RMJ

Original Article

Factors Associated With Transitional Stress Among Relatives During Transferring Critically Ill Patients From ICU-to-Ward

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Abstract

Background: The intensive care unit (ICU) provides effective care for critically ill patients and can significantly reduce mortality rates. However, ICU hospitalization is not only a crisis for patients, but also for their relatives, who often experience high levels of transitional stress. This stress can negatively impact their ability to provide loving care to the patient after the transfer to a general ward.

Objectives: To describe the level of transitional stress and determine the relationship between uncertainty, hope, and preparedness with transitional stress among relatives during transferring critically ill patients from ICU-to-ward.

Methods: This study used a descriptive correlational cross-sectional research design. A total of 112 participants were recruited during December 2022 to September 2023 by selecting participants randomly, following the inclusion criteria. The research instruments included a demographic questionnaire, the Herth Hope Index, the Family Relocation Stress Scale, the Care Preparedness Scale, and the Parents' Perception of Uncertainty in Illness Scale-Family Member. The reliability of the scales was 0.87, 0.88, 0.82, and 0.86, respectively. Descriptive statistics and Pearson product moment correlation were used to perform data analysis.

Results: The mean (SD) score of transitional stress was 36.5 (6.2), indicating a moderate level of stress. Uncertainty was positively correlated with transitional stress (r = 0.75, P < .001). However, hope and preparedness were negatively correlated with transitional stress (r = -0.40, P < .001; r = -0.44, P < .001 respectively).

Conclusions: Clinical nurses should develop nursing interventions to reduce transitional stress among a patient's relatives by promoting their preparedness and hope, and communicate effectively to reduce the relatives' uncertainty about the patient's illness.

Keywords: Hope, Intensive care unit, Preparedness, Relative, Transitional stress, Uncertainty

Citation: Cai WW, Samartkit N, Masingboon K. Factors associated with transitional stress among relatives during transferring critically ill patients from ICU-to-ward. *Res Med J*. 2026; 49(2):e276375. doi:10.33165/rmj.2026.e276375

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Received: 3 July 2025
Revised: 23 July 2025
Accepted: 24 July 2025
Published Online: 26 January 2026

Introduction

The intensive care unit (ICU) serves as a critical setting for the effective management and care of critically ill patients. However, due to the acute onset and severity of patients' conditions, their relatives often experience confusion, anxiety, or depression and may be at risk for posttraumatic stress.[1] Some family members also experience stress simply from being in the ICU environment, which can be perceived as aggressive, intimidating, and threatening. The ICU is frequently associated with death or permanent disability.[2-4] Therefore,

the hospitalization of a critically ill patient in the ICU represents not only a crisis for the patient, but also for their relatives, both during the ICU stay and when the patient is transferred to a general ward.[4]

The transfer of patients from the ICU to a general ward is one of the most challenging, and high-risk transitions of the healthcare system.[1, 2] This vulnerable period carries increased risk of medical errors, adverse events, readmission,[3] dissatisfaction with care, and death.[4] In addition, patient transfer from the ICU to the general ward manifests as an anxiety-inducing scenario for the accompanying relatives[2] because 50%-70% of ICU survivors suffer long-term physical, cognitive, and psychological impairment.[5]

However, the relatives can have both positive and negative responses when hearing that the patient can be transferred from the ICU to the general ward. They may experience relief, excitement, and encouragement since the transfer from the ICU as a marker of clinical improvement or stable medical conditions, allows them to reunite with and personally care for their loved one, often generating feelings of relief and optimism. Conversely, during the ICU stay, the closed management model typically restricts family visitation, limiting their ability to observe the patient's condition and understand the disease progression and prognosis. This asymmetry of information between clinicians and families fosters uncertainty. Upon transfer from the ICU to a general ward, some families may experience fear and anxiety related to unfamiliar care protocols, reduced patient monitoring, potential complications in the general ward setting, an unfamiliar environment, and a lack of knowledge about the illness during the rehabilitation phase. These factors may hinder the family's ability to provide effective support which may negatively impact the patient's recovery and prognosis.[6, 7] Disruptions of the patient environment and continuity of interpersonal relationships, in addition to the nature of the transfer itself, have been identified as a stressful situation for the patient and relatives, and this is called 'transitional' or 'relocation' stress.[8] Transitional stress has been defined as a state in which an individual experiences physiological and/or psychosocial disturbance as a result of transfer from one environment to another, and is also referred to as 'transfer stress' or 'transfer anxiety'.[9]

