

# Challenges in Thirst Management for Intubated Patients in the ICU: A Qualitative Study of Healthcare Provider and Patient Perspectives

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**Objective:** This study aims to examine the challenges associated with thirst management among patients undergoing tracheal intubation in intensive care units (ICUs), and to inform the development of more effective clinical strategies.

**Methods:** A qualitative research design was employed using semi-structured interviews with 32 participants, including healthcare professionals and patients who had experienced tracheal intubation and associated thirst in the ICU. Interview content addressed themes such as the expression, recognition, and management of thirst. Thematic analysis was used to identify key patterns within the data.

**Results:** Four major themes emerged from the analysis: (1) communication barriers in the expression and recognition of thirst; (2) difficulty distinguishing between physiological and psychological thirst; (3) limitations and deficiencies in current thirst management practices; and (4) cognitive disparities between healthcare providers and patients regarding thirst perception. These findings underscore the multifaceted nature of thirst management in tracheal intubation.

**Conclusion:** Thirst management for patients undergoing tracheal intubation in the ICU involves complex, multidimensional challenges. The findings offer clinically relevant insights that may enhance the ability of healthcare providers to recognize and assess thirst, support the development of targeted communication strategies and interventions, and facilitate greater patient involvement in care decisions, thereby contributing to improved treatment adherence and nursing quality.

**Keywords:** clinical challenges, cognitive differences, communication barriers, intubated patients, thirst management

## Introduction

Thirst is a complex subjective symptom with substantial clinical relevance in the intensive care unit (ICU) setting. Existing literature indicates that the incidence of thirst among patients in the ICU reaches 70% or higher, with a considerable proportion reporting severe thirst intensity.<sup>1-3</sup> This symptom is influenced not only by physiological dehydration but also by psychological, environmental, and therapeutic factors.<sup>4,5</sup> Patients undergoing mechanical ventilation encounter particular difficulties in expressing and recognizing thirst due to the speech impairment associated with orotracheal intubation.<sup>6,7</sup>

From a pathophysiological perspective, thirst may result from intracellular fluid depletion (osmotic thirst) or extracellular fluid loss (hypovolemic thirst).<sup>8-10</sup> The therapeutic conditions typical of ICU care such as fluid restriction, mechanical ventilation, and administration of sedatives can further aggravate this symptom.<sup>11</sup> Thirst frequently coexists with other distressing symptoms, including pain, anxiety, fatigue, and sleep disturbances, contributing to a “symptom cluster” that significantly amplifies overall patient discomfort.<sup>1,12,13</sup>

Although thirst is consistently ranked among the most burdensome symptoms experienced by patients in the ICU, its assessment and management remain insufficient in routine clinical practice. Data indicate that only 13.14% (31/236) of

ICU nurses regularly assess the thirst status of patients.<sup>3,14</sup> This inadequacy is partially attributed to limited awareness among healthcare providers regarding the multidimensional nature of thirst, particularly its psychological aspects, as well as the absence of standardized assessment instruments.<sup>15,16</sup> Furthermore, a notable disparity exists in the perception of thirst between patients and healthcare professionals: patients primarily highlight the subjective distress associated with thirst, whereas providers tend to prioritize objective clinical indicators.

In the ICU setting, thirst management for orotracheally intubated patients presents unique challenges. Preliminary research indicates that the incidence of thirst in this population is as high as 88.4%, yet healthcare providers often lack sufficient knowledge and skills to address it effectively.<sup>17,18</sup> Currently, there is a paucity of qualitative research exploring this issue from both the healthcare provider and patient perspectives. Therefore, this study aims to systematically investigate the challenges faced by ICU healthcare providers and orotracheally intubated patients in managing thirst through in-depth interviews, thereby laying a foundation for the development of effective management strategies.

## Study Design

### Study Participants

A purposeful sampling strategy was used to recruit healthcare professionals and patients from the comprehensive ICU of a tertiary hospital in Guizhou Province for participation in this study between April and June 2024. The sampling process was guided by the principle of maximum variation, taking into account diverse factors to ensure the inclusion of representative interview participants.

For the healthcare professional group, the inclusion criteria were as follows: (1) possession of a bachelor's degree or higher; (2) a minimum of one year of experience in intensive care; (3) possession of professional certification; and (4) voluntary participation with informed consent. The exclusion criteria were: (1) healthcare professionals in administrative roles; and (2) those who had not engaged in ICU clinical work for an extended duration. A total of 19 healthcare professionals were included.

For the patient group, the inclusion criteria were as follows: (1) patients aged 18 or above, who had undergone orotracheal intubation for more than 72 hours; (2) those who remained conscious during intubation or had a Richmond Agitation-Sedation Scale score between -1 and 1, along with a Numeric Rating Scale thirst score greater than 4 (or is equal to 4), indicating a moderate or higher level of thirst; (3) the ability to understand and appropriately respond to healthcare professionals' instructions following extubation; and (4) voluntary participation with informed consent. Exclusion criteria were: (1) patients with oral infections, oral diseases, diabetes, or other medical conditions that contraindicated participation; and (2) those who did not report experiencing thirst during intubation or who declined participation. Thirteen patients were included in the interviews based on these criteria.

