

Barriers and Facilitators to Delirium Management Among ICU Nurses: A Qualitative Study Using the COM-B Framework

Yulong Cao

Second Affiliated Hospital of Chongqing Medical University

Yan Gao

Second Affiliated Hospital of Chongqing Medical University

Ruiqi Yang

Second Affiliated Hospital of Chongqing Medical University

Xueyuan Luo

Second Affiliated Hospital of Chongqing Medical University

Xinyi Liu

Second Affiliated Hospital of Chongqing Medical University

Xiaoxiao Wei

Second Affiliated Hospital of Chongqing Medical University

Xiuni Gan

300650@cqmu.edu.cn

Second Affiliated Hospital of Chongqing Medical University

Xiaomin Sheng

Second Affiliated Hospital of Chongqing Medical University

Research Article

Keywords: barriers, COM-B, delirium, intensive care unit, nurses, qualitative

Posted Date: April 23rd, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9195081/v1>

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Additional Declarations: No competing interests reported.

Abstract

Introduction Delirium is a common and serious complication in intensive care units (ICUs) that is frequently under-recognised and associated with prolonged mechanical ventilation, increased mortality, and long-term cognitive impairment. Despite international guidelines recommending routine screening and non-pharmacological management, implementation remains inconsistent. Given the central role of ICU nurses in delirium care and the limited understanding of the behavioural and contextual factors influencing their practice, this study aimed to explore ICU nurses' perceived barriers and facilitators to delirium assessment and management using the Capability, Opportunity, and Motivation model of Behaviour change (COM-B) framework.

Methods This qualitative exploratory descriptive study was conducted in two tertiary hospital ICUs in Chongqing, China. Semi-structured interviews were carried out with 14 registered ICU nurses who had provided independent bedside care for more than one year. The interview guide was informed by the COM-B model. Interviews were audio-recorded, transcribed verbatim, and analysed using thematic analysis.

Results Fifteen barriers and twelve facilitators were identified across six minor themes nested within the three COM-B constructs. Under capability, nurses' clinical experience and conversational assessment facilitated recognition, whereas hypoactive delirium was often missed and the Confusion Assessment Method for the ICU (CAM-ICU) proved difficult to apply in older patients. Under opportunity, environmental factors (single-room layout, sensory overstimulation) and systemic constraints (staffing shortages, heavy workload) limited care, while family engagement and peer support acted as facilitators. Under motivation, safety-first reasoning and professional accountability promoted rapid action, but emotional burden and repeated exposure to aggression reduced sustained person-centred care.

Conclusion ICU nurses' delirium management is shaped by interacting capability, opportunity, and motivation factors. Organisational support, adequate staffing, improved ICU environments, timely multidisciplinary collaboration, and meaningful family involvement are essential to strengthen guideline-aligned delirium care.

Introduction

Delirium is a common and serious complication of critical illness, characterised by acute, fluctuating disturbances in attention, awareness, and cognition [1]. In intensive care units (ICUs), delirium affects both mechanically ventilated and non-ventilated patients, and it is often under-recognised, particularly when symptoms are subtle or hypoactive [2]. The clinical impact of delirium extends beyond transient behavioural disturbance. It is associated with longer durations of mechanical ventilation and ICU stay, more complications, higher mortality, and persistent neurocognitive impairment after hospital discharge [3, 4]. Collectively, these adverse outcomes make delirium a major contributor to the long-term survivorship burden after critical illness [5].

Accordingly, contemporary ICU practice treats systematic delirium prevention, detection, and management as core elements of high-quality care [6]. International guidelines and care bundles recommend routine delirium monitoring with validated instruments, optimising analgesia and sedation, promoting early mobilisation and sleep, supporting reorientation, and reducing modifiable risk factors [7, 8]. Although delirium management is multidisciplinary, ICU nurses are central to delivery because they provide continuous bedside surveillance, conduct repeated assessments, and implement first-line non-pharmacological strategies in real time [9]. Nurses also escalate concerns to medical staff when delirium is suspected, balance competing priorities during clinical deterioration, and involve families to reinforce reorientation and reduce distress. Therefore, the effectiveness of delirium care pathways depends on nursing practice and the clinical context in which care is delivered.

