



Acute psychological trauma in the critically ill: Patient and family perspectives



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ARTICLE INFO

Keywords:

Psychological stress
Intensive care unit
Post-traumatic stress disorder
Post intensive care syndrome

ABSTRACT

Objective: Post-intensive care syndrome (PICS), which encompasses profound psychological morbidity, affects many survivors of critical illness. We hypothesize that acute psychological stress during the intensive care unit (ICU) confinement likely contributes to PICS. In order to develop strategies that mitigate PICS associated psychological morbidity, it is paramount to first characterize acute ICU psychological stress and begin to understand its causative and protective factors.

Methods: A structured interview study was administered to adult critical illness survivors who received ≥ 48 h of mechanical ventilation in medical and surgical ICUs of a tertiary care center, and their families.

Results: Fifty patients and 44 family members were interviewed following ICU discharge. Patients reported a high level of psychological distress. The families' perception of patient's stress level correlated with the patient's self-estimated stress level both in daily life ($\rho = 0.59$; $p < 0.0001$) and in ICU ($\rho = 0.45$; $p = 0.002$). 70% of patients experienced fear of death, 38% had additional other fears, 48% had hallucinations. Concerns included inability to communicate (34%), environmental factors (30%), procedures and restraints (24%), and being intubated (12%). Emotional support of family/friend/staff/clergy (86%), and physical therapy/walking (14%) were perceived to be important mitigating factors. Clinicians' actions that were perceived to be very constructive included reassurance (54%), explanations (32%) and physical touch (8%).

Conclusions: Fear, hallucinations, and the inability to communicate, are identified as central contributors to psychological stress during an ICU stay; the presence of family, and physician's attention are categorized as important mitigating factors. Patients and families identified several practical recommendations which may help assuage the psychological burden of the ICU stay.

1. Introduction

Millions of people are admitted to intensive care units (ICU) in the United States every year [1] and a substantial majority survive [2]. However, survival often does not equate with the resolution of a patient's struggles. Following discharge, many suffer from persistent impairment in the domains of physical, cognitive, and psychological functioning [3] collectively known as post intensive care syndrome (PICS) [4].

Effective inpatient strategies to prevent or minimize the development of PICS likely include pharmacologic treatment of pain and agitation, judicious use of sedatives and antipsychotics, early mobilization, and reorientation [5]. There is insufficient understanding of the etiology and potential interventions to specifically target the persistent

psychological manifestations of PICS. Identified risk factors for post-ICU psychological sequelae include underlying psychopathology, receiving benzodiazepines, presence of in-ICU psychologic distress symptoms, and having memories of frightening/delusional ICU experiences, as well as having no factual recall of the ICU stay and only memories of delusions [6–10]. A single center trial of intra-ICU psychological intervention demonstrated lower rates of post ICU psychological morbidity among surviving trauma patients and the use of daily diaries during hospitalization has been to be beneficial [11,12]. Following discharge, data suggest that cognitive behavioral therapy is superior to pharmacological management of anxiety, depression, and post-traumatic stress disorder (PTSD) [13,14].

We and others have identified components of a patients' ICU experience and the behavior of clinicians that contribute to patients'

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acute psychological distress and subsequent morbidity [15–17]. Strategies for patient's self-actualization and positive support from the ICU personnel and family may alleviate the psychological cost of critical illness [18]. Despite these clinical observations of contributors to ICU stress and the link between acute stress during the ICU stay and subsequent morbidity, a more rich understanding of this problem is mandatory.

We believe that improved comprehension of the psychological impact of an ICU stay is necessary in order to change behaviors that contribute to acute psychological distress and its sequelae. In this study we aimed to 1) evaluate the burden of psychological trauma perceived by mechanically ventilated patients in the ICU and their families and 2) identify the factors felt to exacerbate or mitigate that trauma in order to begin to inform our understanding of this phenomenon. We chose to study patients who were mechanically ventilated (MV) ≥ 48 h in order to target those likely to experience a longer ICU confinement with greater medical interventions and potentially greater risk of PICS.

2. Methods

We conducted a prospective observational study in medical and surgical ICUs at the Mayo Clinic in Rochester, MN. Critically ill patients and their families were queried about psychological distress following an ICU stay and the perceived exacerbating or mitigating factors. The study was approved by the Mayo Clinic institutional review board. Written informed consent was obtained from each enrolled patient. Oral consent was obtained from participating family members.

