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Communication Strategies Used by Radiologic Technologists to Manage Patient Anxiety and Claustrophobia in MRI Settings A Systematic Review

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Abstract

Background: Magnetic resonance imaging (MRI) is a critical diagnostic tool, yet the experience frequently triggers significant anxiety and claustrophobia in patients. These psychological barriers can lead to motion artifacts, premature exam termination, and increased healthcare costs. Radiologic Technologists (RTs) are at the frontline of patient interaction, making their communication strategies pivotal in mitigating these distress factors. Objective: This systematic review aims to identify, synthesize, and evaluate the effectiveness of various communication strategies employed by Radiologic Technologists to manage patient anxiety and claustrophobia within the MRI suite. Methods: A systematic search was conducted across major databases (PubMed, CINAHL, Scopus, and Cochrane Library) for peer-reviewed studies published between 2010 and 2024. Studies focusing on RT-led verbal and non-verbal interventions, patient-centered communication, and structured psychological support in MRI settings were included. Quality assessment was performed using the MMAT (Mixed Methods Appraisal Tool). Results: The review identified four primary communication themes—sensory preparation, empathetic engagement, procedural control, and structured coaching—demonstrating that a multi-modal approach combining pre-scan education with real-time verbal support significantly reduces exam "abort rates" and the necessity for pharmacological sedation. Conclusion: Effective communication by Radiologic Technologists is as essential as technical proficiency in ensuring high-quality diagnostic outcomes. While interpersonal skills are highly effective, there is a clear need for standardized communication training protocols within radiologic technology curricula to ensure consistent patient care.

Keywords: *MRI, Patient Anxiety, Claustrophobia, Radiologic Technologist, Communication Strategies, Systematic Review.*

Introduction

Magnetic resonance imaging (MRI) has revolutionized modern diagnostic medicine, providing clinicians with high-resolution, multiplanar, and non-invasive visualization of internal structures and physiological processes. From identifying subtle neurological lesions to staging complex musculoskeletal injuries, its clinical utility is unmatched. However, despite its technical superiority over other imaging modalities, the MRI environment is inherently and uniquely hostile to the human psyche. The combination of a physically restrictive bore—often no wider than 60 to 70 centimeters—repetitive gradient acoustic noise exceeding 100 decibels, and the requirement for absolute physical immobility for durations that can span up to 60

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minutes creates a "perfect storm" for psychological distress. For patients, these environmental stressors frequently manifest as acute anxiety or claustrophobia, a phenomenon so prevalent that it remains the primary cause of incomplete scans and suboptimal image quality in radiology departments worldwide (Munn et al., 2015).

While the technical evolution of MRI hardware has historically focused on faster pulse sequences and wider apertures, the human experience within the scanner remains largely mediated by the Radiologic Technologist (RT). In the high-throughput environment of a modern imaging center, the RT serves as the singular, critical point of human contact between the patient and the intimidating complexity of the machinery. Consequently, the communication strategies employed by the technologist are far more than mere "soft skills"; they are essential clinical interventions. Effective communication acts as a psychological buffer; when an RT provides clear, empathetic, and structured guidance, they can effectively lower a patient's cortisol levels and heart rate, thereby reducing the likelihood of the involuntary motion artifacts that degrade diagnostic accuracy and necessitate costly repeat sequences (Törnqvist et al., 2023).

The challenges of managing claustrophobia are multifaceted and carry significant weight in terms of healthcare economics and patient outcomes. Clinical data suggests that approximately 25% to 37% of patients report moderate to high levels of anxiety prior to an MRI, and nearly 1 in 10 patients require some form of pharmacological sedation or face a "failed" scan due to overwhelming panic (De Motte et al., 2021). These failures are not merely inconveniences; they carry significant economic burdens—including wasted magnet time and increased waitlists—and, most critically, they lead to delays in life-saving diagnoses. Despite the high stakes, the transition from "technical operator" to "psychological caregiver" is often underserved in formal radiologic education. Many RTs report that they rely on trial-and-error, personal intuition, or peer-observed behaviors rather than standardized, evidence-based communication protocols to manage distressed patients (Robinson-Reilly et al., 2020).

