Original

A Retrospective Study on the Effect of Empowerment Psychological Intervention Led by Specialist Nurses on Post-traumatic Stress Disorder in ICU Patients

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Abstract

Background: Many patients in the intensive care unit (ICU) suffer from post-traumatic stress disorder (PTSD), which seriously affects the treatment, recovery, and prognosis of patients.

Objective: To observe the effect of empowerment psychological intervention on the status of PTSD in ICU patients.

Methods: A total of 86 patients with PTSD who were treated in ICU from July 2019 to December 2021 were divided into two groups according to the intervention method. The control group (n = 43) used routine psychological intervention, while the intervention group (n = 43) used empowerment psychological intervention led by specialist nurses. The Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality of the patients. The Resilience Questionnaire (CD-RISC) was used to evaluate the resilience of the patients, and the Post Traumatic Stress Disorder Self-Rating Scale (PTSD-SS) was used to assess the severity of the symptoms. The Hamilton Anxiety and Depression Inventory (HAMA and HAMD) was adapted to assess the degree of anxiety and depression, and the Post-Traumatic Growth Inventory (PTGI) was adapted to evaluate the post-traumatic growth of the patients.

Results: After the intervention, the total CD-RISC score and its tenacity, self-improvement, and optimism scores in the two groups were all higher than before, and the total PSQI score and its sleep quality, time, efficiency and impairment, as well as hypnotic drugs, daytime dysfunction and time to sleep were lower than before, and the CD-RISC score in the intervention group was higher than that in the control group, PSQI score was lower than that in the control group ($p < 0.05$). After the intervention, PTSD-SS scores and anxiety-depression scores were lower, and PTGI scores were higher in both groups than before ($p < 0.05$).

Conclusion: The empowerment psychological intervention led by specialist nurses applied to ICU patients with PTSD can improve their psychological resilience and sleep quality, reduce negative emotions, alleviate clinical symptoms, and promote post-traumatic growth.

Keywords

specialist nurse-led; psychological intervention; post-traumatic stress disorder; sleep quality; psychological resilience; negative emotions

Introduction

As a psychiatric disorder that occurs after experiencing a traumatic event, post-traumatic stress disorder (PTSD) is caused by repeated experiences of traumatic events, avoidance of traumatic events, and increased alertness, with delayed and persistent features [1–5]. Many intensive care unit (ICU) patients have experienced major trauma and severe illness, and have been in a special tense environment for a long time [6–8]. Therefore, they are also a vulnerable population to suffer from PTSD. The literature reported that the incidence of PTSD in ICU patients is as high as 5% to 64%, which is significantly higher than that in the general population [9]. Studies have shown that the population have potential risk for PTSD in ICU include those who are women, have previous psychiatric history and longer stays in the ICU, and the patients experience delusion, delusional memory, trauma memory, sedation strategies [10,11]. Therefore, some scholars have

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attempted to prevent the occurrence of PTSD in ICU patients by studying these risk factors with corresponding interventions such as psychological intervention, optimizing sedative and analgesic strategies, and restoring physiological sleep mode, and have achieved good results [12]. However, the treatment of ICU patients who have developed PTSD is still controversial, mainly because of the variety of psychological interventions and the lack of unified standards, and there are inconsistent reports on the treatment effect of psychological interventions in various studies [13]. Therefore, under the guidance and assistance of psychologists, the nursing team with years of work experience in our department summarized a set of empowerment psychological intervention methods after sufficient literature research, which was applied to the psychological intervention of PTSD in ICU patients. Empowerment psychological intervention is the process of positively influencing and guiding individual psychological activities through various means and approaches while giving individuals greater possibilities for doing things, emphasizing the stimulation of personal intelligence and potential to achieve the goal of improving nursing effectiveness, which has been used in the management of many diseases, such as type 2 diabetes and obesity [14,15]. This study aimed to evaluate the effectiveness of this psychological intervention method on PTSD in ICU patients.

Data and Methods

General Information

A retrospective study was conducted. A total of 43 patients with PTSD who were treated by empowerment psychological interventions led by specialist nurses in the ICU from July 2019 to December 2021 were selected as the intervention group. Conventional psychological interventions treated cases (n = 43) were selected as the control group. The hospital was a comprehensive hospital with only one ICU of 50 beds. The general data of the two groups were balanced ($p > 0.05$). The formula for calculating sample size is: n = (Z2 × σ 2) / d2, "Z" is the confidence interval, "n" is the sample size, "d" is the sampling error range and "σ" is the standard deviation, and is usually taken as 0.5. This study was approved by the hospital ethics committee (LS2021097) and was conducted according to the Declaration of Helsinki. Informed consent was obtained from every patient and their family members.

