Original research

Factors associated with the teaching of sleep hygiene to patients in nursing students

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ABSTRACT

Teaching patients about sleep hygiene is a common practice in nursing. This study investigated the relationships of nursing students' sleep quality, sleep knowledge, and attitudes toward sleep hygiene with the teaching of sleep hygiene to patients with sleep disorders. A descriptive correlational design was adopted to investigate 258 nursing students from 2 nursing schools in different regions of Taiwan. A series of self-developed and standardized questionnaires was used to collect data. Binary logistic regression analysis was used to identify the predictors of nursing students' teaching patients about sleep hygiene. The overall response rate was 92.8%. A total of 63.6% of the participants taught their patients about sleep hygiene. The findings reveal that the participants were generally less knowledgeable about sleep, particularly in the aspect of sleep hygiene. Those with higher sleep quality, more knowledge about sleep, and more positive attitudes toward sleep hygiene were more likely to teach their patients about sleep hygiene. Sleep quality, sleep knowledge, and attitudes toward sleep hygiene were independent predictors of nursing students' teaching patients about sleep hygiene. The study findings suggest that educators and clinical preceptors may develop effective strategies, such as relaxation, to improve nursing students' sleep quality and integrate sleep education into nursing curricula to further advance the students' sleep knowledge in educational programs and practice.

1. Introduction

During hospitalization, patients experience physical and psychological distress, which reduces sleep quality (Gellerstedt et al., 2014). Sleep disorders in hospitalized patients impair their recovery. The prevalence of sleep disorders in inpatients has been estimated to range from 42% (Vico-Romero et al., 2014) to 62.7% (Enomoto et al., 2010). Sleep has long been a fundamental concern in nursing (Henderson, 1991). Nurses play a crucial role in helping patients to integrate various types of sleep interventions into their daily practice to improve their patients' sleep quality. According to the American Academy of Sleep Medicine (2014), sleep hygiene is defined as a list of strategies that create a favorable sleep environment and encourage patients to avoid behaviors associated with insomnia. Inadequate sleep hygiene is a type of insomnia diagnosis that is mainly caused by poor sleep habits (Siebern and Manber, 2013). SH education alone has been shown to benefit various populations, although it is less effective than pharmacotherapy and cognitive behavioral therapy (Bonnet and Arand, 2016).

Because of the ease of dissemination and accessibility of sleep hygiene education, patients are taught about sleep hygiene to manage their sleep in clinical settings. All nurses and nursing students should be knowledgeable about sleep to promote patients' sleep quality during hospitalization. However, worldwide, gaps exist in knowledge about the influencing factors of nursing students' teaching sleep hygiene to their patients. In this study, we explore the influence of nursing students' sleep quality, sleep knowledge, and attitudes toward sleep hygiene with their teaching of sleep hygiene to patients with sleep disorders.

2. Background

Our study framework established the relationships of sleep quality, sleep knowledge, and attitudes toward sleep hygiene with the teaching of sleep hygiene primarily on the basis of the theory of reasoned action (Fishbein and Ajzen, 1977) and health promotion theory (Pender et al., 2014), as well as on relevant literature and the authors' teaching

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experience. Teaching patients about sleep hygiene is a type of health-promoting behavior. Individual characteristics and experience or knowledge have direct and indirect effects on whether people engage in health-promoting behaviors (Pender et al., 2014). People with more positive attitudes exhibit higher intentions to perform a given behavior (Fishbein and Ajzen, 1977).

A qualitative study showed that students generally have positive attitudes toward sleep promotion in hospitals and they believe that it is curative and beneficial; however, they consider sleep promotion a low priority in their practice (McIntosh and MacMillan, 2009). Although sleep education programs enhance students' knowledge about sleep and sleep disorders (Ye and Smith, 2015), sleep education has still not been integrated into undergraduate nursing curricula in Taiwan or Western countries (Vallido et al., 2010; Ye et al., 2013). Even clinical nurses have reported that they have insufficient knowledge about sleep (Gellerstedt et al., 2015). Nurses consider insufficient sleep knowledge as a major barrier to effective sleep management in clinical practice (Ye et al., 2013).

The prevalence of insomnia is higher in nurses (Lee et al., 2015) than in the general population (Nowicki et al., 2016). Moreover, the clinical environment in which nursing students practice is considered to be one of the most stressful working environments, because these students are required to cope with life-threatening situations. Studies have revealed that the prevalence of insomnia among undergraduates nursing students ranges from 9% (Menon et al., 2015) to 63.2% (Silva et al., 2016). Sleep hygiene practice is not only associated with sleep quality in university students (Suen et al., 2010), but it is also a predictor of poor sleep quality in medical students (Brick et al., 2010).