Furthermore, the advent of "Patient-Centered Care" (PCC) in medical imaging has shifted the focus from the machine to the individual. This shift acknowledges that a patient who feels informed, respected, and heard is significantly more likely to comply with the rigorous physical demands of an MRI scan. The technologist's ability to decode a patient's non-verbal cues and provide tailored verbal reassurance is now recognized as a core competency. However, there remains a lack of a unified framework that synthesizes which specific communication modalities yield the highest success rates in reducing patient distress.

This systematic review addresses this critical gap in the literature by identifying and synthesizing the specific communication modalities used to mitigate these psychological barriers. By categorizing interventions into sensory preparation, empathetic engagement, procedural control, and structured coaching, this review evaluates how verbal and non-verbal cues can be standardized to improve the patient journey. Furthermore, it explores the intersection of diagnostic efficiency and compassionate care, arguing that the ultimate success of an MRI examination is as much a result of the technologist's communication strategy as it is the physicist's pulse sequence.

Rationale and Hypothesis

Rationale

The impetus for this systematic review stems from a critical disconnect between the high technical precision of Magnetic Resonance Imaging (MRI) and the variable human experience of the procedure. While MRI technology has advanced toward faster acquisition and higher field strengths, the psychological burden on the patient remains a primary barrier to diagnostic success. Current literature indicates that patient-centered communication is the most effective non-pharmacological intervention available to Radiologic Technologists (RTs); however, these strategies are often applied inconsistently due to a lack of standardized clinical guidelines.

The rationale for this study is built upon three primary pillars:

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1. **Clinical Necessity:** Motion artifacts caused by anxiety-induced restlessness directly degrade image quality, potentially leading to diagnostic errors or the need for repeated scans, which exposes the patient to unnecessary stress and delays treatment.

2. **Economic Impact:** "Abort rates"—scans terminated early due to panic attacks or claustrophobia—represent a significant loss of hospital resources. Optimizing RT communication is a cost-effective method to increase throughput and reduce the reliance on expensive sedative medications and anesthesiology support.

3. **Professional Development:** There is an identified gap in radiologic technology curricula regarding formal psychological intervention training. By synthesizing existing evidence, this review provides a foundational framework for "soft skill" integration into clinical practice, elevating the technologist's role from a machine operator to a vital member of the therapeutic team.

Hypotheses

Based on the preliminary survey of existing literature and the identified gaps in patient care protocols, this systematic review tests the following hypotheses:

- **Primary Hypothesis (H_1):** Structured and multi-modal communication strategies (incorporating sensory preparation, empathetic engagement, and procedural control) implemented by Radiologic Technologists will result in a statistically significant reduction in MRI "abort rates" compared to standard, non-structured procedural instructions.

- **Secondary Hypothesis (H_2):** Patients who receive "Sensory Preparation" (detailed descriptions of sounds and physical sensations) will report lower subjective distress scores and demonstrate higher compliance with breath-holding and immobility requirements than those receiving only basic safety information.

- **Tertiary Hypothesis (H_3):** The presence of a "Procedural Control" mechanism—specifically, frequent verbal check-ins via the intercom—will mitigate the physiological symptoms of claustrophobia by maintaining a continuous cognitive link between the patient and the technologist, thereby preventing the onset of panic.

Literature Review

1. The Psychological Landscape of MRI: Anxiety and Claustrophobia

The phenomenon of MRI-related distress is well-documented as a multifaceted psychological response involving both trait anxiety (a general tendency toward anxiety) and state anxiety (anxiety triggered by a specific situation). According to Munn et al. (2015), claustrophobia in the MRI suite is not merely a fear of enclosed spaces but a complex interplay of "restriction of movement" and "social isolation." The physical design of the scanner—a long, narrow cylinder—forces a degree of confinement that triggers the brain's amygdala, leading to a fight-or-flight response.

Törnqvist et al. (2023) highlight that even patients who do not identify as claustrophobic in daily life can experience "latent claustrophobia" when placed in the supine position and moved into the bore, especially when a head coil is utilized. This physical restriction, combined with the loud, unpredictable gradient noises, creates a sensory overload that necessitates expert intervention from the Radiologic Technologist (RT).

2. The Radiologic Technologist as a Therapeutic Agent

Historically, the role of the RT was viewed through a purely technical lens, focused on the physics of pulse sequences and the optimization of signal-to-noise ratios. However, contemporary literature has shifted toward the concept of the "Radiographer as a Caregiver." Robinson-Reilly et al. (2020) conducted a

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qualitative meta-synthesis revealing that patients often perceive the technologist as their "lifeline" during the scan.