In total, 32 participants with relevance to thirst-related experiences were enrolled in the study.

## Study Methods

### Interview Outline Design

Semi-structured interviews were used for data collection, with the sample size determined according to the principle of information saturation. When no new themes or concepts emerged during subsequent interviews, the sample size was considered adequate. Prior to the interviews, relevant literature was comprehensively reviewed by the research team, and preliminary interview outlines for both healthcare professionals and patients were developed based on this review. Following pilot interviews and consultation with subject matter experts, revisions were made to finalize the interview frameworks used in the formal data collection.

The interview outline for healthcare professionals included the following prompts: (1) How is thirst perceived among patients in the ICU who are under mechanical ventilation? (2) What impact is thirst believed to have on the condition of patients in the ICU undergoing mechanical ventilation? (3) How is the presence of thirst assessed in patients with orotracheal intubation? (4) What methods are typically used to manage thirst symptoms in mechanically ventilated patients in the ICU, and are there any relevant experiences that can be shared?

The interview outline for patients included the following: (1) How would the experience of thirst during orotracheal intubation be described? (2) What types of discomfort were associated with thirst? (3) How was thirst communicated to healthcare professionals, and how effective were the interventions used to relieve it? (4) What actions were needed to alleviate the discomfort associated with thirst? Was there anything additional the participant wished to share regarding the experience of thirst?

During the interviews, adherence to principles of respect and active listening was maintained. Interviewers listened attentively to participant narratives and demonstrated engagement through nonverbal cues and brief affirmations, such as nodding, smiling, or verbal acknowledgments (eg, “I understand”), with the aim of fostering a sense of value and understanding among interviewees. Personal opinions were strictly withheld to avoid influencing participants’ responses and to ensure that the content accurately reflected their perspectives. Interview durations were flexibly adjusted based on the physical condition, emotional state, and willingness of each participant to communicate, typically ranging from 10 to 50 minutes. At the conclusion of each interview, participants were asked in a gentle and open manner, “I don’t have any more questions. Is there anything else you would like to add?” This approach was intended to encourage autonomy in expression and to enhance the depth and comprehensiveness of the information obtained.

### Data Analysis

In this study, Colaizzi’s seven-step method was used to conduct an in-depth analysis of the interview data. The process involved the following steps: First, within 24 hours of each interview, the recorded materials were transcribed verbatim into text by two researchers independently. The transcriptions were then cross-checked to ensure accuracy. The verified transcripts were subsequently returned to the interviewees for confirmation, ensuring the authenticity and completeness of the data.

Following this, the interview data were independently analyzed by the two researchers, during which statements related to the sensation of thirst among orotracheally intubated patients in the ICU were extracted. Frequently occurring, meaningful viewpoints were coded. After coding, the viewpoints were organized and connected to the study phenomenon, and detailed descriptive accounts were generated. From these accounts, similar viewpoints were grouped and refined into overarching themes.

The results of the analysis were then returned to the interviewees for verification, and modifications were made based on their feedback to improve accuracy. Throughout the analytical process, a third researcher was involved in the review and discussion of the findings. In cases of disagreement regarding specific codes or themes, expert consultation was sought to ensure the rigor and scientific validity of the final analytical outcomes.

### Quality Control

To ensure reliability and validity, rigorous quality control procedures were implemented. All interviewers received training in interview techniques, and a single interviewer conducted all interviews to maintain consistency across sessions. Each interview was audio-recorded, and detailed field notes were taken. Within 24 hours of each session, the recordings were transcribed independently by two researchers, and the resulting transcripts were cross-checked to verify accuracy. To ensure data integrity, the transcripts were returned to the interviewees for confirmation. Any discrepancies identified were resolved through discussion and, when necessary, by referring back to the original recordings.

During the data analysis phase, Colaizzi’s method was independently applied by two researchers. A third researcher reviewed the analytical results to ensure consistency and coherence. Expert consultation was sought to resolve any disagreements or ambiguous findings. Throughout the research process, a reflective stance was maintained by the research team to reduce potential bias and enhance the credibility of the findings.

## Results

A total of 32 participants associated with the issue of thirst in orotracheal intubation participated in this qualitative interview study, comprising both medical staff and patients. The demographic characteristics of the medical staff are presented in [Table 1](#), and those of the patient group are provided in [Table 2](#). From the in-depth interviews with these participants, four major themes and eight corresponding sub-themes were identified, reflecting the multifaceted nature and challenges of thirst management in the ICU setting for patients undergoing orotracheal intubation. The thematic analysis results are presented in [Figure 1](#).

