcare provision can create sentiments of mistrust and unease towards future medical treatments, intensifying anxiety and reluctance to seek care. These negative connotations may endure even without any actual damage, highlighting the significance of addressing patient worries and cultivating a supportive and understanding healthcare atmosphere.

According to (Woolen et al., 2018), patients may undergo feelings of anxiety due to the ambiguity of the imaging outcomes and the potential consequences for their well-being. Anxiety levels can be heightened before and after the imaging procedure due to the fear of receiving a serious diagnosis or the requirement

for additional medical measures.

Moreover, anxiety in the field of radiology might arise from certain procedural factors, such as worries of radiation exposure and related health hazards. Patients may have concerns regarding the potential long-term effects of radiation exposure, especially when it comes to undergoing several imaging examinations or operations that involve high levels of radiation. Insufficient knowledge or misunderstandings about radiation safety precautions and methods to reduce radiation exposure can lead to increased anxiety and unwillingness to undergo important medical imaging tests.

### **3. Effects of Anxiety on Patient Outcomes**

Motion artifacts can occur in images taken during imaging techniques, such as MRI or CT scans, due to restlessness or movement caused by anxiety. These artifacts have the potential to diminish the quality of images and undermine the accuracy of diagnoses by obstructing or distorting anatomical structures. Patient movement during imaging studies can result in inaccurate or partial results, which may require the need for more imaging. This can lead to delays in diagnosing the patient's condition, increased expenses in healthcare, and discontent among patients (Kolokeythas & Amin, 2022).

Physiological reactions caused by anxiety, such as heightened heart rate, shallow breathing, and raised blood pressure, can be dangerous during imaging procedures, especially for individuals with pre-existing medical disorders. These physiological changes can raise the chances of experiencing negative events, such as irregular heartbeats, sudden increases in blood pressure, or difficulty breathing (Weiner, 2019). This is particularly true for susceptible populations, such as elderly people or individuals with cardiovascular or respiratory illnesses. Efficiently managing anxiety can help reduce these hazards and guarantee the safety and well-being of patients undergoing imaging procedures.

Patients may postpone or avoid future healthcare contacts, such as follow-up imaging studies or routine screenings, due to ongoing anxiety stemming from previous imaging experiences or dread of prospective diagnosis. Failure to promptly diagnose and treat medical issues can lead to severe repercussions for patients, such as the advancement of diseases, heightened morbidity rates, and reduced likelihood of successful intervention.

### **4. The Role of Radiology Nurses in Anxiety Management**

Radiology nurses have a vital role in controlling patient anxiety during imaging treatments. They use several tactics to address patient concerns and ensure a happy experience. Due to their specific training, compassionate approach, and intimate connection with patients, they are uniquely capable of reducing anxiety and improving patient comfort during the imaging procedure.

- Assessment of Anxiety Levels

Radiology nurses do comprehensive evaluations of patients' anxiety levels, considering aspects such as

previous encounters, medical background, and individual coping strategies. Radiology nurses can obtain valuable insight into the root causes of anxiety by attentively listening to patients' concerns and carefully observing their nonverbal indicators. This enables them to customize their therapies accordingly (Laukhuf & Laukhuf, 2016).

- Education and Information

A key responsibility of radiology nurses is to offer patients precise and comprehensive information regarding the imaging technique, encompassing pre-exam, during-exam, and post-exam expectations. Nurses decrease anxiety by demystifying the process and reducing uncertainty through explanations of the procedure's goal, processes, and probable symptoms or discomfort.

- Emotional Support

Radiology nurses provide emotional support and empathy to patients who are suffering anxiety, by acknowledging their emotions and validating their concerns. Nurses establish a conducive and unbiased atmosphere, cultivating trust and a positive relationship with patients, so enhancing their comfort and reassurance during the imaging treatment.

- Communication and Reassurance

According to (Ajam et al., 2020), efficient communication is crucial for managing anxiety in radiology environments. Radiology nurses engage in effective and soothing communication with patients, responding to their inquiries, dispelling any misunderstandings, and offering practical insights into the treatment. Nurses relieve fear and instill confidence in patients' abilities to deal with the imaging study by providing reassurance and encouragement.

- Distraction Techniques

Radiology nurses utilize distraction tactics to redirect patients' focus from their worry and discomfort while undergoing the imaging treatment. Patients might employ various techniques, such as guided imagery, deep breathing exercises, or engaging in conversation, to induce relaxation and alleviate anxiety. In addition, nurses have the ability to offer patients headphones and music, as well as providing visual diversions, such as calming visuals displayed on the ceiling of the imaging room (Artykbayeva, 2020).