Despite a strong evidence base and extensive guideline dissemination, delirium management is implemented inconsistently across ICUs. Delirium screening is unevenly integrated into routine workflows, and preventive strategies are often deprioritised when workload, staffing constraints, and acute physiological instability dominate bedside decision-making [10–12]. Even when assessment tools are available, uptake may be limited by perceived lack of feasibility, frequent interruptions, and uncertainty in interpreting responses in patients who are sedated, have communication barriers, or have baseline cognitive impairment [13]. Consequently, delirium care may become episodic and reactive, initiated mainly in response to overt agitation rather than proactive recognition and prevention; this implementation gap persists across many health systems [12].

Closing this gap requires attention not only to recommended practices but also to the behavioural and contextual determinants that influence what clinicians can and will do at the bedside. However, the behavioural and contextual drivers of ICU nurses' delirium management remain poorly characterised, including capability for assessment, opportunities within the environment, interprofessional dynamics, and motivational influences related to patient safety, workload prioritisation, and emotional labour. Prior research has often examined knowledge deficits or organisational barriers in isolation, providing limited insight into how these influences interact at the bedside to enable or hinder consistent delirium care. An integrated understanding is needed to inform interventions that are feasible in ICU practice and aligned with nursing workflows.

The Capability, Opportunity, and Motivation model of behaviour (COM-B) offers a pragmatic framework for examining these determinants and translating findings into implementable strategies [14]. COM-B posits that behaviour arises from clinicians' capability, opportunity, and motivation. Applied to ICU delirium management, COM-B enables systematic examination of how nurses' assessment competence, unit-level constraints, teamwork, and safety-oriented reasoning shape delirium care in practice [12]. Accordingly, this study aimed to identify ICU nurses' perceived barriers and facilitators to delirium assessment and management, guided by the COM-B framework.

Methods

Study design

Qualitative descriptive exploratory (QDE) methodology was employed to conduct this study, as it facilitates the exploration of a phenomenon—in this case, the barriers and facilitators encountered by ICU nurses in delirium management—and provides a detailed, comprehensive account of its significance from the participants' perspectives [15]. The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist [16](E-Component 1) guided the reporting of this study.

Theoretical framework

The Capability, Opportunity, and Motivation model of Behaviour change (COM-B) provided the theoretical framework for this study [14]. The COM-B model identifies capability, opportunity, and motivation as central influences on behaviour [14]. In this study, capability encompasses nurses' knowledge of delirium recognition and their skills in assessing and managing it, opportunity reflects external factors such as workload, time constraints, team collaboration, and the unit environment (including family presence), and motivation includes nurses' safety-first reasoning, emotional responses to delirium care, and beliefs about patient recovery. The COM-B model is widely used in research to explore barriers and facilitators to behaviour change and implementation challenges, in this case the implementation of effective delirium prevention and management practices in the ICU [17].

Setting and sample

The study was conducted in the intensive care units (ICUs) of two tertiary hospitals in Chongqing, China. Registered nurses who had been independently responsible for bedside patient care for more than one year were recruited. A purposive sampling technique was used, and nurses with diverse clinical experience, educational qualifications, and working backgrounds across different ICU types were included. A total of 14 ICU nurses participated in individual semi-structured interviews. Participants were also asked to complete a demographic information form.

Data collection

The first author, who had previous experience in conducting qualitative interviews, interviewed 14 ICU nurses in Mandarin Chinese. Interviews were audio-recorded and lasted between 24 and 37 minutes. All interviews were transcribed verbatim by the first author, which facilitated a close connection between researcher and data [18]. The interview guide (E-Component 2) consisted of semi-structured, open-ended questions based on the COM-B model. It was developed by the research team and pilot-tested with nurses of similar clinical backgrounds. Data collection and preliminary data analysis were conducted concurrently. Participant recruitment and interviewing ceased when data saturation was reached. Saturation was defined as the point at which no new themes, codes, or significant clinical insights emerged from the interviews, confirming that the sample size of 14 was sufficient for this study.