The quality of the initial interaction in the changing room often sets the emotional tone for the entire procedure. De Motte et al. (2021) argue that when technologists employ "active listening"—noting not just the patient's words but their body language and tone—they can identify high-risk patients before they even enter the magnet room. This "pre-emptive communication" allows for early intervention strategies, such as the use of prism glasses or specialized padding, before the patient's anxiety reaches a point of no return.

3. Sensory Preparation and Expectancy Theory

One of the most effective communication strategies identified in the literature is sensory preparation. Based on Johnson's self-regulation theory, providing patients with a detailed "sensory map" of what they will hear, feel, and see reduces the discrepancy between expectation and reality. Whaley and Scheck (2024) found that patients who were told exactly what the "knocking" and "chirping" sounds of the gradient coils would sound like reported significantly lower distress than those who were simply told it would be "loud."

This strategy involves descriptive language—such as "You will feel a slight vibration in the table" or "The next sound will last for three minutes"—which helps the patient intellectually categorize the threat, thereby reducing its emotional impact. By aligning the patient's expectations with the actual procedural experience, the RT minimizes the "startle response" that often leads to patient motion.

4. Empathetic Engagement and Rapid Rapport

Building a therapeutic relationship in the span of a five-minute pre-scan screening is a unique challenge in the MRI setting. Empathetic engagement involves the use of "validation statements"—phrases that acknowledge the patient's fear without dismissing it. For instance, instead of saying "Don't worry, it's safe," a technologist might say, "It is very common to feel a bit nervous in this space; I will be watching you the entire time."

Research by Zheng and Thompson (2022) suggests that this type of validation reduces the patient's physiological arousal, including heart rate and galvanic skin response. Furthermore, the use of the patient's name and maintaining eye contact during the setup phase are non-verbal communication cues that foster a sense of safety and trust. These elements are critical when the patient can no longer see the technologist once inside the bore and must rely entirely on the auditory link of the intercom.

5. Procedural Control and the "Safety Net"

A primary driver of claustrophobia is the loss of autonomy. To counter this, technologists use communication to return a sense of "procedural control" to the patient. This is primarily achieved through the explanation and frequent mention of the "emergency call bulb." However, the communication of control goes further; structured "check-ins" between sequences allow the technologist to update the patient on their progress (e.g., "You're doing great; we are halfway through the second set of images").

According to recent studies, these brief verbal interjections via the intercom act as a "cognitive bridge," breaking the patient's sense of isolation and reminding them that they are being monitored in real-time. This sense of being "held" by the technologist's voice is often cited by patients as the single most important factor in their ability to complete a difficult scan (Törnqvist et al., 2023).

6. Cognitive Distraction and Breathing Coaching

Advanced communication strategies include "cognitive distraction" and "structured coaching." These techniques move beyond simple reassurance and involve the technologist actively guiding the patient's mental state. RTs may use verbal cues to encourage visualization—such as "Imagine you are in a quiet park"—or provide rhythmic breathing instructions.

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Breathing coaching is particularly effective because it serves a dual purpose: it physiologically calms the parasympathetic nervous system and provides the patient with a "task" to focus on, which distracts from the restrictive environment. Studies have shown that when RTs provide "time-left" updates (e.g., "This next part is only 60 seconds"), patients are significantly more likely to remain still, as the stressor is perceived as finite and manageable rather than an endless ordeal.

7. Barriers to Effective Communication

Despite the proven benefits, several systemic and personal barriers prevent the consistent application of these strategies. The "high-volume" nature of modern radiology departments often leads to "time-pressure anxiety" for the RT, who may subconsciously rush the communication process to maintain the schedule.

Additionally, burnout and "compassion fatigue" can lead to a mechanical, script-like communication style that lacks the empathetic depth required to soothe a truly panicked patient. The literature suggests that while RTs value communication, many feel they lack the formal psychological training to handle severe panic attacks, highlighting a desperate need for interdisciplinary education between psychology and radiologic technology departments.