Furthermore, during the transition period of the patient from the ICU to the general ward, medical staff primarily focus on the patient, but disregard the physical and/or psychological changes among the patient's relatives, which increases the psychological pressure on the relatives.[6] Some studies have found that more than 75% of relatives reported transitional stress when transferring patients out of the ICU.[10] A qualitative study found that, after the ICU patient was transferred to the general ward, some relatives became alarmed by the patient's vulnerability.[5] They realized that transferring from the ICU to the ward was not the end of risk. While they knew that patients tend to get better when they leave the ICU, they do not fully understand the recovery progress, and this may exacerbate anxiety. Oh et al[11] found that the relatives of ICU-transferred patients exhibited a medium-to-high level of transitional stress.

A meta-analysis found that the psychological health of a patient's relatives was positively correlated with the patient's psychological reactions.[12] However, transitional stress may undermine the ability of relatives to care for the patient after transfer from the ICU to the general ward.[13] Schröder et al[14] suggested that if the nurses paid more attention to the relatives' physical and psychological health, the patient's disease outcomes would be better. For this reason, it is important to consider the relative's transitional stress and the factors that correlate with it and help to achieve a reduction of transitional stress, so that patients can make a smooth and safe transition.

Based on Meleis's transition theory, transitional stress refers to a response pattern that can be influenced by transition conditions. Higher transitional stress is an outcome indicator, suggesting an unsuccessful transition. The dimensions of the transition include the shift from technical and individual care to general care; from a secure environment inside the ICU to a vulnerable and unpredictable environment; and the transition from despair to independence.[1] Moreover, coming from an environment of safety in the ICU where the patient-to-nurse ratio was one-to-one and going to a ward where it is one-to-many patients, increases the relative's transitional stress.[10] Therefore, researchers should evaluate and understand the transitional stress experienced by the relatives of critically ill patients. Understanding the transition condition could help hospital staff mitigate the transitional stress experienced by a patient's relatives and help healthcare providers achieve a successful transition by managing the transition conditions to reduce the ICU transfer pressure experienced by the patient's relatives.

Uncertainty is an adverse manifestation of patient transition that is often perceived by the relative(s). During the ICU stay, a patient's relatives may feel disconcerted or insecure, which can trigger fear, anxiety, anger, or depression.[8] The stark difference between the ICU and a general ward can also cause uncertainty.[5] In China, studies found that some relatives felt uncertain about the patient's disease, which could be exacerbated by transitional stress.[15, 16] The uncertainty and the psychological burden of relatives of ICU patients were at a high level, which were the main influencing factors of transitional stress.[17]

Hope, another variable emotion during patient transition, is a concept belonging to positive psychology. Hope is described as an experience, emotion, or need.[18] As a psychological resource, hope can help individuals to respond to trauma with resilience.[19] Meanwhile, Folkman has revealed the importance of hope for people who are coping with serious and prolonged psychological stress. Furthermore, other studies have found that higher levels of hope are associated with fewer stress symptoms in the relatives of critically ill patients.[20, 21] Moreover, Zhang et al,[22] found that perceived stress was negatively correlated with each dimension of hope.

Preparedness is a condition that can affect the transition process and response. Preparedness is defined as perceived readiness for multiple domains of the caregiver role. Preparation includes preparing and planning about individual knowledge, meaning, experience, and the environment in transition.[23] The patient's relative acts as the main carer of a patient after transfer out of the ICU. There is a significant negative correlation between the preparation of the main relatives of the ICU patient and transitional stress. If the relatives are not ready to take care of and deal with the transition, it may lead to anxiety, uneasiness, and other emotions from transitional stress.[24] When it is time to transfer the patient out of the ICU, if the preparation of the relative is successful, the stress and anxiety of the transition can be reduced.[25, 26] More and more scholars pay attention to the preparation of patients before transfer from the ICU to the ward. However, there have been few reports on the relationship between preparedness and the transitional stress of the patient's relatives, which is worthy of in-depth study.