2.1. Selection of participants and data collection

All adult patients admitted to medical or surgical ICU, who received 48 h or more of MV were screened for participation (VD and MD). Patients who were non-English speakers, or had a history of schizophrenia, psychotic disorders, or prior dementia were excluded. Eligible patients were consented and a six-item screener derived from Mini-Mental Status examination to identify cognitive impairment was administered (VD) [19]. Patients who declined study participation or exhibited signs of cognitive impairment defined as a score of < 4 on the six item screener were excluded. Demographic data (age, sex, body mass index), duration of mechanical ventilation, and length of stay in ICU were collected. Additionally, each patient's Acute Physiology and Chronic Health Evaluation III (APACHE III) index, which is a measure of severity of acute illness, was recorded [20].

Enrolled subjects and their families were interviewed (VD) within 72 h following ICU discharge utilizing a structured interview format. Most patients were interviewed while alone on the hospital ward; other interviews were conducted in the presence of a family member or a health care provider per patient's preference. Family members were defined as adult relatives who visited at the patient's bedside; family members were interviewed either in person in the presence of the patient or alone or were interviewed by telephone. One family member was interviewed per patient; there were no exclusion criteria for family. All surveys were administered by a trained physician (VD). Results of each survey were manually charted and simultaneously recorded using portable electronic voice recorder. The interview contained structured queries with choices of categorized responses and open-ended questions. All answers were charted and voice recorded. Any narratives unrelated to the questions asked were not analyzed. VD was the first rater and LK was the second rater for the 10 first patients and families. There was 100% inter rater agreement for scales and narrative transcription. Thematic coding scheme was established using Delphi (consensual) method (LK, OG, VD). No re-confirmation with interviewed participants was performed. Clinical information was obtained from the electronic medical record.

We estimated the rate of physical, psychological, and/or cognitive dysfunction at 40% for the ICU survivors and family member's

experience, based on previously published data [21]. Thus, to detect PICS with a 95% chance we would need $\log 0.05/\log 0.6 = 6$ patients. Given the exploratory nature of our single group observational pilot study and the inclusion of open-ended questions in our design, we established a targeted accrual at 50 in order to maximize our understanding of patients' and families' experience.

2.2. The content of structured interviews

The senior author (LK) developed original questionnaires aimed to better understand three domains relevant to providing psychological support to the critically ill during their ICU admission. The authors' clinical ICU experience, the personal experience of one of the authors [22] and factors known to impact psychological stress guided the design of the queries [23–26]. These included a 100 point verbal analogue scales to assess psychological distress level, the intensive care psychological assessment tool (IPAT) score [27], and assessment of the domains of psychological trauma, its exacerbating/mitigating factors, and aspects of patient/clinician communication (available in Supplemental Digital Content). The IPAT score is a validated, quick and simple screening tool to detect acute psychological distress in ICU patients, and the risk of psychological morbidity. With a cut point ≥ 7 , the IPAT score predicts future diagnosis of PTSD and psychological morbidity [28].

2.3. Data analysis

All study data were managed using the REDCAP electronic data capture tool hosted at Mayo Clinic, Rochester, Minnesota [29]. Continuous variables are presented as medians and interquartile ranges. Categorical variables are presented as counts and percentages. Statistical comparison was performed using non-parametric tests (Mann-Whitney, Fisher's exact test, and Spearman correlations as appropriate). Multiple logistic regression model was constructed to explore relationships of demographic factors, APACHE score, length of ventilation and ICU stay, and reported level of stress in daily life and IPAT score ≥ 7 . A two tailed p -value < 0.05 indicated significant difference. Statistical computation was performed using JMP 11 (SAS, Cary).

3. Results

During a period between August 2015 and May 2016 we identified and screened 87 subjects meeting pre-defined enrollment criteria. Thirty seven patients were excluded as per study design; 50 patients and 44 family members were interviewed (Fig. 1). Six families were not interviewed: four families were not available for interview, one family refused to participate and one patient did not have a family. Median duration of interview was 12 (7–19) min for patients, and 20 (10–35) min for families.

Median patient age was 63 years (IQR 50–69), BMI 27.7 (IQR 23–33.6), 62% were male, median APACHE III score was 47 (IQR 31–51) at the first hour and 68 (IQR 58–89) at 24 h of ICU stay. Median length of stay was 7 days (IQR 5–11) in ICU with median MV duration of 104 h (IQR 71–153). Half of patients had a six-item screener score of 6, 17 patients had 5, and 8 patients had 4. There were no significant differences in stress level in men and women, no association with sex, age, APACHE score, length of MV and ICU LOS. Median IPAT score was 7 of 30 (IQR 3–11), there were 26 patients (52%) with IPAT score ≥ 7 . In these patients median self-expressed stress level was 76 (43.75–93.5).

3.1. Psychological trauma

48 (96%) patients viewed themselves as optimists prior to and after their ICU stay. Only 4 (8%) patients had a specific attitude towards the ICU before admission due to public media, communication with others,

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