Data analysis

Audio-recorded data were transcribed verbatim. Thematic analysis was performed using the six steps described by Braun and Clarke [19]. Major themes were identified and defined deductively using the capability, opportunity, and motivation elements from the COM-B model [14]. The transcripts were coded in NVivo, and subthemes were subsequently identified from the coded data. The transcripts were read multiple times to ensure familiarity with the data. The research team conducted the initial coding, resolved discrepancies through discussion, and developed an initial codebook. Codes were grouped into minor themes and subsequently organised into major themes using the COM-B model to develop the final codebook. Participant quotations were used to illustrate the themes.

Ethical considerations

Ethical approval

for this study was obtained from the Ethics Committee of the Second Affiliated Hospital of Chongqing Medical University (Approval No. 2025 – 296) prior to data collection. Institutional approval was also granted by the participating hospitals. All participants received written and verbal information about the study and provided written informed consent before participation. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time without penalty. All data were anonymised, securely stored, and handled confidentially throughout the study to protect participants' privacy and rights.

Results

Participant characteristics

A total of 14 ICU nurses participated in the individual semi-structured interviews, with a mean ICU experience of 8.6 years (SD = 4.5, range = 2–18 years). The majority were female (n = 10/14), consistent with the gender distribution typical of critical care nursing in the participating units. All participants held at least a bachelor's degree, with three (n = 3/14) possessing a master's degree or higher. Participants were drawn from comprehensive ICUs (n = 8), emergency ICUs (EICU, n = 3), and respiratory ICUs (RICU, n = 3) across two tertiary hospitals, providing a varied representation of critical care settings.

Themes and subthemes

Six sub-themes were identified under the major themes of capability, opportunity and motivation (Table 1).

Table 1
Major and minor qualitative themes.

COM-B Construct (Major themes)	Minor Themes	Barriers and Facilitators
Capability	1. Navigating the complexities of assessment	Facilitators: Hyperactive observation, conversational assessment Barriers: Hypoactive delirium, elderly comprehension, CAM-ICU difficulties
	2. Perception of clinical experience and training	Facilitators: Clinical experience, senior intuition, subtle cues Barriers: Novice inexperience, hypoactive knowledge gaps, insufficient training
Opportunity	3. Environment and systemic constraints	Facilitators: Adequate staffing, controlled environment Barriers: Single rooms, sensory overstimulation, staff shortages, high workload
	4. Delirium management is a team sport	Facilitators: Family engagement, peer support, physician collaboration Barriers: Rigid visiting policies, delayed medical response
Motivation	5. Safety first, at any cost	Facilitators: Professional duty, accountability Barriers: Device removal risk, falls, staff violence
	6. Weathering the emotional storm	Facilitators: Cognitive empathy, emotional boundaries, off-duty disengagement Barriers: Emotional toll, helplessness, verbal abuse

Capability

Navigating the complexities of assessment

Nurses discussed the challenges of identifying fluctuating and atypical presentations of delirium in the clinical setting. They identified that hyperactive delirium, characterised by overt agitation and unsafe behaviours, was readily detected through direct observation. In contrast, hypoactive or “quiet” delirium was repeatedly framed as insidious and difficult to recognise. One participant stated:

“Actually, delirium has a manic type... and also a quiet type. The quiet type is not easy to detect, so we need to actively chat to judge if they answer questions incorrectly” (P13).

Standardised assessment tools, such as the CAM-ICU, provided a structural framework, but nurses frequently encountered practical difficulties applying them to critically ill adults. Elderly patients, in particular, posed cognitive assessment challenges due to limited comprehension or irrelevant responses, making it arduous to distinguish acute delirium from baseline cognitive decline. One nurse reported that:

“Especially some elderly patients have limitations in knowledge and comprehension... They often give irrelevant answers, and you cannot tell whether they simply do not know or are responding incoherently due to delirium, so assessment is quite difficult” (P04).

Consequently, nurses often refrain from using formal assessment tools; instead, they subjectively evaluate the cognitive function of patients with delirium by employing simplified, conversational questions.