Inclusion criteria: (1) duration of ICU admission >48 h; (2) age ≥18 years, ≤65 years, regardless of gender; (3) meeting the criteria for PTSD in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [16] and confirmed by two chief physicians after diagnosis; (4) the PTSD Cheeklist-Civilian Version (PCL-C) score >38 points [17]; (5) first diagnosis of PTSD; (6) the patient had normal cognitive function at present to agree of joining the study and signing the protocol.

Exclusion criteria: (1) previous history of psychiatric disorders; (2) severe liver and kidney dysfunction, cardiopulmonary insufficiency; (3) mental retardation or mental retardation due to accidents; (4) previous sleep disorders requiring long-term sedative drugs; (5) inability to understand, or to complete the questionnaire; (6) other serious physical illnesses.

Nursing Intervention Methods

The intervention methods were designed according to expert opinions.

The control group was given routine ICU care, including monitoring of vital signs, care of therapeutic measures such as oxygen inhalation, puncture and drainage, environmental care, skin care, protective restraint, and other special care measures, as well as psychological comfort.

The intervention group was led by specialist nurses and given empowerment psychological interventions based on routine ICU care. Five ICU nursing staff were randomly selected to form an empowerment psychological intervention group. They received training on knowledge related to psychological intervention, including general psychological knowledge, standard psychological assessment methods, and intervention methods, psychological characteristics of ICU patients, and communication skills of psychological intervention in nursing practice. Before implementing the empowerment psychological intervention, a good nurse-patient trust relationship was established through adequate communication, and special questionnaires and scales were used to assess the patient's symptoms, psychological state, and sleep state for making a psychological intervention plan.

Empowerment psychological interventions include (1) guiding patients to confide in and showing empathy and understanding to them; (2) diverting their attention from hinting and recalling to reduce the influence of traumatic events; (3) using positive cognitive therapy to dissolve patients' negative emotions and reduce numbness and avoidance; (4) guiding patients to perform deep breathing and muscle relaxation and teaching them imaginary relaxation methods; (5) using desensitization therapy to gradually desensitize patients; (6) the patients were guided to describe

their self-cognition of PTSD, and to analyze and evaluate for reconstructing cognition eventually [14,15]. The intervention was applied for one month by inpatient care.

Observation Indicators

① The psychological resilience of patients was assessed by the Connor-Davidson Resilience Scale (CD-RISC): there are 25 items in the scale, including resilience, self-improvement, and optimism, with a single-entry score range of 0 to 4 points, which is directly proportional to the psychological resilience [18]. The higher the CD-RISC score, the better.

② The severity of the patient's symptoms was assessed by the PTSD Self-Rating Scale (PTSD-SS): there are 25 items divided into five dimensions, including subjective assessment, repeated recurrence experience, avoidance of symptoms, increased alertness, and impaired social function, with a single-entry score range of 1 to 5 points, which is directly proportional to the severity of clinical symptoms [19]. The PTSD-SS score is lower, the better.

③ The Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale-17 (HAMD-17) were used to assess patients' negative emotions: the higher the score, the more severe the symptoms of anxiety and depression of the patient [20,21]. HAMA scores over 29 were considered as extreme anxiety, and scores over 21, 17, and 14 were considered as definitely have, have, and maybe have anxiety, respectively. While HAMD scores over 24 were classified as severe depression and over 17 and 7 as moderate and mild depression, respectively.

④ The Pittsburgh Sleep Quality Index (PSQI) was used to assess patients' sleep quality: the scale consists of 19 self-rated questions plus five other-rated questions covering seven aspects, with a score range of 0 to 21 points. The higher the score, the worse the sleep quality [22,23].

⑤ The Post-Traumatic Growth Inventory (PTGI) was used to assess patients' post-traumatic growth, including appreciation of life, interpersonal relationships, personal strength, new possibilities, and mental change. The PTGI scale score ranges from 0 to 105, and the score is proportional to the degree of post-traumatic growth [24,25]. The higher the PTGI score, the better.

Statistical Methods

SPSS (Version 26.0, IBM, Armonk, NY, USA) was used for processing, and the χ^2 test was applied to compare the count data (described by the number of cases). Then, the measurement data's normality and homoscedasticity were tested, ($\chi \pm s$) was applied to describe them after meeting the criteria, and the t-test was applied for comparison. $p < 0.05$ indicates that the difference is statistically significant.

