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NURSING PERSPECTIVES ON PATIENTS' SLEEP DURING HOSPITAL CARE

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Nursing perspectives on patients' sleep during hospital care

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To Annie and Adam

I love you to the moon and back. Never ever doubt your ability. Do not be afraid to step outside your comfort zone and remember always to aim high. Live your life with joy, authenticity and honesty. Be kind to yourself and to others. Just like excellent nursing.

With endless love,
Mom

ABSTRACT

Sleep is crucial for all humans in terms of health, daily functioning and well-being. Previous research has shown that sleep is considered a stressor for patients during hospital care. The general aim of this thesis was to explore and describe, from a nursing perspective, patients' sleep and how sleep is addressed, promoted and assessed during hospital care.

Methods

To cover the general aim of this thesis, various designs were chosen, and diverse methods of data collection were employed. In *Study I*, data were collected through qualitative interviews of ten consecutively recruited patients at an acute hospital. In *Study II*, data were collected through qualitative individual interviews and four focus groups, with a total of twenty-two registered nurses at four acute hospitals in an urban region. *Study III* was designed as a mixed method study and data were collected through twenty-one qualitative individual interviews as well as from program and course syllabuses and intended learning outcomes at three universities. Data from *Studies I-II* were analysed by qualitative content analysis with an inductive, latent approach. Data in *Study III* were analysed by qualitative content analysis with an inductive, manifest approach and collected documents were read word-for-word and scanned for the pre-set word, sleep. *Study IV* was a cross-sectional study and data were collected through a web-based survey. Acute hospitals in Sweden were subjected to stratified randomized sampling. Registered nurses, head nurses, nursing care developers and local training staff were included in the study. Data were analysed using descriptive statistics, and free-text answers were analysed by a thematic text analysis. *Study V* was performed as a non-experimental prospective study. Data from a group of twenty-five patients at two hospitals were collected by using the Richards-Campbell Sleep Questionnaire and actigraphy by Vivago® and were analysed with correlation and regression analysis.

Findings

Patients' sleep during hospital care is affected by several different factors and patients' sleep is described as an important but undermanaged area. Limited knowledge and education within the area and insufficient support from the organization can be seen as barriers. *Study III* reveals that several student nurses lack evidence-based knowledge about sleep and sleep-promotion and consider themselves only to be prepared to address and promote sleep to a limited extent. Furthermore, the word, sleep, occurred explicitly only three times in two different learning outcomes at one of three included universities. *Study IV* shows that the area of sleep is not highlighted in a clinical context; for example, there is an absence of training days and education about sleep, only a few departments actively address patients' sleep, and the use of sleep-assessment is non-existent. *Study V* shows a relationship between individual Vivago® graphs and patients' self-assessed sleep, but a significant correlation for all patients between mean values for the two assessments was only obtained for one of the two included nights.

Conclusions

This thesis indicates that sleep deprivation is common among patients during hospital care. Furthermore, education about patients' sleep in the investigated nursing programs and in clinical practice seems to be deficient. Assessments with the Richards-Campbell Sleep Questionnaire and measurement with Vivago® capture different dimensions of sleep. In its present form, the RCSQ could have the potential to facilitate nursing actions to promote sleep amongst hospitalized patients in line with person-centred care. Furthermore, it is concluded that patients' sleep during hospital care is an undermanaged and non-highlighted area. This thesis shows that there are several challenges for nurses, nursing managers and organizations at acute hospitals if better outcomes are to be achieved.

LIST OF SCIENTIFIC PAPERS

- I. **Gellerstedt, L.,** Medin, J., & Rydell Karlsson, M. Patients' experiences of sleep in hospital: a qualitative interview study. *Journal of Research in Nursing*. 2014, 19(3) 176-188.
- II. **Gellerstedt, L.,** Medin, J., Kumlin, M., & Rydell Karlsson, M. Nurses' experiences of hospitalized patients' sleep in Sweden: a qualitative study. *Journal of Clinical Nursing*. 2015, 24, 3664-3673.
- III. **Gellerstedt, L.,** Medin, J., Kumlin, M., & Rydell Karlsson, M. Sleep as a topic in nursing education programs? A mixed method study of syllabuses and nursing students' perceptions. Submitted and under revision.
- IV. **Gellerstedt, L.,** Medin, J., Kumlin, M., & Rydell Karlsson. Nursing care and management regarding patients' sleep during hospitalization - A cross-sectional pilot study. Submitted and under revision
- V. **Gellerstedt, L.,** Rydell Karlsson, M., Medin, J., & Kumlin, M. Patients' sleep in hospital: Outcomes of self-assessed vs objectively measured sleep as a nursing tool. In manuscript.