The American Nurses Association recently launched the HealthyNurse™ project and defined a healthy nurse "as one who actively focuses on creating and maintaining a balance and synergy of physical, intellectual, emotional, social, spiritual, personal, and professional wellbeing" (American Nurses Association, 2014). Because nurses account for the highest proportion of professionals in the healthcare industry (Turale, 2016) and nursing is considered the most trusted profession, nurses have the capability of making the world healthier, which is beneficial not only for nurses themselves, but also for their patients (American Nurses Association, 2014). Professional nurses have the responsibility of acting as role models for patients. Nurses play a crucial role in promoting patients' health by teaching the patients about health behaviors. Nurses who believe in and adopt healthy behaviors are more likely to act as positive role models for their patients through patient education (Esposito and Fitzpatrick, 2011). Teaching patients about healthy behaviors is a health-promoting behavior exhibited by nurses. Teaching patients about healthy behaviors of nursing students shares some of the same features as teaching patients of qualified nurses. However, worldwide, gaps exist in knowledge about the correlation between the aforementioned factors and nursing students teaching sleep hygiene to their patients. Therefore, this study investigated the relationships of nursing students' sleep quality, sleep knowledge, and attitudes toward sleep hygiene with their teaching of sleep hygiene to their patients.

3. Methods

3.1. Design and sample

A cross-sectional study design was adopted to examine the correlation among the study variables. Nursing students were purposively sampled from two nursing schools (each with a 2-year and 4-year program) located in different regions of Taiwan. Both school programs grant university diplomas to their graduated students. To qualify for participation, students were required to have at least 270 h (6 credit hours) of clinical practicum experience, be older than 20 years, and have completed a physiology course. The sampling frame comprised all nursing students eligible for inclusion in this study. Before study

commencement, we provided detailed information to school administrators about the purpose of the survey and received permission to conduct the study at both schools. After the school administrator announced the recruitment information for students, questionnaires were administered by a research assistant to 278 nursing students in classes between August 2013 and July 2014. The survey was aimed at investigating the relationships of nursing students' sleep quality, sleep knowledge, and attitudes toward sleep hygiene with the teaching of sleep hygiene to patients with sleep disorders. The study purpose was detailed on the cover page of the questionnaire, and the participants were assured that their confidentiality and anonymity would be maintained. The questionnaire took approximately 15–20 min to complete. All questionnaires were returned in sealed envelopes and handed to the research assistant in the classes. The response rate was 92.8%. Therefore, a total of 258 returned questionnaires were included in the analysis.

3.2. Variables and measures

Five major factors considered to be related to the likelihood of teaching sleep hygiene to patients were explored using a series of questionnaires.

3.2.1. Participant characteristics

The survey collected participants' personal and professional information, including their age, gender, marital status, education, type of nursing program, licensure, and time given to sleep lessons at the nursing school. The time given to the sleep lesson was defined as the total number of minutes allocated for learning sleep-related information in the curriculum of the nursing school.

3.2.2. Sleep quality

The participants' sleep quality was measured using the Chinese version of the Pittsburgh Sleep Quality Index (PSQI) (Tsai et al., 2005), which was originally developed by Buysse et al. (1989). The PSQI is a self-reported questionnaire consisting of 19 self-rated items that assess sleep habits during the previous month. The items are grouped to generate seven component scores. The sum of the component scores yields a global PSQI score, with higher scores indicating poorer sleep quality. PSQI scores of > 5 imply that subjects have poor sleep quality (Buysse et al., 1989). A score of > 5 in the Chinese version of the PSQI has 98% sensitivity and 55% specificity for people with insomnia (Tsai et al., 2005).

3.2.3. Sleep knowledge

Because there are currently no standardized questionnaires available to be used for measurement of nurses' sleep knowledge, a sleep knowledge questionnaire comprising 16 self-rated items on sleep knowledge, including basic sleep psychology, sleep hygiene, and sleep architecture, was constructed on the basis of the authors' clinical knowledge and teaching experience with students, as well as on a literature review (Zozula et al., 2001). Each item offered three response options: yes, no, or unsure. One point was assigned for a correct response, and zero was assigned for incorrect or "unsure" responses. The maximum score was 16 points. The total score was treated as a global indicator of the levels of the participants' sleep knowledge. A higher score indicated that they were more knowledgeable about sleep.

To ensure the sleep knowledge questionnaire was comprehensive and appropriate for the participants, the draft questions were reviewed by five educators in nursing and sleep medicine to amend any ambiguous content. To validate the test items, an independent *t*-test was performed to examine the differences in the scores for the items measuring sleep knowledge between the top 27% (high-scoring group) and bottom 27% (low-scoring group) of the participants (Kelley, 1939). The high-scoring group reported higher scores for sleep knowledge ($n = 77$; $M = 13.23$, $SD = 1.10$) than did the low-scoring group ($n = 93$;