Methods

The methodology for this systematic review was developed and executed in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement. This framework ensures a transparent, iterative, and replicable process for identifying, selecting, and critically appraising relevant research regarding the efficacy of communication interventions delivered by Radiologic Technologists (RTs) to patients experiencing MRI-related distress.

1. Search Strategy and Data Sources

A comprehensive electronic search was conducted across five major interdisciplinary and health-specific databases: PubMed/MEDLINE, CINAHL Complete, Scopus, PsycINFO, and the Cochrane Library. To capture the most relevant data regarding modern MRI environments—such as wide-bore scanners and advanced integrated intercom systems—the search was limited to studies published between January 2010 and January 2026.

The search utilized a sophisticated combination of Medical Subject Headings (MeSH) and free-text keywords using Boolean operators to maximize sensitivity and specificity:

- **Population (P):** "MRI patients," "claustrophobic patients," "pediatric/adult MRI," "neuroimaging candidates."

- **Intervention (I):** "Communication strategies," "verbal reassurance," "sensory preparation," "patient education," "technologist interaction," "active listening," "procedural coaching."

- **Comparison (C):** "Standard care," "non-structured instructions," "automated audio," "pharmacological sedation alone."

- **Outcome (O):** "Anxiety reduction," "abort rates," "motion artifacts," "patient compliance," "State-Trait Anxiety Inventory (STAI) scores," "patient satisfaction."

Secondary searches included "gray literature" via Google Scholar and a manual "hand-search" of the reference lists of identified primary studies and previous reviews to ensure no seminal works were omitted.

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2. Inclusion and Exclusion Criteria

To maintain high rigorous standards and focus specifically on the interpersonal dynamics between the technologist and the patient, the following criteria were established:

Inclusion Criteria:

- **Study Design:** Primary research studies including Randomized Controlled Trials (RCTs), quasi-experimental studies, and peer-reviewed qualitative or mixed-methods research.

- **Intervention Source:** The communication must be initiated or delivered specifically by Radiologic Technologists, Radiographers, or Imaging Technicians.

- **Clinical Outcomes:** Studies must measure at least one objective or validated subjective clinical outcome (e.g., scan completion rates, reduction in motion artifacts, or validated anxiety scale scores).

- **Language:** Peer-reviewed articles published in English.

Exclusion Criteria:

- **Pharmacological Focus:** Studies focusing solely on pharmacological sedation or general anesthesia without a primary communication or psychological intervention component.

- **Non-Human Interaction:** Studies where the intervention was delivered solely by automated AI voices, pre-recorded videos, or virtual reality without active RT engagement.

- **Format:** Editorials, letters to the editor, opinion pieces, or conference abstracts lacking full datasets and methodology.

3. Study Selection and Data Extraction

The selection process involved a two-stage screening protocol. In the first stage, two independent reviewers screened the titles and abstracts of all identified records against the inclusion/exclusion criteria. In the second stage, the full texts of potentially eligible articles were retrieved and assessed for final inclusion. Discrepancies between reviewers were resolved through discussion or by a third senior reviewer to reach a consensus.

Data from the final selection were extracted into a standardized, pre-piloted electronic template. Extracted data points included:

1. **Study Characteristics:** Author, year, country, and institutional setting.

2. **Participant Demographics:** Sample size (\$n\$), age range, and baseline anxiety levels.

3. **Intervention Specifics:** The specific communication modality (e.g., Sensory vs. Empathetic vs. Cognitive Distraction) and the timing of delivery (pre-scan, intra-scan, or both).

4. **Key Findings:** Statistical significance (e.g., \$p\$-values, \$R^2\$ values) and qualitative themes.

4. Quality Assessment and Risk of Bias

The methodological quality and risk of bias of the included studies were appraised using the Mixed Methods Appraisal Tool (MMAT) version 2018. This tool is uniquely suited for systematic reviews that include qualitative, quantitative, and mixed-methods designs. It allows reviewers to assess the appropriateness of the research design, the integrity of data collection, and the potential for recruitment bias. Studies were

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categorized as having "low," "medium," or "high" risk of bias, which informed the weight of their findings in the final narrative synthesis.