In conclusion, transferring a patient from the ICU is an important and significant potential trigger of transitional stress that can reach extreme levels.[27] From the above literature review, the researcher found that nursing services during the transition period when patients are transferred from the ICU to the general ward have been receiving more and more attention. For patients and their families, transferring out of the ICU is a positive step for managing the disease. However, the transition is also a new challenge,

and that could mean that the relatives face a new set of obstacles and experiences, such as changing the frequency of the medical and nursing team visit and changing of treatment.[28, 29] However, in China, the investigation of transitional stress among relatives who take care of a critically ill patient is limited, and there have been few studies on the relationship between transitional stress, uncertainty, hope, and preparedness. Under the guidance of Meleis's transition theory, the purpose of this research was to explore the relative's transitional stress and to examine whether preparedness, uncertainty, and hope were associated with transitional stress. The results of this research should be useful for nurses and healthcare providers to attain a better understanding of transitional stress and the factors that correlate with stress, so that they can develop appropriate nursing interventions to reduce transitional stress among patients' relatives, and facilitate the process for a successful transition, thus helping to meet the ultimate goal of patient safety and recovery after moving from the ICU to general ward.

This study aimed to describe transitional stress among relatives during the transfer of critically ill patients from the ICU to the general ward, and to determine the relationship between uncertainty, hope, preparedness and transitional stress among the relatives when transferring critically ill patients from the ICU to the general ward.

Methods

Study Design and Setting

This study employed a descriptive correlational research design. The study was conducted in the general ICU of the Second Affiliated Hospital of Wenzhou Medical University, in Wenzhou, China. The ICU has 26 beds. During the patient's admission in the ICU, their relatives communicated with the patients and medical staff every day for 10 to 20 minutes, they could see the current state of the patient, and the surrounding environment only online by video call. At the same time, the relatives could get some information about caring for patients through the network, there was an official account on WeChat, and there were some videos and pictures to educate how to take care of the patient, which the relatives studied by themselves.

Participants

The study sample was the relatives of critically ill patients who were transferred from the ICU to the general ward at the Second Affiliated Hospital of Wenzhou Medical University in Wenzhou, China. After identifying eligible participants based on the inclusion criteria, a simple random sampling technique was used to recruit the study sample. The inclusion criteria for the relatives were as follows: 1) being the patient's spouse, son/daughter, or parent(s) who continuously visited and made medical decisions when the patient was admitted to ICU; 2) being the carer during the patient's stay in the general ward; 3) being at least 18 years old; 4) having the ability to read and speak Chinese; 5) willingness to participate in the study; and 6) no history of a psychological disorder such as clinical anxiety, depression, or sleep disorder.

The inclusion criteria for critically ill patients were as follows: 1) being at least 18 years old; 2) having the Acute Physiology and Chronic Health Evaluation II (APACHE II) score of at least 15 on the day of admission; 3) had stayed in the ICU for at least 72 hours; 4) having hemodynamic stability and readiness for transferring from ICU to general ward.

(stable blood pressure, regular heart rate, no mechanical ventilation, and no other special physiological monitoring instruments).

The G*Power 3.1.9.7 program for correlational design was used to calculate the sample size for this study. The significance level was .05, statistical power was 0.90 and estimated medium effect size was 0.30. Accordingly, the study sample was 112 participants.

Instruments

In total, 5 instruments were utilized for data collection, all of which were authorized by the original authors and the Chinese version author. The demographic questionnaire was developed by the researcher, and was divided into 2 parts: information on the patient (sex, marital status, education, monthly income, payment method of medical expenses, diagnosis, length of ICU stay, pretransfer Barthel Index score, APACHE II score during the first 24 hours of ICU stay and the scores before transferring to ward, whether the first time in the ICU, feeding method, and indwelling catheter), and information of the relatives (sex, age, marital status, education, religion, relationship with the patient, monthly income, history of caring for a critically ill person, health status, and chronic illness).

