Original Article

Mental Health, Well-Being, and Quality of Patient Care among Radiologic Technologists

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Abstract

Radiologic technologists sustain diagnostic pathways yet often work in high-pressure environments. This study examined how mental health and well-being relate to perceived quality of patient care among radiologic technologists in Iligan City, Philippines. An explanatory sequential mixed-methods design included a survey of 50 technologists from public and private facilities, followed by in-depth interviews with 10 purposively selected participants. Quantitative analyses showed mild to moderate anxiety, depression, and stress, moderately high well-being, and high perceived care quality. Higher depression and stress correlated with lower ratings of patient satisfaction, perceived clinical outcomes, and care coordination, while higher well-being correlated with higher perceived care quality. Multiple regression identified depression as an independent predictor of overall quality of care after adjustment for demographic and workload variables. Qualitative themes described emotional strain, moral commitment to patient safety, and reliance on informal coping in the absence of structured support. Mental health support for radiologic technologists emerges as a strategy to protect both workforce sustainability and the quality of diagnostic care in low-resource urban settings.

Keywords: depression, mental health, patient care quality, radiologic technologists

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1. Introduction

Radiologic technologists occupy a central position in contemporary health systems. They operate complex imaging equipment, safeguard radiation protection, and shape patient experience at crucial diagnostic moments (Clemen et al., 2023; Pelias et al., 2023). Global evidence now documents substantial mental health burdens among healthcare workers, including high rates of anxiety, depression, stress, and burnout, with clear implications for workforce retention and quality of care (Miranda et al., 2023; Lagunes Córdoba et al., 2021; Søvold et al., 2021). Recent work indicates that radiographers and radiology technicians face similar or higher levels of burnout because of workload, time pressure, and under-appreciation of their work (Arif, 2024; Kennedy et al., 2025; Mahecha-Naranjo et al., 2025).

Quality of care is often defined as the degree to which health services increase the likelihood of desired health outcomes and align with current professional knowledge (Donabedian, 2005; World Health Organization, 2025). Donabedian's framework links structure, process, and outcome, and remains an influential lens for evaluating service quality (Donabedian, 1966; Berwick & Fox, 2016). Qualitative work with nurses describes quality care as holistic practice that integrates technical competence, effective communication, and respect for dignity (Stavropoulou et al., 2022). These perspectives converge on a core insight: clinician well-being and mental health condition the capacity to deliver safe, person-centred care.

Stress and coping theory explains how chronic occupational demands tax psychological resources and shape behaviour. Lazarus and Folkman (1984) describe stress as a transaction between person and environment that individuals appraise as taxing or exceeding their resources, which influences coping responses and downstream outcomes. Self-determination theory posits that when basic needs for autonomy, competence, and relatedness are not met, intrinsic motivation and performance deteriorate (Ryan & Deci, 2000). In imaging departments, these mechanisms can manifest as reduced attentiveness, shorter communication with patients, or lower adherence to protocols, which may influence satisfaction and diagnostic accuracy.

Empirical research links healthcare worker distress with declines in service quality and patient safety indicators, although most studies focus on physicians and nurses (Søvold et al., 2021). In radiology, emerging evidence shows that workload and burnout among radiographers associate with perceived stress and concerns about performance (Arif, 2024; Mahecha-Naranjo et al., 2025). However, little is known about how mental health and well-being relate to perceived quality of patient care among radiologic technologists in lower-middle-income settings. The Philippine context features high patient-to-staff ratios, variable infrastructure, and limited formal mental health support, yet radiologic technologists remain under-studied.

This study addresses that gap in Iligan City, an urban centre in Northern Mindanao. It asks how anxiety, depression, stress, and overall well-being among radiologic technologists relate to perceived quality of patient care, including patient

satisfaction, perceived clinical outcomes, and care coordination. It also explores how technologists describe the links between their psychological state and day-to-day practice. By integrating quantitative and qualitative findings, the study positions mental health support for radiologic technologists as a component of quality-of-care strategies in resource-constrained environments.

