

Significance of depression in family caregivers of critically ill patients discharged home

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Readiness for discharge is an important factor that influences negative health outcomes such as unplanned readmission, aggravation of caregiver stress and increases healthcare costs (1). In particular, caregivers of critically ill patients have higher burdens in patient care because of lack of professional knowledge on patient conditions, social supports and community resources (2-5).

Recently, Cameron and colleagues from Canada reported the results of a prospective observational multicenter study regarding one-year outcomes in caregivers of critically ill patients (6). The study participants were 280 caregivers of patients who had received seven or more days of mechanical ventilator care in intensive care units (ICUs). Data on caregiver and patient characteristic were collected using medical records and self-administered questionnaires. The main outcomes of this study were caregivers' depressive symptoms, psychological well-being, physical and mental health. In this study the Center for Epidemiologic Studies Depression scale (CES-D) was used to measure caregivers' depressive symptom, the Positive Affect Scale from the Positive and Negative Affect Schedule (PANAS) for psychological well-being and the Physical Component Summary (PCS) and Mental Component Summary (MCS) of the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36) for physical and mental health. Time points of assessment were 7 days and 3, 6, 12 months after ICU discharge. The primary hypothesis of the study was that severity of illness and functional independence of the patients influence caregivers' depressive symptom, psychological wellbeing, health related quality of life, and sense of control over life. However, the result was not consistent with the hypothesis.

There are two important findings in this study which focus on the level of depression and health outcomes of caregivers. Percentage of caregivers with a CES-D score of 16 (cutoff point) or more were 67% at 7 days, 49% at 3 months, 43% at 6 months, and 43% at 12 months. This finding indicates that many caregivers were at risk for clinical depression and identifies two groups of trajectories—those who initially had high depressive symptoms but decreased over time (83.6%) and those who remained high (16.4%). There was no significant difference between the two groups in severity of patients' illness, functional independence and caregivers' demographic characteristics.

In addition, negative health outcomes in mental health of the caregivers were significantly associated with age, limitation of participation in valued activities due to patient care, social support, mastery (sense of control over life), and personal growth. Moreover, low physical health score for the caregivers, which are related with less mastery (sense of control), being older, and having lower annual family income, were significantly associated with the level of assistance provided. These results are inconsistent with previous studies that showed significant association between caregiver's psychological health and patient's physical status or disease severity (2-5).

In some aspects, Cameron *et al.* (6) study makes a significant contribution in scientific knowledge of caregiver burden/stress. First, this study used longitudinal data analysis including the multivariate mixed-effects modeling, and latent class mixed model with trajectory groups. These statistical approaches seem to have given new aspects of change in caregivers' burden after the critically ill patients

discharge from ICU or hospitals. Since Nagin [1999] introduced the trajectory model in clinical research (7), many researchers have applied this model. The advantages of trajectory analysis, which is also called group-based trajectory modeling, are to estimate patterns over time and simultaneously identify unobserved subgroups of individuals with similar trajectories (8).

Second, the sampling was done with a multicenter design which has given positive effects on external validity of the study. Ten university affiliated hospitals in six main cities in Canada participated in the study with 7 years of participant enrollment. In addition, the data included various characteristic of the patients, caregivers and complicated caregiving situations based on the theoretical framework of the Pearlin's Stress Process Model of family caregiving (9).

Nevertheless, there are some aspects of this study that remain and need to be considered. First, it was unclear if Cameron *et al.* [2016] considered patients' functional independence at 3, 6, and 12 months. Based on the information given in this paper, we could only recognize synchronized data for the patients in the two groups at the baseline (7 days after ICU discharge). Patients' functional independence at 3, 6, and 12 months could also impact the longitudinal caregivers' depressive symptoms. Thus, considering the covariates between patients and caregivers, analysis with a dyadic model (10) could be applied with measures of longitudinal changes in patients' functional independence and self-care abilities. Furthermore, in the Cameron *et al.* study, patients' care needs were not considered including findings that discharged patients experience various problems and unmet needs including difficulties in activities of daily living, emotional problems, insufficient assistance, uncertainty, and anxiety (11).

Recently, our research team has conducted a nationally funded study investigating caregiver burden of discharge patients with high risk medical condition including chronic obstructive pulmonary disease (COPD). In a small portion of the study, we identified nine caregivers of COPD patients with high risk of readmission and analyzed correlations of patient characteristics and caregiver burden. Data were collected at two points—pre discharge and 30 days after discharge. Caregiver burden was measured with the objective care burden score developed by Montgomery *et al.* (12). Patient data included general and disease related characteristics, COPD Assessment Tool (CAT) scores, PCS and MCS of SF-36. As a result, we found significant negative correlations between patients' physical health (PCS) scores and caregiver burden at 30 days after discharge ($r=-0.814$; $P=0.008$). We used the

Length of stay, Acute admission, Comorbidity, Emergency department visits (LACE) scores (13) as a screening tool to identify patients with high risk of readmission. This tool can be effective to define inclusion criteria for research.

As readmission is becoming a critical global healthcare issue, caregiver burden as well as patient condition is also an important factor to be managed in order to prevent unplanned readmission. The study results highlight the importance for nurses and healthcare providers in discharge care management to include tailored education and counseling for both patients and their caregivers.

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Footnote

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