The Family Relocation Stress Scale (FRSS) was used to measure the level of transitional stress. Oh et al[8] had adapted the FRSS for the relatives of patients in the ICU. This scale was back-translated into Chinese and revised by Wang et al.[30] The Chinese version of the FRSS has 14 items with 4 dimensions, including the recognition of the patient who remains critically ill (3 items), the recognition of separation anxiety (3 items), the recognition of general ward environment and care (6 items), and the recognition of transfer (2 items). Each item is rated on a 4-point Likert scale, with 1 indicating 'completely disagree', 2 indicating 'disagree', 3 indicating 'agree', and 4 indicating 'completely agree'. Items 2, 5, 6, 7, 8, 10, and 11 are scored in reverse. The total potential score of this scale is 56, with a higher score indicating more stress. A score of less than or equal to 15 is classified as 'low' stress, 16-40 is 'moderate' stress, and 41-56 is 'high' stress.[11, 17] The Chinese version of the FRSS has been tested in the Chinese population, with a Cronbach α value of 0.86. In this study, the internal consistency reliability of the FRSS was 0.88.

The Care Preparedness Scale (CPS) was used to measure the level at which relatives of the patient perceived that they were prepared for the tasks and demands in the caregiving role. The CPS was originally developed by Archbold et al.[31] Liu et al[32] translated the CPS into Chinese. The CPS comprises 8 items, with each item rated on a 5-point rating scale ranging from not at all prepared (0) to very well prepared (4). A total score of 0-32 is calculated by summing the responses for all items, with a higher score indicating feeling more prepared. The scale had exhibited good validity and reliability among relatives of patients in palliative care. The Chinese version of the CPS has been tested in the Chinese population, with a Cronbach α value of 0.90. In this study, the internal consistency reliability of the CPS was 0.82.

The Parents' Perception of Uncertainty in Illness Scale-Family Member (PPUS-FM) was used to measure the level of uncertainty. It is a self-rating scale compiled by Mishel.[33] The Chinese version of this scale was back-translated by Chuang.[34] This scale demonstrates good reliability and validity in the research of critically ill adult patients.[34, 35] The scale primarily comprises 31 items in 4 dimensions: ambiguity, complexity, lack of information, and unpredictability. Among them, 13 items are in the dimension of uncertainty, 9 items in the dimension of complexity, 5 items in the dimension of lack of information, and 4 items in the dimension of unpredictability. All items were scored using a 5-point Likert scale, ranging from 'strongly disagree', 'disagree', 'don't know', 'agree', and 'strongly agree'

as 1 to 5 points, respectively. Eleven items were scored in reverse. The potential total scale score was 31-155 points, with a higher score indicating a stronger sense of uncertainty about the disease. A 'low' illness uncertainty score was below 59 points, a 'medium' score was from 59-87 points, and 'high' score was above 87 points.[36] In this study, the internal consistency reliability of the PPUS-FM was 0.86.

The Herth Hope Index (HHI) was used to measure the level of hope among the relatives of critically ill patients. HHI was developed by Herth[37] and translated into Chinese by Zhao.[38] The scale comprises 12 items, with each item being rated on a 4-point Likert-type scale (1 = strongly disagree to 4 = strongly agree). The potential total score ranges from 12-48. A higher score indicates greater hope, scores of 12-23 indicate low hope, scores of 24-35 indicate medium hope, and scores of 36-48 indicate high hope. The Chinese version of the HHI was tested in the Chinese population, with a Cronbach α value of 0.85. In this study, the internal consistency reliability of the HHI was 0.87.

Data Collection

The researcher explained the data collection procedures to the ICU staff and obtained their cooperation. The ICU nurse assisted in identifying potential participants from the patient registry based on the inclusion criteria. The researcher met each participant and informed them about the study's purpose, ethical issues, and human protections, and invited them to participate in the study. Finally, consent process, and data collection were conducted by the researcher.

