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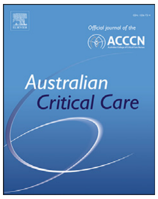

Research paper

Critically ill patients' experiences of discomfort and comfort in the intensive care unit: A qualitative descriptive study

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ABSTRACT

Background: The physiological state of critically ill patients is severely impaired by illness or trauma and is uncomfortable. Such experiences cause long-term anxiety and post-traumatic stress disorder.
Objective: This study aimed to understand discomfort and comfort based on the experiences of critically ill adult patients in the intensive care unit and to explore ways to improve their comfort.
Methods: This qualitative descriptive study was conducted with 15 critically ill patients (age range: 46–81 years; six females) in the intensive care unit using semistructured interviews and participant observation. The data collected were analysed using Braun and Clarke's thematic analysis. Data were collected from the intensive care unit and general ward of a university hospital in Japan.
Findings: Six themes related to discomfort and comfort were identified. The three themes related to discomfort were "overlapping uncertainties", "being unable to control physical discomfort", and "having to endure psychologically and situationally". The three themes related to comfort were "feeling connected brings calm", "routine care relieves pain and thirst", and "ease when one can decide for oneself". Participants' discomfort involved physical and psychological factors and was related to treatments, procedures, care, and the environment. Moreover, more than half of the patients endured unmet needs. Comfort was brought about by providing routine care for physical discomforts that critically ill patients often experience, feeling alive and connected to others and encouraging independence.
Conclusion: Recognising the potential for physical and psychological discomfort, as well as communication and other difficulties, in critically ill patients is crucial. Patients may also experience discomfort when healthcare providers take the lead, which underscores the importance of involving patients in their care. By showing respect for patients' intentions and involving them in decision-making, healthcare providers can improve patient comfort and promote a more collaborative approach to care.

1. Introduction

1.1. Meaning of comfort in critical care

Providing comfort is a central goal in nursing. Comfort is the immediate experience of strength when one's needs for relief, ease, and transcendence are met in four contexts (physical, psychospiritual, social, and environmental).[1] In contrast, discomfort is an unpleasant feeling or sensation or a negative state, and one's natural response to it is to avoid or reduce it via actions or verbal or nonverbal behavioural cues.[2] Based on the patient's response, practitioners must focus not only on treating discomfort symptoms but also on providing comfort.[3]

However, in critical care, comfort needs are complex. The physiological state of critically ill patients is severely impaired by illness or trauma and is markedly uncomfortable. Physically, they experience discomforts such as pain,[3] dyspnoea,[4] and thirst.[5–7] Psychologically, they are prone to feelings of helplessness and vulnerability due to their inability to communicate and the lack of a sense of control.[3,8] Such experiences can not only reduce their

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comfort but also cause long-term anxiety and post-traumatic stress disorder.[9]

In addition, the implications of the intensive care unit (ICU) environment and the presence of healthcare professionals must be considered to improve their comfort. Olausson et al.[10] described comfort from theoretical and empirical perspectives, focussing on the ICU environment, as related to feeling close to nature, individuals' intentions, past experiences, understanding the situation, and being able to move without strain. Synonyms for comfort were also indicated, such as satisfaction, calm, relaxation, release, peacefulness, and strengthening. Focussing not only on the patient's illness or injury but also on discomfort symptoms caused by the ICU-specific environment is necessary to improve comfort. Hojjatoleslami et al.[11] identified the theme of the “nurse's healing presence” and showed that it is a crucial factor in all aspects of complex and critical illness and hospitalisation situations for patient comfort, with immediate and long-term positive outcomes.