- Use of Pharmacological Interventions

Radiology nurses may offer pharmacological therapies in certain instances to alleviate extreme anxiety or claustrophobia during imaging procedures. This may involve the administration of anxiolytic drugs or sedatives under the close supervision of a physician. Nurses meticulously evaluate patients' appropriateness for pharmacological therapies, taking into account aspects such as medical history, allergies, and potential drug interactions (Arsenault & Keller, 2019).

## 5. Nursing Interventions to Alleviate Anxiety

Effective management of patient anxiety in radiology settings relies heavily on nursing interventions and approaches. Nurses can mitigate anxiety, enhance patient comfort, and improve the imaging experience by implementing evidence-based tactics and patient-centered approaches. Nurses employ many interventions and approaches to provide assistance to patients undergoing radiological procedures.

- Pre-procedure Interventions

Prior to commencing the imaging procedure, nurses employ diverse interventions to prepare patients and mitigate anxiety. They offer comprehensive explanations of the procedure, encompassing information on what the patient might anticipate, the objective of the examination, and any sensations that the patient might encounter. Nurses also facilitate patients in articulating their concerns or apprehensions, rectifying any misunderstandings and imparting knowledge to ease worry around the surgery. In addition, patients are instructed in relaxation techniques such as deep breathing exercises, progressive muscle relaxation, or guided imagery to effectively cope with anxiety and induce a state of tranquility prior to the treatment. Nurses collaborate with a multidisciplinary team consisting of radiologists, radiology technicians, and other healthcare professionals to ensure a coordinated approach and enhance the patient's experience.

- During-procedure Interventions

During the imaging procedure, nurses utilize interventions to provide assistance to patients and reduce anxiety. They establish and maintain effective channels of communication with patients, offering reassurance, support, and regular information regarding the status of the surgery. In addition, nurses employ distraction strategies to redirect patients' attention away from anxiety-inducing components of the treatment. These techniques include engaging patients in conversation, supplying distractions like music or visual stimuli, and providing focal areas for attention diversion. Nurses additionally administer physical comfort treatments, such as furnishing blankets for warmth, changing positions for best comfort, and providing hand-holding or soft touch to convey support and confidence. In addition, nurses consistently observe patient reactions and champion for their requirements, liaising with the radiology team to guarantee the patient's ease, security, and overall welfare during the process.

- Post-procedure Interventions

Nurses provide patients with post-procedure education, imparting advice on follow-up care, anticipated side effects, and the further stages of their treatment plan. In addition, nurses engage in continual communication with patients to evaluate their recovery after an operation, manage any persistent issues, and guarantee the seamless continuation of care. Nurses provide ongoing assistance to patients after the imaging process, encouraging their overall health and ensuring a seamless transition to post-procedure care (Tuck & Krenzischek, 2020).



## 6. Challenges Faced by Radiology Nurses in Alleviating Anxiety

A major obstacle that radiology nurses encounter is the intense time pressure and heavy task expectations in the radiography department. The nurses' capacity to deliver complete care and support to concerned patients undergoing imaging procedures may be impeded due to limited time availability. In order to tackle this difficulty, healthcare companies might consider solutions such as enhancing workflow processes, simplifying administrative chores, and adopting staffing models that prioritize patient-centered care.

Nurses may face difficulties in obtaining and using evidence-based interventions due to variables such as restricted resources, absence of defined protocols, and disparities in clinical practice (Dagne & Beshah, 2021). In order to tackle this difficulty, healthcare institutions can allocate resources towards professional development opportunities for radiology nurses. This includes providing training on evidence-based therapies for anxiety management and guidelines for their implementation.

According to (Alqerea et al., 2023), efficient interdisciplinary teamwork is crucial for meeting the intricate requirements of concerned patients undergoing imaging treatments. Nevertheless, obstacles such as language problems and conflicting priorities among team members might hinder the process of working together and organizing patient care. In order to address these difficulties, healthcare institutions should use tactics to foster interdisciplinary collaboration and communication, such as frequent multidisciplinary gatherings, collective decision-making procedures, and established communication protocols.

### Conclusion

It is crucial to address patient anxiety in radiology in order to improve outcomes and enhance the entire patient experience. Nurses have a pivotal role in addressing patient anxiety by employing clear communication, and implementing therapies based on scientific evidence. Nurses can alleviate suffering, improve comfort, and support a more positive imaging experience by comprehending the fundamental causes of anxiety and customizing interventions to suit the specific requirements of each patient.