The ICU has approximately 2-3 patients, with age at least 18 years who are transferred from the ICU to the general ward every day. The data for this study were collected by the onsite researcher every day between December 2022 and September 2023. It took approximately 30 minutes for each participant to complete the self-reported questionnaires in a private room.

Statistical Analysis

Data analysis was performed using IBM SPSS 26.0 software (IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp; 2019). Descriptive statistics were used to analyze demographic characteristics. Pearson correlation coefficient was used to determine the relationship between uncertainty, hope, preparedness and transitional stress among the relatives of critically ill patients during the transition from the ICU to the general ward. All relevant assumptions for using Pearson correlation were fulfilled.

Results

The description of demographic characteristics (both of relatives and patients) and health information of the 112 participants was determined (Table 1 and Table 2).

Among the patients enrolled, 64.3% of the patients underwent surgery, with 89.3% of the patients being admitted to the ICU for the first time. Over three-fifths (63.4%) of the patients stayed in the ICU for 3-7 days. On the transfer day, 67.0% of the participants had activities in daily living (ADL) scores of 0-20, whereas 92% of the patients had APACHE II scores of 15-24. Most patients (62.5%) were fed through a nasogastric tube, 99.1% of the patients had a venous catheter, and 58% had a central venous catheter. A surgical drainage tube was present in 44.6% of the patients, and 90.2% of the patients had a urinary catheter. Most patients (59.8%) had nasal oxygen when they were transferred to the general ward (Table 3).

Table 1. Demographic Characteristics of the Relatives	
Characteristic	**No. (%)**
Gender	
Male	41 (36.6)
Female	71 (63.4)
Age, y	
20-39	41 (36.6)
40-59	59 (52.7)
60-75	12 (10.7)
Religion	
No religion	63 (56.3)
Buddhism	38 (33.9)
Christian	11 (9.8)
Educational attainment	
None	5 (4.5)
Primary school	23 (20.5)
Junior high school	38 (33.9)
Senior high school	28 (25)
Bachelor's degree	18 (16.1)
Marital status	
Unmarried	6 (5.4)
Married	106 (94.6)
Occupation	
No occupation	55 (49.1)
Employed	49 (43.8)
Civil servant/government staff	3 (2.7)
Laborer (builder, factory worker, sanitation worker, driver, farmer)	35 (31.3)
Businessperson	11 (9.8)
Retired	8 (7.1)
Relationship with the patient	
Spouse	26 (23.2)
Child	60 (53.6)
Parent	9 (8.0)
Brother/sister	15 (13.4)
Nephew/niece	2 (1.8)
Frequency of visit	
Once a day	96 (85.7)
Every 2 days	8 (7.1)
Every 3 days	5 (4.5)
Twice a day	3 (2.7)

Table 1. Demographic Characteristics of the Relatives (Continued)	
Characteristic	**No. (%)**
Experience in caring for a critically ill person	
No	101 (90.2)
Yes	11 (9.8)
Health status	
Unhealthy	2 (1.8)
Healthy	110 (98.2)
Chronic disease (hypertension/diabetes)	
No	105 (93.8)
Yes	7 (6.3)
Received some medical information about the patient when admitted to the ICU	
No	28 (25.0)
Yes	84 (75.0)
Received some information about how to take care of the patient when visiting the patient	
No	41 (36.6)
Yes	71 (63.4)
Need some information or some help after patient was transferred to the general ward	
No	64 (57.1)
Yes	48 (42.9)

Abbreviation: ICU, intensive care unit.

Table 2. Demographic Characteristics of the Patients	
Characteristic	**No. (%)**
Gender	
Male	80 (71.4)
Female	32 (28.6)
Age, y	
18-39	20 (17.9)
40-59	30 (26.8)
60-75	39 (34.8)
75-91	23 (20.5)
Religion	
No religion	69 (61.6)
Buddhism	34 (30.4)
Christian	9 (8.0)
Educational attainment	
Primary school or below	72 (64.3)
Junior high school	22 (19.6)
Senior high school	15 (13.4)
Bachelor's degree	3 (2.7)