1.2. *Comfort needs and care perspectives in critical care*

In order to provide comfort care, it is necessary to understand how patients perceive discomfort and comfort. Several metasyntheses have explored discomfort and comfort based on the experiences of ventilated patients. Carruthers et al.[12] described how enduring uncomfortable medical procedures, such as ventilation, endotracheal suctioning, injections, and position changes, exhaust patients mentally and physically and how health professionals' personalised care and trust positively influence patients' experiences. Danielis et al.[13] found four themes in their metasynthesis: “the effect of intense stress on the body's systems”, “the induced negative emotional situations”, “the feeling of being cared for in a hospital setting”, and “perceived support from family and loved ones”. Moreover, “feeling comforted” was a frequent code across studies. In both studies, an important resource for patients' physical and psychological discomfort was the presence and care of healthcare professionals. Wensley et al.[14] explored the perspectives of patients undergoing heart surgery regarding comfort in acute care. They found that understanding the patients' needs during their interactions with healthcare staff is important for improving their comfort. Berntzen et al.[15] indicated that a gap exists between the comfort needs of ICU patients and nurses' achievements in fulfilling them and that discomfort is an inevitable part of the critical illness trajectory. Thus, although healthcare professionals' care improved patient comfort, there were unmet medical needs and discomfort. This finding implies a lack of comfort care for critically ill patients. Comfort is an essential component of care and should be assessed from patients' perspectives.[1] This highlights the need for an in-depth exploration of patient experiences, explicitly focussing on discomfort and comfort.

Many studies describing the experiences of critically ill patients have been conducted in Europe and the United States, particularly in the Scandinavian countries. Because culture, ethnicity, and environment influence comfort, such studies must be conducted in different areas of the healthcare environment. It is imperative to listen to patients’ experiences globally, and further research is needed.[13] A local understanding of cultural changes and the most effective interventions for transferring knowledge is crucial for evidence-based medicine.[16] Therefore, studies should be conducted in clinical settings in which critically ill patients receive care.

In stressful healthcare situations, where comfort needs are high, the goal is to provide enhanced comfort compared to the previous baseline.[1] Effective comfort care must be provided by understanding both discomfort and comfort among critically ill patients. Therefore, this study aimed to understand discomfort and comfort based on the experiences of critically ill adult patients in the ICU and to identify ways to increase their comfort.

2. Methods

2.1. *Design*

We performed a qualitative descriptive study to comprehensively explore participants’ experiences in plain language.[17]

2.2. *Setting*

Data were collected in the ICU and general ward of an 800-bed university hospital in a rural city in Japan. The ICU had 20 beds, of which two were private and the others were public. Sixty nurses worked in the ICU, where data were collected. Two of them had master's degrees, and three were certified nurses in critical care by the Japanese Nurses Association. Each nurse was responsible for one to two patients and worked two shifts: one during the day and the other at night. During data collection, although the impact of the coronavirus disease 2019 (COVID-19) was waning, most visits were restricted.

2.3. *Participants*

The participants were adult patients in the ICU for more than 12 h. They were selected using purposive sampling.[18] The first author asked adult patients in the emergency department or cardiac surgery unit who were scheduled to be admitted to the ICU to participate in the study in a face-to-face setting. Fifteen patients agreed to participate, whereas five declined. The participants had never met the interviewer. Patients who were awake, could remain aware of the situation, and could speak and understand Japanese were included in the study.

No participants were sedated when interviewed. Additional interviews were conducted with most participants 3 to 8 days after ICU discharge. Unable to schedule an interview with them, one participant (Patient 9) could not be interviewed post ICU discharge. The average age of the participants was 65.3 years (range: 46–81 years), and most were male (60.0%). All participants had cardiovascular diseases, and 14 had undergone surgery.

2.4. *Data collection*

Data were collected from May to September 2022 through semistructured interviews[19] and participant observations.[20] The level of participation in the observation was "observer as participant". The first author conducted semistructured interviews one to four times per participant in the general ward and at the ICU bedside. These interviews were conducted in the absence of nonparticipants and were recorded on a digital voice recorder with participants' consent. Prior permission was obtained from the ICU clinician and the attending physician for the first author to conduct participant observation in the ICU. Participant observations were conducted before and after the interviews in the ICU. Participants' words, facial expressions, and behaviour were recorded in the field notes during vital sign measurements, mobilisation, bed bathing, and procedures, as well as in the ICU environment. To preserve the patient's experience, brief field notes were taken in the clinical setting and elaborated immediately after leaving the ICU. Data collection was concluded upon obtaining duplicate data.

Data on participants' characteristics (age, sex, diagnosis at the time of admission, surgery, duration of mechanical ventilation, and duration of ICU stay) were collected from electronic medical records according to their face sheet (Table 1). The interview guide

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Table 1
Participant characteristics.