**Table 1** Basic Data of Healthcare Professionals

Number	Role	Sex	Age Classification	Marital Status	Education	WorkExperience (Years) Classification	ICU-Work Experience (Years) Classification
N1	Nurse	Female	25-34	Married	Bachelor's Degree	>10	>10
N2	Nurse	Male	35-44	Married	Bachelor's Degree	>10	>10
N3	Nurse	Female	35-44	Married	Bachelor's Degree	>10	>10
N4	Nurse	Female	25-34	Unmarried	Bachelor's Degree	<5	<5
N5	Nurse	Male	25-34	Married	Bachelor's Degree	6-10	6-10
N6	Nurse	Female	25-34	Unmarried	Bachelor's Degree	<5	<5
N7	Nurse	Female	35-44	Married	Bachelor's Degree	>10	>10
N8	Nurse	Male	25-34	Married	Bachelor's Degree	6-10	6-10
N9	Nurse	Male	25-34	Married	Bachelor's Degree	6-10	<5
N10	Nurse	Female	35-44	Married	Bachelor's Degree	>10	>10
N11	Nurse	Female	35-44	Married	Master's Degree	>10	>10
D1	Doctor	Female	35-44	Married	Doctoral degree	>10	>10
D2	Doctor	Female	35-44	Married	Master's Degree	>10	>10
D3	Doctor	Male	35-44	Married	Master's Degree	>10	>10
D4	Doctor	Male	35-44	Married	Bachelor's Degree	>10	>10
D5	Doctor	Male	35-44	Married	Doctoral degree	6-10	6-10
D6	Doctor	Male	35-44	Married	Master's Degree	6-10	6-10
D7	Doctor	Female	25-34	Unmarried	Master's Degree	<5	<5
D8	Doctor	Female	25-34	Married	Doctoral degree	<5	<5

**Table 2** Basic Patient Data

Number	Role	Sex	Age Range	Marital Status	Education	Profession	NRS*	Clinical Diagnosis
P1	Patient	Male	45-54	Married	High school	Worker	6	Severe pneumonia
P2	Patient	Female	35-44	Married	Vocational college	Freelancer	7	Severe acute pancreatitis
P3	Patient	Male	65-74	Married	Primary school	Farmer	6	Gastrointestinal bleeding
P4	Patient	Male	35-44	Married	Primary school	Driver	4	Multiple trauma
P5	Patient	Female	45-54	Married	Primary school	Farmer	5	Septic shock
P6	Patient	Female	18-24	Unmarried	Undergraduate	Student	4	Severe acute pancreatitis
P7	Patient	Male	65-74	Married	Junior high school	Retired worker	5	Postoperative of gastrointestinal perforation
P8	Patient	Female	75-84	Married	Primary school	Farmer	9	Heart failure
P9	Patient	Male	55-64	Married	Primary school	Unemployed	4	Multiple trauma
P10	Patient	Male	45-54	Married	Primary school	Farmer	5	Cervical infection
P11	Patient	Male	45-54	Married	High school	Worker	6	Severe pneumonia
P12	Patient	Male	35-44	Unmarried	Junior high school	Unemployed	9	Chronic kidney disease stage 5
P13	Patient	Female	35-44	Married	High school	Worker	4	Peritonitis

**Notes:** NRS: Numeric Rating Scale is a subjective tool for assessing thirst intensity, ranging from "0" (no thirst) to "10" (extreme thirst).

## Theme 1: Communication Barriers in Thirst Expression and Recognition

Patients undergoing endotracheal intubation encounter distinct communication challenges. As they are unable to vocalize, their thirst can only be conveyed through nonverbal behaviors, such as knocking on the bed rail or using body movements. Significant limitations in nonverbal communication have been commonly reported. Mouth gestures are frequently misunderstood, written communication is hindered by physical restraints, and actions such as knocking are often misinterpreted as expressions of other needs. The ability of medical staff to accurately interpret these signals varies considerably. However, such cues are frequently overlooked or misunderstood, often due to factors including high workload, limited experience in recognizing nonverbal expressions of thirst, or the prioritization of other clinical tasks.

Consequently, thirst symptoms may go unaddressed in a timely manner, contributing to increased anxiety, irritability, and, in some cases, dangerous behaviors such as self-extubation. This negative feedback loop exacerbates physical