Table 2. Demographic Characteristics of the Patients (Continued)	
Characteristic	**No. (%)**
Marital status	
Unmarried	6 (5.4)
Married	106 (94.6)
Divorced	1 (0.9)
Widowed	5 (4.5)
Occupation	
No occupation	33 (29.5)
Employed	59 (52.6)
Healthcare personnel	1 (0.9)
Civil servant/government staff	6 (5.3)
Laborer	47 (42.0)
Businessperson	5 (4.4)

Table 3. Health Information of the Patients	
Characteristic	**No. (%)**
Had surgery	
No	40 (35.7)
Yes	72 (64.3)
History of admission to the ICU	
1st	100 (89.3)
2nd	11 (9.8)
4th	1 (0.9)
Length of stay in the ICU, d	
3-7	71 (63.4)
8-14	30 (26.8)
15-28	8 (7.1)
> 28	3 (2.7)
ADL score (admission day)	
0-20 (completely dependent; extremely severely/severely impaired)	106 (94.6)
21-40 (severely dependent; moderately impaired)	4 (3.6)
41-60 (moderately dependent)	2 (1.8)
ADL score (transferring day)	
0-20 (completely dependent; extremely severely/severely impaired)	75 (67.0)
21-40 (severely dependent; moderately impaired)	20 (17.8)
41-60 (moderately dependent)	17 (15.2)
APACHE II score (admission day)	
15-24	86 (76.8)
≥ 25	26 (23.2)

Table 3. Health Information of the Patients (Continued)	
Characteristic	**No. (%)**
APACHE II score (transferring day)	
15-24	103 (92.0)
≥ 25	9 (8.0)
Feeding method	
Oral eating	34 (30.4)
Tube feeding	70 (62.5)
Treatment for nothing per oral	8 (7.1)
Indwelling catheter*	
Venous catheterization	
None	1 (0.9)
Central venous catheter	65 (58.0)
Peripheral venous catheter	46 (41.1)
Surgical associated drainage tube	
No	62 (55.4)
Yes	50 (44.6)
Urinary catheter	
No	11 (9.8)
Yes	101 (90.2)
Respiratory	
Normal breathing	11 (9.8)
Nasal oxygen	67 (59.8)
Mask oxygen	13 (11.6)
Intubation tube	16 (14.3)
Tracheotomy	5 (4.5)
Comorbidity	
No	106 (94.6)
Yes	6 (5.4)

Abbreviations: ADL, activities in daily living; APACHE II, Acute Physiology and Chronic Health Evaluation II; ICU, intensive care unit.

* A patient can have multiple different types of tubes at the same time.

All relatives suffered from transitional stress, with 83.9% suffering a 'moderate' level and 16.1% experiencing 'high' stress. The mean (SD) score of transitional stress was 36.5 (6.2) and ranged 28-51 (Table 4).

The mean (SD) score of hope of the sample was 27.5 (5.1), indicating a 'moderate' level. The mean (SD) score for the preparedness of relatives was 16.1 (4.4), which was also at a 'moderate' level. The mean (SD) score for uncertainty was 83.0 (10.0), which was also at a 'moderate' level (Table 5).

Relatives' hope and preparedness was moderately negatively correlated with transitional stress when the critically ill patient was transferred from the ICU to the general ward (r = -0.40, P < .001; r = -0.44, P < .001) respectively. Furthermore, uncertainty exhibited a high positive correlation with transitional stress (r = 0.75, P < .001) (Table 6).

Table 4. Transitional Stress Among the Relatives	
Transitional Stress Score	**No. (%)**
Low stress (≤ 15)	0
Moderate stress (16-40)	94 (83.9)
High stress (41-56)	18 (16.1)

Table 5. Hope, Uncertainty, and Preparedness Among the Relatives				
Variable	**Range**		**Mean (SD)**	**Level**
	Possible Score	**Actual Score**		
Hope	12-48	18-43	27.5 (5.1)	Moderate
Uncertainty	31-155	65-101	83.0 (10.0)	Moderate
Preparedness	0-32	9-28	16.1 (4.4)	Moderate

Table 6. Pearson's Correlation Coefficients Between Hope, Uncertainty, and Preparedness and Transitional Stress		
Variable	**Transitional Stress**	***P* Value**
Hope	-0.40	< .001
Uncertainty	0.75	< .001
Preparedness	-0.44	< .001

Discussion

In this study, the mean (SD) score for transitional stress among the relatives when transferring the critically ill patient from the ICU to the general ward was 36.5 (6.2). This score was considered to be at a moderate level, and was consistent with the studies of Luo et al[39] in 2022 on the transitional stress of relatives when transferring a critically ill patient from the ICU to general ward (mean [SD], 34.5 [6] and 32.3 [3.8], respectively).