Patient number	Age	Sex	Admission diagnosis	Duration of MV (hours)	Duration of ICU stay (hours)	Number of interviews	Duration of interviews in the ICU (minutes)	Duration of interviews in general ward (minutes)
1	64	M	Acute aortic dissection Stanford B	0	41	2	20	42
2	48	F	Pulmonary stenosis	2.5	17	2	11	25
3	74	F	Thoracic aortic aneurysm	22	41.5	2	15	22
4	66	M	Angina pectoris	113.5	280	2	25	44
5	57	F	Mitral insufficiency	4	18	2	21	26
6	70	M	Thoracic aortic aneurysm	13	64.5	3	15	48
7	62	M	Aortic stenosis	4	65	3	28	23
8	70	M	Abdominal aortic aneurysm	0	19.5	2	18	41
9	81	F	Aortic stenosis	3	19.5	1	12	0
10	62	M	Abdominal aortic aneurysm	0	16.5	2	18	29
11	80	M	Acute thromboembolic lower limb arterial occlusion	0	16.5	2	15	31
12	46	M	Hypertrophic cardiomyopathy	2.5	20.0	2	8	50
13	70	F	Tricuspid regurgitation, Mitral insufficiency	68.5	185	4	43	27
14	76	F	Thoracic aortic aneurysm	17	65.0	2	21	14
15	53	M	Chronic aortic dissection	13.5	87.0	2	2	27
	Range (mean) 46–81 (65.3)			Range (mean) 0–113.5 (17.6)	Range (mean) 16.5–280 (63.7)		Range (mean) 2–43 (18.1)	Range (mean) 0–50 (29.9)

Note: M: male; F: female; MV: mechanical ventilation; ICU: intensive care unit.

consisted of open-ended questions based on a literature review[14,21,22] and the authors' experiences in the ICU. The sample questions were as follows: What were your experiences in the ICU? Have you ever felt comfortable in the ICU? Have you ever felt uncomfortable in the ICU? What were the causes of your comfort and discomfort? The questions were tailored to fit the participant's narrative to elicit their feelings and thoughts.

2.5. *The stance of the researchers*

The first author had 15 years of clinical experience as a registered male nurse and had worked in emergency rooms and ICUs. The first author was a university researcher and was not involved in the treatment or care of patients in the ICU of the hospital where the participants were admitted. All research members had extensive clinical experience in intensive care, and four were affiliated with universities and had experience in qualitative studies.

2.6. *Data analysis*

The data collected from semistructured interviews and participant observations were uploaded to NVivo Windows (QSR International) and analysed using thematic analysis.[23] Table 2 lists the six steps of data analysis.

2.7. *Rigour*

Rigour was ensured as follows. Raw data and codes were shared with all researchers and discussed to build consensus and understanding and to make modifications. Participants' check was performed with one participant. We checked with the participant whether the interpreted results reflected patients' comfort and discomfort in the ICU. Although the analysis was led by the first author, a qualitative researcher supervised the analysis process. To ensure trustworthiness, repeated meetings with ICU nurses were held to share findings and confirm the accuracy of the data analysis.

Dependability, credibility, and confirmability were also considered during this process. To ensure transferability, the themes were described in detail by citing participants' narratives.[24]

2.8. *Ethical considerations*

This study was conducted in accordance with the Declaration of Helsinki.[25] Owing to concerns about the risk of coercing patients to participate in the study, the study was explained by the first author, who was not involved in the treatment or care of patients in the ICU. The participants were informed that they could withdraw from the study at any time. They were also explained that if the interview became distressing, it would be discontinued. Verbal and written informed consent was obtained from all the participants. In the ICU, the participants were contacted after confirming with the in-charge nurse that their condition was stable. Participants' consent was reconfirmed during the interview and participation observation. No payments were made to the participants. The recorded interviews were anonymised during transcription. The study protocol was approved by the Nagasaki University Hospital clinical research ethics committee (approval number: 22041819).