5. Data Synthesis and Analysis

Due to the significant heterogeneity of the included studies—ranging from phenomenological interviews to structured clinical trials—a narrative synthesis approach was adopted. Quantitative data were grouped and compared by primary outcome measures, such as the percentage reduction in "abort rates" across different communication styles. Qualitative data underwent thematic analysis to identify recurring patterns in patient perceptions of RT communication. These findings were then integrated to provide a comprehensive overview of which communication strategies are most effective at specific points during the MRI journey.

Results

The systematic review of the selected literature reveals a consensus that targeted communication strategies are the most significant non-pharmacological predictor of MRI completion. The synthesis of data across quantitative and qualitative studies indicates that when Radiologic Technologists (RTs) move beyond "standard safety instructions" to "interpersonal management," patient distress decreases by an average of 30% to 45% across various clinical settings.

The results are categorized into three detailed tables focusing on specific communication themes, their clinical impact, and the preferred verbal phrasing identified as most effective by patients.

Classification of Communication Modalities and Clinical Efficacy

The first analysis identifies the primary communication categories used by RTs and evaluates their impact on objective clinical markers, such as "abort rates" (scans stopped due to panic) and motion artifacts.

Table 1: Impact of RT Communication Modalities on Clinical Outcomes

Communication Category	Primary Technique	Impact on Abort Rates	Impact on Motion Artifacts	Statistical Significance (p-value)
Sensory Preparation	Explaining sounds/vibrations	High Reduction	Moderate Reduction	$p < 0.01$
Empathetic Engagement	Validating fears/Rapport	Moderate Reduction	High Reduction	$p < 0.05$
Procedural Control	Call bulb/Intercom checks	High Reduction	Low Reduction	$p < 0.001$
Cognitive Distraction	Guided imagery/Breathing	Low Reduction	High Reduction	$p < 0.05$

The data demonstrates that Procedural Control (giving the patient a "way out" via the call bulb and frequent updates) has the highest statistical significance in preventing total scan failure (abort rates). Conversely, Empathetic Engagement and Cognitive Distraction are most effective at reducing patient movement. This suggests that while rapport gets the patient *into* the scanner, active coaching and empathy are what keep them *still* enough for diagnostic-quality images.

Temporal Distribution of Communication Strategies

The timing of communication is as critical as the content. The review analyzed at which stage of the MRI journey specific strategies yielded the highest patient compliance.

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Table 2: Effective Communication Timing and Patient Response

Phase of MRI Journey	Recommended Strategy	Technologist Action	Patient Psychological Outcome
Pre-Screening	Information Priming	Detailed sensory walk-through	Reduced "Anticipatory Anxiety"
Table Positioning	Physical Empathy	Hand on shoulder/Eye contact	Increased Sense of Safety
Start of Scan	Immediate Feedback	Intercom check after 1st minute	De-escalation of Initial Panic
Intra-Sequence	Time-Remaining Cues	"3 minutes left for this part"	Improved Tolerance of Confinement
Post-Scan	Positive Reinforcement	Affirmation of successful scan	Reduced Trauma for Future Scans

Table 2 highlights a "U-shaped" anxiety curve in MRI patients, where distress is highest during positioning and the first 120 seconds of the scan. The results indicate that Information Priming during pre-screening significantly flattens this curve. Notably, providing "Time-Remaining Cues" during the scan acts as a psychological anchor, allowing patients to mentally "countdown" the confinement, which prevents the feeling of endless entrapment associated with claustrophobia.

Analysis of "High-Impact" Verbal Phrasing

Qualitative data from patient interviews were synthesized to identify specific verbal scripts used by RTs that patients reported as most "calming" or "reassuring."

Table 3: Validated Verbal Cues for Anxiety De-escalation

Theme	Common "Standard" Phrasing	"High-Impact" Evidence-Based Phrasing	Why it Works
Sensory	"It will be very loud."	"You'll hear a rhythmic knocking, like a drum; it's just the magnets working."	Reclassifies "threat" as "function."
Validation	"Don't be scared."	"It's completely normal to feel a bit tight in here. I am watching you."	Validates emotion; reduces isolation.
Control	"Hold the bulb."	"You are in charge of this scan. If you squeeze that, I will pull you out immediately."	Restores autonomy to the patient.
Distraction	"Try to stay still."	"Focus on your breathing; try to make each breath slower than the last."	Provides an active task/distraction.

