Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

A Qualitative Study on Nurses' Ethical Decision-Making Experiences and Coping Mechanisms in the Context of Hierarchical Collaboration in the Operating Room Oriented Toward Patient Safety

Xiaoting Wang
The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital

Qinghai Song
Shandong Provincial Hospital Affiliated to Shandong First Medical University

Yan Li
The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital

Lijing Zhang
The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital

Xiru Yang
The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital

Cuiping Xu
xucuiping775@sohu.com

The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital

Research Article

Keywords:

Posted Date: November 20th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10886956/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background Operating room (OR) nurses face persistent ethical dilemmas amid hierarchical interprofessional collaboration, yet the full process of their ethical decision-making and coping mechanisms remains underexplored. This study aimed to explore OR nurses' ethical decision-making experiences and adaptive strategies in hierarchical clinical contexts, grounded in moral distress theory.

Methods A descriptive phenomenological design was adopted. Semi-structured in-depth interviews were conducted with 15 OR nurses recruited from three tertiary Class A hospitals in Shandong Province, China, using purposive maximum variation sampling. Data were analyzed using Colaizzi's seven-step method, guided by the antecedents–process–consequences framework of moral distress.

Results Four core themes emerged: (1) triggers of ethical decision-making, including efficiency–safety tension, interprofessional cognitive differences, and ambiguous accountability; (2) diversified coping strategies tailored to career stage and conflict nature, notably safety standard adherence amid superficial cooperation as a novel adaptive strategy among junior nurses; (3) three-stage developmental trajectories of ethical decision-making competence alongside professional growth; and (4) multi-level needs for institutional, cultural, and individual support systems.

Conclusions OR nurses' ethical decision-making is shaped by structural, professional, and individual factors. Junior nurses develop implicit adaptive strategies to uphold safety standards under hierarchical pressure. A tiered support system can promote both nursing professional development and perioperative patient safety.

Background

- As a high-risk clinical setting, the operating room relies on nurses to perform standardized perioperative practices such as safety verification, positioning protection, and instrument counting, placing nurses in a pivotal role in safeguarding surgical patient safety [1,2]. The OR operates under a multi-professional hierarchical collaboration model: surgeons lead the surgical decision-making process, while nursing staff assume responsibility for perioperative safety monitoring. Differences in professional roles, perspectives, and work priorities between the two groups are inherent to clinical practice [3].
- In daily clinical work, inherent tensions often arise between surgical turnover efficiency and safety protocol adherence. Some surgeons propose procedural adjustments to improve efficiency, presenting nurses with ethical dilemmas that require balancing patient safety with team collaboration [4]. Unresolved tensions not only undermine nurses' occupational well-being but also pose potential risks to perioperative safety management [5].
- Moral Distress Theory provides a classic analytical framework for understanding psychological experiences in clinical ethical decision-making [6]. Corley [7] structurally expanded the theory in 2002, proposing the Antecedents–Process–Consequences model of moral distress. This

framework delineates the evolutionary logic from situational constraints to cognitive appraisal and then to occupational outcomes, extending moral distress from a narrow psychological construct to a analyzable process chain. This model serves as the core analytical framework for the present study.

- Current international and domestic research on OR nurses' ethical decision-making remains dominated by cross-sectional surveys, focusing largely on prevalence and risk factor identification [8,9]. Only a small number of qualitative studies have preliminarily explored associated triggers [10], and no study has systematically depicted the complete process through which nurses perceive decision contexts, adopt coping strategies, and achieve professional growth.
- Accordingly, grounded in the moral distress process model and tailored to the clinical characteristics of hierarchical collaboration in the OR, this study conducted semi-structured in-depth interviews across five dimensions: situational triggers, cognitive experiences, behavioral responses, psychological evolution, and support needs. The study aims to explore OR nurses' ethical decision-making experiences and coping mechanisms in hierarchical contexts, and to provide references for optimizing interprofessional collaboration, enhancing ethical decision-making competence, and improving perioperative safety management systems.