Results

Comparison of the Baseline Data between the Two Groups

Basic data of the two groups, such as gender, age, marriage, educational background, and family income, were collected for comparison, and there was no statistical difference between the two groups ($p > 0.05$, Table 1).

Comparison of the CD-RISC Scores between the Two Groups

Before the intervention, there was no statistical difference between the CD-RISC scores of the two groups ($p > 0.05$). After the intervention, the total CD-RISC score and its tenacity, self-improvement, and optimism scores in the two groups were all higher than before, which meant that the patients' psychological resilience had become stronger after the intervention. These in the intervention group were higher than those in the control group ($p < 0.05$, Table 2).

Comparison of PTSD-SS Scores between the Two Groups

Before the intervention, there was no statistical difference between the PTSD-SS scores ($p > 0.05$). After the intervention, PTSD-SS scores and five scores covered were lower in both groups than before, which meant that the patient's symptoms had reduced after the intervention, and these scores in the intervention group were lower than those in the control group ($p < 0.05$, Table 3).

Comparison of Negative Emotions Score between the Two Groups

Before the intervention, there was no statistical difference in anxiety-depression scores between the two groups ($p > 0.05$). After the intervention, the HAMD and HAMA scores were lower in both groups than before, which meant that the patients' negative emotions had become reduced after the intervention, and these scores in the intervention group were lower than those in the control group ($p < 0.05$, Table 4).

Table 1. Comparison of baseline data between the two groups.

Baseline data	Control group (n = 43)	Intervention group (n = 43)	χ^2/t	*p*
Gender [n(%)]			0.199	0.655
Male	17 (39.53)	15 (34.88)		
Female	26 (60.47)	28 (65.12)		
Age [n(%)]			0.802	0.670
18∼35 age	18 (41.86)	14 (32.56)		
36∼55 age	17 (39.53)	20 (46.51)		
>55 age	8 (18.60)	9 (20.93)		
Body mass index [($\bar{x} \pm$ s), kg/m^2]	23.95 ± 2.17	24.02 ± 2.11	0.152	0.880
Marital status [n(%)]			0.254	0.968
Married	20 (46.51)	19 (44.19)		
Unmarried	12 (27.91)	13 (30.23)		
Divorced	7 (16.28)	6 (13.95)		
Widowed	4 (9.30)	5 (11.63)		
Degree of education [n(%)]			0.478	0.788
Junior high school and below	11 (25.58)	9 (20.93)		
Secondary school to college	15 (34.88)	14 (32.56)		
Undergraduate and above	17 (39.53)	20 (46.51)		
Per capita household income [n(%)]			0.994	0.608
<386 Euros	13 (30.23)	9 (20.93)		
386∼579 Euros	19 (44.19)	21 (48.84)		
>579 Euros	11 (25.58)	13 (30.23)		
Mechanical ventilation [($\bar{x} \pm$ s), h]	53.98 ± 8.87	51.78 ± 9.74	1.095	0.277
ICU stay [($\bar{x} \pm$ s), d]	72.14 ± 10.25	71.63 ± 12.57	0.206	0.837
PTSD severity [n(%)]			0.191	0.662
Mild	17 (39.53)	19 (44.19)		
Moderate-severe	26 (60.47)	24 (55.81)		
Causes of PTSD [n(%)]			0.490	0.783
Cerebrovascular disease	11 (25.58)	13 (30.23)		
Severe trauma	27 (62.79)	23 (53.49)		
Other	5 (11.63)	4 (9.30)		

ICU, intensive care unit; PTSD, post-traumatic stress disorder.

Table 2. Comparison of CD-RISC scores between the two groups [($\bar{x} \pm$ s), point].

Group	n	Tenacity		Self-improvement		Optimism		CD-RISC Overall Score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	43	24.89 ± 4.63	31.56 ± 3.87①	17.55 ± 3.26	21.59 ± 3.02①	7.45 ± 2.12	11.41 ± 1.95①	49.89 ± 4.11	64.22 ± 4.85①
Intervention group	43	25.01 ± 4.28	38.91 ± 3.02①	17.19 ± 3.41	26.87 ± 2.47①	7.39 ± 2.25	13.89 ± 1.84①	49.56 ± 4.27	78.87 ± 4.03①
t		0.125	9.818	0.500	8.874	0.127	6.066	0.365	15.235
p		0.901	0.000	0.618	0.000	0.899	0.000	0.716	0.000

Compared with preintervention, ①$p < 0.05$. CD-RISC, Connor-Davidson Resilience Scale.

Table 3. Comparison of PTSD-SS scores between the two groups [($\bar{x} \pm$ s), score].