Perception of clinical experience and training

Nurses considered that their accumulated clinical experience and intuition positively impacted their capacity to recognise delirium early and implement interventions. Senior nurses were able to anticipate risks by observing subtle cues, whereas novice nurses often missed early warning signs until severe behaviours emerged. For example, one claimed:

“There is a significant disparity between new and experienced nurses in their ability to manage delirium. The department tends to assign new nurses to night shifts; however, these nurses often fail to recognize delirium, resulting in many patients experiencing delirium at night and subsequently pulling out their tubes.” (P13).

Furthermore, knowledge gaps specifically regarding hypoactive delirium critically hindered early recognition. Rather than merely struggling with assessment difficulties, several nurses admitted to being unfamiliar with the concept, while others perceived quiet patients as 'low risk'. This fundamental lack of awareness critically diminished their clinical vigilance. One nurse confessed:

“We feel that the risk coefficient for this type of patient (hypoactive delirium) is relatively low, and the risk of extubation is low, so our attention to them is not as great as for the hyperactive or completely manic type” (P03).

Perceived knowledge gaps were further compounded by an over-reliance on individual experience, which created inconsistency across staff. Insufficient targeted training emerged as a major barrier limiting nurses' capability. Participants expressed a strong desire for practical, scenario-based education rather than conventional theoretical lectures to build their cognitive capacity. One participant suggested:

“I hope we can have some kind of practical combat drill... when you really encounter a delirious patient, how do you protect yourself, how do you protect the patient, how do you assist the doctor, how to handle it” (P05).

Opportunity

Environment and systemic constraints

The physical layout and sensory environment of the ICU dictated nurses' opportunities to monitor and manage delirious patients. Caring for patients in separate single isolation rooms created visual blind spots, which impeded timely observation and assistance. One nurse explained:

"If I manage three patients, they might be distributed in three different rooms. If one of them is a delirious patient, the management difficulty is much greater because I cannot always stay by his side" (P14).

Likewise, environmental overstimulation—continuous noise from monitor alarms and constant lighting—disrupted sleep architecture and induced paranoia, posing a challenge to delirium management. Another participant recalled:

"The intensive care unit typically maintains continuous lighting for 24 hours. At night, if critically ill patients require interventions, the lights cannot be turned off; when patients are stable, some lights may be dimmed while others remain on. This lack of distinction between day and night disrupts patients' circadian rhythms, which can significantly contribute to the development of delirium. Additionally, the persistent noise from monitor alarms can increase patient anxiety and physiological stress. These environmental factors, combined with pharmacological agents, may precipitate or exacerbate delirium, thereby increasing the burden of patient management." (P09).

Staff shortages, combined with high acuity care, contributed to challenges in prioritising non-pharmacological delirium management. Sustained observation was described as time-intensive, forcing nurses to make difficult trade-offs regarding their workload. One participant captured the resulting challenges,

"I'm usually handling three to four patients, and when it's chaotic and noisy around me, I just don't have much time for non-pharmacological interventions. To be honest, a lot of the time I have to prioritize the more critical patients and just ask the doctor to manage them with medication so I can free up my hands. It's kind of unavoidable when the workload is really heavy, you know." (P12).

Delirium management is a team sport

Cooperation between nurses, physicians, and the patient's family was highlighted as key to achieving optimal delirium management. While peer assistance among nurses was robust during emergencies, collaboration with physicians yielded mixed opportunities. Some nurses felt supported, but others perceived a delayed medical approach as a barrier, with one identifying,

"Most of the time, when doctors know a patient has developed delirium, they adopt a wait-and-see attitude, thinking the patient will naturally wake up once the drug metabolizes" (P09).

Many participants identified families play an important role in non-pharmacological management. Unfamiliar ICU environments triggered severe separation anxiety, which could often be rapidly de-escalated by a familiar voice. One nurse stated:

“Many patients with delirium, especially the elderly, become anxious as soon as they're admitted to the ICU—just because of the unfamiliar environment and not being able to see their family. Some even become aggressive out of fear. We can try over and over to explain why treatment is necessary and calm them down, but it barely helps. But the moment a family member comes in—even if they just sit by the bedside and talk about everyday things—the patient often settles down quickly. Their voice and presence provide the kind of comfort that feels most familiar and reassuring, and it immediately eases that fear of separation. Honestly, it works better than anything we can say.” (P08).