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LIST OF ABBREVIATIONS

EBN	Evidence-Based Nursing
EEG	Electroencephalography
FG	Focus Group
ICN	International Council of Nurses
MM	Mixed Methods research
NREM	Non-Rapid Eye Movement
PREM	Patient-Reported Experience Measures
PROM	Patient-Reported Outcomes Measures
PSG	Polysomnography
PSQI	The Pittsburgh Sleep Quality Index
REM	Rapid Eye Movement
RN	Registered Nurse
RCSQ	Richards-Campbell Sleep Questionnaire
UKÄ	Swedish Higher Education Authority (Universitetskansler- ämbetet)

INTRODUCTION

Sleep is crucial to all humans in terms of health, daily functioning and well-being. Throughout history, sleep has been emphasized as an important function for patients during hospital care and thus, an important part of health care. In the late 1800's, Florence Nightingale advocated the importance of sleep and argued that sleep was a significant part of the healing process for those who were ill (1). Swedish health care is undergoing constant change, partly due to increasing demands for efficiency and thereby a quest for shortening periods of care. Care in hospitals is conducted on a 24-hour basis and, nowadays, staff carry out an increasing number of checks and routine tasks during the night in order to facilitate and speed up treatment times. This may, of course, affect patients' possibility of, and entitlement to, rest and sleep in a negative way. From the perspective of nursing, nurses have both the authority and responsibility to address health-promotion in nursing care, and patients' sleep is an area that should be included (2, 3).

BACKGROUND

SLEEP

Sleep is an experience that is so natural that most people take it for granted. Sleep is often described in terms of the brain resting, but sleep is a complex and dynamic state that is crucial to life (2, 4-6). It is defined by Carskadon and Dement (7) as:

“Sleep is a reversible behavioral state of perceptual disengagement from, and unresponsiveness to, the environment and sleep is a complex combination of a psychological behavioral process. Sleep is typically accompanied (in humans) by postural recumbence, behavioral quiescence, and closed eyes” (7).

During sleep, heart rate, blood pressure and breathing are reduced (5, 8) and body temperature is lower than during wakefulness (4). Furthermore, energy metabolism is influenced and regulated and secretion of hormones, such as growth hormone, increases during sleep (9).

Sleep architecture

Normal sleep proceeds cyclically between two different states of sleep; Non-Rapid Eye Movement sleep [NREM] and Rapid Eye Movement sleep [REM]. Non-Rapid Eye Movement sleep is divided into three stages (N1-N3), where sleep in N1 is considered as

shallow, N2 as basic sleep and N3 as deep sleep (4, 10). Each sleep cycle contains the four stages, NREM (N1-N3) and REM (5, 9).

During the sleep stages, NREM and REM, different forms of activity in the brain can be detected by electroencephalography [EEG] (4). Sleep in normal humans starts with NREM sleep, first through N1, where transition from wakefulness to shallow sleep occurs. N1 is associated with a low threshold of arousal and has the role of wake-to-sleep transition. In N1, the brain-wave activity is low but with an influential frequency in brain activity, with sigma waves and so-called sleep spindles and K complexes. Sleep proceeds from N1 to N2, where more intensive stimuli are necessary for arousal (4). In N3, deep sleep is characterised by high-amplitude, low-frequency brain-wave activity, which is called delta activity and is seen as delta waves in an EEG. From N3, sleep proceeds into REM, which is not divided into stages. Muscle tonus, episodic bursts of rapid eye movements and muscle atonia can be observed in an EEG during REM (5). The two distinctive and different stages of sleep proceed through the night in cycles of approximately 90 minutes per cycle. In normal nocturnal sleep, the cycles occur three to six times per night, assuming a biological need for about 8 hours sleep (4, 5). The ultradian process regulates the shift between NREM and REM during the cycles (5).

Several factors and processes govern the regulation of sleep, and the two-prominent factors are the circadian rhythm and the homeostatic process. The circadian rhythm is controlled through the circadian clock, positioned in the suprachiasmatic nucleus, which is a bilateral structure consisting of thousands of neurons and located in the hypothalamus (9). The circadian rhythm regulates the timing system for wakefulness and sleep, and environmental signals, for example, light/darkness, regulate the rhythm (4, 9). The duration of sleep and wakefulness is driven by the homeostatic process. A person who has less deep sleep than needed during the night may experience sleepiness the following day and will have extended deep sleep during the following night (4).