3. Findings

From the data collected, 823 codes were extracted describing discomfort and comfort in the ICU. These codes were categorised based on their patterns, similarities, and differences. The categorised codes were named based on their characteristics, and 17 subthemes were identified. Out of six themes, three themes related to discomfort, including “overlapping uncertainties”, “being unable to control physical discomfort”, and “having to endure psychologically and situationally”, and three themes related to comfort, including “feeling connected brings calm”, “routine care relieves pain and thirst”, and “ease when one can decide for oneself”, were obtained based on the patterns in the subthemes, as shown in Table 3.

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Table 2
Six steps of thematic analysis (Braun and Clarke, 2006).

	Thematic analysis
1	Familiarising oneself with the data The authors repeatedly reviewed the content of the interviews and field notes to check the accuracy of the transcriptions and made corrections if required. The content of the verbatim transcripts was read repeatedly to grasp the overall meaning, and initial ideas were noted.
2	Generating initial codes The verbatim transcripts were re-read line by line and coded into meaningful units concerning patients' comfort and discomfort experiences.
3	Searching for themes The codes were categorised into potential themes based on their patterns and similarities.
4	Reviewing the themes The potential themes were reviewed to ensure that they reflected the meaning of the extracted codes and the overall data set.
5	Defining and naming the themes We determined the aspects of the data captured by each theme. Themes and subthemes were identified through a detailed analysis and refinement of the individual themes and data.
6	Producing the report

After a detailed description of the themes and subthemes, relevant interview (e.g., Patient 1) and field note (e.g., Field note 1) data were presented as examples.

3.1. Discomfort among critically ill patients in the ICU

Participants' discomfort involved physical and psychological factors and was related to treatments, procedures, care, and the environment. Three themes related to discomfort are described in the following.

3.1.1. Overlapping uncertainties

In the ICU, the participants were uncertain about their surroundings, including the time, place, physical condition, and the future.

3.1.1.1. Being confused due to delusion and realistic dreams. Several participants experienced delusion and were unsure whether it was real or a dream. The patients described this as a dream-like, fearful experience they distinctly remembered, even

Table 3
Themes and subthemes of discomfort and comfort in the ICU.

	Theme	Subtheme	Researchers' field notes and participants' quotations
Discomfort	Overlapping uncertainties	Being confused due to delusion and realistic dreams	I thought I was being controlled by machines attached to my hands and neck. (Patient 1)
		Being unable to understand one's surroundings and condition	There is nothing to do but look at the ceiling. Sometimes, I just look to the right or left. (Patient 4)
	Being unable to control physical discomfort	Experiencing pain	After all, pain comes first. It is still a struggle against pain. (Patient 12)
		Experiencing severe thirst	I don't feel anything without food. It's just that I'm thirsty. (Patient 4)
		Not seeing improvements in physical condition	I had arrhythmia and palpitations and couldn't sleep for about 2 days because of it. (Patient 2)
		Not being able to move one's body as desired	I think the most painful thing is not being able to move my body the way I want to. (Patient 3)
	Having to endure psychologically and situationally	Not being able to find the call button	When the patient scratched his head with his left hand and let go of the call button, he lost track of where the button was and groped for it. (Field note 9)
		Not being able to speak	I had no way of communicating when phlegm was stuck, so when someone passed by my bed, I asked them to take a tissue by gesturing with my hand. (Patient 10)
		Wanting to cause as little trouble as possible	I wanted to cause as little trouble as possible. (Patient 11)
		Obey with unchangeable situations in health care	The nurse lowered the bed without explaining it to the patient. The patient looked a little surprised but said nothing. (Field note 6) It's medical care, so I don't think I have a choice anymore. (Patient 8)
Comfort	Feeling connected brings calm	Talking to a friendly healthcare professional provided relief	I am still concerned about what will happen, so I am relieved when a medical professional explains to me "This is roughly what will happen". (Patient 7) I think my symptoms improved a lot because I talked to them; they listened to me, and they were sincere. (Patient 10)
		Feeling relieved after surviving	When I woke up, I thought oh, I'm alive, I'm okay. (Patient 5)
		Feeling reassured because of the presence of family	It is a relief to see my children. (Patient 11)
	Routine care relieves pain and thirst	Relief with analgesics and position changes	It was a pain, but they give you painkillers right away… That was a great help. (Patient 15)
		Quenching thirst with water	The patient holds a glass of water in his hand and gargles three times. His thirst is reduced, and his facial expression becomes calm. (Field note 10)
	Ease when one can decide for oneself	Wanting to do things oneself	I want to do what I can, even if it's slowly, without always having to depend on medical professionals. (Patient 3)
		Glad to have someone do something one cannot do	I know I'm asking a lot, but I can't move on my own, so it was refreshing to have my body washed. (Patient 4)

ICU: intensive care unit.