Topic	Subtopic	Key Content
Theme 1 Communication Barriers in Thirst Expression and Recognition	1.1 Limitations of Nonverbal Expression	Patients express thirst through nonverbal means, such as knocking on the bed rail or using body movements; mouth gestures are often misunderstood; writing is difficult due to restraints; behaviors like knocking may be misinterpreted as other needs.
	1.2 Vicious Cycle of Delayed Response	Medical staff, due to heavy workloads, lack of experience in recognizing signs, or prioritization of clinical needs, often ignore or misunderstand thirst signals, which can lead to anxiety, irritability, and even dangerous behaviors such as self-extubation.
Theme 2 Dilemma of Distinguishing Between Physiological and Psychological Thirst	2.1 Psychological Needs Expressed as Thirst	Patients externalize discomfort, such as a sore throat, loneliness, or anxiety, by expressing it as thirst. They convey these psychological needs through nonverbal behaviors, such as biting on tubes or making sounds to signal their needs.
	2.2 Clinical Challenges in Distinguishing Thirst	Medical staff face challenges in determining the authenticity of thirst; they must adhere to fluid management principles, focus on fluid balance to prevent complications from overhydration, and also address patients' psychological needs for attention and companionship.
Theme 3 Challenges and Deficiencies in Thirst Management	3.1 Lack of Clinical Attention	Due to busy work schedules and the prioritization of critical conditions, medical staff often fail to give sufficient attention to patients' thirst symptoms, leading to unmet needs.
	3.2 Absence of Standardized Intervention Programs	Current thirst management measures lack standardized protocols, with interventions being arbitrary, ineffective, and posing safety risks. Nurses' approaches vary, leading to inconsistencies in patient care.
Theme 4 Cognitive Differences Between Patients and Healthcare Providers	4.1 Gap Between Subjective Pain Experience and Objective Assessment	Patients often experience intense subjective suffering, such as extreme thirst, anxiety, and despair, while medical staff rely on objective medical indicators (e.g., pH, electrolytes, fluid balance) to assess thirst, which can lead to a disconnect between the patient's experience and the clinical assessment.
	4.2 Inequality in Decision-Making Power	Inequality in decision-making power can lead to patients' demands being ignored or misunderstood. This can affect treatment adherence, hinder recovery, and increase the difficulty and pressure on medical staff, ultimately lowering the quality of care.

**Figure 1** Thirst management challenges in the ICU: Perspectives of healthcare professionals and patients.

discomfort and psychological distress in patients, elevates clinical risk, delays recovery, and imposes additional burdens on healthcare providers.

### Limitations of Nonverbal Expression

The inability to speak due to endotracheal intubation forces patients to rely on alternative, often inadequate, nonverbal methods to express thirst. This subtheme highlights the practical challenges associated with such communication, including the limited effectiveness of gestures, the misinterpretation of cues, and the physical constraints that hinder written or gestural expression. The following accounts from patients and healthcare providers illustrate these barriers in real clinical contexts.

During the intubation period, my mouth had to stay open, and I experienced an intense sensation of thirst; throat pain was also very discomfiting. (P1)

I tried to communicate using body movements and vocalizations. When the nurse arrived, I tried to express my thirst through mouth gestures. The experience was like being mute. The nurse asked me multiple questions before eventually understanding that I was thirsty. (P2)

Verbal communication was not possible, and even though I tried to make gestures, they were not understood. I felt a great deal of discomfort and tried to write but the nurse was unable to interpret it. (P4)

Patients with endotracheal intubation have been observed knocking on the bed as a signal for water. When asked if they were thirsty, they typically nodded in response. (N1)

Recognition of thirst in intubated patients is often more difficult. It may present as anxiety, restlessness, or frequent movements intended to attract the attention of healthcare personnel. (N2)

Some patients attempt to express thirst through writing, although this is uncommon, as many have hand restraints or lack the physical strength to do so. (N5)

When dry lips or oral dryness are noted, we can consider the possibility of thirst. (N3)

Physiological changes such as increased heart rate, rapid breathing, and elevated blood pressure may be indicative of thirst. (N4)

In cases of excessive sweating on the forehead or body, it is recommended to check if the patient is thirsty. (N4)

Indicators such as pH levels, electrolyte status, or fluid balance may assist in evaluating the presence of thirst. (D2)

Given the frequency of contact between nurses and patients in the ICU, greater responsibility for addressing thirst may lie with nursing staff. (D3)

In traditional Chinese medicine, a thick tongue coating has been interpreted as a potential sign of thirst. (N11)

### Vicious Cycle of Delayed Response

Delayed recognition and response to patients' expressions of thirst can initiate a self-perpetuating cycle of distress, with significant implications for both physical and psychological well-being. When thirst is not promptly identified or alleviated, patients may experience escalating anxiety, frustration, and behavioral disturbances. These responses not only exacerbate their discomfort but also pose clinical management challenges, such as increased agitation, interference with treatment, and heightened risk of complications. The accounts below illustrate how delays in addressing thirst can contribute to a negative feedback loop that affects patient outcomes and care efficiency.

I was greatly discomfited when I was unable to express my thirst, and no one intervened. This made me feel increasingly irritable, anxious, and frustrated. I felt a strong aversion to returning to the ICU. (P4)

While visiting a relative in the ICU, there were some signs of thirst in the patient. The patient's swallowing ability was not appropriately assessed, and 30 mL of water was administered orally in small sips. However, there was a noticeable calming effect thereafter. (N9)

I attempted to vocalize in the presence of nursing staff with the hope of receiving water. In some cases, these efforts were not understood, and I continued to remain thirsty, silently enduring my thirst. (P3)

I repeatedly bit the endotracheal tube in an attempt to break it, driven by the desire to speak and request water. (P6)

In the ICU, due to the critical condition of most patients, clinical stability is prioritized over thirst management. (N3)

Restless movement in patients has been frequently observed as a response to thirst, at times triggering ventilator alarms. (N4)

Unaddressed thirst was reported to negatively affect sleep and rest. (P8)

