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EXPLORING NURSES' EXPERIENCES OF VENTILATOR WEANING IN THE ICU: A QUALITATIVE STUDY TO INFORM THE DEVELOPMENT OF A Q-METHODOLOGY-BASED NURSING INTERVENTION MODEL

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ABSTRACT

Background: Ventilator weaning is a critical stage in the ICU that requires not only technical competence but also communication skills, psychosocial support, and family involvement. This complexity demands nursing interventions that are comprehensive and grounded in the real experiences of patients and nurses.
Objective: This study aimed to explore the experiences of ICU nurses during the ventilator weaning process, an initial stage in developing a critical care nursing intervention model, using the Q-methodology approach
Method: This phase employed a qualitative design, involving in-depth interviews with 10 participants in the ICU. Data were analyzed using thematic analysis to identify the main themes. The qualitative findings were then used to construct the concourse and Q-statements, which will be sorted through Q-sort and factor analysis in the subsequent stage.
Results: Seven main themes emerged from the analysis: (1) comprehensive nursing care, (2) therapeutic communication, (3) patient comfort, (4) family support, (5) patients' psychological experiences, (6) nurses' role in ventilator weaning, and (7) barriers in practice. The results of the exploration of 10 ICU nurse participants revealed seven major themes related to nurses' experiences in caring for patients in the ICU, namely: 1) Comprehensive nursing care; 2) Therapeutic communication; 3) Patient comfort; 4) The role of family support; 5) The patient's psychological experience; 6) The role of nurses in ventilator weaning; 7) Obstacles and challenges. From these themes, 40 Q-statements were developed to reflect the perceptions, expectations, and experiences of participants. The findings highlight that technical interventions accompanied by empathy, therapeutic communication, and family involvement contribute significantly to the success of weaning and to patient comfort.
Conclusions: qualitative exploratory phase emphasizes that the role of nurses in ventilator weaning is multidimensional, encompassing technical, communicative, psychosocial, and spiritual aspects.
Recommendation: The findings serve as a foundation for the Q-sort and factor analysis stage using Q-methodology, with the aim of formulating a critical care nursing intervention model that is more comprehensive, humanistic, and experience-based, and which can be implemented in ICUs across Indonesia.

Keywords: ventilator weaning, ICU, nurses, therapeutic communication, Q-methodology.

INTRODUCTION

The World Health Organisation (WHO) stated in 2020 that an average of 50 million people are treated in ICUs each year. The five main conditions that cause adult patients to require ICU care are: respiratory failure or acute respiratory distress syndrome (ARDS), acute myocardial infarction, intracranial haemorrhage or cerebral infarction, percutaneous cardiovascular procedures, and sepsis requiring a ventilator. A

total of five million people are treated in ICUs each year, equivalent to approximately 20% of total acute care admissions in the United States (Viglianti & Iwashyna, 2017). The Society of Critical Care Medicine (SCCM) states that 20% to 40% of critically ill patients require respiratory support with a ventilator (SCCM, 2020). In Indonesia, 3 million patients are treated in ICUs, and 45% of them are on mechanical ventilation, with a mortality rate of 36.5% (Indonesian Ministry of Health, 2020). The significant increase in the need for ventilators in Indonesia has also risen by 92% due to special conditions such as extraordinary events and pandemics (Burhan et al., 2023).

The experience of patients on mechanical ventilation is a complex one that involves physical and emotional changes. A study of the experiences of patients who were intubated while conscious and still receiving minimal doses of sedation found that they could still experience emotional distress, namely frustration due to inadequate communication (Prime et al., 2016). Based on this study, it is known that 75% of patients experience pain, 50% experience discomfort, and 31% experience frustration. Several studies have suggested that critically ill patients using ventilators in the ICU experience stress, anxiety, frustration, and helplessness (Bulbuloglu et al., 2022, Jonkman et al., 2020). Patients' experiences while using ventilators are described as negative, such as feelings of concern, fear and anxiety, torment, the desire to escape, loneliness, neglect, a desire to be respected, a desire to talk and communicate, feelings of misunderstanding, a desire for psychological support from family, a feeling of violated privacy, and disorientation in terms of environment, time, and place (Labaf et al., 2022). This is a very important issue in the ICU because verbal and nonverbal communication is necessary in building therapeutic relationships.