1. Subjects and Methods

1.1 Study Subjects

- Purposive sampling was used to recruit OR nurses from three tertiary Class A hospitals in Shandong Province, China, between January and March 2026.
- **Inclusion criteria**: (1) Licensed registered nurses currently working in the OR; (2) At least 1 year of continuous OR work experience; (3) Having experienced at least one clinical scenario in the past year where a surgeon proposed simplifying or adjusting perioperative safety procedures based on hierarchical authority; (4) Fluent verbal expression and no communication barriers; (5) Voluntary participation with written informed consent.
- **Exclusion criteria**: (1) History of psychiatric illness or ongoing psychological treatment; (2) Anticipated job changes (maternity leave, resignation, transfer) during the study period that would prevent full participation.
- Sampling followed a maximum variation strategy, considering hospital affiliation, age, years of experience, professional title, gender, and educational background. Data saturation was achieved after the 14th interview, with no new themes emerging. A total of 15 nurses were ultimately enrolled (6 from Hospital A, 5 from Hospital B, 4 from Hospital C), coded D1–D15. Demographic characteristics are shown in Table 1. This study was approved by the Medical Ethics Committee (Approval No. [2025] Lunshenzi 035).

Table 1
Demographic Characteristics of Participants (n = 15)

Number	Gender	Age (years)	Years of service (years)	Job title	Education level	Nurse level	Hospital
D1	Female	24–26	1.5	Senior nurse	master's student	N1	A
D2	Female	24–26	3	Nurse	undergraduate	N1-1	B
D3	Male	27–29	6	Senior nurse	undergraduate	N2-1	B
D4	Female	30–35	10	Nurse-in-Charge	undergraduate	N2-2	A
D5	Male	27–29	6	Senior nurse	undergraduate	N2-1	C
D6	Female	36–40	16	Nurse-in-Charge	undergraduate	N3	A
D7	Female	30–35	9	Nurse-in-Charge	undergraduate	N2-2	B
D8	Female	24–26	2	Nurse	undergraduate	N0	A
D9	Female	36–40	17	Associate Chief Nurse	master's student	N3	C
D10	Female	30–35	12	Nurse-in-Charge	undergraduate	N2-2	C
D11	Female	27–29	4	Senior nurse	undergraduate	N1-2	A
D12	Male	30–35	9	Senior nurse	undergraduate	N2-1	B
D13	Female	30–35	11	Nurse-in-Charge	undergraduate	N2-2	C
D14	Male	24–26	3	Nurse	undergraduate	N1-1	A
D15	Female	24–26	2	undergraduate	undergraduate	N1-1	B

1.2 Methods

- This study classified perioperative safety conflicts under hierarchical authority into two categories:
- **(1) Professional deliberation contexts**: scenarios where operational standards allow flexibility, and differing judgments arise from interprofessional perspective differences (e.g., positioning angle, degree of wound observation detail);
- **(2) Standard enforcement contexts**: rigid scenarios involving core perioperative safety systems (e.g., surgical safety checklist, instrument counting), where strict protocol adherence is required.

1.2.1 Interview Guide Development

- Grounded in the moral distress theory's evolutionary logic (conflict trigger → immediate experience → coping behavior → long-term exhaustion → support needs), an initial interview guide was developed based on literature review and research group discussion. The guide was reviewed by one expert in nursing ethics, and refined based on pilot interviews with two nurses.
- The final interview guide covered five dimensions: (1) Situational perception: "Please describe a complete experience where a surgeon proposed adjusting perioperative procedures for efficiency or surgical exposure." (2) Cognitive and emotional experience: "What were your initial thoughts and feelings when the surgeon proposed the adjustment?" (3) Behavioral coping strategies: "How did you ultimately handle the situation? Please describe your communication approach and specific operational process in detail." (4) Long-term occupational impact: "How have your professional mindset and identity changed after repeated exposure to similar procedural adjustment scenarios?" (5) Institutional support recommendations: "What support do existing hospital policies provide when you face these dilemmas? What improvements would you suggest?"

1.2.2 Data Collection

- Guided by descriptive phenomenological methodology, data were collected via semi-structured in-depth interviews. All interviewers received prior qualitative research training. Interviews were conducted by two researchers with qualitative research experience.
- Prior to each interview, participants were informed of the study purpose, methods, and confidentiality principles. Written informed consent was obtained. Interviews were audio-recorded and field notes were taken simultaneously. Interviews followed the guide without leading questions; participants were encouraged to express genuine views. Probing and clarifying techniques were used as appropriate, and participants' emotions, tone, and body language were documented in real time.
- Interviews were conducted in a quiet, private teaching room, lasting 30–45 minutes each. Researchers maintained a neutral, objective stance throughout, minimizing the influence of personal experience or subjective judgment on findings.

