



Risk of post-traumatic stress disorder in family caregivers of neuroscience intensive care unit patients

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Family caregivers of intensive care unit (ICU) patients are exposed to high levels of stress (1). During ICU admission, family caregivers are in a position to witness the stress-provoking ICU environment more vividly than the patients who lack physical and cognitive capacity to control or understand surroundings. Because limited decisional capacity is common in patients during the critical phase of their illness, many family caregivers are expected to take the role of a surrogate decision maker to discuss options for life supporting treatments. Demands on family caregivers do not stop after patients' ICU discharge. Recovering from critical illness leads to a new phase of complex and unpredictable illness experience. Over time, support from formal resources dissipate and more responsibilities are assumed by family caregivers. Decades of research have highlighted that ICU family caregivers are at risk for adverse psychological responses at various timelines across the trajectory of their loved one's illness, recovery and/or death (2-4). Despite growing awareness, supportive and effective interventions targeted to family caregivers of ICU patients are lacking (2). One of major challenges in developing interventions may be limited knowledge of ways to identify family caregivers at high risk for severe stress response and other modifiable risk factors.

Post-traumatic stress disorder (PTSD) is one of the well-recognized adverse psychological complications in ICU family caregivers (5). In a landmark study of PTSD symptoms in ICU family caregivers, Azoulay and

colleagues (6) surveyed 284 family members of ICU patients. Approximately one third of family members reported symptoms indicating moderate to major risk of PTSD (Impact of Event Scale total score >30) at 3 months post-ICU discharge or death of a patient (6). While official diagnosis of PTSD requires a month interval between exposure to a traumatic event and actual diagnosis (7), studies targeting family caregivers of the critically ill have shown that these family caregivers report onset of PTSD symptoms as early as during patients' ICU admission (1). Identifying PTSD risk early may help to deliver interventions to the high-risk caregiver group to prevent adverse long-term psychological outcomes after patients' discharge.

In a recent issue of the journal, *Critical Care Medicine*, Choi *et al.* reported findings of their prospective observational study that evaluated PTSD risk in family caregivers of patients admitted to a neuroscience ICU during ICU admission to 6 months post-ICU discharge (8). The sample consisted of 99 dyads of patient-family caregivers. Stroke/hemorrhage (35.4%, n=35) and tumor (25.3%, n=25) were the two major admitting diagnoses. A majority of patients were intubated in the ICU (74.7%, n=74), but all had had no cognitive barriers to make informed consent for enrollment. To evaluate the main outcome variable, caregivers' risk for PTSD, family caregivers were asked to complete the Post-Traumatic Checklist-Specific Stressor (PCL-S, 17-items, score ranges 17-85) at three time points:

prior to patients' ICU discharge (baseline, n=99); 3 months post-ICU hospitalization (n=79); and 6 months post-ICU discharge (n=79). For baseline data collection, caregivers completed paper-based questionnaires. For 3 and 6 months follow-up, caregivers were contacted via email and were instructed to complete measures via a secure web-based data collection link. At baseline, caregivers completed additional measures of anxiety and depressive symptoms, caregiving self-efficacy, satisfaction with health care, coping, mindfulness and bond with patients. For analyses, the authors (I) examined sensitivity and specificity of screening baseline PTSD risk in predicting caregivers' PTSD risk at 3 and 6 months post-ICU discharge; and (II) examined if any of baseline characteristics in patients and caregivers predicted PTSD risk at each time point by using recursive partitioning analyses.

Two main findings include: relatively slow increase in prevalence of PTSD risks in their caregiver sample, and validity of baseline PTSD risk during ICU admission in predicting PTSD risk in caregivers at 3 and 6 months after patients' discharge from a neuroscience ICU (8). At baseline, 16.2% of caregivers (16 out of 99) reported clinically significant PTSD symptoms (8). Higher proportion of caregivers reported PTSD risk at 3 months (17.7%, 14 out of 79) and 6 months (21.5%, 17 out of 79) post-ICU discharge. Screening for PTSD risk at baseline predicted the risk at each follow-up time point with moderate sensitivity (75% at 3 months and 80% at 6 months) and high specificity (92% at 3 months and 95% at 6 months). In their sample of family caregivers, PTSD risk at baseline was associated with anxiety ($B=0.44$; $P=0.004$), bond with patient ($B=-0.08$; $P=0.03$) and mindfulness ($B=-0.15$; $P=0.07$). Results of recursive partitioning analyses revealed having PTSD risk at baseline was the most relevant predictor for PTSD risk at 3 and 6 months post-hospitalization.

This study by Choi *et al.* (8) makes significant contribution to the field. First, this is one of few studies that prospectively examined PTSD risk in family caregivers in both acute (ICU admission) and chronic (3 and 6 months post-ICU discharge) phase of patients' illness. Second, prevalence of PTSD risk is relatively stable over time (16–21%) but there was a trend of increasing PTSD risk in this caregiver sample for the first 6 months post-ICU discharge. As highlighted by the authors, this result is in contrast to the general understanding regarding trends of PTSD symptoms, which are mostly known to decrease over time in populations exposed to other

types of trauma (9). Third, findings suggest the value of screening PTSD risk in family caregivers during patients' ICU admission as a way to identify a high-risk caregiver group after patient's ICU discharge. Lastly, findings also suggest future opportunities of involving other important psychosocial variables in designing interventions. The authors examined bond with patients and mindfulness as resilience factors and found higher bond with patients and better mindfulness were associated with lower PTSD symptoms. While there was no statistically significant prediction of PTSD risk by these resilience factors, further elucidating contributions from these factors on PTSD risk will be valuable. For example, growing evidence supports mindfulness as attainable trait or treatment that can reduce PTSD symptoms (10,11).

As addressed by the authors, major limitations exist in their findings. This study involved a small sample of family caregivers of a highly selective group of patients who were recruited from a neuroscience ICU. All patients were capable of providing informed consent at baseline. Presumably, patients enrolled might have relatively less complicated courses of critical illness and recovery trajectories while irreversible deficits are likely due to neurologic diagnoses. Readers would have been able to get a better idea about patients' condition at ICU discharge if the authors had included more clinical data such as ICU length of stay, hospital length of stay, discharge disposition (inpatient rehabilitation, skilled nursing facility, long-term acute care or home) and duration of mechanical ventilation. Therefore, caution needs to be made when interpreting and comparing the results from this study with findings from other previous studies of PTSD symptoms in family caregivers of the critically ill (5,12).

Despite these limitations, findings from Choi *et al.* (8) warrant replication studies with family caregivers of neuroscience ICU patients with higher acuity and more complex recovery trajectories to re-identify characteristics of at risk groups of caregivers and appropriate timing and targeting of interventions.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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