Group	n	Subjective assessment		Repeat the experience		Avoidance symptoms		Increased alertness		Impaired social functioning		PTSD-SS total score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	43	4.68 ± 0.41	3.36 ± 0.34①	25.14 ± 2.15	21.12 ± 1.87①	27.56 ± 2.53	22.03 ± 2.17①	21.23 ± 2.06	18.86 ± 1.74①	4.52 ± 0.56	3.36 ± 0.41①	83.13 ± 3.98	68.71 ± 4.05①
Intervention group	43	4.74 ± 0.37	2.81 ± 0.29①	24.97 ± 2.28	18.97 ± 1.64①	27.43 ± 2.66	19.74 ± 2.04①	21.17 ± 2.18	17.44 ± 1.39①	4.59 ± 0.51	2.64 ± 0.35①	82.26 ± 4.15	61.43 ± 3.22①
t		0.712	8.071	0.356	5.668	0.232	5.042	0.131	4.181	0.606	8.758	0.992	9.226
p		0.478	0.000	0.723	0.000	0.817	0.000	0.896	0.000	0.546	0.000	0.324	0.000

Compared with pre-intervention, ①$p < 0.05$. PTSD-SS, Post Traumatic Stress Disorder Self-Rating Scale.

Table 4. Comparison of negative emotions score between the two groups [($\bar{x} \pm s$), point].

Group	n	HAMD score		HAMA score	
		Before intervention	After intervention	Before intervention	After intervention
Control group	43	31.25 ± 4.05	15.24 ± 2.63^{①}	34.25 ± 3.67	17.02 ± 2.88^{①}
Intervention group	43	30.97 ± 3.89	12.12 ± 2.18^{①}	34.36 ± 4.02	13.41 ± 2.51^{①}
t		0.327	5.989	0.133	6.197
p		0.745	0.000	0.895	0.000

Compared with pre-intervention, $^{①}p < 0.05$. HAMD, Hamilton Depression; HAMA, Hamilton Anxiety.

Comparison of the PSQI Scores between the Two Groups

Before the intervention, the PSQI scores between the two groups were compared with no statistical difference ($p > 0.05$). After the intervention, the PSQI scores and their seven content scores, including sleep quality, time, efficiency, and impairment, were lower than before, meaning the patient's sleep quality had improved after the intervention. These scores in the intervention group were lower than those in the control group ($p < 0.05$, Table 5).

Comparison of the PTGI Scores between the Two Groups

Before the intervention, the PTGI scores between the two groups were compared with no significant difference ($p > 0.05$). After the intervention, the total PTGI scores and their life appreciation, interpersonal relationship, personal strength, new possibility, and mental change in the two groups were all higher than before, which meant that the patients' post-traumatic growth became stronger after the intervention. These in the intervention group were higher than those in the control group ($p < 0.05$, Table 6).

Discussion

The results of this study showed that the total CD-RISC scores and each score, total PTSD-SS scores and each score, HAMD scores, HAMA scores, total PSQI scores and each score, as well as total PTGI scores and each score in the intervention group were better than those in the control group after the intervention, indicating that the empowerment psychological intervention used in our department could more effectively improve the patients' psychological resilience, alleviate their PTSD symptoms, symptoms of anxiety and depression and sleep quality, and promote their post-traumatic growth.

With the ability to cope with changes in the external environment, adaptability, and self-psychological regulation, individuals with higher psychological resilience are better able to cope with traumatic events. For patients who have had PTSD, higher psychological resilience is also more conducive to PTSD recovery [26]. Research has compared the effectiveness of conventional care and cognitive psychological interventions for patients with PTSD, showing that the psychological resilience of patients with cognitive intervention has been significantly improved [27]. The empowerment psychological intervention measures adopted in our department also included the content of mental intervention. The patients were guided to describe their self-cognition of PTSD and to analyze and evaluate for reconstructing cognition eventually. In addition, the empowerment psychological intervention adopted in our department also included guiding patients to talk, diverting their attention using positive cognitive therapy, guiding patients to relax with desensitization therapy. Moreover, before the intervention, the specialist nurses were given targeted training on the psychological characteristics of ICU patients and the communication skills of psychological interventions in nursing practice to master the empowerment of psychological interventions, conduct detailed and accurate assessments of patients, and develop individualized intervention strategies. Unlike the above studies, this study was dominated by specialist nurses, who took advantage of their long contact time with ICU patients and could quickly establish a trusting relationship to carry out empowerment psychological interventions, which helped to achieve better intervention results. With the improvement of psychological resilience, the psychological state of the patients has been improved. The patients became more resilient, self-improved, and optimistic, which also helped to alleviate the symptoms of PTSD by relieving anxiety and depression and improving sleep status and mental state. The improvement in various control group scores after intervention may be related to the following factors. As the patient's condition alleviates, their psychological state will improve. Patients can receive a certain degree of comfort in communication with medical staff, which also helps to improve their psychological state.