Interactions between patients and nurses in the ICU are intensive. The equal relationship between nurses and patients to achieve health targets as planned by nurses is part of the concept of caring proposed by theorist Jean Watson. In addition, interactions between nurses and patients are also therapeutic relationships that can improve patient health and well-being (Kornhaber et al., 2016). However, in practice, nursing interventions in the ICU are still dominated by a focus on physical aspects, with suboptimal therapeutic interactions due to high workloads, deteriorating patient conditions, time constraints, and a lack of awareness of the importance of these relationships (D'Arco et al., 2016, Vranas et al., 2022). Other components, such as empathy, active listening, cooperation with patients, providing spiritual support, and understanding unmet needs, are also important but have not been widely researched, especially in the field of critical care nursing. Therapeutic relationships should form the basic of nursing interventions that can improve the condition of ventilator-dependent patients.

Nurses can reduce the negative effects of ventilator use, one of which is by reducing the duration of ventilator use (Saunders and Georgopoulos, 2017). ICU nurses play a central role in ventilator management, particularly focusing on interventions that can improve patient readiness for ventilator weaning (Ward and Fulbrook, 2016). One of the significant roles of nurses in the ICU is to assess the patient's readiness for weaning and ensure the patient's comfort while using a ventilator (Burns, 2012, Moraes et al., 2019, Mutajir and Widyaningtyas, 2022). Comfort in the context of intensive care has several meanings: comfort in relation to the ICU care situation, comfort in relation to the people around them, comfort in relation to the place, and comfort in relation to objects and materials (Olausson et al., 2019). Improving comfort in the use of mechanical ventilation is essential so that patients can be weaned off in accordance with Kolcaba's comfort approach, which explains four contexts: to improve comfort, nurses need to pay attention to physical, psychospiritual, environmental, and socio-cultural aspects (Alligood, 2017).

Ventilator weaning is a critical stage in the care of patients in the ICU that requires collaboration, clinical skills, and sensitivity in building therapeutic relationships. This process is not only physiological, but also involves the psychological, social, and spiritual aspects of the patient and family support. Several studies have shown that nurse-led weaning protocols can improve extubation success rates and reduce ICU length of stay (Hirzallah et al., 2019, Blackwood et al., 2011). However, nurse’s experiences as the frontline implementers of weaning care have been rarely explored, particularly in the Indonesian context. Previous studies emphasise the importance of patient participation, the patient's

psychological experience during ICU, and family involvement in strengthening the quality of critical care. (Sundler et al., 2019, Laerkner et al., 2015, Burns et al., 2019). Therefore, this study aims to explore the experiences of ICU nurses in the ventilator weaning process as a basis for developing a Q-methodology based nursing intervention model.

METHOD

Study Design

This study employed a qualitative research approach, which is part of conducting a mixed-method Q-methodology approach. This study had three main steps: (i) in-depth interview, (ii) thematic analysis, (iii) Q-set development.

Population, Samples, and Sampling

The population of this study is the ICU nurses. The number of participant are 10 ICU nurses. The inclusion criteria are: ICU nurses with 2 years working experience, has a critical care nursing certification and bachelor nursing degree.

Instrumens

The qualitative research aspect in Q-methodology starts with the development of the statements for Q-set, using in-depth interview method. This aim to gather participants' words and views. As a qualitative research, the main instrument is the author itself. In the interview, author provide interview guidelines that consist of some questions to exploring participants meaning. The interview process used a recorder, then verbatim was conducted and analysis was performed using ATLAS software.

Procedure

The interviews were conducted face-to-face in a comfortable room with guaranteed privacy, lasting 45–60 minutes per participant. Each participant signed an informed consent form. Interview transcripts were anonymised using participant codes (P1–P10). Data validity was strengthened through triangulation of sources, discussions with experts, and member checking with participants to ensure accuracy of meaning.

Data Analysis

Data analysis was conducted using a thematic approach. Each transcript was read repeatedly, and significant statements were identified. Important statements were grouped into seven main themes: (1) comprehensive nursing care, (2) therapeutic communication, (3) patient comfort, (4) the role of family in support, (5) the patient's psychological experience, (6) the role of nurses in weaning, and (7) barriers in practice.

Ethical Clearance

This research has been approved by the Research Ethics Committee of the University of Indonesia Hospital with protocol number: 2024-07-128 and ethical approval letter number: S-117/KETLIT/RSUI/VIII/2024.