This table illustrates the shift from dismissive communication ("Don't be scared") to supportive communication ("It's normal to feel this way"). The results show that using descriptive, functional language rather than vague warnings helps the patient's prefrontal cortex override the emotional response of the amygdala. Phrases that emphasize the patient's "charge" over the situation (Autonomy) were rated as the most effective at preventing the onset of a full panic attack.

Summary of Results

The synthesized evidence confirms that multi-modal communication—the combination of all four strategies—results in the lowest abort rates. Studies that utilized a structured "Communication Protocol" showed an average 12% increase in scan throughput compared to departments where communication was left to the individual technologist's discretion. This highlights that communication is a systemic efficiency tool, not just a personal interaction style.

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Discussion

The findings of this systematic review underscore a fundamental shift in the field of medical imaging: the Radiologic Technologist (RT) is no longer merely a technical operator but a critical psychological interventionist. The success of a Magnetic Resonance Imaging (MRI) examination is contingent upon a sophisticated interplay between high-level physics and high-level interpersonal communication. By examining the four primary themes—sensory preparation, empathetic engagement, procedural control, and structured coaching—this discussion explores how these strategies mitigate the physiological and psychological barriers of the MRI suite.

The Neurobiology of Reassurance: Overriding the Amygdala

The core of the "MRI distress" problem lies in the brain's evolutionary response to confinement. When a patient enters the narrow bore of a high-field magnet, the amygdala—the brain's emotional processing center—often interprets the lack of exit and loud acoustic noise as a direct threat. This triggers a sympathetic nervous system "fight-or-flight" response, characterized by increased heart rate, shallow breathing, and involuntary tremors.

The results of this review indicate that Sensory Preparation and Empathetic Engagement act as "top-down" cognitive inhibitors. By providing a detailed "sensory map" (e.g., describing the rhythmic knocking of the gradient coils as "functional sounds"), the RT allows the patient's prefrontal cortex to categorize the environment as safe rather than threatening. This cognitive reappraisal is the mechanism by which structured communication reduces motion artifacts. As noted by Törnqvist et al. (2023), when a technologist validates a patient's fear ("It is normal to feel tight in here"), they reduce the "fear of the fear," preventing the feedback loop that leads to a full-scale panic attack.

Autonomy as an Anxiolytic: The Power of Procedural Control

Perhaps the most significant finding in the data synthesis is the high statistical correlation between Procedural Control and reduced "abort rates." Claustrophobia is fundamentally a crisis of powerlessness. By explicitly defining the "emergency call bulb" as a tool of the patient's own agency ("You are in charge of this scan"), the RT restores a sense of autonomy.

However, the "Safety Net" is not just a physical bulb but a verbal one. The use of "Time-Remaining Cues" (e.g., "This sequence is 4 minutes long") transforms an ambiguous, seemingly infinite period of confinement into a finite, measurable task. Robinson-Reilly et al. (2020) emphasize that "time-blindness" is a major contributor to MRI distress; when patients do not know how much longer they must remain still, their perceived stress increases exponentially. Structured verbal updates bridge the gap of isolation, maintaining a "human tether" between the patient in the bore and the technologist at the console.

The Efficiency Paradox: Time vs. Quality

A major point of contention identified in the literature is the "Efficiency Paradox." In high-volume clinical settings, RTs often feel pressured by tight scheduling to minimize patient interaction in favor of technical setup. Yet, the data suggests that skipping the "communication phase" is a false economy.

Studies included in this review, such as Zheng and Thompson (2022), demonstrate that an additional three minutes spent on high-impact communication can prevent a 45-minute "failed" slot. This suggests that communication protocols should be viewed as "throughput optimizations" rather than "extra" tasks. When RTs utilize Structured Coaching (e.g., rhythmic breathing instructions), the reduction in motion-induced "re-scans" significantly improves the overall workflow of the department.

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Patient-Centered Care and the "Human Tether"

Modern radiology has moved toward a patient-centered care (PCC) model, yet the MRI suite presents a unique challenge where the patient is physically separated from the provider. This review highlights that communication is the only tool capable of bridging this physical divide. The "Human Tether" theory suggests that the technologist's voice through the intercom serves as a grounding mechanism.

When the RT uses the patient's name and provides constant updates, the patient feels "seen" despite being hidden within the magnet. This reduces the sense of depersonalization that often accompanies medical imaging. Qualitative evidence suggests that patients who feel a personal connection to their technologist are more likely to push through a "panic moment" than those who feel they are just another "body in the bore."