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after leaving the ICU. One participant said that he felt as if the stretcher on which he was lying was moving. He told some nurses about it, but they did not believe him.

> *"I don't think the stretcher's brakes were on. The stretcher was moving backwards, little by little, bit by bit. When I told the nurses, they didn't believe me"* (Patient 4).

One participant repeatedly recounted his experience of having a central venous catheter or arterial line inserted and said that it controlled his body. They also talked about how they were aware of their own death in the space between reality and dreams. Sometimes, they joined their hands and prayed to their ancestors. Being aware of this possibility was terrifying, and some patients had tears in their eyes when they talked about it.

> *"I was worried. I thought I was no longer in this world"* (Patient 4).

3.1.1.2. Being unable to understand one's surroundings and condition. When participants woke up and realised they were in the ICU, they were unaware of their physical condition. One participant also shared that when he was in the bed, he could only see the ceiling; there were calendars and clocks hanging on the walls of the ICU, but he could not notice them. Even if he had noticed them, he said he could not see them clearly. Participants struggled to get a sense of the day and time.

> *"My head is fuzzy, my body doesn't move, and I don't know what state I'm in"* (Patient 5).

> The patient spends most of his time in a supine position. He often looks at the ceiling and does not move (Field note 1).

> *"There was a clock over there (right wall), but I was blind and didn't know what time it was"* (Patient 2).

3.1.2. Being unable to control physical discomfort

All participants experienced pain, and more than half had a dry mouth. Other physical discomforts were uncontrollable dyspnoea, palpitations, nausea, and fatigue. The inability to move one's body to deal with these discomforts was also painful.

3.1.2.1. Experiencing pain. The participants experienced postoperative wound pain, pain associated with the disease, pain from procedures, and movement-induced wound pain. They were also defensive against pain.

> *"After drinking water, pain appeared in the chest area, and it took 2—3 minutes to calm down"* (Patient 14).

3.1.2.2. Experiencing severe thirst. The participants experienced severe thirst and stated that discomfort was beyond anything they could imagine.

> *"I'm already thirsty. It's like you want a drink every time"* (Patient 8).

3.1.2.3. Not seeing improvements in physical condition. Various discomforts were not controlled. The participants talked about how the moving parts of their bodies distracted them from the discomfort. The researchers observed many behaviours, such as participants rubbing their chests and gripping bed fences. The participants experienced distress and a sense of nowhere to belong.

> The patient complained of fatigue, repeatedly grabbing the bed rails with her hands, rubbing her chest area, and exhibiting other behaviours (Field note 3).

3.1.2.4. Not being able to move one's body as desired. The participants talked about the pain caused by their inability to move their bodies. They described feeling as if their immobile body did not belong to them. They also felt frustrated by their inability to do their own thing.

> *"It feels like someone else's body, not my own"* (Patient 4).

3.1.3. Having to endure psychologically and situationally

The participants endured difficulties finding the call button, being unable to speak, and wanting to cause as little trouble as possible. In addition, they experienced surprise, depression, and embarrassment about the medical environment and sudden medical treatment. The circumstances surrounding the participants, such as emergency surgeries, urgent procedures, defecation care, the ICU environment, and restricted visits, caused them discomfort.

3.1.3.1. Not being able to find the call button. The participants talked about looking for the call button, not being able to find it, and not being able to call the nurse.

> *"I was choking on phlegm and wanted to call (a nurse) to suction it out. I was looking for the call button, but couldn't find it"* (Patient 8).

3.1.3.2. Not being able to speak. Patients with artificial airways sometimes had to wait because they could not speak and communicate their intentions.

> *"If I can get the words out, I tell the nurse, but if I try to communicate with gestures, the nurse does not understand"* (Patient 6).

3.1.3.3. Wanting to cause as little trouble as possible. The patients wanted to cause as little trouble as possible for the healthcare personnel, so they looked for the right time to call for help.