Contrarily, rigid ICU visiting policies critically restricted this collaborative resource, as identified by another participant,

“The visitation policy is from 3:30 to 4:00 in the afternoon, and only one family member per patient is allowed per visit... Honestly, I don't think it helps much with improving delirium in patients. The visiting time is just too short.” (P09).

Motivation

Safety first, at any cost

Participants reported their delirium management practices were governed by profound concerns for patient and occupational safety. Nurses expressed that a hyperactive delirious patient is at severe risk of accidental removal of life-saving devices, falls, and violent attacks against staff. This safety-first motivation was deeply rooted in prior traumatic clinical experiences, with one claiming:

“One particularly strong patient, when exhibiting aggressive behaviour, used his head to strike our colleague's head, knocking her unconscious right there” (P06).

Alternatively, this intense focus on safety was underpinned by a strong sense of professional accountability. Nurses described an inherent duty to act even when experiencing significant emotional and physical strain. Another emphasized the non-negotiable nature of this duty, stating:

“The duty is there, the responsibility is there, it's impossible to ignore” (P02).

Consequently, this fear and responsibility drove the rapid, pre-emptive application of physical restraints as an immediate defensive measure to secure life-saving devices, as nurses felt they had to ensure basic survival before attempting psychological reassurance.

Weathering the emotional storm

Caring for hyperactive delirious patients inflicted significant emotional tolls. Nurses frequently reported feelings of helplessness, frustration, and being wronged, particularly when facing unprovoked verbal abuse or physical violence. One nurse expressed:

"The most unacceptable is their verbal abuse towards medical staff. Although knowing the patient doesn't mean it, hearing it still makes you feel uncomfortable and wronged" (P09).

Despite these emotional challenges, experienced nurses cultivated intrinsic resilience strategies, utilizing cognitive empathy to reframe aggression as a symptom of the disease rather than intentional malice. One suggested:

"Let flowers be flowers, let trees be trees, don't force too much... able to understand the existence of this behaviour, and respond accordingly, won't be affected by some of the patient's behaviours or words" (P05).

To survive the continuous psychological strain, nurses actively established strict emotional boundaries. Relying on off-duty disengagement was viewed as the ultimate internal self-preservation mechanism, with one participant commenting:

"If there is really no way to intervene, and they remain continuously restless, then the only way is to forget it after getting off work. Just handing over the shift, that is the best solution, just quickly get off work" (P03).

Discussion

This qualitative study identified fifteen barriers and twelve facilitators affecting ICU nurses' delirium management. Nurses described delirium care as a series of rapid bedside decisions made amid competing clinical priorities. The COM-B model helped interpret these decisions as behaviours shaped by nurses' capability, the opportunities afforded by the unit context, and their moment-to-moment motivation [14]. Across the participating ICUs, nurses' capability was strengthened by accumulated clinical experience and informal pattern recognition. However, it was undermined by uncertainty in recognising subtle presentations and by the practical difficulties associated with structured screening tools. Opportunity increased when staffing, teamwork, and clinical routines supported sustained observation and non-pharmacological interventions. In contrast, it was constrained by single-room layouts, sensory overstimulation, and workload pressures, which shifted delirium management from engagement toward containment. Motivation was primarily driven by safety-first reasoning and professional accountability. At the same time, it was weakened by emotional fatigue, particularly when repeated episodes of agitation occurred in the context of limited organisational support within routine ICU workflow. This pattern is consistent with broader evidence showing that delirium care is implemented inconsistently because effective implementation requires behavioural capability, social and physical opportunity, and sustained motivation to operate simultaneously [12, 20]. Barriers and facilitators were rarely discrete; instead, they interacted dynamically. For example, reduced visibility could increase assessment uncertainty and intensify safety-driven decision-making. Recognising these

interdependencies helps explain why guideline-concordant delirium practices remain difficult to normalise without coordinated, multilevel support.