1.2.3 Data Analysis

- Within 24 hours after each interview, audio recordings were transcribed verbatim. Transcripts were cross-checked for accuracy, coded by participant ID, and imported into NVivo 12.6 for data management.
- Colaizzi's seven-step analytical method was applied [11]: (1) All interview transcripts were read repeatedly by the research team; (2) Statements related to participants' experiences of hierarchical conflict were extracted; (3) Recurrent, meaningful concepts were coded; (4) Coded concepts were grouped into categories; (5) Relationships between themes and phenomena were described exhaustively; (6) Similar perspectives were distinguished and themes were conceptualized; (7) Findings were returned to participants for member checking to ensure validity.

- During analysis, interpretive coding was guided by moral distress theory: a pre-established codebook was developed based on the theoretical dimensions (conflict trigger → coping behavior → long-term exhaustion → support needs), followed by open coding of interview data. Original statements were mapped to corresponding dimensions, and new categories outside the framework were inductively derived. Core themes were refined through constant comparison and conceptual convergence. Two researchers coded independently; discrepancies were resolved through discussion with the research team and an ethics expert to ensure alignment between the theoretical framework and raw data.

2. Results

- Grounded in the moral distress analytical framework, four core themes were extracted from interviews with 15 OR nurses, depicting the triggers, coping responses, psychological evolution, and support needs associated with ethical conflict under hierarchical authority. This pattern aligns with the trigger–coping–evolution–resolution pathway of moral distress.

2.1 Theme 1: Triggers of Ethical Decision-Making

2.1.1 Tension Between Surgical Turnover Efficiency and Safety Protocol Adherence

- Participants identified consecutive surgical caseloads and emergency cases as major factors challenging complete adherence to safety protocols. In high-turnover or emergency scenarios, efficiency goals create tension with safety standards. When surgeons propose procedural adjustments to accelerate turnover, nurses must negotiate between safety bottom lines and team efficiency.
- *D6: "Toward the end of an elective breast surgery, the lead surgeon wanted to rush to the next case and proposed skipping some detailed wound observation steps to speed things up." D5: "During an emergency case, the lead surgeon was pressed for time and suggested I could speed up by skipping the extra pre-op skin disinfection step."*

2.1.2 Interprofessional Cognitive Differences Between Physicians and Nurses

- Participants noted that surgeons focus primarily on procedural progress and overall patient safety, while nurses bear responsibility for full perioperative safety and regard standardized practices as central to safety monitoring. Differences in professional roles create divergent perceptions of the same procedure.
- *D9: "Surgeons are more focused on getting the surgery done smoothly. They tend to give less consideration to issues like poor positioning leading to postoperative pressure injuries."D10: "The lead*

surgeon is focused on achieving the best surgical field, and can easily overlook the safety benefits of padding and angle adjustments."

2.1.3 Decision-Making Pressure Under Ambiguous Responsibility Boundaries

- Perioperative communication occurs largely verbally, and written confirmation for some procedures lags behind practice. Participants reported that as frontline operators, they perceive themselves as potentially liable for adverse events, creating occupational responsibility pressure when faced with procedural adjustment proposals.
- *D7: "For intraoperative supply changes, sometimes the signature is delayed, and part of the procedural responsibility falls on us nurses who carry it out." D10: "If positioning is suboptimal and the patient develops pressure injuries post-op, that responsibility falls on me."*

2.2 Theme 2: Coping Strategies and Behavioral Responses

2.2.1 Public Professional Adherence

- Senior nurses with sufficient experience and professional credibility typically articulate their position explicitly based on professional standards when safety-related decisions are at stake, prioritizing patient welfare over interpersonal harmony.
- *D4: "Patient safety is the priority. This is geriatric surgery, and if the anesthesiologist isn't present, I absolutely have to ensure proper monitoring. I cannot compromise on patient safety."*
- When nurses judge that procedural adjustments could cause irreversible harm, they choose to strictly uphold safety standards regardless of seniority.
- *D9: "I definitely disagree with that. If the positioning isn't right, the patient is very likely to develop pressure injuries. I didn't overthink it—I just stuck to the protocol."*

2.2.2 Collaboration-Focused Flexible Communication

- When procedures allow professional discretion and safety risks are controllable, nurses commonly use empathetic expression and private communication to build consensus, upholding safety standards while preserving team collaboration.
- *D5: "I didn't want a direct confrontation with the senior director, so I smiled and said, 'Brother, that won't work. Let's take it slow, no need to rush.'" D6: "Gentle, private communication works much better than public disagreement. If you just say 'no' outright, the other person might feel rejected. If you frame it differently, they can tell you're looking out for them."*