> *"I tried to figure out how much I could endure it. I thought I would call a nurse if I couldn't endure it"* (Patient 5).

3.1.3.4. Obey with unchangeable situations in health care. Two participants had to undergo emergency surgery. One was depressed by the sudden event but said that he had no choice but to leave it to the doctors. Participants also expressed surprise at sudden X-rays, and other examinations and procedures, resistance to having nurses take care of their defecation, and the restrictions of the ICU environment (restricted visits, beds, lighting, noise, and so on) were unavoidable for the treatment.

> *"The doctors were like, let's remove the tubes today. I was like, 'What?'"* (Patient 2)

> (To be taken care of in defecation) *"There was some resistance. There was resistance, but I had no choice"* (Patient 1).

3.2. Comfort among critically ill patients in the ICU

The participants described comfort using words such as "calm", "ease", "overcome", "pleasant", "improve", "glad", "relieve", "wonderful", and "revive". Three themes related to comfort are described in the following.

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3.2.1. *Feeling connected brings calm*

Feeling connected to the outside world and other people was important for improving participants' comfort. The participants could feel alive and calm down by communicating with healthcare professionals, asking about their condition, feeling the passage of time, and receiving encouragement from family members. Some participants sensed the passage of time and perceived the situation based on their room's brightness or changes in healthcare professionals. However, for most participants, receiving information from their healthcare professionals was helpful.

3.2.1.1. Talking to a friendly healthcare professional provided relief. The participants talked about how the healthcare professionals explained to them individually what was happening, what to expect, and how they were praised for early mobilisation. The participants who thought that they would not be able to get out of bed the day after surgery could do so with the help of their physical therapist and nurses. They felt reassured and calm as they could understand the situation because of the healthcare professionals. They talked pleasantly about the friendliness and attentiveness of the healthcare professionals.

> *"Words are always nice to hear. When I am praised for doing something that I thought I would never be able to do because it would be too tiring, it makes me feel good"* (Patient 7).
>
> *"They listen to the smallest complaint and think, 'What can I do to fix this?' I think that this surpasses even excellent medical care"* (Patient 10).

3.2.1.2. Feeling relieved after surviving. The participants talked about their relief at being alive when they woke up after surgery and how they felt as if they had overcome their difficulties when the morning sun brightened their hospital room.

> *"I was relieved to find out that it was the morning. Ah, a day had passed. Ah, I had overcome (another day)"* (Patient 5).

3.2.1.3. Feeling reassured because of the presence of family. The participants talked about being reassured by the presence of family members over the phone or during visits. Remembering encouraging words from family members motivated the participants to do their best.

> *"My brothers and son came, and it gave me relief. He left, saying, 'Hang in there'"* (Patient 11).

3.2.2. *Routine care relieves pain and thirst*

The participants described how pain and thirst were relieved by the routine care provided by nurses.

3.2.2.1. Relief with analgesics and position changes. Most participants received pharmacological interventions, such as opioid therapy and/or intravenous acetaminophen, prophylactically and/or according to patient complaints. They also stated that they were subjected to repeated positional changes. They said that these pharmacological and nonpharmacological interventions relieved their pain.

> *"I had my body turned around repeatedly, and it helped"* (Patient 2).
>
> *"If I got sore, they put me on a drip for pain relief, and it went away"* (Patient 9).

3.2.2.2. Quenching thirst with water. The participants' verbal and facial expressions showed how their thirst was alleviated by water.

> *"I never thought it would be so hard not being able to drink water until now. Even just wetting my mouth revived me"* (Patient 2).

3.2.3. *Ease when one can decide for oneself*

Being able to decide for themselves made the participants feel relaxed, calm, and pleased.

3.2.3.1. Wanting to do things oneself. The participants said that it was important to be able to make their own decisions and do it on their own, even if it took time.

> *"When you have a choice, you feel more relaxed, like choosing something easier for today or trying a little harder"* (Patient 15).

3.2.3.2. Glad to have someone do something one cannot do. The participants felt relieved when they decided to leave what they could not do to the healthcare professionals.

> *"A physical therapist came and helped me sit up. So, I felt refreshed again. It felt good, or rather, I felt like I could entrust my body to him with peace of mind"* (Patient 14).