2. Methodology

2.1 Design

The study used an explanatory sequential mixed-methods design. The first phase involved a cross-sectional survey that quantified levels of anxiety, depression, stress, well-being, and perceived quality of patient care. The second phase comprised semi-structured interviews that clarified and deepened quantitative patterns, especially where associations between mental health, well-being, and quality-of-care outcomes appeared strongest.

2.2 Setting and Participants

The study took place in government and private hospitals and imaging centres in Iligan City, Philippines. Eligible participants were licensed radiologic technologists who provided direct patient care in diagnostic radiology, computed tomography, magnetic resonance imaging, or fluoroscopy and who had worked in their current institution for at least six months. Radiologists, student interns, and technologists without patient contact were excluded.

Fifty radiologic technologists participated in the survey. The mean age was 29.4 years (SD = 5.9). Slightly more than half were women, most worked full time, and caseloads reflected busy urban practice. From this group, 10 technologists were purposively selected for interviews to maximise variation in age, gender, mental health scores, and facility type.

2.3 Instruments

The survey instrument had four sections. The first section captured sociodemographic and professional characteristics: age, gender, years of experience, type of facility, and typical weekly caseload.

The second section assessed mental health status. Anxiety items drew on the Generalized Anxiety Disorder 7-item scale, which is a widely validated measure of anxiety symptom severity (Spitzer et al., 2006; Johnson et al., 2019). Depression items reflected the structure of the Patient Health Questionnaire 9-item depression scale, which provides a brief, reliable assessment of depressive symptom severity (Kroenke et al., 2001). Stress items followed the conceptualisation of the Perceived Stress Scale, which measures the degree to which individuals appraise life situations as

unpredictable, uncontrollable, and overwhelming (Cohen et al., 1983). Respondents rated frequency of symptoms on a 4-point Likert scale from 1 (never) to 4 (almost always). Subscale scores were averaged, with higher scores indicating more severe symptoms. Cronbach's alpha values in this sample were 0.86 for anxiety, 0.88 for depression, and 0.84 for stress.

The third section measured well-being using items aligned with the World Health Organization definition and the WHOQOL quality-of-life domains, which emphasise physical, psychological, social, and environmental facets (The WHOQOL Group, 1998; Skevington et al., 2004). Items assessed life satisfaction, social support, and perceived personal growth. Responses used a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated better well-being. Cronbach's alpha for the composite scale was 0.90.

The final section assessed perceived quality of patient care from the technologists' perspective. Items reflected three domains. Patient satisfaction included respectful treatment, clarity of explanations, and responsiveness to concerns. Perceived clinical outcomes encompassed image quality, minimisation of repeat exposures, and contribution to accurate diagnosis. Care coordination addressed cooperation with physicians and nurses, scheduling, and information flow. The scale drew on Donabedian's structure-process-outcome framework and on qualitative work that frames quality care as holistic and patient centred (Donabedian, 2005; Stavropoulou et al., 2022). Cronbach's alpha for the overall quality-of-care scale was 0.92.

Semi-structured interview guides explored the following areas: perceived sources of stress and emotional strain; experiences of anxiety and low mood; strategies that protected or eroded well-being; and specific ways that psychological state influenced communication, protocol adherence, and teamwork in imaging departments.

2.4 Data Collection

Data collection occurred between January and May 2024. After coordination with department heads, the researcher distributed printed questionnaires together with information sheets and consent forms. Participation was voluntary and anonymous. Completed questionnaires were sealed in envelopes and deposited in secure boxes at the radiology department, then collected by the researcher.

Interviews took place in private rooms within the hospital or through secure online videoconferencing for participants on rotating shifts. Each interview lasted around 35 to 60 minutes and was audio-recorded with consent. Interviews were conducted in English or Cebuano, depending on participant preference. Cebuano excerpts were translated into English while preserving key expressions.