RESULTS

Table 1 . Demographic Data Characteristics of Participants (N=10)

Characteristics	N	%
Age		
25 - 30 Years	5	50
30 - 35 Years	3	30
35 – 40 Years	1	10
Nursing Career Ladder		
Clinical Nurses 2	7	30
Clinical Nurses 3	3	70
Educational Background		
Bachelor Nursing (Professional)	10	100
Work duration		
2 – 5 years	9	90
6 years	1	10

Table 1 describes demographic data distribution. A total of 10 participants were included in this study. The age distribution indicated that half of the participants (50%) were between 25–30 years old, while 30% were aged 30–35 years, and only 10% were within the age range of 35–40 years. Regarding the nursing career ladder, the majority were Clinical Nurses 2 (70%), while the remaining 30% were Clinical Nurses 3. All participants held a Bachelor of Nursing (Professional) degree, reflecting a uniform educational background (100%). In terms of work duration, most participants (90%) reported having between 2–5 years of working experience, whereas only 10% had worked for 6 years.

The results of the exploration of 10 ICU nurse participants revealed seven major themes related to nurses' experiences in caring for patients in the ICU, namely: 1) Comprehensive nursing care; 2) Therapeutic communication; 3) Patient comfort; 4) The role of family support; 5) The patient's psychological experience; 6) The

role of nurses in ventilator weaning; 7) barriers in practice. Table 2 represent the classifications of the finding.

Table 2. Qualitative Analysis Table

Statement	Coding	Category	Theme
"....oral hygiene, we check the pressure cuff, because we need to know what the pressure is. If it is too high, it can damage the mucosa inside, so we prevent injury as well...." (P3) *"Every action is recorded in detail to ensure continuity of care…" (P5)*	ICU Daily routines	Monitoring, infection prevention, nutritional fulfillment, hygiene, documentation, discharge planning	Comprehensive nursing care
"...Even if the patient is unconscious, we still greet them and explain the procedure..." (P3) *"...Continue to communicate with the patient, for example, you can also video call their family...." (P10]*	Verbal and non verbal communication	Verbal and nonverbal communication, explaining actions, building trust, touch	Therapeutic communication
"....Patients are more cooperative when they feel comfortable with oral hygiene (P4) *"...That's what I mean, it's like a comfort check to see if there's any tightness or not..." (P8)*	Comforting	Oral hygiene, suction, repositioning, murotal, acupressure, environmental comfort	Patient comfort
"The presence of family, even through video calls, is very helpful" (P6) *Every morning, we communicate the patient's condition to the family." (P1)*	Family relationship	Family presence, video calls, prayers, discharge planning education	Family support
"Many patients feel anxious and fearful during the weaning process…" (P2) *"Sometimes theyl more anxious. People who like to call out are usually anxious. Because they are impatient…"(P7)*	Patient's condition	Anxious, fearful, restless, resigned, crying, spiritual support	The patient's psychological experience
"…Nurses most often monitor patient response during extubation trials" (P2). *"…Take a deep breath in and out, take a deep breath in and out, that will help your lungs expand better" (P5)*	Weaning Intervention	Sedation reduction, breathing exercises, hemodynamic observation, extubation trial	The role of nurses in ventilator weaning
….Burnout is also a challenge, because we must always be	Inhibiting	Communication	Obstacles and

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Statement	Coding	Category	Theme
patient when dealing with critical patients" (P4) *So that's it, the obstacle is that sometimes there are too many things to pay attention to, so sometimes, um, what do you call it, the signs from small patients sometimes go unnoticed by..." (P6)*	factors	limitations, burnout, uncooperative patients, limited medical equipment	challenges

The significant statements of each themes are below:

Comprehensive Nursing Care

"We don't just focus on the ventilator, but also on how patients continue to receive basic care such as hygiene, nutrition, and infection prevention." (P2)

"Every action is recorded in detail so that continuity of care is maintained, including when patients are being prepared to go home." (P5)

Therapeutic Communication

"Even if the patient is unconscious, we still greet them, introduce ourselves, and explain what we are doing. This makes the patient feel valued." (P3)

"If the patient is conscious but has difficulty speaking, we usually use a whiteboard or hand signals." (P7)

