



Depressive symptoms and anxiety in intensive care unit (ICU) survivors after ICU discharge



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ABSTRACT

Background: The association between intensive care unit (ICU) survivors' psychological sequelae, individual care needs, and discharge disposition has not been evaluated.

Objective: To describe depressive symptoms and anxiety in ICU survivors and explore these symptoms based on individual care needs and discharge disposition for 4 months post-ICU discharge.

Methods: We analyzed data from 39 ICU survivors who self-reported measures of depressive symptoms (*Center for Epidemiologic Studies-Depression 10 items* [CESD-10]) and anxiety (*Shortened Profile of Mood States-Anxiety subscale* [POMS-A]).

Results: A majority of patients reported CESD-10 scores above the cut off (≥ 8) indicating risk for clinical depression. POMS-A scores were highest within 2 weeks post-ICU discharge and decreased subsequently. Data trends suggest worse depressive symptoms and anxiety when patients had moderate to high care needs and/or were unable to return home.

Conclusion: ICU survivors who need caregiver assistance and extended institutional care reported trends of worse depressive symptoms and anxiety.

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Introduction

Advances in critical care have increased the likelihood of patient survival beyond the intensive care unit (ICU).¹ Despite reaching this milestone, many ICU survivors face physical, cognitive, and psychological sequelae that result in delay or inability to return to pre-illness function.^{2–4} For this reason, the scope of patient-centered critical care has expanded to support the needs of ICU survivors and their family caregivers during the post-ICU discharge period.^{5,6}

Although interventions to date have primarily targeted health-related quality of life and physical function after critical illness,^{7–9} evidence supports that ICU survivors frequently experience psychological sequelae. From a study that analyzed data from more than 20,000 individuals who experienced critical illness, Wunsch

and colleagues reported that ICU survivors are at increased risk for new psychiatric diagnoses in the first months after hospital discharge.¹⁰ Davydow and colleagues reported similar findings from a systematic review of 10 observational studies that enrolled ICU survivors.³ In these studies, the prevalence of clinically significant depressive symptoms ranged from 17% to 43%.³ In 150 patients followed for one year after ICU admission for at least 24 h, unresolved depressive symptoms were associated with an increase in hospital readmissions and emergency department visits.¹¹ In addition, ICU survivors have reported significant anxiety, with a reported prevalence of 23–41% that can persist for years after ICU discharge.^{12–17}

The Pittsburgh Mind-Body Center Model was proposed by a multidisciplinary team of investigators to examine interactions between psychological, biological and behavioral responses to a stressor.¹⁸ The Adapted Pittsburgh Mind-Body Center Model poses that patient characteristics, e.g., physical function and physical and psychological symptoms, can lead to negative responses in family caregivers, which in turn affect caregiver's overall physical health.¹⁸ Guided by this model, we examined interactions of psychological,

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behavioral and biological responses to acute and chronic stress in family caregivers of the critically ill from patients' ICU admission to 4 months post-ICU discharge and potential relationships with characteristics of ICU survivors.¹⁹ Findings from this parent study highlighted problems of negative psychological and physical health issues in family caregivers of ICU patients and their relationship with patients' symptoms and discharge disposition.^{20–22} These findings also suggested the need for further exploration of changes in psychological sequelae in patients and their potential relationship with patient care needs (extent of functional recovery) and discharge disposition.

Therefore, the aims of the present study are to: 1) describe trends in depressive symptoms and anxiety in ICU survivors for 4 months post-ICU discharge; 2) explore the relationship between ICU survivors' individual care needs and depressive symptoms and anxiety; 3) explore depressive symptoms and anxiety in ICU survivors based on home discharge status. Our report extends findings of prior studies by exploring longitudinal trends of psychological sequelae in ICU survivors for the initial 4 months post-ICU discharge and relationships to care needs and home discharge status.

Methods

In this secondary analysis, we used the data from a study that explored biobehavioral stress responses in family caregivers of ICU survivors who underwent mechanical ventilation for 4 days or more.¹⁹ The study protocol was reviewed and approved by the Institutional Review Board. All participants provided informed consent.

Site, sample and procedure

Information on the parent study site, sample, and study procedures were detailed in a prior publication.²⁰ Among 47 patients enrolled during their ICU admission, 39 survived and were discharged from the ICU. For this report, we analyzed data from ICU survivors who were able to self-report measures of depressive symptoms and anxiety at one or more of the following time points: (1) within 2 weeks post-ICU discharge (to assess acute response following critical illness); (2) 2 months (to assess response when discharge destination tends to become diversified and include home, long-term acute care, skilled nursing facilities); and (3) 4 months (to assess new or persistent psychological symptoms). The flow of available participants throughout the study is summarized in Fig. 1.