2.5 Data Analysis

Survey data were entered into statistical software and checked for completeness and outliers. Descriptive statistics summarised participant characteristics and key variables. Reliability analyses used Cronbach's alpha. Pearson correlations assessed associations between mental health subscales, well-being, and quality-of-care domains. Multiple linear regression estimated the unique contributions of anxiety, depression, and stress to overall perceived quality of care, controlling for age, gender, years of experience, and weekly caseload. Significance was set at $p < .05$.

Qualitative data underwent reflexive thematic analysis. The researcher read each transcript multiple times, identified meaningful segments related to mental health and care practices, and assigned initial codes. Codes were grouped into candidate themes, which were refined through iterative comparison across participants and facilities. Themes were defined and named to capture patterns that explained the quantitative results.

2.6 Ethical Considerations

The institutional ethics review board of the researchers' institution approved the protocol. Hospital administrators granted permission to approach staff. Participants received written information about the study, confidentiality, and voluntary participation, and provided written informed consent. Data were stored on password-protected devices and reported in aggregated form. Identifying details were removed from transcripts, and pseudonyms replaced real names.

3. Results

3.1 Participant Characteristics

Table 1 summarises the demographic profile of the 50 radiologic technologists. The sample reflected a predominantly young, early-career workforce with varied experience across public and private institutions.

3.2 Mental Health, Well-Being, and Perceived Quality of Patient Care

Radiologic technologists reported mild to moderate levels of anxiety, depression, and stress, alongside moderately high well-being and high perceived quality of patient care (Table 2).

Table 1. Demographic and professional characteristics of radiologic technologists (n = 50)

Characteristic	Category	n	%
Gender	Female	28	56.0
	Male	22	44.0
Age group (years)	21-30	29	58.0
	31-40	15	30.0
	Above 40	6	12.0
Years of practice	Less than 5	21	42.0
	5-10	17	34.0
	More than 10	12	24.0
Primary facility type	Tertiary hospital	34	68.0
	Secondary hospital	9	18.0
	Diagnostic center	7	14.0
Weekly caseload (examinations)	Less than 60	14	28.0
	60-100	23	46.0
	More than 100	13	26.0

Table 2. Mental health, well-being, and perceived quality of patient care (n = 50).

Construct	Mean	SD	Possible range
Anxiety	2.21	0.58	1.00-4.00
Depression	2.09	0.61	1.00-4.00
Stress	2.35	0.55	1.00-4.00
Overall well-being	3.62	0.67	1.00-5.00
Patient satisfaction	4.18	0.51	1.00-5.00
Perceived clinical outcomes	4.09	0.49	1.00-5.00
Care coordination	4.02	0.54	1.00-5.00
Overall quality of patient care	4.10	0.45	1.00-5.00

Average anxiety, depression, and stress scores clustered slightly above the midpoint of the scale, while quality-of-care scores clustered near the upper end, suggesting strong professional commitment despite psychological strain.

3.3 Correlations between Mental Health, Well-Being, and Quality of Care

Pearson correlations indicated consistent links between mental health indicators, well-being, and perceived quality of care (Table 3). Higher depression and stress associated with lower ratings of overall quality of care and its domains. Well-being associated positively with all quality-of-care measures. Anxiety showed weaker and mainly non-significant relationships.

Table 3. Correlations between mental health, well-being, and perceived quality of patient care (n = 50).

Variable pair	r	p
Anxiety - overall quality of care	-0.19	.190
Depression - overall quality of care	-0.38	.007
Stress - overall quality of care	-0.33	.018
Well-being - overall quality of care	0.42	.003
Depression - patient satisfaction	-0.36	.010
Stress - patient satisfaction	-0.31	.026
Depression - clinical outcomes	-0.34	.014
Stress - care coordination	-0.29	.038

Radiologic technologists who reported higher depressive symptoms and higher perceived stress tended to rate their communication, responsiveness, and teamwork less favourably. Those with higher well-being perceived stronger patient satisfaction, better outcomes, and smoother coordination.

3.4 Predictors of Overall Quality of Patient Care

Multiple regression examined whether mental health variables predicted overall quality of patient care after adjustment for demographic and workload factors (Table 4).