Safety-first decision-making was central to nurses' motivation to intervene, particularly when delirium-related behaviours were perceived as threatening life-sustaining devices, physical stability, or staff wellbeing. In this study, nurses' immediate responses prioritised the prevention of unplanned device removal, falls, and the escalation of agitation into aggression. As a result, restrictive or pharmacological strategies were often adopted early, before more time-intensive de-escalation or reorientation was attempted. This reasoning is consistent with evidence that restraint use in critical care is often driven by nurses' perceived duty to avert imminent harm and to demonstrate visible risk control in high-liability situations [21]. Professional accountability appeared to function as both a facilitator and a barrier. It sustained nurses' vigilance and willingness to intervene, while simultaneously narrowing their behavioural repertoire to options perceived as immediately protective and defensible. Similar patterns have been reported when clinicians describe restraint decisions as a negotiated balance among competing obligations, including protecting the patient, protecting staff, and maintaining operational flow [22]. Nurses also described occupational violence and verbal aggression as realistic possibilities during episodes of hyperactive delirium, further reinforcing a control-first approach. This finding aligns with qualitative research showing that patient aggression in intensive care leads staff to anticipate harm and to rely on containment strategies to restore safety [23]. Contrary to the assumption that safety practices are purely protocol-driven, our findings suggest that safety-first behaviour is deeply rooted in clinical experience and emotional responses. It is therefore unlikely to change through education alone unless credible alternatives are available that preserve safety while enabling more therapeutic delirium care.

The opportunity to deliver consistent delirium care was strongly shaped by environmental and systemic constraints that influenced what nurses could realistically implement at the bedside. Single-room design reduced visual access and delayed support from additional staff, creating a structural barrier to sustained observation and timely non-pharmacological intervention, particularly when nurses were responsible for multiple patients. Similar findings have been reported in a qualitative study of ICU environments, in which reduced visibility and fragmented workflows limited staff capacity to anticipate deterioration and provide relational, calming care in real time [24]. In addition to layout, sensory overstimulation, including alarms, lighting, and procedural activity, undermined efforts to create a calming environment and limited sleep promotion and reorientation. Staffing shortages and high workload further forced nurses to prioritise tasks. As a result, delirium care, particularly its preventive and non-pharmacological components, was often deprioritised when competing physiological instability demanded attention. These constraints are consistent with implementation research showing that delirium monitoring and management become inconsistent when resources, staffing, and workflow design do not support routine delivery [25]. Consistent with reports from nurses in other settings, organisational support and adequate staffing were perceived as key facilitators that help transform delirium care from an additional task into an integrated component of routine practice [26]. Contrary to the assumption that tools alone can standardise care, our findings highlight that opportunity, including

space, time, and staffing, sets the upper limit on what nurses can sustain. This pattern is also reflected in studies identifying workload as a determinant of delirium evaluation behaviour [27].

Delirium management is inherently collaborative, and nurses' practices were repeatedly shaped by the presence or absence of coordinated interprofessional and family support. Nurses described peer assistance as a reliable facilitator during episodes of acute agitation, as it enabled rapid containment and redistribution of workload. By contrast, collaboration with physicians was more variable and could be limited by delayed responses or differing clinical priorities. This interdependence is consistent with broader implementation literature showing that delirium care improves when multidisciplinary teams share goals, communicate consistently, and distribute responsibilities across professional boundaries [25, 28]. Family engagement emerged as a strong facilitator of nurses' non-pharmacological strategies. Familiar voices could reduce distress and support reorientation in ways that nurses could not easily replicate within routine ICU care. Consistent with surveys of ICU delirium practice, nurses' perceived ability to implement guideline-recommended approaches was greater when family participation was enabled and supported rather than treated as peripheral [29]. In contrast, rigid visiting policies were perceived as removing a key relational resource, thereby increasing reliance on staff-delivered containment and medical escalation. From a COM-B perspective, family presence and physician responsiveness constitute forms of social opportunity. When these were constrained, nurses' behaviour predictably shifted toward actions that could be undertaken unilaterally within the limits of nursing scope and available time. These findings reinforce the practical implication that delirium care pathways require explicit interprofessional agreements regarding urgency, escalation, and the shared value of non-pharmacological care, rather than assuming that alignment will emerge through guideline dissemination alone.