2.2.3 Safety Standard Adherence Amid Superficial Cooperation

- Junior nurses in early career stages prioritize smooth team functioning. They typically respond cooperatively to maintain procedural rhythm, while simultaneously strictly implementing safety protocols—upholding the safety bottom line without triggering open conflict.
- *D2: "I'd first say 'okay, okay' in response, but then go through every check step by step at my own pace. I still completed the three-step counting procedure per protocol, trying not to hold up the overall rhythm." D1: "I didn't want to interrupt the flow publicly, so I finished all the verifications ahead of time before inviting the director in. That way, even if the director pushes for speed, everything is already done on my end."*

2.3 Theme 3: Developmental Trajectories of Ethical Decision-Making Competence and Occupational Psychology

2.3.1 Internal Shift in Professional Value Evaluation

- Early in their careers, nurses evaluate their professional worth largely based on external feedback from superiors and peers, exploring their professional identity. With accumulating clinical experience, they gradually shift to self-directed professional judgment, forming a more stable professional self-concept.
- *D2: "When I first started, I cared so much about what others thought of me. I wanted to be a 'good nurse' and have everyone like me. Now I know what matters is doing right by the patient and by my profession." D11: "At first I was desperate to prove myself and be validated by everyone. Now I realize your competence isn't determined by what one person says."*

2.3.2 Staged Development of Ethical Decision-Making Competence

- With increasing seniority and clinical experience, nurses build professional confidence and their ethical decision-making competence develops in stages: from reliance on guidance early in career, to deliberative balancing, and ultimately to stable autonomous decision-making.
- *D3: "When I first started, I did whatever senior nurses and doctors said. Gradually I developed my own professional judgment, and I stand my ground when it comes to safety bottom lines." D6: "After 16 years, I know exactly which steps cannot be skipped and which can be adjusted. When I disagree, it's always based on professional grounds." D9: "With more years of experience comes professional confidence. You clearly articulate the principles you stand by, and you don't relax standards just because the other person is a senior physician or expert."*

2.3.3 Occupational Adaptation Challenges Under Sustained Tension

- Participants reported that prolonged exposure to decision tension without systemic support may lead to fluctuations in professional identity and increased psychological depletion. Junior and emotionally sensitive nurses are more susceptible to psychological stress, and some consider career changes.
- *D1: "Lately I feel like I'm mostly just doing execution-level work, and my own professional ideas don't always come through. Sometimes I wonder if switching to a different unit might be a better fit." D14: "After enough of these experiences, my sense of professional identity has declined, and I've gradually lost confidence in my own expertise."*

2.4 Theme 4: Needs and Recommendations for Support System Optimization

2.4.1 Cultivating a Safety-First Team Collaboration Culture

- Participants universally called for institutional clarification of the fundamental role of perioperative safety protocols, granting nurses independent authority in enforcing core safety systems, and establishing equal interprofessional communication mechanisms.
- *D9: "I hope the department can clarify the central role of safety procedures, and give senior nurses and nurse managers clearer authority over safety processes." D4: "Safety decisions should be based on professional judgment. Whichever plan is safer for the patient is the one we follow, regardless of position or seniority."*

2.4.2 Establishing a Professional Ethics Support System

- Participants recommended systematic occupational ethics support mechanisms, including clear role-based responsibility boundaries and targeted training in ethical decision-making and communication skills for junior nurses to support their professional growth.
- *D14: "If the head nurse or a senior colleague could step in with professional backup when there's a difference of opinion, I'd feel much more confident." D6: "We should train junior nurses more—teach them how to uphold standards while maintaining good collaboration, so they can do their jobs better."*

3. Discussion

3.1 Three-Tier Influencing Factors of OR Ethical Decision-Making Challenges

- Moral distress theory posits that external structural constraints such as power hierarchies and institutional deficits are prerequisites for individual moral distress [12]. This study finds that moral distress in the OR is not unidimensional, but arises from three interrelated mechanisms: efficiency

pressure, interprofessional cognitive differences, and ambiguous accountability. This finding corroborates and further refines the aforementioned theory.

- The core root cause differs by conflict type: ethical dilemmas with room for professional deliberation stem primarily from interprofessional cognitive differences and hierarchical power imbalance; by contrast, conflicts involving core safety red lines reflect institutional gaps in safety management and supervision, which cannot be resolved by individual nurses' communication skills alone.

