Relationship between social support before ICU admission and post-discharge mental health symptoms in ICU patients

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I. Introduction

Although advances in intensive care have dramatically improved the survival rate of critically ill patients, the quality of life of patients discharged from intensive care units (ICU) has declined. Mental health conditions, such as post-traumatic stress disorder (PTSD), anxiety, and depression, are considered factors. Mental health conditions may be related to social support. Social support is associated with stress, and the belief that support is available is thought to reduce the impact of stressful events on health. However, no studies have considered the impact of social support before ICU admission on mental health after ICU discharge. This study aimed to clarify the relationship between social support before ICU admission and mental health symptoms after ICU discharge and develop a predictive model for depressive symptoms after ICU discharge.

II. Methods

Design: Prospective cohort study. A questionnaire on social support prior to ICU admission (DSSI-J) was administered from 48 h after admission to the ICU to within 2 weeks after discharge from the ICU. Three months after discharge from the ICU, mental health questionnaires (IES-R and HADS) were mailed to analyze the association between social support before ICU admission and mental health after ICU discharge. Information during ICU stay was collected from medical records.

Participants: Patients aged 18 years or older who stayed for more than 48 h in a medical or surgical ICU.

Analysis: Analysis 1: The primary outcome was analyzed using a generalized linear model (GLM; family=Gaussian and link function=identity), with the IES-R score as the objective variable and the DSSI-J score, age, sex, and education years as the explanatory variables. The secondary outcome was analyzed using a GLM (family=Gaussian and link function=identity), with the anxiety and depressive symptom score as the objective variable and the DSSI-J score, age, sex, and education years as the explanatory variables. Analysis 2: A predictive model of depressive symptoms was created by determining predictor variables using a stepwise method. The bootstrap method was used to examine the predictive ability of the created predictive model, and calibration curves were created.

III. Result

Analysis 1: A total of 153 patients were enrolled; 115 were included in the analysis, and the prevalence of PTSD symptoms, anxiety, and depression at 3 months after ICU discharge was 11.3%, 14.0%, and 24.6%, respectively. Multivariate analysis of PTSD symptoms, anxiety, and depression adjusted for confounding by age, sex, education years, and social support revealed no independent factors associated with PTSD symptoms and anxiety. For depressive symptoms, women (β = 0.268, 95% confidence interval: 0.005 to 0.531, p = 0.046) and social support (β = −0.018, 95% confidence interval: −0.029 to −0.006, p = 0.002) were independent factors associated with depressive symptoms. Analysis 2: The DSSI-J score (odds ratio: 0.961, 95% confidence interval: 0.924–0.998, p = 0.040) and total midazolam dose (odds ratio: 1.010, 95% confidence interval: 0.996–1.030, p = 0.151) were selected as predictors for the prediction model. The area under curve obtained by the bootstrap method was 0.653, which was found to be incorrect. Model performance overestimation (optimism) was 0.1135, confirming that it was not overfitting; however, the nomogram could not be created owing to insufficient predictive ability.

IV. Discussion

Social support before ICU admission may not be associated with PTSD symptoms after discharge from the ICU; the type of traumatic experience and the support needed by the ICU patient may have influenced the type of support needed. Understanding the traumatic experience of patients and the support they require owing to this experience and providing them with the necessary social support accordingly are important. In contrast, social support before ICU admission may be a factor associated with depressive symptoms after discharge from the ICU; patients with low social support require attention even after discharge, and so, considering social support from the patient's perspective is also necessary. Predictors may have been missing in the creation of the prediction model. In particular, the influence of psychological characteristics, such as the patient's personality, thoughts, and coping mechanisms for stress, should be considered.

V. Conclusions

1. Perceived social support prior to ICU admission was not associated with PTSD symptoms after ICU discharge.
2. Perceived social support before ICU admission associated with depressive symptoms after ICU discharge.
3. Only social support before ICU admission and factors related to treatment during ICU admission were not sufficient to predict depressive symptoms after ICU discharge, indicating that additional factors need to be considered. Investigating predictive factors, including psychological characteristics, measuring perceived social support over time, and conducting further prospective studies with large sample sizes are necessary.