During a typical shift, nurses are responsible for an average of three patients. After receiving handover from the previous shift, various nursing duties, physician orders, and emergent situations are managed. This often leaves limited time to address the thirst-related concerns of patients. (N8)

Due to persistent thirst, the patient intentionally defied the treatment instructions. Requests from nursing staff were actively refused. (P7)

Thirst, anxiety, and insomnia have been described as mutually reinforcing symptoms that may collectively contribute to the development of delirium. (D5)

Increased patient agitation was noted to elevate oxygen consumption, thereby necessitating stricter fluid restriction, which in turn intensifies thirst. (D2)

## Theme 2: Dilemma of Distinguishing Between Physiological and Psychological Thirst

The experience of thirst among patients undergoing intubation encompasses not only a physiological necessity but also a complex psychological dimension. Discomfort such as throat pain, feelings of loneliness, and anxiety is frequently externalized as manifestations of thirst. Psychological needs are often expressed through nonverbal behaviors, including

actions such as biting the endotracheal tube, vocalizations intended to attract attention, or statements implying unmet emotional needs (eg, “my family understands me better”).

These behaviors have been interpreted as expressions of both physical discomfort and an underlying psychological desire for companionship and recognition. However, there are significant challenges for healthcare providers in accurately assessing the authenticity of such thirst-related expressions. Strict adherence to fluid management protocols is required to maintain intake–output balance and prevent complications related to overhydration. At the same time, attention must be given to the psychological needs of patients for interaction and emotional support.

The overlap between physiological and psychological components of thirst, combined with clinical uncertainty in provider judgment, adds complexity to effective thirst management in the ICU.

### Psychological Needs Externalized as Thirst

In some patients in the ICU, particularly those undergoing orotracheal intubation, expressions of thirst may not always correspond to physiological dehydration but may instead reflect underlying psychological needs. These needs—such as a desire for comfort, attention, or emotional support—may be externalized as thirst, especially in contexts where other forms of expression are limited. This phenomenon complicates clinical assessment, as providers may find it difficult to distinguish between physiological and psychological drivers of thirst-related behaviors. The following excerpts reflect the nuanced interplay between psychological discomfort and thirst expression.

I reported severe throat pain, and expressed a desire to relieve it through water intake. When this need was not understood, I experienced feelings of anxiety and desperation. (P1)

Many patients may not be experiencing true physiological thirst; rather, psychological needs may be more prominent. Similar to how a child may report stomach pain regardless of the actual source of discomfort, thirst may be expressed when patients require repositioning, relief from itching, or emotional support. When asked if they are thirsty, patients often respond affirmatively. (D1)

In the absence of physiological indicators of thirst, the expression of thirst may represent a psychological need for attention, which leads patients to request water from nurses and physicians. (D2)

I repeatedly bit the endotracheal tube, driven by physical discomfort. (P6)

I wanted my family members, as I felt that they understood the sensation of thirst compared to medical staff better. What I really needed was companionship. (P6)

I was instructed to endure thirst because I had heart failure and hence there was an associated need for fluid restriction. (P8)

During episodes of fever, I could distinctly feel dryness and pain around my lips. (P2)

In cases where intubated patients exhibited signs of agitation or restlessness, the initial inquiry focused on whether thirst was present. The degree of thirst was not assessed due to the complexity and limited perceived value of such evaluation; intervention was initiated directly. (N10)

### Challenge in Differentiating Physiological Thirst From Psychological Needs

In the ICU, accurately discerning whether expressions of thirst reflect true physiological dehydration or underlying psychological needs presents a significant clinical challenge. This distinction is particularly complex in critically ill, intubated patients, where standard indicators may be obscured, and patient communication is compromised. The clinical imperative to maintain strict fluid balance further complicates the decision-making process, often resulting in hesitancy or delay in addressing reported thirst. The excerpts below illustrate the uncertainty faced by healthcare professionals in interpreting and responding to thirst-related expressions.

There was uncertainty regarding whether the thirst of the patient was genuine or a perception projected onto them. Given the need for strict fluid balance in ICU care, thirst—although uncomfortable—was viewed as potentially beneficial for overall prognosis. (D4)

Patient requests for water were not always fulfilled upon the expression of thirst. This was based on the assumption that adequate fluid intake was being administered and intake–output balance was maintained, thus minimizing the likelihood of significant thirst. (N8)

In the absence of physiological indicators of thirst, repeated water requests were interpreted as a manifestation of psychological needs, such as seeking attention from medical staff. (D2)

In the context of critical illness, thirst was considered tolerable. Intubated patients were perceived to endure thirst without significant clinical consequence, even in the absence of hydration interventions. (D3)

Following administration of 100 mL of water, the patient continued to express thirst, which suggested that the sensation of thirst may occur with greater frequency than anticipated. (N3)

The use of lip balm was recommended to family members as a means of relieving oral dryness, primarily for psychological reassurance. (N9)

There was uncertainty regarding whether the sensation of thirst was authentically experienced by the patient or if it was externally imposed by caregivers. (D6)

In certain cases, there were repeated requests for water despite the absence of clear physiological signs of thirst. This pattern was interpreted as an indication of heightened emotional needs. (D2)

### Theme 3: Challenges and Deficiencies in Thirst Management

The management of thirst in patients undergoing intubation presents numerous challenges, largely attributable to insufficient clinical attention and the absence of standardized intervention protocols. In many cases, thirst symptoms reported by patients remain unaddressed due to the high workload of healthcare providers and the prioritization of life-threatening conditions. At the same time, existing thirst interventions are often implemented in an unsystematic manner, lacking standardized procedures and, in some cases, failing to include assessments of swallowing function, thereby introducing potential safety concerns.