The ability to navigate the complexities of delirium assessment emerged as a core component of capability, determining whether delirium management was initiated early or only after risk became overt. Nurses found hyperactive delirium comparatively easy to recognise because of its visible agitation, whereas hypoactive presentations were often perceived as ambiguous and were therefore less likely to prompt structured screening. This finding is consistent with evidence that hypoactive delirium is frequently under-recognised in routine practice and that reliance on behavioural disruption as a cue can delay detection and intervention [30]. This uncertainty reduced nurses' confidence in initiating proactive reorientation and instead encouraged a wait-for-disruption approach. Structured tools such as the CAM-ICU provide an evidence-based framework [31]. However, nurses described practical difficulties in applying specific items to critically ill adults, particularly older patients with limited comprehension or atypical responses. Similar barriers have been documented, including difficulties in applying the CAM-ICU in complex clinical scenarios and uncertainty in interpreting patient responses in the presence of sedation, fatigue, or communication barriers [13]. Consequently, nurses sometimes adopted simplified conversational checks and pattern-based judgement. Although these strategies could facilitate rapid bedside sensemaking, they also risked inconsistency and under-documentation. This trade-off is consistent with reports that nurses prefer screening approaches perceived as feasible and clinically meaningful when standard instruments are experienced as burdensome [32, 33]. Rather than reflecting

attitudinal resistance, these workarounds appeared to represent a mismatch between capability and opportunity. When tools did not fit workflow demands or communication realities, adaptations helped preserve bedside care but weakened standardisation.

Perceptions of clinical experience and training further differentiated nurses' capability to implement delirium management behaviours consistently, making ongoing mentoring and feedback particularly valuable. Experience functioned as a facilitator by enabling nurses to recognise subtle behavioural and physiological cues, anticipate escalation, and select de-escalation strategies with greater confidence. However, this reliance on experiential knowledge could also create variability across nurses, particularly when formal training in delirium subtypes and structured assessment was limited. Novice nurses were described as less confident and more reactive, sometimes recognising delirium only after agitation became disruptive. This pattern is consistent with studies linking knowledge gaps to delayed recognition and inconsistent implementation [34]. Targeted education was therefore identified as a critical facilitator. However, nurses emphasised that traditional didactic teaching may be insufficient to build the practical skills required for real-time assessment, communication, and self-protection. Evidence suggests that structured training can improve nurses' knowledge of and confidence in delirium screening tools [35]. However, consistent with integrative reviews, these effects may be fragile if they are not reinforced through practice supports, reminders, and role modelling [12]. Contrary to the assumption that greater experience automatically produces better delirium care, our findings suggest that capability gains from experience depend on feedback and shared standards. Without these supports, experience may instead entrench local heuristics that vary across staff. Aligning experiential know-how with structured training, mentoring, and accessible decision aids may therefore be essential for moving delirium management from individual expertise toward collective reliability [20].

Managing the emotional burden of delirium care shaped nurses' motivation to sustain person-centred management over time. Nurses described delirium episodes, particularly those involving agitation, accusations, or aggression, as emotionally taxing and as generating frustration, helplessness, and a sense of being unfairly targeted. This form of emotional labour has been consistently described in qualitative accounts of ICU delirium care, in which nurses must simultaneously ensure safety, maintain therapeutic communication, and regulate their own responses under time pressure [30]. When aggression was anticipated, emotional strain could reinforce pre-emptive containment strategies. This is consistent with staff reports indicating that patient aggression in the ICU affects vigilance, confidence, and willingness to engage relationally in the moment [23]. Nurses also identified several facilitators that helped sustain motivation, including cognitive empathy that reframed aggressive behaviour as illness-related, deliberate emotional boundaries to prevent over-identification, and psychological disengagement outside work to support recovery between shifts. These strategies are consistent with implementation syntheses suggesting that clinicians' emotional experiences and moral reasoning can function either as enablers or as barriers to sustained delirium care behaviours [12]. Without organisational acknowledgement and opportunities for debriefing, cumulative exposure may lead to emotional numbing and withdrawal, which can in turn normalise resignation when delirium persists despite sustained effort. Brief peer check-ins after incidents, visible managerial support, and timely security assistance may help

nurses re-engage in therapeutic communication rather than default to restraint-focused routines on subsequent shifts. These measures are most likely to be effective within a supportive, non-punitive unit culture. Supporting nurses through team debriefing, psychological safety, and clear escalation pathways may therefore be as important as technical training for sustaining delirium care.