3.1.1 Mechanism of Efficiency Pressure on Safety Enforcement

- ORs across China face widespread operational pressure from consecutive surgical caseloads. Clinically, there are legitimate demands for procedural optimization involving safety checks, wound observation, and other nursing practices. When efficiency goals cascade to frontline staff, nurses must negotiate between safety protocol adherence and surgical rhythm management.
- This aligns with findings by Whitehead et al. [13], who identified power imbalance and institutional barriers as key predictors of moral distress among healthcare professionals. Further differentiation by professional nature reveals that practices such as wound observation detail and skin disinfection scope allow a degree of flexibility, falling within the scope of nursing professional judgment. Core perioperative safety systems such as surgical safety checklists and instrument counts, by contrast, represent non-negotiable patient safety bottom lines and must not be compromised for efficiency.
- This pattern may relate to the orientation of current public hospital performance appraisal systems, where surgical turnover efficiency is a key metric of departmental operational performance and physician workload. This suggests that hospital management must define clear bottom lines for core safety systems and prohibit compression of critical steps for efficiency. Turnover optimization should occur within the bounds of core safety guarantees, supported by appropriate staffing adjustments. Integration of core safety compliance into routine departmental quality control can build a systemic perioperative safety foundation.

3.1.2 Cognitive Differences Arising From Interprofessional Division of Labor

- During surgery, surgeons focus on procedural progress and surgical field exposure, while nurses prioritize comprehensive perioperative safety such as positioning protection and temperature management. These cognitive differences inherent to professional roles could be bridged through equitable communication.
- In practice, however, surgeons hold greater decision-making authority, and the independent value of nursing judgment requires stronger institutional recognition and formal communication channels. This aligns with findings by Li et al. [14]. A contributing factor may be that surgeons bear ultimate

responsibility for surgical outcomes, which inherently grants them authority over procedural rhythm—but also leaves nurses' patient-safety perspectives lacking formal institutional grounds for pushback.

- When nursing professional autonomy is undermined, feelings of ethical powerlessness accumulate, exacerbating nurses' passive position in ethical decision-making. Bridging these cognitive differences therefore requires institutional channels for equitable interprofessional communication, alongside team-based training to foster mutual understanding across professions.

3.1.3 Impact of Ambiguous Accountability on Decision Risk

- Perioperative care is fast-paced and instruction-driven; procedural adjustments, supply use, and rhythm management are largely communicated verbally for efficiency. Written confirmation for critical procedures often occurs retroactively. In the event of an adverse event, nurses as frontline operators face heightened risk of responsibility attribution.
- This is consistent with findings by Zhang et al. [15], who noted that when faced with simplification requests, nurses experience not only moral guilt from deviating from professional standards but also additional perceived unfairness around occupational liability. Ambiguous responsibility boundaries increase nurses' occupational psychological stress and amplify the burden of ethical decision-making. This highlights the need for institutional clarification of role-based responsibilities to reduce nurses' perceived occupational risk.

3.2 Characteristics and Practical Value of Nurses' Coping Strategies Across Contexts

- Moral distress theory typically categorizes ethical conflict responses into two modes: compliant compromise and open confrontation [12]. This study demonstrates that in the hierarchically structured OR environment, nurses employ a richer repertoire of strategies, selected adaptively based on seniority and conflict nature.
- In this study, senior nurses at the nurse-in-charge level or above predominantly uphold safety standards openly when core safety systems are at stake, prioritizing patient safety. This aligns with findings by Park et al. [16]. From a moral distress evolutionary perspective, this mode achieves high consistency between internal values and external behavior. Although it may cause short-term interpersonal friction with surgeons, it entails no internal ethical conflict and therefore generates the lowest moral distress intensity, representing the most professionally ethical response.
- Critically, however, this strategy depends heavily on individual nurses' professional seniority and credibility. Junior nurses typically lack equivalent professional authority. Without institutional authorization and support, nurses who uphold standards openly may bear disproportionate

interpersonal and occupational risk—this is the primary reason junior nurses rarely adopt this approach.