4. Discussion

This study aimed to understand discomfort and comfort based on the experience of critically ill adult patients in the ICU and to identify ways to improve their comfort. Consequently, six themes were identified: three related each to discomfort and comfort.

4.1. *Characteristics of discomfort among critically ill patients*

This study revealed that discomfort arose from uncertainty, pain, thirst, the ICU environment, and the inability to communicate one's needs or move one's body, including communication with healthcare professionals. These findings are similar to those found in the study by Ashkenazy et al.,[4] who found unmet patient needs to be the fundamental trigger of discomfort in the ICU. However, Ashkenazy et al.[4] excluded confused patients from their study; therefore, patients who reported suffering from delusion as part of psychological discomfort were not included. Delusion was associated with unrealistic experiences and awareness of the possibility of death. The descriptions of discomfort were associated with real events, which is consistent with the study by Berntzen et al.,[3] who reported that they were accompanied by both factual and delusional memories. The participants described actual physical discomfort as delusions, which were related to life-threatening fears. Such delusion and fear in the ICU are associated with long-term cognitive decline and post-traumatic stress disorder.[26,27] Healthcare professionals must recognise that discomfort in the ICU has long-term effects.

Eight participants reported that they had endured unmet needs. This may have contributed to their discomfort. Berntzen et al.[3] reported that patients expressed the necessity of endurance and endured pain and other discomforts. Similarly, in this study, the participants endured various discomforts in addition to pain. Even in severe situations, they attempted to be considerate of healthcare professionals and other patients as they felt that they were not the only ones suffering. It should be emphasised that critically ill patients should not endure discomfort.

Participants' endurance was also related to communication. Studies have reported that the inability to communicate effectively leads to fear, helplessness, loneliness, and decreased independence.[3,4,9,28,29] This study revealed that the inability to utter words prevented one from communicating one's intentions. Additionally, being unable to find the call button forced participants to wait patiently without a way to complain of discomfort. This situation was contrary to feeling ”reassured by having my call bell nearby”, which Tolotti et al. found.[29] We believe that this suggests a need for improved communication strategies in the ICU. Communication is a salient part of care, and nurses must be alert and adjust their communication strategies to patients' needs and communication abilities.[30] In addition, there were situations where participants accepted and endured the healthcare and ICU environment, including treatments, examinations, and care, believing they had no choice. In critical illness, the patient's voice is weak and almost unheard, making the patient compliant with caring actions.[31] Healthcare professionals must understand the vulnerability of these critically ill patients.

Furthermore, patients' facial expressions and behaviours when they experience discomfort must be noticed as these aspects may reveal the type of discomfort they are experiencing. One participant repeatedly rubbed their chest, gripped the bedrail with a distorted expression on their face, and appeared restless. They described this as fatigue. The Critical Care Pain Observation Tool and Behavioral Pain Scale are pain-rating scales that determine pain levels based on body movements.[32,33] However, it is important to recognise that patients’ behaviours do not always reveal their pain.

4.2. *Characteristics of comfort among critically ill patients*

The comfort experiences found in this study are similar to those found in other studies involving ICU patients and may contribute to strengthening the literature in this field.

Participants experienced improved comfort from receiving information about their physical condition and what to expect. They felt their bodies recovered and overcame the obstacles by listening to the words of healthcare professionals and by feeling alive. This is similar to the transcendence that Kolcaba described.[1] We found that even though the patient experienced some discomfort, they were motivated by words and found satisfaction in having a sense of recovery. In addition, the healthcare professionals' kindness and sincerity improved patients' comfort. Baumgarten and Poulsen[28] have reported that a clear and sincere presence of nurses is crucial to the patient's experience and helps alleviate their vulnerabilities, such as anxiety, fear, and loneliness. Furthermore, patients felt more comfortable when nurses spoke pleasant words in a pleasant tone and tried to cooperate with them on common issues with kindness, goodness, and respect.[12] Among healthcare professionals, nurses are always approximate to their patients, and their attitude towards patients is essential for patients' comfort. These caring attitudes are also important to promote patients' wellbeing and satisfaction with their care.[31] Timely and appropriate intervention was found to be important as routine care alleviated physical discomforts such as pain and thirst. The participants reported that analgesic administration was particularly effective for pain. Acetaminophen was prescribed as an adjunct to opioids for patients after cardiac surgery and could be administered according to patient complaints. The pain, agitation or sedation, delirium, immobility, and sleep guidelines suggest that ICU patients experience pain daily, even at rest, and that pain assessment and analgesia before the procedures are important.[34] In the ICU where the participants were admitted, patient pain was assessed using the numeric rating scale and the Critical Care Pain Observation Tool,[32] awareness was assessed using the Richmond Agitation–Sedation Scale,[35] and delirium was assessed using the confusion assessment method for the ICU.[36] The ability to administer analgesics according to patients' perception of pain effectively relieved pain.