Reports have indicated that commonly used measures, such as lip moistening or the administration of small volumes of water, are frequently ineffective in alleviating the sensation of thirst. Additionally, inconsistencies in the approaches adopted by different nursing staff have been observed, contributing to variability in care quality. These issues underscore the complexity of thirst management in the intensive care setting and reflect the urgent need for improvement.

Future efforts should focus on the development of systematic, evidence-based protocols that ensure both safety and efficacy, with the goal of enhancing patient comfort and optimizing the quality of care provided.

#### Inadequate Clinical Attention

Despite the prevalence and severity of thirst among intubated ICU patients, it often receives limited clinical attention. Contributing factors include the prioritization of life-threatening conditions, time constraints, and adherence to strict fluid management protocols. As a result, thirst is frequently overlooked during routine assessments, underreported in shift handovers, and inconsistently addressed across care providers. The following accounts illustrate the insufficient prioritization of thirst and the consequences of this gap in symptom management.

In patients with critical illness and fluid restrictions, thirst is often overlooked. Withholding water from intubated patients was perceived as having minimal clinical impact. (D3)

Limited attention is generally given to the thirst symptoms of intubated patients. Many conscious patients with endotracheal intubation are placed under protective restraints, and expressions of thirst are seldom heard. (N6)

Although patients occasionally demonstrate a strong desire for water, adherence to fluid management protocols prevents the provision of fluids at will, complicating clinical decision-making. (D3)

Water was not provided; instead, a few sprays were applied using a sprayer, which failed to relieve the sensation of thirst. (P6)

During each shift, nurses have to typically provide care for three patients. From the beginning of the shift, nursing responsibilities, implementation of medical orders, and emergency situations lead to constant activity. As a result, attention to patients' thirst is often not prioritized. (N8)

In the ICU setting, due to the severity of conditions, clinical stability of the patients is prioritized during the management of thirst and other aspects of care. (N9)

My lips were moistened and that provided only temporary relief. I needed a more effective and longer-lasting method to relieve thirst. (P11)

Given the frequency of nurse–patient interaction, addressing thirst in patients in the ICU was viewed as a primary responsibility of nursing staff. (D3)

I was experiencing severe oral dryness, with lips cracking and peeling during movement, that resulted in pain. But I was provided with moisture typically only during routine morning hygiene. (P2)

Thirst is rarely mentioned during nursing shift handovers, indicating that the issue receives limited clinical attention. (D1)

I faced inconsistent responses during thirst management, with some nurses providing water and others not. I think there needs to be standardized training in this area. (P7)

### Lack of Standardized Intervention Protocols

Thirst interventions in the ICU are typically implemented in an inconsistent and unsystematic manner, with considerable variability in both the methods used and the criteria for their application. The absence of standardized protocols often results in trial-and-error approaches that may not adequately address patients' needs or ensure safety. Factors such as fear of aspiration, unclear guidelines on acceptable fluid volumes, and reliance on non-evidence-based practices contribute to the limited effectiveness of current strategies. The following accounts underscore the diverse and often inadequate measures employed in thirst management, highlighting the urgent need for uniform, evidence-informed protocols.

Patients who report thirst are often provided with small volumes of water; however, persistent thirst throughout the day has been noted, even shortly after fluid administration. (N2)

In some cases, up to 100 mL of water was administered, yet patients continued to request additional fluids. (N3)

The use of cold lemon water was considered potentially effective, though no opportunity to implement this approach was reported. The suggestion was made for future research teams to examine its clinical utility. (N10)

Efforts to alleviate thirst have included administering water through a feeding tube via syringe. Although this method is regarded as safe and efficient, it was observed to have limited effectiveness in relieving thirst, as oral intake was not possible. (N4)

I requested for ice water, but was provided with warm water instead. My lips were moistened using either cotton swabs or a spray bottle, and I preferred the latter because of its cooling effect. (P4)

When signs of oral dryness and peeling were noted by family members, requests to moisten the lips using cotton swabs were made. In such cases, the use of lip balm was often recommended. (N6)

The patient was administered water according to individual clinical status and swallowing function. Typically, 5 mL was given orally, up to a maximum of 30 mL. Water was provided at relatively frequent intervals. (N7)

Dry lips were commonly observed in intubated patients. Family members were advised to purchase lip balm; however, this intervention appeared to serve primarily as reassurance for both family and staff. (N9)