According to Meleis's transition theory, transitional stress refers to a response pattern that can be influenced by various conditions during a transition. These conditions encompass personal, community, and societal factors. In the present study, the relatives' transitional stress may be explained based on these aspects.

The first determinant is the severity of the condition of the patient. In this study, the patients had a low ADL score and a high APACHE II score, with 67.0% of patients having an ADL score of 0-20 and 92% having an APACHE II score of 15-24 on the transition day. This indicated that the patient was still at risk of being transferred back to the ICU.[40] Furthermore, the body of the patient was extremely severely or severely impaired, and being severely dependent on others. Seo et al[41] have reported a negative correlation between good ADL scores and stress, ie, the lower the ADL score, the greater the stress of the patient's relatives. In addition, some researchers have reported that as a patient's self-care ability decreases, their relatives face more difficulty in taking care of them. This means that the patient will be more dependent on the care of others, suggesting evident transitional stress among relatives.[42]

Based on transition theory, knowledge of the transition process affects transitional stress. When patients are transferred to the general ward, intensive care is interrupted, and the patients' relatives need to take care of the patients by themselves in the general ward. Furthermore, some studies have found that relatives with caregiving experience suffered from less transitional stress, because they might have more knowledge and could better adapt to the role transition from family relatives to caregivers.[43, 44] In the present study, 90.2% of the relatives had no experience in caring for a critically ill person. This change in role may also contribute to transitional stress among the relatives of patients transferred from the ICU.[45]

Regarding formal schooling, previous studies have found that lower educational attainment was associated with depression, anxiety, and stress.[46-48] Furthermore, a patient whose relatives had lower education would exhibit higher stress.[49] In the present study, 75% of relatives had high level of education, and they could access telehealth support or the relevant online information.[50] In contrast, low education level was an independent factor for low family readiness, potentially affecting their ability to effectively communicate with medical professionals.[43, 44] Therefore, their ability to obtain the needed information was poor. Collectively, these findings have indicated that the low educational attainment of relatives in this study might have affected their transitional stress.

The frequency of patient visits may also be a reason for relatives to perceive transitional stress. More frequent visits may lessen a relative's stress. The primary needs of the relatives of the ICU patient are medical information, reassurance, and being near the patient.[51, 52] Studies have found that the less the ICU visit time, the higher the transitional stress among relatives. This is because when patients are transferred out of the ICU, relatives with fewer visits are not physically and psychologically prepared to care for the patient, who may have various catheters and instrument connections, leading to a higher level of transitional stress.[53] When the relatives visit the patient, the medical staff may give medical information to them. However, in the present study, 85.7% of participants visited patients once a day, which indicated that relatives had insufficient access to medical information when outside the hospital setting, increasing the stress of transfer.

In the present study, 71% of the relatives were female. Studies have found that female relatives of ICU transfer patients experience higher levels of transitional stress. This is because women are more emotionally sensitive and psychologically more susceptible to another's suffering. Furthermore, females have weaker coping ability than males. In particular, when a loved one's condition is critical, women are more likely to experience anxiety, depression, and other negative psychological reactions. While female relatives feel encouraged when their loved one is transferred from the ICU to the general ward, they also experience a higher level of stress, including worry and uncertainty.[54]

