



Research paper

Sleep assessment by patients and nurses in the intensive care: An exploratory descriptive study



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ABSTRACT

Background: Sleep disruption is common in intensive care unit (ICU) patients, with reports indicating reduced quality and quantity of sleep in many patients. There is growing evidence that sleep in this setting may be improved.

Aim: To describe ICU patients' self-report assessment of sleep, examine the relationship between patients' self-reported sleep and their reported sleep by the bedside nurse, and describe the strategies suggested by patients to promote sleep.

Methods: An exploratory descriptive study was undertaken with communicative adult patients consecutively recruited in 2014–2015. Patients reported sleep using the Richards–Campbell Sleep Questionnaire (score range 0–100 mm; higher score indicates better sleep quality), with nursing assessment of sleep documented across a five level ordinal variable. Patients were asked daily to describe strategies that helped or hindered their sleep. Ethical approval for the study was gained. Descriptive statistical analysis was performed [median (interquartile range)]; relationships were tested using Spearman's rank correlation and differences assessed using the Kruskal–Wallis test; $p < 0.05$ was considered significant.

Results: Participants ($n = 151$) were recruited [age: 60 (46–71) years; ICU length of stay 4 (2–9) days] with 356 self-reports of sleep. Median perceived sleep quality was 46 (26–65) mm. A moderate relationship existed between patients' self-assessment and nurses' assessment of sleep (Spearman's rank correlation coefficient 0.39–0.50; $p < 0.001$). Strategies identified by patients to improve sleep included adequate pain relief and sedative medication, a peaceful and comfortable environment and physical interventions, e.g. clustering care, ear plugs.

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Conclusion: Patients reported on their sleep a median of 2 (1–3) days during their ICU stay, suggesting that routine use of self-report was feasible. These reports revealed low sleep quality. Patients reported multiple facilitators and barriers for sleep, with environmental and patient comfort factors being most common. Interventions that target these factors to improve patient sleep should be implemented.

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1. Introduction

Sleep disruption is common in the intensive care unit (ICU) population, with reports indicating reduced quality and quantity of sleep in a majority of patients.^{1,2} Intensive care patients receive as little as two hours of sleep over a 24 h period, with little demonstrated change over three decades of investigation.^{3–5} The quality of the sleep is also compromised, with some results suggesting that intensive care patients do not experience normal sleep.^{1,6}

Sleep is considered to be physically and psychologically restorative and essential for healing and recovery from illness. During critical illness sleep is vital, potentially promoting immune function and thus reducing preventable healthcare-associated infection.⁷

There are many potential causes for sleep disruption during critical illness. These include alterations in circadian rhythm, elevation of the stress response, management strategies such as medications, care activities, technology interaction (e.g. patient-ventilator synchrony) and environmental factors such as noise and light.⁸ Difficulty sleeping due to noise and the invasiveness of therapeutic interventions has been reported as one of the most important physical stressors for ICU patients by patients, relatives and healthcare professionals.⁹

There is evidence that nurses are not able to accurately assess patient sleep, when compared to patients' own assessment of their sleep, with nurses consistently over-rating the amount and quality of patient sleep.^{10,11} Sleep assessment in a number of studies has been undertaken using polysomnography, although routine use of this method during patient care is rarely feasible or affordable. The recognition of poor quality and quantity of sleep during critical illness has been strengthened by the development of patient self-assessment sleep tools. The most commonly used sleep assessment instrument in ICU described in literature is the Richards–Campbell Sleep Questionnaire (RCSQ).^{11–16} The RCSQ is a five item visual analogue scale (VAS) that contains assessment items relating to sleep depth, falling asleep, number of awakenings, percent of time awake and overall quality of sleep that are rated on a 100 mm scale. There is initial evidence of the utility of the RCSQ in the ICU, although reports of its use have predominantly been limited to a single (usually the last) night of the patients' ICU stay. Only one study (conducted in the USA) has reported RCSQ use on multiple ICU days.¹³

Sleep assessment instruments enhance the ability of health professionals to recognise and respond to poor sleep, but their use is not widespread in the clinical environment. However healthcare professionals need to recognise and respond to reports of poor sleep quality and quantity in order to provide appropriate interventions to support sleep. Many factors, including potentially modifiable factors that may affect the patient's ability to sleep have been identified. Incorporation of these factors into quality improvement interventions has led to mixed results regarding improvement of ICU patients' sleep.^{14,17–20} These inconsistencies may be due to methodological differences such as setting and context, as well as frequency and method of sleep assessment.

The primary aims of this study were to:

1. Describe ICU patients' self-report assessment of sleep throughout their ICU stay;

2. Determine the feasibility of ICU patients self-reporting sleep assessment on multiple days during their ICU stay;

3. Describe the interventions and environments suggested by ICU patients to promote sleep;

These three primary aims were designed to inform future development of an intervention to improve patient sleep if a need was identified. Additionally, a sub-study was undertaken to:

4. Describe current documentation of ICU patients' sleep by nurses;

5. Examine the relationship between nurses' assessment of sleep and patients' self-reported sleep.

2. Methods

2.1. Setting and design

An exploratory descriptive study was undertaken at the Princess Alexandra Hospital (PAH) and the Royal North Shore Hospital (RNSH) Intensive Care Units (ICUs). Both ICUs are Level 1 tertiary-referral ICUs in Brisbane (PAH) and Sydney (RNSH), Australia. The ICUs each provide care for critically ill adult surgical and medical patients; more than 2000 patients are admitted to PAH annually while more than 3000 patients are admitted to RNSH annually. To be eligible for enrolment participants were: (1) adult patients (≥ 18 years); (2) treated in ICU for greater than 24 h; and (3) able to interact and respond to English commands (including language, hearing and vision). Patients were excluded from study enrolment if: (1) they had a known or suspected pre-existing sleep disorder; (2) there was high suspicion or diagnosis of dementia; (3) there was high suspicion or confirmed excessive intake of alcohol or other substance abuse and (4) were a prisoner. Patients who met the criteria were consecutively recruited between March and July 2014 (PAH and RNSH) and September 2014 and February 2015 (PAH only).

Researchers at both sites collected data relating to ICU patients self-reported sleep and strategies for improvement in sleep. Two ICUs were included because each unit has noteworthy differences in physical layout, with the PAH containing a mix of open bed spaces and single rooms while the RNSH contains only single rooms. Only the PAH was the site for the sub-study which examined documentation of patient sleep by ICU nurses and the relationship between patient reported sleep quality and nursing documentation of patients' sleep. As the study aims were descriptive (that is designed to inform the development of future interventional studies), a sample of 150 participants (with at least 50 participants per study site) was the target.

2.2. Data collection and measurement

Ethics approval was obtained from the Metro South, Northern Sydney Health, Griffith University and University of Technology Sydney Human Research Ethics Committees. Patients provided agreement to report sleep while they were in ICU and were then approached towards the end of their ICU admission or following discharge to the ward to provide informed consent. At this time of seeking patients' consent Research Nurses performed an

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