- When facing ethical dilemmas with room for negotiation, mid-career nurses most often resolve conflict through empathetic, private communication. This is highly consistent with findings by Amalia et al. [17]. This approach balances team collaboration with standard adherence, reflecting nurses' interprofessional communication competence [18]. However, long-term reliance on individual coordination increases psychological burden, necessitating institutional support and cultural cultivation at the team level.
- Safety standard adherence amid superficial cooperation represents an adaptive strategy developed by junior nurses during early career stages, and constitutes a key novel finding of this study. Unlike traditional organizational silence or passive compliance, its core feature is verbal alignment with surgical rhythm paired with strict behavioral adherence to safety standards—driven by internalized professional ethics.
- This strategy deviates from the two classical modes in moral distress theory, possibly attributable to China's distinct occupational culture, where openly challenging superiors may negatively affect career evaluation [19]. It represents adaptive practical wisdom among junior nurses, reflecting their safety consciousness and professional responsibility.
- At the same time, it signals a need for greater institutional support for junior nurses' safety advocacy, to reduce psychological burden and enable them to uphold professional standards more openly. For early-career nurses still building their professional identity, lacking both the professional standing and psychological resources to challenge authority openly, yet unwilling to compromise professional ethics, superficial cooperation with private adherence emerges as the optimal middle ground.
- Existing domestic research [20] has often dismissed such behaviors among junior nurses as simple fear of authority or passive compliance, mistaking attitudinal accommodation for behavioral compromise and underestimating junior nurses' professional commitment to safety.
- Nevertheless, this strategy only protects individual safety bottom lines and cannot resolve conflict at its source. Long-term suppressed psychological tension accelerates moral exhaustion, and nurses remain fully liable in the event of procedural error. This phenomenon precisely reflects gaps in departmental ethics support systems, indicating that management must provide clear institutional backing for junior nurses.

3.3 Dynamic Relationship Between Ethical Decision-Making Competence and Occupational Experience

- Moral distress theory indicates that psychological experiences of ethical decision-making fluctuate dynamically with repeated exposure, and without support may follow a trajectory of initial experience → sustained accumulation → exhaustion [12]. This study finds that growth in nurses' ethical decision-making competence is a key factor in alleviating psychological stress and

interrupting negative developmental trajectories, consistent with views put forth by Chen et al. [20]. Extending prior research, this study further identifies three corresponding stages of co-evolution in the hierarchical OR context.

- The high-frequency, high-stakes nature of ethical conflict in the OR both amplifies psychological burden and drives iterative refinement of nurses' decision-making. Growth in decision-making competence, in turn, mitigates moral distress intensity and delays progression toward exhaustion.

Stage 1: Passive Compliance (Initial Moral Distress Phase)

- This stage is most common among junior nurses, who have not yet developed independent ethical decision-making awareness and lack confidence in their own professional judgment. They tend to defer to hierarchical authority in conflicts [21], and a single conflict can trigger intense guilt and powerlessness.
- This likely reflects the vocational adaptation phase: junior nurses' ethical knowledge derives largely from textbooks, they lack experience managing clinical conflict, and the perceived psychological cost of open dissent is high [22]. Nurses at this stage use the superficial cooperation strategy to uphold operational bottom lines, but cannot resolve psychological conflict at its source; distress manifests primarily as internal emotional friction [23]. This suggests that departments should strengthen ethics scenario training and mentorship early in nurses' careers to build professional confidence and reduce internal friction.

Stage 2: Deliberative Exploration

- With accumulating clinical experience, nurses begin seeking balance between standard adherence and relationship maintenance, predominantly using flexible communication strategies. Moral distress shifts to chronic, sustained internal friction, entering an accumulation phase consistent with Pahor's cumulative model of moral distress outcomes [24].
- Uniquely, nurses in this stage are not passive recipients of distress; instead, they convert sustained psychological pressure into a driver of competence growth, directly tied to their developing risk judgment capabilities. This likely reflects the gradual formation of clinical experience and contextual risk assessment skills during this career phase.

Stage 3: Autonomous Decision-Making

- Once nurses develop a stable framework for risk judgment and professional values, their ethical decision-making competence matures. They can proactively steer conflict resolution with patient safety at the center. This stage accompanies an internal shift in professional value evaluation: nurses move from seeking external validation to relying on their own professional judgment. Both the frequency and intensity of moral distress decrease significantly.
- This likely stems from established professional identity among senior nurses: their professional judgment is no longer contingent on physician approval, but anchored in patient safety and

professional standards. Accordingly, hierarchical disagreement rarely undermines their professional confidence, and the psychological impact of moral distress is markedly reduced [25].

- If nurses remain stuck in the passive compliance stage without competence growth, accumulated moral distress may progress to moral exhaustion, manifesting as eroded professional confidence, diminished professional identity, and even turnover intention[26]. Junior and emotionally sensitive nurses are at highest risk of this outcome. This indicates that management must provide targeted competence-building pathways and psychological support for this group to facilitate successful stage transition.