We identified situations in which pharmacological interventions alleviated pain in ICU patients. However, other discomforts must also be addressed, as Berntzen et al.[3] described the pain as being relieved, but patients still struggled. The theory of unpleasant symptoms describes how the exact factors may influence one's experience of various symptoms, and consequently, similar interventions may be effective in alleviating more than one symptom.[37] This may also be applied for discomfort and comfort among critically ill patients. When using the taxonomic structure of comfort theory, it is important to consider all known discomforts and risk factors and that comfort obtained in one context will always affect comfort in other contexts.[1] Furthermore, patients' responses to care should be carefully monitored as healthcare professionals' care may improve comfort but may also cause discomfort.

Critically ill patients depend on others and lack a sense of control.[4,9] However, they recalled feeling significant relief when their needs were met, and they did not feel helpless.[9] In this study, it was important for patients to ask for care on their own, leaving what they could not do themselves in the hands of the nurses. Patients’ recognition and expression of their needs, even if dependent, give them autonomy and bring comfort.[38]

5. Limitations

This study involved talking to patients at their bedside, where they receive treatment and care, and observing them during their illness, providing realistic insight into patients' situations and increasing the credibility of this study. However, this study has some limitations. First, the number of patients was limited to those with cardiovascular diseases. However, as cardiovascular diseases account for more than 30% of deaths worldwide and require continuous monitoring and intensive care,[39,40] this study may have effectively described the experience of critically ill patients. Second, because the interviews were conducted in the ICU, delusion and other psychiatric symptoms may have affected their quality. However, we supplemented the data by interviewing patients again after their discharge from the ICU. Third, owing to COVID-19, ICU visits were restricted. This may have affected patients’ comfort.

6. Conclusions

This study explored patient care by focussing on the experience of critically ill patients in the ICU from both comfort and discomfort perspectives. Critically ill patients experienced various physical and psychological discomforts in the ICU, leading to communication problems, such as the loss of the call button and the inability to speak. In addition to the discomfort caused by the unique ICU environment, patients also experienced discomfort in situations where they were dependent, and therefore, the healthcare provider took the lead, regardless of the patients' intentions. This underlines the importance of involving patients in their care. By showing respect for patients’ intentions and involving them in decision-making, healthcare providers can improve patient comfort and promote a more collaborative approach to care.

Furthermore, the patients’ experiences of comfort and discomfort in this study provide perspective to examine the impact on recovery after ICU discharge and complications such as mental and cognitive disorders.

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CRediT authorship contribution statement

Yusuke Oyama: conceptualisation, methodology, formal analysis, investigation, resources, data curation, writing—original draft, writing—review and editing, project administration, Funding acquisition. **Hiroaki Yamase:** conceptualisation, methodology, formal analysis, data curation, writing—review and editing, project administration, Funding acquisition. **Kyosuke Fujita:** methodology, formal analysis, investigation, resources, data curation, writing—review and editing. **Hiroshi Tashita:** methodology, formal analysis, investigation, resources, data curation, writing—review and editing. **Tomoharu Honda:** methodology, formal analysis, data curation, writing—review and editing. **Koji Yoshida:** methodology, formal analysis, data curation, writing—review and editing. **Akira Nagata:** conceptualisation, methodology, formal analysis, investigation, resources, data curation, writing—review and editing, project administration, Funding acquisition.

Conflict of interest

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 manuscript.

Data availability statement

Due to the nature of this study, the participants did not agree for their data to be shared publicly. Thus, supporting data are not available.

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