Concerns regarding the risk of choking or aspiration led to minimal use of oral water administration. (N6)

A syringe was used to introduce small amounts of water into the oral cavity, with a maximum volume of 2.5 mL, or to moisten the oral mucosa using a cotton swab. However, these measures were reported to be ineffective for alleviating lip dryness. (N11)

## Theme 4: Cognitive Differences Between Patients and Healthcare Providers

Thirst management in patients undergoing intubation highlights a considerable cognitive disparity between patients and healthcare providers. Patients frequently report severe subjective discomfort, including intense thirst, anxiety, and emotional distress. In contrast, healthcare providers typically assess thirst based on objective clinical parameters such as pH levels, electrolyte balance, and fluid intake and output. This disjunction between the subjective experiences of patients and the clinical criteria used for evaluation often results in the inadequate recognition and management of thirst-related needs.

Additionally, an imbalance in decision-making authority contributes to overlooking or misinterpretation of the concerns of patients, potentially impacting treatment adherence and delaying recovery. This misalignment not only adds to the psychological and physical burden experienced by patients but also increases the workload and stress among healthcare providers. The resulting strain negatively affects the quality of care and further complicates effective thirst management in the intensive care setting.

### Gap Between Subjective Suffering and Objective Evaluation

Although patients may clearly express feelings of extreme thirst, their symptoms are often assessed against objective markers, potentially leading to underestimation of distress. This gap between clinical judgment and patient-reported discomfort reflects a significant barrier to effective symptom management.

I felt an intense sensation of thirst, and a nurse inquired about the severity of the thirst I was experiencing. (P8)

Although some patients verbally expressed thirst, it was observed that they were receiving intravenous fluids and had balanced fluid intake and output, leading to the perception that significant thirst should not have occurred. (N6)

I was instructed to remain still and calm, despite the presence of noticeable edema and severe thirst, which made it difficult to comply with the directive to stay calm. (P12)

I felt extreme thirst, accompanied by a sense of being misunderstood when the nurse questioned whether I was thirsty, because this indicated that my discomfort was not being acknowledged. (P12)

Thirst is generally not perceived during intubation; however, the most intense thirst symptoms are typically reported within 30 minutes following extubation. (D6)

### Imbalance in Decision-Making Power

In the ICU, patients often lack autonomy over their care decisions, particularly when intubated and unable to communicate effectively. Healthcare providers may misinterpret or override patients' expressions of thirst due to clinical concerns, further limiting patient agency and potentially exacerbating distress.

I tried to attract the attention of nursing staff by producing sounds with my mouth upon their arrival, in the hope that water would be provided. This made me feel concerned about future unavailability of assistance if my thirst intensified. However, at some instances, the intention behind such cues was not understood. (P11)

In response to patient restlessness, sedative medication was increased as clinically indicated. (N3)

I tried to communicate my thirst through body language and facial expressions. These attempts were reportedly misinterpreted as non-cooperation with treatment, which resulted in making me feel that I had lost whatever autonomy I had in decision-making. (P7)

In ICU care, fluid intake and output require strict regulation. Although thirst is recognized as a distressing subjective experience, it was considered potentially beneficial to the overall prognosis of the patient. (D4)

Oral water administration was not supported in cases of tracheal intubation, due to the complete absence of swallowing ability. (D7)

I preferred oral intake of glucose water due to its sweetness, in contrast to the flavorless fluids that were sometimes provided. (P13)

I verbally expressed my severe thirst, yet water intake was restricted. This made me feeling as if my emotional needs were being deliberately disregarded. (P7)

Although thirst may not pose a direct physiological risk, its substantial psychological and emotional impact on patients was acknowledged. (N7)

## Discussion

### Effects of Communication Barriers on Thirst Expression and Recognition

Tracheal intubation impairs normal speech, limiting patients to non-verbal means of expressing thirst, such as tapping on the bed rail or using body movements. However, these behaviors are frequently subject to misinterpretation.<sup>19</sup> For instance, actions such as biting the endotracheal tube or making vocal sounds may be prompted by thirst but are often perceived as indications of other needs, resulting in delayed or inaccurate recognition of thirst-related cues. Due to limited experience in interpreting these non-verbal signals and the prioritization of other clinical concerns, healthcare professionals may overlook or misjudge these expressions.

Such misinterpretation can contribute to heightened anxiety, irritability, and, in some cases, unsafe behavior, including self-extubation or falling from the bed. These outcomes not only compromise patient comfort and delay recovery but also increase clinical risk. Therefore, there is a critical need to strengthen the training of healthcare providers in the interpretation of non-verbal expressions and to develop more effective communication strategies to minimize delays in thirst management caused by communication barriers.<sup>20,21</sup>

### Challenges in Differentiating Physiological Thirst From Psychological Thirst

Thirst in patients may represent not only a physiological requirement but also an external expression of underlying psychological needs. Discomfort related to sore throat, loneliness, or anxiety may be communicated through expressions of thirst as a means of seeking attention or companionship. However, accurately assessing the authenticity of thirst can be challenging for healthcare providers. Although adherence to fluid management protocols is necessary to prevent complications associated with overhydration, psychological needs must also be considered. This tension may result in an overly cautious approach to thirst management, potentially leading to unmet psychological needs.

