

Stress and Fatigue in ICU Nursing

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Intensive care is a complex system wherein stress and fatigue can increase the likelihood of medical errors. Approximately 85,000 errors occur in US Intensive Care Units (ICU) in a day (Donchin et al., 1995; Wu et al., 2002). Studies show nurses are stressed and fatigued while working in this complex error prone environment. In one research, estimated 60% of ICU nurses reported medium to high levels of stress (Guerrer & Bianchi, 2011) while approximately 65% reported fatigue during work hours in critical care (Scott et al., 2006). One of the difficulties with reducing ill effects of stress and fatigue in ICU is the lack of operationalizable definitions for these constructs and issues in measurement. Selye (1956) defined stress as *an unspecific response of the body to any demand that might be internal or external in nature*. Since then, stress has been generally defined in terms of a set of stressors such as unnecessary prolongation of life, conflict with physicians and unrealistic expectations from colleagues, self, and patient families. Nursing stress in literature is classified into two fields, organizational stress and stress related to patient care. Organizational stressors include lack of clear responsibilities and authorities, performing unnecessary tasks, and lack of a trained team for transferring patients to other hospitals. Stress related to patient care includes the difference in capacity of wards and number of patients, as well as training students and new staff (Bahadori et al., 2014). Chronic stress leads to burnout among nurses and results in high turnover rates in the nursing profession. Burnout can also lead to lower morale, reduced job performance, higher tardiness, absenteeism, high turnover rate, and alcohol and drug abuse. Another unique stressor for the nursing profession is moral distress. Moral distress is defined as the lack of freedom to act in a moral way. Chronic stress elicits a response that is usually unfavorable to an individual's well-being. The construct of nursing 'workload' has been documented as a stressor. Morris et al. (2007) referred to the term nursing work as, "the amount of work performance required to carry out nursing work in a specified time." According to Duffield et al. (2006), an excessive workload is linked to stress and dissatisfaction among nurses (Aiken et al 2001; Fagin 2001, in Duffield et al., 2006). An individual's lack of well-being and degraded work performance may occur when workload moves beyond an acceptable level resulting in physiological strain. This can manifest as heart rate elevation or behavior changes such as reduced work pace (Chen et al., 2011). An acceptable workload definition was provided by Wu & Wang (2001) as *a level that an individual is able to sustain for a given work shift in a physiologically steady state without fatigue or discomfort*. An excessive workload for nurses leads to lack of rest between tasks, which in turns leads to fatigue. Fatigue is defined in a variety of ways in different domains. Fatigue can be defined as *"a general psychophysiological phenomenon that diminishes the ability of the individual to perform a particular task by altering alertness and vigilance, together with the motivational and subjective states that occur during this transition."* (Thiffault & Bergeron, 2003, in De Vries et al., 2003). Fatigue is also associated with lack of recovery period where lack of rest acts as a stressor. Distinguishing unique factors associated with stress or fatigue, particularly chronic aspects of these constructs, is challenging in ICU nursing. The constructs of stress and fatigue influence nursing activities and can lead to degraded performance like medical errors. Other effects include higher turnover rates, unnecessary costs, loss of productivity and increase in healthcare costs. There is a research gap in the identification of acute stress and fatigue thresholds above which there is a risk to individual's well-being in ICU nursing. This gap in measurement if left unchecked can lead to chronic diseases, increased medical errors because of memory lapses or slips and other off-work incidents like drowsy driving. Continuous monitoring of effects of stress and fatigue on physiological parameters shows promise to measure and mitigate ill effects of these constructs. A variety of measurement techniques are used in literature to measure stress and fatigue in an ICU setting. Some overlap and measure effects of both stress and fatigue. Physiological measures are used in research studies to look at an isolated construct such as stress in ICU nurses; however, these biometric measures show effects of both stress and fatigue making it difficult to identify effects due to a single construct. Because it is difficult to separate the effects of the constructs of stress and fatigue from one another in an ICU setting, the feasibility of a combined construct can be considered to investigate degraded performance. The effects of both stress and fatigue can be combined as one entity labeled as 'psychophysical health deterioration' in ICU nurses. It will be easier to study combined effects instead of performing studies investigating a single construct in isolation.

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