3.4 Pathways to Building an OR Ethical Decision-Making Support System

- Integrating findings on ethical triggers, coping patterns, and moral distress evolution, alleviating OR nurses' moral distress requires multi-level coordinated action—it cannot rely solely on individual nurses' psychological adjustment or communication skill improvement.
- At the institutional level, establishing clear safeguards represents the foundational solution pathway. Core perioperative safety systems—including the surgical safety checklist and instrument counting—must be defined as non-negotiable protocols, granting nurses explicit, institutionally protected authority over safety procedure enforcement. Compliance with core safety standards should be integrated into routine departmental quality control systems, accompanied by a traceability mechanism for procedural deviations and clear accountability at each stage of the perioperative workflow. Additionally, the scope and execution procedures for perioperative verbal orders should be standardized, and formal channels for declining and reporting inappropriate simplification requests in non-emergency settings should be established, thereby clarifying the boundaries between decision-making responsibility and execution responsibility.
- At the cultural level, departments should cultivate a shared consensus on patient safety as the overriding priority, respect the independent professional judgment of nursing staff, and foster equitable interprofessional communication. This approach addresses the hierarchical cultural underpinnings of efficiency pressure and professional cognitive divergence at their source.
- At the individual level, stage-specific training programs should be implemented:Junior nurses: Focus on safety risk identification and foundational communication skills, cultivating protocol awareness and reducing the psychological burden associated with implicit adherence strategies;Mid-career nurses in the deliberative exploration stage: Strengthen ethical decision-making reasoning and conflict coordination competence, refining strategies for balancing safety priorities with interpersonal dynamics;Senior nurses: Develop ethics mentorship and team support capabilities, forming a hierarchical ethics support network in which experienced nurses guide and back up their junior colleagues.

4. Conclusions

- Through semi-structured interviews, this study systematically depicts the experiences and patterns of ethical decision-making among OR nurses in hierarchical collaborative contexts, identifying efficiency–safety tension, interprofessional cognitive differences, and ambiguous accountability as key influencing factors.Nurses develop diversified coping strategies tailored to their career stage and situational characteristics. Notably, safety standard adherence amid superficial cooperation reflects junior nurses' commitment to safety and adaptive wisdom. Ethical decision-making competence develops in stages alongside professional growth, and a robust support system can effectively promote synergies between nurses' professional development and patient safety.Future efforts should build an integrated support system combining institutional safeguards, cultural cultivation, and individual development, further optimizing the perioperative safety management environment and achieving mutual benefits for both patient safety and nursing workforce occupational health.Limitations of this study include a sample restricted to three tertiary hospitals in Shandong Province, China, with a relatively small proportion of senior nurses, which may limit generalizability. Future research could employ multi-center quantitative designs and longitudinal follow-up to develop and evaluate targeted intervention programs.

Declarations

Ethics approval and consent to participate

This study was approved by the Medical Ethics Committee of The First Affiliated Hospital of Shandong First Medical University (Shandong Provincial Qianfoshan Hospital) (Approval No. [2025] Lunshenzi 035). The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants prior to each interview. All participants were informed of the study purpose, data confidentiality, and their right to withdraw voluntarily. All interview data were anonymized during transcription and analysis.

Consent for publication.

Not applicable.

Availability of data and materials

The raw interview transcripts contain identifiable personal information of participants and cannot be publicly shared to protect participant privacy and confidentiality. De-identified aggregated data may be made available upon reasonable request from the corresponding author.

Competing interests

The authors declare no competing interests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' contributions

Conceptualization: CX, XW; Methodology: XW, QS; Data collection: YL, LZ; Formal analysis: XW, XY; Writing – original draft: XW; Writing – review & editing: CX, QS; Supervision: CX. All authors read and approved the final manuscript.

Clinical trial number

Not applicable.