Radiology nurses have a crucial function in addressing the intricate requirements of apprehensive patients undergoing imaging procedures. Radiology nurses exhibit perseverance and dedication in delivering high-quality treatment and support to patients, despite time limits, limited resources, and hurdles to interdisciplinary teamwork.

In order to overcome problems and improve care delivery methods in radiology settings, healthcare organizations must prioritize the development and support of radiology nurses. Healthcare organizations can empower radiology nurses to excel in their roles and ensure that anxious patients receive the necessary support and compassion during imaging procedures by investing in professional development opportunities, providing sufficient resources and staffing levels, and promoting a culture of teamwork and continuous improvement.

## References

- Ajam, A. A., Tahir, S., Makary, M. S., Longworth, S., Lang, E. V., Krishna, N. G., ... & Nguyen, X. V. (2020). Communication and team interactions to improve patient experiences, quality of care, and throughput in MRI. *Topics in Magnetic Resonance Imaging*, 29(3), 131-134.
- Alqerea, H. M., Al-Mahrei, S. M. A., Algarea, S. M., Al Mutarid, A. H. D., Alyami, A. F. A., Alyami, F. S. M., ... & Almutairy, B. A. (2023). Enhancing Patient Care: The Role Of Radiology Nurses In Modern Healthcare. *Journal of Namibian Studies: History Politics Culture*, 36, 2071-2082.
- Arsenault, S., & Keller, C. (2019). Managing Anxious Patients Undergoing Magnetic Resonance Imaging: Evidence Versus Common Practice in Ireland. *Trinity Student Medical Journal*, 20(1), 27-33.
- Artykbayeva, A. (2020). Nursing methods for emotional support of fearful patients before and during MRI.
- Dagne, A. H., & Beshah, M. H. (2021). Implementation of evidence-based practice: The experience of nurses and midwives. *Plos one*, 16(8), e0256600.
- Eltawil, F. A., Atalla, M., Boulos, E., Amirabadi, A., & Tyrrell, P. N. (2023). Analyzing barriers and enablers for the acceptance of artificial intelligence innovations into radiology practice: a scoping review. *Tomography*, 9(4), 1443-1455.
- Forshaw, K. L., Boyes, A. W., Carey, M. L., Hall, A. E., Symonds, M., Brown, S., & Sanson-Fisher, R. W. (2018). Raised anxiety levels among outpatients preparing to undergo a medical imaging procedure: prevalence and correlates. *Journal of the American College of Radiology*, 15(4), 630-638.
- Gross, M. S., Ju, H., Osborne, L. M., Jelin, E. B., Sekar, P., & Jelin, A. C. (2021). Indeterminate prenatal ultrasounds and maternal anxiety: A prospective cohort study. *Maternal and child health journal*, 25, 802-812.
- Halkett, G., O'Connor, M., Aranda, S., Jefford, M., Merchant, S., York, D., ... & Schofield, P. (2016). Communication skills training for radiation therapists: preparing patients for radiation therapy. *Journal of Medical Radiation Sciences*, 63(4), 232-241.
- Kolokythas, O., & Amin, K. (2022). Body imaging. In *Advances in Magnetic Resonance Technology and Applications* (Vol. 6, pp. 351-370). Academic Press.
- Laukhuf, R. L., & Laukhuf, G. A. (2016). Stress in radiology nursing. *Journal of Radiology Nursing*, 35(3), 205-210.
- Lawal, O., Regelous, P., & Omiyi, D. (2023). Supporting claustrophobic patients during Magnetic Resonance Imaging examination—the patient perspective. *Radiography*, 29(6), 1108-1114.
- Rotunda, T. J. (2017). Reducing occurrences of MR-related claustrophobia in patients with PTSD. *Radiologic Technology*, 89(1), 97-99.
- Tuck, P., & Krenzischek, D. A. (2020). Pre-and Post-Procedure Nursing Care. *Advanced Practice and Leadership in Radiology Nursing*, 59-75.

Weiner, H. (2019). The psychobiology and pathophysiology of anxiety and fear. In *Anxiety and the anxiety disorders* (pp. 333-354). Routledge.

Woolen, S., Kazerooni, E. A., Wall, A., Parent, K., Cahalan, S., Alameddine, M., & Davenport, M. S. (2018). Waiting for radiology test results: patient expectations and emotional disutility. *Journal of the American College of Radiology*, 15(2), 274-281.