Delirium management in mechanically ventilated ICU patients represents a multifaceted clinical challenge. Our findings suggest that nurses' delirium management behaviours are best understood as the product of dynamic interactions among capability, opportunity, and motivation. Specifically, capability included assessment competence, experiential pattern recognition, and training; opportunity encompassed environmental visibility, workload, staffing, and team and family support; and motivation involved safety-first reasoning and emotional endurance. The most influential facilitators included experienced nurses' nuanced recognition of clinical cues, supportive peer teamwork during acute episodes, and meaningful family engagement. These facilitators were effective because they simultaneously strengthened more than one COM-B component. They enhanced capability through shared sensemaking, expanded opportunity by adding practical and relational resources, and stabilised motivation by reducing perceived risk and isolation. Conversely, the most constraining barriers included limited visibility in single-room settings, high workload, and delayed interprofessional response. These barriers restricted opportunity and intensified safety-driven decision-making, thereby making non-pharmacological strategies more difficult to sustain even when nurses valued them. These insights align closely with the ICU Liberation Bundle and the Society of Critical Care Medicine's Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption guidelines (SCCM PADIS guideline) recommendations, which position delirium monitoring and non-pharmacological interventions as routine, team-based care rather than optional additions [8, 25]. In Chinese tertiary ICUs, translating these recommendations into nursing practice is likely to require not only training in delirium assessment and subtype recognition, but also workflow redesign, such as visibility-enhancing solutions and protected quiet time, family-inclusive policies, and interprofessional agreements that legitimise nurses' early intervention and escalation. Such multilevel alignment is essential if delirium management is to become a consistent nursing practice rather than an episodic response to crisis.

Limitations

This study included nurses from only two tertiary hospitals, which may limit the transferability of the findings. The data were self-reported and were not triangulated through direct observation or the perspectives of physicians, patients, or family members.

Conclusions

ICU nurses' delirium management behaviours were shaped by interacting factors related to capability, opportunity, and motivation. Safety-first reasoning and emotional burden often drove containment-focused practices, whereas environmental constraints and poor team alignment limited the delivery of non-pharmacological care. Strengthening assessment capability, promoting family and team support,

and redesigning workflows to protect time and visibility may help support consistent, guideline-aligned delirium management.

Declarations

Clinical trial number

Not applicable.

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Ethics Committee of the Second Affiliated Hospital of Chongqing Medical University (Approval No. 2025 – 296) prior to data collection. Institutional approval was also granted by the participating hospitals. All participants received written and verbal information about the study and provided written informed consent before participation. Participation was voluntary, and participants were informed of their right to withdraw at any time without penalty.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contribution

Yulong Cao: Conceptualisation, methodology, investigation, data curation, formal analysis, writing – original draft. Yan Gao: Conceptualisation, methodology, supervision, validation, writing – review & editing. Ruiqi Yang: Methodology, investigation, formal analysis, writing – review & editing. Xueyuan Luo: Investigation, data curation, validation. Xinyi Liu: Investigation, data curation. Xiaoxiao Wei: Investigation, validation, writing – review & editing. Xiuni Gan: Supervision, project administration, resources, writing – review & editing. Xiaomin Sheng: Conceptualisation, methodology, supervision, project administration, validation, writing – review & editing.

Acknowledgements

The authors would like to thank all ICU nurses who generously shared their time and experiences for this study. The authors also thank the participating hospitals for supporting the conduct of this research.

Data Availability

The data that support the findings of this study are not publicly available due to privacy and ethical restrictions. De-identified data may be available from the corresponding author upon reasonable request and subject to approval by the relevant ethics committee.

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