To address this issue, greater emphasis should be placed on evaluating the psychological states of patients along with physiological assessments. A more holistic approach to thirst management which incorporates both fluid balance considerations and psychosocial support may improve the adequacy of care and enhance overall patient well-being.

### Challenges and Deficiencies in Thirst Management

Research has demonstrated that non-pharmacological interventions, such as ice water spray, ice chip stimulation, menthol-based moisturizers, artificial saliva spray, and psychological support are both practical to implement and effective in alleviating thirst symptoms. These methods have been validated in multiple studies.<sup>11,22–25</sup> Despite this, several challenges persist in the clinical management of thirst. First, due to heavy workloads and the prioritization of life-threatening conditions, healthcare providers often allocate limited attention to thirst-related symptoms, resulting in unmet patient needs.<sup>26</sup> Second, standardized or individualized protocols for thirst intervention are lacking. Existing interventions are frequently arbitrary, clinically ineffective, and may pose safety risks. Inconsistencies in practice among nursing staff further contribute to variability in patient care.<sup>27,28</sup>

This situation not only compromises patient comfort and delays recovery but may also increase the workload and psychological burden on healthcare providers. Therefore, there is an urgent need to develop standardized and individualized thirst management protocols, enhance clinical awareness of thirst-related care, and ensure that timely and effective relief is provided to patients experiencing thirst.<sup>29</sup>

## Cognitive Differences Between Patients and Healthcare Workers

Patients frequently report intense subjective distress, including severe thirst, anxiety, and despair, while clinical assessments often rely on objective physiological parameters such as pH levels, electrolyte concentrations, and fluid balance to assess thirst.<sup>30</sup> This disparity between subjective experiences and the objective indicators used in clinical evaluation may result in underestimation of thirst-related symptoms and inadequate fulfillment of patient needs by healthcare providers.<sup>31</sup>

Certain misconceptions persist in clinical settings, such as the belief that patients with tracheal intubation lack swallowing ability (D7), that balanced fluid status eliminates the possibility of thirst (N6), and that discomfort can be addressed by escalating sedative use (N3). Furthermore, the imbalance in decision-making authority between patients and healthcare providers may lead to overlooking or misinterpretation of concerns of the patients. These dynamics can negatively affect treatment adherence, delay recovery, increase provider workload and stress, and ultimately diminish the quality of care.

To address these issues, improved communication with patients is essential. Greater attention should be given to understanding the subjective experiences of patients, respecting their preferences and needs, and promoting shared decision-making. Such efforts may contribute to enhanced care quality and increased patient satisfaction.

## Limitations

This study contributes to the existing body of research by incorporating qualitative interviews from the perspectives of both healthcare professionals and patients, providing an in-depth exploration of thirst management among tracheally-intubated patients in the ICU. The findings present multidimensional challenges, including communication barriers, unmet psychological needs, insufficient management strategies, and cognitive disparities between stakeholders.

However, several limitations should be noted. The small sample size and single-center design limit the generalizability and external validity of the findings. Additionally, thematic categorization conducted by researchers during data analysis may introduce subjectivity and potential bias. The study also did not include interviews with other relevant stakeholders such as nursing assistants, rehabilitation therapists, dietitians, and family members thereby limiting a comprehensive understanding of multi-role interactions and the broader scope of needs in thirst management. Furthermore, the influence of demographic variables such as marital status, parental status, and educational level was not examined.

## Conclusion

Thirst management in tracheally-intubated patients in the ICU presents a complex and multidimensional challenge. Effective care requires healthcare professionals to address communication barriers, consider the psychological dimensions of thirst, implement standardized or individualized management protocols, and reduce the cognitive disconnect between providers and patients. These efforts are essential to improving the effectiveness of thirst management, enhancing care quality, and optimizing the recovery experience. Future research should further examine evidence-based strategies and targeted interventions to strengthen clinical practice and support comprehensive patient care.

## Abbreviations

ICU, intensive care unit; TDS, Thirst Distress Scale; PTDS, Perioperative Thirst Discomfort Scale; NRS, Numerical Rating Scale; VAS, Visual Analogue Scale; OMWS: Oral Mucosa Wetness Scale.

## Data Sharing Statement

The datasets used or analysed during the current study are available from the corresponding author on reasonable request.

## Ethics Approval and Consent to Participate

This study was conducted with approval from the Ethics Committee of Affiliated Hospital of Zunyi Medical University (KLL-2024-251). This study was conducted in accordance with the declaration of Helsinki. All participants provided informed consent to participate in the study and publish their anonymized responses and clinical information.

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## Disclosure

You Yuan and Li-Feng He are co-first authors for this study. The authors declare that they have no conflicts of interest regarding this work.

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