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ORIGINAL ARTICLE

Sleep in family caregivers of ICU survivors for two months post-ICU discharge

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Summary
Objective: To describe changes in sleep quality in family caregivers of ICU survivors from the patients' ICU admission until two months post-ICU discharge.
Design: Descriptive repeated measure design.
Setting: Academic hospital medical ICU.
Main outcome measures: Subjective sleep quality (Pittsburgh Sleep Quality Index [PSQI]) and objective sleep/wake variables (SenseWear Armband™) were measured in family caregivers at patients' ICU admission, within two weeks post-ICU discharge and two months post-ICU discharge.
Results: In 28 family caregivers of ICU survivors, most caregivers reported poor sleep quality (i.e. PSQI >5) across the three time points (64.3% during patients' ICU admission, 53.6% at each post-ICU time point). Worse trends in sleep quality and objective sleep/wake pattern were observed in caregivers who were employed, and a non-spouse. There were trends of worsening sleep quality in caregivers of patients unable to return home within two months post-ICU discharge compared to patients able to return home.

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Conclusions: Poor sleep quality was highly prevalent and persisted in family caregivers of ICU survivors for two months post-ICU discharge. Our data support the need for a larger longitudinal study to examine risk factors associated with sleep quality in family caregivers of ICU survivors to develop targeted interventions.

Implications for clinical practice

- A majority of family caregivers report poor sleep quality during patients' ICU admission. Such poor sleep quality continues for initial two months after patients' ICU discharge.
- We observed trends of worse sleep quality and sleep/wake pattern in non-spouse caregivers and those who work in addition to caregiving role. Caregivers' sleep quality and sleep/wake pattern were worse when the course of patients' recovery involves long-term institutional care or home discharge soon after ICU discharge.
- Targeted interventions based upon caregivers' individual care situations and needs unique in major post-ICU transition patterns will help improving caregivers' sleep quality and ultimately benefit patients' recovery.

Introduction

Promoting physical and mental health of family caregivers is an important component of family-centred critical care nursing. Psychological symptoms commonly experienced by family members of intensive care unit (ICU) survivors include depression, post-traumatic stress and complicated grief, a constellation of symptoms referred to as Post-ICU Syndrome-Family (PICS-F) (Davidson et al., 2012). Poor sleep quality and impaired sleep/wake patterns may be major contributing factors leading to PICS-F.

Inadequate rest is a highly prevalent health risk in family members of critically ill patients admitted to an ICU (Choi et al., 2013). During the patient's ICU stay, family caregivers report poor sleep quality and its association with decreased daytime functioning (Verceles et al., 2014). The nature of recovery after critical illness is complex and unpredictable (Unroe et al., 2010), with many caregivers assuming responsibility for patients' physical and psychological needs (Choi, 2009; Van Pelt et al., 2007). In addition, patients may experience several transitions between care settings during recovery, providing additional stress (Unroe et al., 2010). Stress from these increased responsibilities and the unpredictable nature of the recovery may cause persistent problems with sleep quality. Few studies have explored sleep quality or objective sleep/wake patterns in family caregivers during the post-ICU discharge period, an important phenomenon to explore when designing interventions to address PICS-F.

The aim of this study was to describe the trajectory of sleep quality and objective sleep/wake patterns in family caregivers of ICU survivors from the patients' ICU hospitalisation to two months post-ICU discharge. We also described sleep quality and objective sleep/wake patterns by caregiver characteristics and patient home discharge status. We hypothesised that poor sleep quality and disrupted sleep/wake patterns would be present across the phases of patients' illness and recovery and vary depending on characteristics of patients' recovery (e.g. timing of home discharge after ICU discharge).

Methods

Design and setting

This descriptive analysis was part of a longitudinal study that explored biobehavioral stress responses in family caregivers of critically ill adults who required mechanical ventilation ($\geq$4 days) in a medical ICU in a tertiary academic hospital (Choi, 2009). Potentially eligible family caregivers and patients were identified by ICU staff and asked to give permission to be approached by a research team member. If permission was granted, a member of the research team verified eligibility and explained the study's purpose, risks and benefits. Baseline data collection occurred during the patients' ICU hospitalisation. Follow up data collection occurred at various locations at each time point, depending on patients' placement after hospital discharge.

Data collection

Medical records were reviewed to obtain patient characteristics. Two instruments were used to assess caregiver sleep. The Pittsburgh Sleep Quality Index (PSQI) measured subjective sleep quality (Buysse et al., 1989). The potential PSQI score ranges from 0 to 21; scores over five indicate poor sleep quality. Higher scores indicate worse sleep quality. Reliability and validity have been well established (Backhaus et al., 2002; Buysse et al., 1989; Carpenter and Andrykowski, 1998; Fichtenberg et al., 2002). The Cronbach's α reported for the Global PSQI score was 0.83 (Buysse et al., 1989). The Cronbach's α in a population of ICU family caregivers has not yet been established. The Cronbach's α for our care-