Sleep quality and sleep health

The concept 'sleep quality', is a clinical term and considered to be complex because it is difficult to measure objectively (11). Buysse et al. (12) state that sleep quality includes areas, such as sleep duration and number of awakenings, and that the term encompasses both qualitative and quantitative aspects. Furthermore, it has been suggested that subjective sleep quality cannot always be compared with objective measurements of sleep. Harvey et al. (13) define the concept, 'sleep quality', as the number of awakenings experienced during the

night, and feeling restored and rested when waking up, in contrast to tiredness on waking and through the following day (13). Buysse (11) describes the concept, 'sleep health', as:

“Sleep health is a multidimensional pattern of sleep-wakefulness, adapted to individual, social, and environmental demands, that promotes physical and mental well-being. Good sleep health is characterized by subjective satisfaction, appropriate timing, adequate duration, high efficiency, and sustained alertness during waking hours” (11).

The National Sleep Foundation recommends a duration of seven to eight hours sleep for adults (26-64 year) to improve sleep health (14).

Risks and consequences of sleep deprivation

Sleep deprivation, as well as sleep disturbances, are usually found in healthy individuals but also in individuals diagnosed with a sleep disorder. Sleep deprivation is defined as an acute and/or chronic lack of sleep. Sleep deprivation can generate problems that are often related to insufficient quantities of sleep (15). Decreased sleep and reduced sleep quality have an impact on cognitive functioning. Sleep deprivation can result in a reduced memorizing ability and difficulties in maintaining concentration (6). Deteriorated functioning may occur after continuous sleeplessness but also after a shorter reduction of sleep time (16). Humans' logical reasoning, ability to retain new information and decision making is impaired by sleep deprivation. Furthermore, both short- and long-term sleep deprivation result in reduced alertness, extended reaction time and reduced level of attention (17). Sleep plays a critical role during the regulation of memory processes, and sleep before learning is essential for initial encoding of certain memories. Sleep is required for the successful consolidation of different forms of memory (18). Inflammatory processes are associated with sleep loss and sleep deprivation. Levels of C-reactive protein increase in inflammatory processes, both in total and partial sleep deprivation (19, 20). Sleep deprivation, after just 36 hours, is associated with a risk of developing coronary disease (21, 22). Both chronic and acute loss of sleep interferes with immune processes (23-26) and a shorter duration of sleep is associated with an increased sensitivity to developing a cold (27).

Assessment of sleep

Sleep can be measured objectively and subjectively (28, 29). Subjectively measured sleep can give information about patients' experiences of sleep, while objective measurements can identify and measure data to present an illustration and description of what occurs physically. Sleep can be measured objectively through polysomnography [PSG] and PSG is considered

as the gold standard regarding monitoring sleep quantity (30). PSG is used to evaluate abnormalities in sleep and/or wakefulness and other physiological disorders that have an impact on, or are related to, sleep and/or wakefulness (29). Another way to measure sleep objectively is through actigraphy [AG], a wristwatch device that can register body movement and activity. Computer software translates the person's movements into sleep-wake periods. An actigraph cannot provide data about sleep stages but records and registers sleep patterns and periods of awakening (30). Actigraphy is shown to correlate with PSG (31, 32). Although AG cannot replace PSG in sleep assessment, it is a convenient, affordable and accurate method of evaluating sleep (33). Subjective measurement of sleep can be achieved through different kinds of self-reported sleep-questionnaires, e.g. the Pittsburgh Sleep Quality Index [PSQI] (12) and the Richards-Campbell Sleep Questionnaire [RCSQ] (34). The RCSQ has shown high validity and reliability in a comprehensive study, with PSG related to the items of sleep depth, falling asleep and sleep quality (35). The internal consistency (Cronbach's alpha coefficient) for the RCSQ, has been reported to be 0.90 in other studies (36-38).

NURSING

There are several definitions of the concept, nursing, and this thesis is based on the definition given by the International Council of Nurses [ICN] (39)

“Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles” (39).

Nursing education and the nursing profession

According to ICN (39), basic nursing education is a formal standard program which would provide a broad and complete foundation in, for example, nursing sciences. A completed program should be a foundation for general practice of nursing and for a leadership role. The International Council of Nurses states that a registered nurse [RN] is an individual who has completed an education program of basic and generalized nursing and is approved by the regulatory authority to practice nursing in his/her country. After completed education, nurses are authorized and prepared to participate in general nursing practice, which includes care of ill and disabled people of all ages, prevention of illness, and health promotion, in both health care and other community settings. Furthermore, a nurse who has undergone basic nursing

education is expected to practice health care teaching, to be a member of the health care team and to be engaged in research. The nurse is expected to have a key role in shaping and applying acceptable standards of nursing practice, education and research. Furthermore, nurses are expected to be active in developing a core of research-based professional knowledge that supports evidence-based practice (39).