Table 4. Multiple regression predicting overall perceived quality of patient care (n = 50).

Predictor	B	SE B	β	p
Age	0.01	0.01	0.11	.394
Gender (female = 1)	0.06	0.09	0.10	.503
Years of experience	0.00	0.01	0.03	.815
Weekly caseload	-0.00	0.00	-0.09	.521
Anxiety	-0.08	0.09	-0.12	.382
Depression	-0.24	0.08	-0.41	.004
Stress	-0.15	0.08	-0.24	.076

Note. $R^2 = .32$, adjusted $R^2 = .23$, $F(7, 42) = 2.83$, $p = .015$.

The model explained 32 percent of the variance in overall quality-of-care scores. Depression emerged as a significant independent predictor. Higher depression predicted lower perceived quality of care after accounting for age, gender, experience, workload, anxiety, and stress. Stress displayed a smaller, borderline effect. Demographic and workload variables did not predict perceived quality once mental health variables entered the model.

3.5 Qualitative themes

Interviews with 10 radiologic technologists produced three main themes with associated subthemes (Table 5).

Table 5. Qualitative themes on mental health, well-being, and quality of patient care.

Theme	Subthemes	Summary of meaning
Emotional load and invisible strain	Cumulative fatigue; silent worry; emotional spillover	Continuous exposure to high caseloads and serious cases builds exhaustion that often remains unspoken but colours interactions with patients and colleagues.
Professional commitment as a protective anchor	Moral duty; pride in technical excellence; patient safety focus	Strong professional identity and commitment to image quality, radiation protection, and patient comfort drive technologists to preserve standards even when distressed.
Informal coping and unmet support needs	Peer solidarity; family and faith; lack of institutional support	Technologists rely on informal coping strategies and express a desire for structured mental health support, debriefing, and leadership attention to psychological risk.

Participants described days when cumulative stress from back-to-back examinations, urgent requests, and difficult cases reduced patience with anxious or non-cooperative patients. Several noted that in such states they spoke less, gave shorter explanations, or rushed positioning. Others linked low mood with difficulty sustaining empathy, especially late in long shifts.

At the same time, technologists expressed strong moral commitment to patient safety. Many framed careful positioning, dose optimisation, and minimisation of repeats as ethical obligations rather than technical tasks. When they felt psychologically well, they described more time spent reassuring patients, checking identifiers, and clarifying orders with physicians.

Informal coping strategies dominated the narratives. Participants emphasised peer support, humour during breaks, family conversations after duty, and prayer. Few recalled access to formal mental health services or structured debriefing after distressing events. Several respondents called for mental health awareness sessions and confidential counselling tailored to imaging staff.

4. Discussion

This study demonstrates that the mental health and well-being of radiologic technologists in Iligan City relate meaningfully to the quality of patient care they perceive themselves to provide. Mild to moderate symptoms of anxiety, depression, and stress coexist with high reported quality-of-care ratings, yet depression and stress still show negative associations with perceived patient satisfaction, clinical outcomes, and care coordination. Well-being shows the opposite pattern. These findings extend global evidence that healthcare worker mental health is inseparable from quality and safety of care (Alipio, 2024; Søvold et al., 2021; Lagunes Córdoba et al., 2021).

The association between depression and lower perceived quality of care is consistent with stress and coping theory and with self-determination theory. Persistent low mood, hopelessness, and loss of interest undermine cognitive focus, energy, and motivation (Lazarus & Folkman, 1984; Ryan & Deci, 2000). When radiologic technologists carry this burden into the workplace, they may find it harder to sustain empathic communication, meticulous positioning, and proactive coordination with other staff. Over time, such patterns can erode both patient experience and technical quality, even when individuals retain high professional ideals.