In the present study, uncertainty of the participants had a positive significant and high correlation with transitional stress ($r = 0.75$, $P < .001$). This finding was consistent with the study hypothesis. Uncertainty is a transition condition perceived by relatives. A sustained high level of uncertainty is associated with higher stress, poor mental health outcomes, and impaired coping ability.[55] Similarly, the ICU contains monitoring equipment and advanced treatment options. As a result, the medical staff configuration is sufficient for most patient needs. However, in the general ward, monitoring equipment is significantly less, the predictive ward environment is removed, and the care mode changes from 'one-to-one' to 'one-to-many'. Therefore, patients and their families may feel insecure, and even question the treatment effect.[56] In this way, the differences between the ICU and

general ward result in uncertainty.[5] In China, some studies have found that some relatives felt uncertain about the patient's disease, potentially increasing the transitional stress.[15, 16]

In the present study, hope was negatively associated with transitional stress among the relatives of critically ill patients (r = -0.40, P < .001). The mean (SD) score for the hope was 27.5 (5.1). This indicated that relatives had a moderate level of hope. This finding was consistent with many studies.[21, 22, 57, 58] According to Meleis's transitions theory, hope is an important facilitator of the transition condition, and can decrease stress.[59] Hope may serve as a moderating resource at the individual level to decrease negative impacts.[60] Furthermore, hope is a prerequisite for effective coping and decision-making, with a protective function against stress. Hope-based therapy interventions can decrease depressive symptoms and stress.[61] Therefore, helping relatives to have a higher level of hope can decrease transitional stress.

In the present study, there was a negative significant correlation between preparedness and transitional stress (r = -0.44, P < .001). This finding was consistent with that of other studies.[24, 25] Caregiver preparedness is a key factor in the physical and psychological well-being of caregivers.[25] Preparedness refers to the preparation for transition in a way that can affect the transition process and response. Preparation includes preparing and planning about an individual's knowledge, meaning, experience, and environment in transition.[23] In a study involving 87 family caregivers during patients' cancer treatment, increased caregiver preparedness was associated with decreased fatigue and mood disturbance. Furthermore, preparedness interacts with mutuality (relationship quality) in buffering stress responses to high caregiver demands.[62] Therefore, a higher level of hope among relatives was associated with lower transitional stress, consistent with the results of the present study.

The findings from this study provide a basis for predicting the influencing factors for relatives of patients with transitional stress. Accordingly, clinical nurses can formulate nursing interventions to reduce transitional stress. Specifically, nurses can help mitigate transitional stress by enhancing relatives' preparedness and fostering a sense of hope. Additionally, reducing uncertainty through clear, consistent communication and providing timely information and psychological support can better equip family members for the transition from ICU to general ward. Such nursing practices not only support the emotional well-being of relatives but may also contribute to improved outcomes for patients during the recovery process.

Conclusions

In this study, there was a moderate level of transitional stress among the relatives when transferring critically ill patients from the ICU to the general ward in a hospital in Wenzhou. Hope and preparedness were negatively correlated with transitional stress, whereas uncertainty was positively correlated with transitional stress. Understanding the dynamic relationship among these factors can help nursing staff develop specific interventions to reduce transitional stress among relatives when transferring critically ill patients from the ICU to the general ward.

Additional Information

Acknowledgments: The authors would like to thank all research participants for their valuable time and kind cooperation to complete this study. Moreover, the authors also extend their gratitude to the ICU staff of the Second Affiliated Hospital of Wenzhou Medical University for their support in the data collection process. This work was conducted as part of a master's thesis in Nursing Science at the Faculty of Nursing, Burapha University, Chon Buri, Thailand.

Ethics Approval: The study protocol was approved by the Ethics Committee of Burapha University (G-HS082/2565 on 21 November 2022) and the Second Affiliated Hospital of Wenzhou Medical University (2022-K-165-02 on 16 December 2022). Before data analysis, details of the objectives, procedures, and right to withdraw were explained by the researcher, with no effect on the quality of service for each candidate. The confidentiality and anonymity of the participants were ensured throughout the study. A consent form was signed by the participants before collecting data.

Clinical Trial Consideration: This study does not report on a clinical trial.

Financial Support: No financial support was provided for this study.

Conflict of Interest: The authors declare no conflict of interest.

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Conceptualization: All authors
Formal Analysis: All authors
Methodology: Wei Wei Cai, Niphawan Samartkit
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