Table 5. Comparison of PSQI scores between the two groups [($\bar{x} \pm s$), points].

Group	n	Sleep quality		Time to fall asleep		Sleeping time		Sleep efficiency		Sleep disorder		Hypnotic drugs		Daytime dysfunction		Total PSQI Score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	43	2.45 ± 0.74	1.52 ± 0.33①	2.41 ± 0.65	1.45 ± 0.36①	1.82 ± 0.56	1.26 ± 0.31①	1.30 ± 0.28	1.04 ± 0.18①	1.59 ± 0.42	1.13 ± 0.22①	1.02 ± 0.29	0.81 ± 0.22①	2.11 ± 0.61	1.23 ± 0.21①	12.74 ± 1.56	8.42 ± 1.05①
Intervention group	43	2.39 ± 0.81	1.27 ± 0.25①	2.45 ± 0.59	1.21 ± 0.22①	1.77 ± 0.63	1.05 ± 0.24①	1.27 ± 0.32	0.87 ± 0.12①	1.63 ± 0.38	0.86 ± 0.18①	1.06 ± 0.22	0.67 ± 0.16①	2.07 ± 0.64	0.87 ± 0.18①	12.69 ± 1.74	6.85 ± 0.84①
t		0.359	3.960	0.299	3.730	0.389	3.513	0.463	5.153	0.463	6.229	0.721	3.375	0.297	8.535	0.140	7.656
p		0.721	0.000	0.766	0.000	0.698	0.001	0.645	0.000	0.644	0.000	0.473	0.001	0.767	0.000	0.889	0.000

Compared with pre-intervention, ①$p < 0.05$. PSQI, Pittsburgh Sleep Quality Index.

Table 6. Comparison of PTGI scores between the two groups [($\bar{x} \pm s$), score].

Group	n	Life appreciation		Interpersonal relationship		Personal strength		New possibilities		Mental change		PTGI total score	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	43	3.51 ± 0.81	4.95 ± 0.74①	16.15 ± 2.45	18.51 ± 2.38①	12.05 ± 1.45	15.77 ± 1.36①	7.02 ± 1.78	9.83 ± 1.81①	14.86 ± 2.65	19.42 ± 2.59①	53.67 ± 4.15	68.46 ± 4.71①
Intervention group	43	3.48 ± 0.72	6.42 ± 0.61①	16.22 ± 2.42	22.12 ± 2.23①	11.93 ± 1.48	18.94 ± 2.01①	6.98 ± 1.67	12.87 ± 1.52①	15.10 ± 2.42	23.85 ± 2.61①	54.01 ± 3.69	83.28 ± 5.02①
t		0.182	10.051	0.133	7.258	0.380	8.565	0.107	8.434	0.439	7.900	0.401	14.118
p		0.856	0.000	0.894	0.000	0.705	0.000	0.915	0.000	0.662	0.000	0.689	0.000

Compared with pre-intervention, ①$p < 0.05$. PTGI, Post-Traumatic Growth Inventory.

Conclusion

The empowerment psychological intervention led by specialist nurses applied to ICU patients with PTSD can improve their psychological resilience and sleep quality, reduce negative emotions, alleviate clinical symptoms, and promote post-traumatic growth. Early empowerment psychological intervention led by specialist nurses should be given to ICU patients with PTSD to improve their psychological state and prognosis. This study confirms the role of empowerment psychological intervention led by specialized nurses, and the research results can provide a reference for the clinical management of PTSD in ICU patients. However, this study was performed in a single center with a limited sample size and intervention period. Furthermore, the scores used in this study were also influenced by other factors, such as the cognitive function and the compliance of patients, which might not be considered.

Availability of Data and Materials

All data generated or analyzed during this study are included in this published article.

Author Contributions

JY and NZ designed the research study. JY and HYZ performed the research. BH analyzed the data. All authors contributed to editorial changes in the manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

This study was approved by the hospital ethics committee (LS2021097), and was conducted according to the Declaration of Helsinki. The informed consent has been obtained from every patient and their family members. All subjects gave their informed consent for inclusion before they participated in the study.

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Conflict of Interest

The authors declare no conflict of interest.

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