Measures

Shortened Version of Center for Epidemiologic Studies-Depression 10 items (CESD-10) was used to measure depressive symptoms.²³ Scores were reported using a 4-point Likert-type summative scale (range 0–30), with higher scores indicating more depressive symptoms. On the CESD-10, a score of ≥ 8 has been used as an indicator of individual risk for clinical depression.²⁴ The CES-D has been validated in studies involving ICU survivors.^{25–27} The Cronbach's alphas in this study were 0.73–0.78. Validity has been established in ICU survivors.^{25–28}

Shortened Profile of Mood States-Anxiety scale (POMS-A) was used to measure anxiety. The POMS was developed to assess transient distinct mood states.²⁹ We used the 3-item tension-anxiety subscale to measure anxiety in ICU survivors. Each item was rated using a 5-point scale (1 = never, 5 = always). The total subscale score ranged from 3 to 15; higher scores indicated higher anxiety.

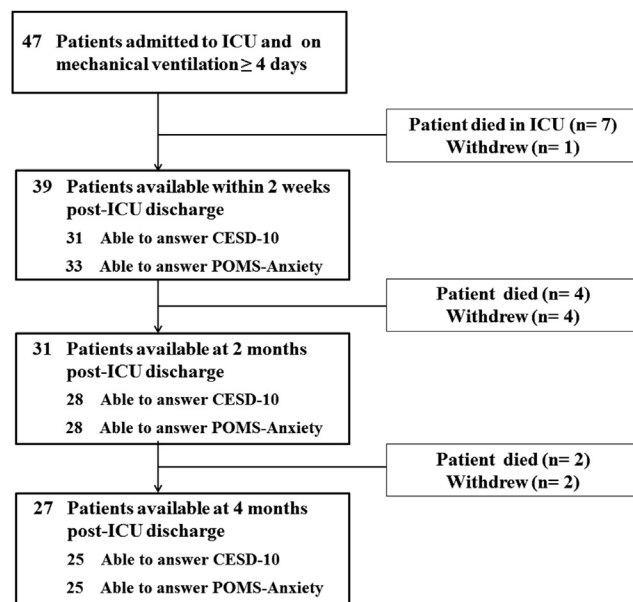


Fig. 1. Flow of study participants at enrollment during their ICU admission and three follow-up time points.

The Cronbach's alphas in this study were 0.85–0.90. Validity with other anxiety measures has been established.³⁰

*Activities of Daily Living (ADL; 6 items)*³¹ and *Instrumental Activities of Daily Living (IADL; 8 items)*³² were used to determine patients' care needs at each time point. Patients were asked to answer deficiencies in 6 ADLs (e.g. bathing, eating)³¹ and 8 IADLs (e.g., shopping).³² The score was the sum of activities needing assistance; higher scores indicated worse functional status. Reliability and validity have been well established.^{33–39} Depending on response, the level of care needs was categorized as: no need (no impairment in ADL or IADL), moderate need (≥ 1 impairment in IADL but no impairment in ADL), and high need (≥ 1 impairment in ADL).⁴⁰ The use of ADL and IADL to determine level of caregiving has been validated in a prior study with a large population of spousal caregivers.⁴¹

Data analysis

A research team member hand entered data into IBM-SPSS v. 19.0 (SPSS, Inc.; Chicago, IL, USA) which was verified by the principal investigator (JC). Descriptive statistics were reported for all variables. Non-parametric statistics were used to provide a conservative interpretation because of the small sample size. The Kruskal–Wallis test was used to compare ICU survivors' depressive symptoms and anxiety by individual care needs at each follow-up point based upon the sum of the ADL and IADL score, i.e., 1 = no care needs (no impairment in ADL or IADL); 2 = moderate care needs (no impairment in ADL and one or more impairments in IADL); and 3 = high care needs (at least one impairment in ADL). The Mann Whitney U test was used to compare ICU survivors' depressive symptoms and anxiety by presence/absence of previous history of psychiatric conditions with data obtained from patients' medical records. Friedman test was used to explore depressive symptoms and anxiety by ICU survivors' home discharge status at 4 months post-ICU discharge. Besides statistical significance (set at $\alpha = 0.05$, two-tailed), trends in differences were also explored.

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