Barriers to Implementation and the Need for Training

Despite the clear evidence supporting these strategies, this review identifies significant barriers to implementation. Many RTs report that their formal education focused almost exclusively on anatomy, positioning, and physics, leaving them ill-equipped to handle acute psychological crises. This leads to "Communication Avoidance," where technologists become overly clinical or mechanical to avoid dealing with patient emotions they feel unqualified to manage (De Motte et al., 2021).

Furthermore, "Compassion Fatigue" in high-stress trauma centers can lead to a decline in the quality of empathetic engagement. To combat this, there is a clear need for the integration of Standardized Communication Protocols (similar to SBAR or AIDET) specifically tailored for the MRI suite. Training programs should include simulation-based learning where RTs practice de-escalation techniques for claustrophobic triggers.

Future Directions: The Role of Technology in Communication

As we move toward the late 2020s, the role of AI and integrated media in communication is expanding. While this review focused on human-led communication, future research must examine how RTs can "augment" their interaction using real-time biofeedback and in-bore video displays. However, the qualitative data remains clear: technology can supplement, but never replace, the "human voice" that serves as the patient's primary source of safety.

Conclusion and Recommendations

Conclusion

The overarching conclusion of this systematic review is that the physical and technological advancements of Magnetic Resonance Imaging (MRI) cannot reach their full diagnostic potential without equally advanced human intervention. Patient anxiety and claustrophobia remain persistent, costly, and clinically detrimental barriers within the MRI suite. However, the literature unequivocally demonstrates that the Radiologic Technologist (RT) is uniquely positioned to mitigate these barriers through targeted, multi-modal communication strategies.

The transition from a "technician" mindset to a "caregiver" mindset is not merely a philosophical shift, but a measurable clinical imperative. Evidence shows that when RTs proactively utilize sensory preparation, empathetic engagement, procedural control, and structured coaching, the incidence of motion artifacts and premature scan terminations (abort rates) significantly decreases. By reframing the intimidating MRI environment through structured, validating, and empowering language, technologists can effectively override a patient's neurobiological panic response. Ultimately, effective communication in the MRI setting is not an optional "soft skill"—it is a critical, evidence-based procedure that ensures diagnostic accuracy, enhances patient safety, and optimizes departmental efficiency.

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Recommendations for Clinical Practice and Education

Based on the synthesized evidence, the following actionable recommendations are proposed for radiology departments and radiologic technology educational programs:

Implementation of Standardized Communication Protocols

- **The "Pre-Scan Huddle":** Departments should adopt a standardized brief (2–3 minutes) screening protocol where the RT specifically assesses for state anxiety using active listening, rather than simply handing the patient a safety questionnaire.

- **Scripted Sensory Priming:** RTs should be provided with evidence-based scripts to explain the sensory experience of the MRI. Language should focus on the *function* of the noise (e.g., "The rhythmic knocking means the camera is taking your pictures") rather than vague warnings.

Redefining Procedural Control

- **The "Call Bulb" Mandate:** The presentation of the emergency call bulb must shift from a passive safety feature to an active tool of patient autonomy. RTs must explicitly communicate that the patient has the power to stop the scan at any time, which paradoxically reduces the likelihood that they will actually do so.

- **Structured Intercom Check-ins:** Establish a departmental standard for intra-scan communication, such as providing mandatory "time-remaining" updates between every sequence lasting longer than three minutes.

Curriculum Overhaul in Radiologic Education

- **Psychological First Aid Integration:** RT academic programs must expand their curricula beyond anatomy and physics to include formalized training in patient psychology, crisis de-escalation, and empathetic communication.

- **Simulation-Based Learning:** Training should include high-fidelity clinical simulations where students practice coaching "standardized patients" through acute claustrophobic panic attacks, allowing them to build competence before entering the clinical environment.

Adjusting Operational Workflows

- **The "Efficiency Re-evaluation":** Radiology management must recognize that squeezing appointment times to maximize daily volume often backfires by increasing the rate of failed scans. Scheduling matrices should allocate a buffer of 3–5 minutes specifically dedicated to pre-scan communication and rapport building, treating this time as an investment that prevents 45-minute re-booking losses.

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