The pattern for stress, especially its link with care coordination, reflects the reality of imaging departments where technologists juggle large caseloads, competing demands from referring clinicians, and frequent interruptions. Chronic stress can narrow attention toward immediate task completion and leave little bandwidth for negotiation, information sharing, or anticipatory problem solving. This accords with evidence that high workload and under-appreciation contribute to burnout and performance concerns among radiographers and radiology technicians (Arif, 2024; Kennedy et al., 2025; Mahecha-Naranjo et al., 2025).

The positive association between well-being and perceived quality of care supports the idea that environments which support psychological needs for autonomy, competence, and relatedness foster intrinsic motivation and more effective performance (Ryan & Deci, 2000). Radiologic technologists who report higher life satisfaction, stronger social support, and a sense of personal growth also describe higher patient satisfaction, better perceived outcomes, and smoother coordination. This echoes conceptualisations of quality care that emphasise holistic practice and relational aspects of care alongside technical expertise (Stavropoulou et al., 2022).

Qualitative findings clarify how these mechanisms play out in daily practice. Participants describe a cumulative emotional load from repeated exposure to urgent or distressing cases without structured debriefing. They acknowledge that on days of heavy stress or low mood they sometimes communicate less or move through procedures on autopilot. At the same time, they hold a strong sense of professional commitment to image quality, radiation safety, and patient comfort. This moral anchor motivates them to compensate for structural deficiencies, although at personal psychological cost.

The reliance on informal coping strategies and the absence of formal support structures align with global warnings that health systems often neglect the mental health of their workforce, especially outside crisis periods (Søvold et al., 2021). In the Philippine context, lean staffing and limited mental health infrastructure may reinforce a culture of silent endurance (Alipio et al., 2022; Alipio et al., 2025). This culture may maintain short-term throughput but risks long-term deterioration of both staff well-being and service quality.

Donabedian's structure-process-outcome framework offers a useful lens. Mental health promotion and psychosocial support for radiologic technologists are part of the structural environment that influences care processes and outcomes (Donabedian, 2005). When structures ignore psychological safety, processes such as communication, verification, and coordination suffer, even if equipment and protocols meet technical standards (Alipio, 2024). Conversely, investment in mental health support can strengthen processes and outcomes, including patient experience, diagnostic accuracy, and radiation safety.

The findings suggest that hospital administrators and policymakers should treat mental health support for radiologic technologists as a quality-of-care intervention rather than as an optional wellness add-on. Routine mental health screening, access to confidential counselling, and structured debriefing after critical incidents can help maintain psychological resilience. Leadership that listens to technologists' concerns about workload and staffing can reduce preventable stressors and improve both staff retention and care quality.

Education providers can integrate mental health literacy, self-care, and peer support strategies into radiologic technology curricula. Professional societies can articulate standards that link workforce well-being to imaging quality and patient safety, and can advocate for institutional policies that protect psychological health.

The study has several limitations. The sample size was modest and drawn from a single city, which restricts generalisability. Measures of mental health and quality of care relied on self-report and may reflect perception more than objective performance. The cross-sectional design limits causal inference. Despite these constraints, the convergence of quantitative associations and qualitative narratives supports the interpretation that mental health and well-being are deeply intertwined with the perceived quality of patient care.

Future research can extend this work to larger and more diverse samples, include objective performance indicators such as error rates and repeat exposure rates, and adopt longitudinal designs to track changes over time. Comparative studies across regions and facility types in the Philippines could identify structural drivers and protective factors at system level. Interventional studies that test mental health support programmes for radiologic technologists would provide stronger evidence for policy.

5. Conclusion

Radiologic technologists in this study report strong commitment to high-quality patient care while carrying notable mental health burdens. Depression and stress associate with lower perceived quality of care, particularly in communication, responsiveness, and coordination, while higher well-being aligns with better self-rated performance. These patterns position mental health and well-being as central determinants of quality of care in diagnostic imaging, not as secondary concerns.

Health facilities and policymakers should embed mental health promotion, early support, and psychologically safe work environments into radiology services. Protecting the mental health of radiologic technologists is both an ethical responsibility and a practical strategy to sustain the technical and relational quality of diagnostic care in resource-constrained settings.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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