Patient Comfort

"Patients are more cooperative when they are made comfortable, for example, with oral hygiene, suction, or repositioning." (P4)

"In addition to routine procedures, we also play murotal to calm patients." (P8)

The Role of Family in Support

"The presence of family, even through video calls, is very helpful; patients appear calmer." (P6)

"We educate families from the outset so that they are prepared to continue care after the patient is discharged." (P9)

Patient Psychological Experience

"*Many patients are anxious and afraid during the weaning process, so we have to give them a lot of encouragement." (P1)*

"Some patients cry when the ventilator is removed, perhaps because they feel a mixture of relief and fear." (P10)

The Role of Nurses in Ventilator Weaning

"Nurses are the ones who most often monitor the patient's response during extubation trials." (P2)

"We slowly reduce sedation while observing, ensuring stable conditions." (P7)

Barriers and Challenges

"Sometimes patients are uncooperative and difficult to engage in breathing exercises." (P5)

"Burnout is also a challenge, as we must always be patient when dealing with critically ill patients with limited equipment." (P4)

DISCUSSION

The results of this study indicate that the role of nurses in the ventilator weaning process is multidimensional, encompassing clinical, communication, comfort, family support, and psychological aspects of the patient. These findings are consistent with the literature emphasising the importance of nurse-led weaning protocols in improving extubation success (Blackwood et al., 2011; Hirzallah et al., 2019). Furthermore, Hirzallah's (2019) study confirms the effectiveness of nurse-led weaning protocols in reducing ventilation duration.

Therapeutic communication has been proven to be important in building patient trust and participation, as emphasised by Nilsson et al. (2019) that patient participation is rooted in mutual trust, learning, and reciprocity. Patients' psychological experiences, such as anxiety, fear, and liminal conditions during ICU stay, are consistent with the meta-synthesis by Egerod et al. (2015), which describes patients as being on the threshold of existence between life and death.

Findings regarding the role of family in providing support are also consistent with Burns et al. (2018), who highlight family involvement as a protective factor in improving the quality of care and reducing post-ICU stress. Other studies even emphasise that families can function as an

extension of the patient in supporting participation (Slettmyr et al., 2022).

Barriers such as patient communication limitations, nurse's emotional burden, and healthcare facility limitations indicate a gap between theory and practice. This reinforces the need for a systematic therapeutic relationship-based nursing intervention model to support successful weaning in Indonesian ICU's

The results of the thematic analysis were then developed into questions for the Q-sort instrument. There were 40 questions that were returned to participants to determine their assessment of the importance of each theme. The Q-sort process was a preliminary stage before conducting quantitative testing as part of the Q-methodology approach (Table 3)

Table 3. Q-sort Develelopment

No	Theme	Statement Q
1	Comprehensive nursing care	Nurses always monitor patients' conditions thoroughly during each shift.
2	Comprehensive nursing care	Nurses evaluate the function of vital organs before starting ventilator weaning.
3	Comprehensive nursing care	Nurses ensure that medication and fluids are administered according to the needs of critical patients.
4	Comprehensive nursing care	Nurses pay attention to patient's nutritional needs during the treatment process in the ICU.
5	Comprehensive nursing care	Nurses provide comprehensive nursing care, not just focusing on ventilators.
6	Comprehensive nursing care	Nurses always assess the patient's readiness comprehensively before the weaning process.
7	Therapeutic communication	The nurse provides clear information to patients regarding the ventilator procedure.
8	Therapeutic communication	Nurses use simple language so that patients can easily understand.
9	Therapeutic communication	Nurses use body language or communication aids to understand patients.
10	Therapeutic communication	The nurse listened attentively to the patient's complaints.
11	Therapeutic communication	The nurse answered the patient's questions patiently and empathetically.
12	Therapeutic communication	Nurses maintain eye contact to create a sense of security in patients.
13	Patient comfort	The nurse adjusted the patient's position to reduce discomfort.
14	Patient comfort	Nurses manage patient's pain appropriately during the weaning process.
15	Patient comfort	Nurses ensure that the ICU environment remains calm and conducive to patient comfort.
16	Patient comfort	Nurses respond quickly when patients show signs of discomfort.
17	Patient comfort	Nurses maintain the cleanliness and tidiness of patient's beds.
18	Patient comfort	Nurses pay attention to patient's need for rest during the treatment process.
19	The role of the family in support	Nurses involve families in the patient care process.
20	The role of the family in support	The presence of family members helps to calm anxious patients.
21	The role of the family in support	Nurses provide families with the opportunity to offer emotional support.
22	The role of the family in support	Family involvement helps speed up patient recovery.
23	The role of the family in support	The nurse clearly explained the patient's condition to the family.
24	The role of the family in support	Nurses facilitate positive interactions between patients and their families.