References

1. Gao X, Guo L, He L, et al. Expert consensus on sensitive indicators of professional nursing quality in operating room. J Nurs Sci. 2025;40(13):45-50.
2. Gillespie BM, Bavin E, Harbeck E, Chaboyer W. Prioritizing care in the OR: a qualitative study. AORN J. 2025. https://doi.org/10.1002/aorn.14398.
3. Ruano-Ferrer F, Gutiérrez-Giner MI. Safety perception in the operating environment: the nurses' perspective versus that of the surgeons. Heliyon. 2023;9(1):e12676.
4. Facey M, Baxter N, Mobilio MH, Peter E, Moulton CA, Paradis E. Surgical safety checklist compliance process as a moral hazard: an institutional ethnography. PLoS One. 2024;19(2):e0298224.
5. Zhang J, Li M, Xu X, Zhao Q. Ethical dilemmas in nursing: a literature review. J Nurs Sci. 2021;36(23):17-20.
6. Barlem EL, Ramos FR. Constructing a theoretical model of moral distress. Nurs Ethics. 2015;22(5):608-615.
7. Oh JJ, Wakefield L. Beyond resilience: organizational ethics and the structural production of moral distress in healthcare. HEC Forum. 2026. https://doi.org/10.1007/s10730-026-09599-4.
8. Fereidouni A, Garmanjani S, Padam Z, Maleki Z, Miraki S, Teymoori E. Examining the correlation of moral courage with spiritual well-being and moral distress in operating room nurses in Iran: a cross-sectional study. Perioper Care Oper Room Manag. 2026;42:100602. https://doi.org/10.1016/j.pcorm.2025.100602.
9. Mert S, Kersu Ö, Aydin Sayilan A, Akyolcu N. An investigation of surgical nurses' professional values, ethical sensitivity and quality of care: a cross-sectional study from northwest Turkey. Eval Health Prof. 2022;46(1):30-40.
10. Demir M, Håkansson E, Drott J. Nurses' experiences of moral distress and how it affects daily work in surgical care—a qualitative study. J Adv Nurs. 2023;80(5):2080-2090.
11. Colaizzi PF. Psychological research as the phenomenologist views it. In: Valle RS, King M, editors. Existential-Phenomenological Alternatives for Psychology. New York: Oxford University Press; 1978.

p. 47-71.
12. Kherbache A, Mertens E, Denier Y. Moral distress in medicine: an ethical analysis. J Health Psychol. 2022;27(8):1971-1990.
13. Whitehead PB, Herbertson RK, Hamric AB, Epstein EG, Fisher JM. Moral distress among healthcare professionals: report of an institution-wide survey. J Nurs Scholarsh. 2015;47(2):117-125.
14. Liu M, Tian L, Jiang J, et al. Ethical conflicts in interprofessional collaboration among nurses: a scoping review. Chin J Nurs. 2024;59(9):1138-1145.
15. Zhang Y, Wang H, Hu K. Relationship between moral distress and moral sensitivity in clinical nurses: a latent profile analysis. J Nurs. 2023;30(3):20-25..
16. Pajakoski E, Leino-Kilpi H, Stolt M, Čartolovni A, Suhonen R. Nurses' justifications for morally courageous acts in ethical conflicts: a narrative inquiry. Nurs Ethics. 2024;32(6):752-766.
17. Ominyi J, Agom DA, Beryl NA. Nursing autonomy and evidence-based practice in acute care: navigating power and promoting collaboration. Green C, editor. Nurs Forum (Auckl). 2025;2025(1):9343933.
18. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. Cochrane Database Syst Rev. 2009;(3):CD000072.
19. Kovanci MS, Atli Özbaş A. Newly graduated nurses' experiences of moral distress during transition process: a convergent mixed methods study. BMC Nurs. 2025;24(1):246.
20. Khosravani M, Solymani S, Mohsenpour M. Iranian perioperative nurses' lived experiences of moral distress: a phenomenological study. J Perioper Pract. 2025;35(11):544-552.
21. Kim YH, Kang YA, Ok JH, Choe K. Expert nurses' coping strategies in ethically challenging situations: a qualitative study. BMC Nurs. 2021;20(1):183.
22. Xu X, Wang Y, Meng J, Xia X, Cao W, Liu Y. The relationship between moral sensitivity, missed nursing care and moral distress among new nurses: a cross-sectional study. J Clin Nurs. 2025;34(6):2262-2275.
23. Ren Z, Zhou C, Zhang X, Yang A, Li W, Liu H. Emotional labor, fatigue, and presenteeism in Chinese nurses: the role of organizational identification. BMC Nurs. 2024;23(1):673.
24. Aljabery M, Coetzee-Prinsloo I, Van Der Wath A, Al Hmaimat N. Characteristics of moral distress from nurses' perspectives: an integrative review. Int J Nurs Sci. 2024;11:10005.
25. Sillero Sillero A, Buil N. Enhancing interprofessional collaboration in perioperative setting from the qualitative perspectives of physicians and nurses. Int J Environ Res Public Health. 2021;18(20):10775.
26. Xie N, Zou L, Yuan Z. The impact of professional identity on nurses' mental health status after the COVID-19 public health emergency: a cross-sectional survey. Front Public Health. 2025;13:1678636.