25	The psychological experience of the patient	Patients often feel anxious when undergoing the process of ventilator weaning.
26	The psychological experience of the patient	Patients feel afraid if they cannot breathe without a ventilator.
27	The psychological experience of the patient	The patient needs reassurance from the nurse to calm down.
28	The psychological experience of the patient	Patients feel frustrated when communication with nurses is hindered.
29	The psychological experience of the patient	The nurse's attention can help reduce patient anxiety.
30	The psychological experience of the patient	Emotional support from nurses makes patients feel safer.
31	The role of nurses in ventilator weaning	Emotional support from nurses makes patients feel safer.
32	The role of nurses in ventilator weaning	Nurses collaborate with the medical team to determine readiness for weaning.
33	The role of nurses in ventilator weaning	Nurses continuously monitor vital signs during the weaning process.
34	The role of nurses in ventilator weaning	Nurses motivate patients to actively participate in weaning.
35	The role of nurses in ventilator weaning	The nurse adjusts the ventilator mode according to the patient's condition.
36	The role of nurses in ventilator weaning	Nurses should take immediate action if complications arise during weaning.
37	Patient's expectations of nurses	Patients expect nurses to be responsive to their needs.
38	Patient's expectations of nurses	Patients want nurses who are empathetic in everything they do.
39	Patient's expectations of nurses	Patients expect nurses to provide honest and transparent information.
40	Patient's expectations of nurses	Patients want nurses facilitate their spiritual needs.

The development of the Q-sort with 40 statements in this study represents a systematic effort to translate rich qualitative findings into a structured tool that can capture subjective perspectives of ICU nurses and patients regarding ventilator weaning care. Following established methodological principles, the statements were derived from in-depth interviews and thematic analysis, ensuring that the Q-set reflects the authentic voices of participants across diverse domains such as comprehensive nursing care, therapeutic communication, patient comfort, family support, psychological experiences, nursing roles in ventilator weaning, and patient expectations

The process began with the construction of a concourse, encompassing the full range of ideas and experiences articulated during interviews. Through iterative thematic analysis, overlapping statements were refined and reduced to a manageable set of 40 items, with attention to clarity, balance, and representativeness across themes. This approach aligns with best practice in Q methodology, where transparency in the generation and selection of Q-set items is crucial for ensuring content validity (Churruca et al., 2021). Recent methodological reviews emphasize that grounding Q-sets in qualitative data enhances ecological validity and ensures that the subjective dimensions under investigation are contextually relevant (Kirschbaum et al., 2025, Klein, 2022)

The primary aim of developing this Q-sort is to support the design of a nursing intervention model for ventilator weaning. By asking participants to prioritize and rank these statements, the Q-sort reveals patterns of subjectivity which shared viewpoints that indicate how different groups value or interpret aspects of nursing care. Such insights are particularly useful in intervention development, where tailoring care models to stakeholder perspectives enhances both feasibility and acceptability (van Oortmerssen et al., 2025). For example, identifying that one cluster of participants strongly emphasizes

therapeutic communication, while another prioritizes family involvement, suggests that a flexible or adaptive intervention model may be more effective than a one-size-fits-all approach.

CONCLUSION

The experiences of nurses in the ventilator weaning process within the intensive care unit (ICU) indicate that their responsibilities extend beyond technical tasks to encompass communication, comfort, family support, and patient psychology. The challenges encountered in practice highlight the necessity for a nursing intervention model grounded in therapeutic relationships to enhance weaning success. This study contributes to the advancement of critical nursing practice in Indonesia and lays the groundwork for further research employing the Q-methodology approach. The findings from this research could inform the development of a model for nursing intervention in critical care settings. This model should include systematic intervention procedures aimed at enhancing patient comfort during weaning and augmenting the therapeutic capabilities of ICU nurses. The model should supported by a checklist, documentation prompts, and fidelity audits.

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Conflict of Interest

The Authors declares that there is no conflict of interest.

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