The Swedish government and Parliament, through the Ministry of Education, Science and Technology, make decisions about higher education programs regarding laws, guidelines and targets for universities. The Swedish Higher Education Authority [UKÄ] regulates, examines and issued permits on behalf of the Swedish government for the degree of applied programs and courses. The Swedish Higher Education Authority decides which higher education institutions are to be entitled to award a degree. All nursing programs in Sweden are of three years' duration and correspond to 180 credits in the European Credit Transfer System, leading to a Bachelor's degree. Today, 25 universities in Sweden provide nursing programs and the universities are authorized to design the programs in various ways but are required to follow national regulations regarding content and learning outcomes.

Caring science and nursing science

Caring science and nursing science are key components in nursing education programs and are based on the process of care (40-42). Each field of science includes a specific element and precise methods aimed at knowledge-searching, and within a science a phenomenon is studied as a part of reality (40, 43). Love and charity are considered to be the core in the concept of caring, and the process of care consists of the relationship between patient and health care provider (44). Caring science can be broadly described as creating knowledge about nursing, for example, the essence in caring science is described by Eriksson as: 1. The subject of knowledge, 2. The central substance, in this case – the human, health, the world and caring, and 3. The methods for knowledge-searching (40).

The foundation of caring science is based on the paradigm of human sciences, which takes the view that a human is a whole person with a body, a spirit and a soul (45, 46). Caring science focusses upon the phenomenon of caring and not on the profession (47). Caring science can be regarded as a unique human science based on essential and fundamental issues of human life and existence (48). Furthermore, in caring science the concept of health comprises more than the absence of diseases (40).

One part of nursing is person-centred care [PCC]. Person-Centred Care can be described as a model consisting of five components: 1. Working with the patients' beliefs and values, 2.

Engagement, 3. Providing holistic care, 4. Shared decision making and, 5. Having a sympathetic presence (49). Today, there is no established national definition of the concept of PCC (50). A person-centred approach is described as:

“A person-centred approach to care sets the person’s views about his/her life situation and condition irrefutably, and always, in the centre of care” (51)

A patient is a person, and, according to a person-centred approach and PCC, a person should not be reduced to their disease or diagnosis but be seen as a someone with feelings, needs and expectations (51). Person-centred care means that a person’s views and experiences should be taken in account, so that they are not treated as a passive participant in care (52). Positive outcomes have been demonstrated by PCC, e.g. increased quality of life, improved discharge procedures and reduced healthcare costs (53).

Person-centred care is one important way of increasing patients’ participation. Furthermore, high-quality care entails collecting information from patients, how they are feeling, perceived symptoms and how they experience care and treatment. Use of Patient-Reported Outcomes [PROM] and Patient-Reported Experience Measurements [PREM] is increasing in the field of healthcare research (54, 55). Patient-Reported Outcomes are instruments or tools used to measure the patient’s health status and PREM is used to measure patients’ overall experiences of care or the health care service (54). The use of PREM and PROM makes it possible to place the focus on the patient in research and is a way to evaluate care and also to develop health and medical care from a patient perspective.

Evidence-based nursing

Research can provide new and valuable knowledge about health and illness. Nurses are expected to be both consumers of, and participators in, research during their working life (56). Evidence is not only required for nursing interventions but in all forms of activities conducted in nursing, and is described as a process that is ongoing until implementation and evaluation have been carried out (57). Evidence-based nursing [EBN] is defined as:

“an ongoing process by which evidence, nursing theory and the practitioners’ clinical expertise are critically evaluated and considered, in conjunction with patient involvement, to provide delivery of optimum nursing care for the individual”(58)

Evidence-based nursing is considered to improve patient outcome and quality of care. Knowledge and education about EBN are one important area in order to improve and develop evidence-based practice (58, 59).

Nursing care and sleep

Nursing care focusses upon basic needs regardless of the patient's health status (60, 61).

According to Henderson, nursing care is based on an individual's basic components of health.

To achieve health, the individuals may need support through nursing care (62, 63).

Henderson specifies fourteen components of nursing care. Also called Henderson's need theory, it is one of few theories that explicitly mentions the basic need of sleep. Nursing care in a hospital setting may be seen as three components connected to each other: 1. Actions needed by all adult patients during hospital care, 2. Care that is not related to a specific health problem or diagnosis and, 3. Care not directed at a specific health goal (60). As Henderson's need theory does not limit nursing to care in connection with illness, and as all individuals have biopsychosocial basic needs, body and mind should be regarded from a holistic perspective. The 14 components in nursing need theory are based on a holistic approach in order to address sociological, physiological, psychological and spiritual areas. Furthermore, the components cover issues such as, environment, the individual, nursing and health, with component number five describing the need of rest and sleep (62, 63) (Figure 1). Basic needs are part of health, and the purpose of nursing is to support the individual to achieve health. Nursing care has a supporting and assisting role when an individual lacks the strength or knowledge to achieve the 14 components of basic needs.

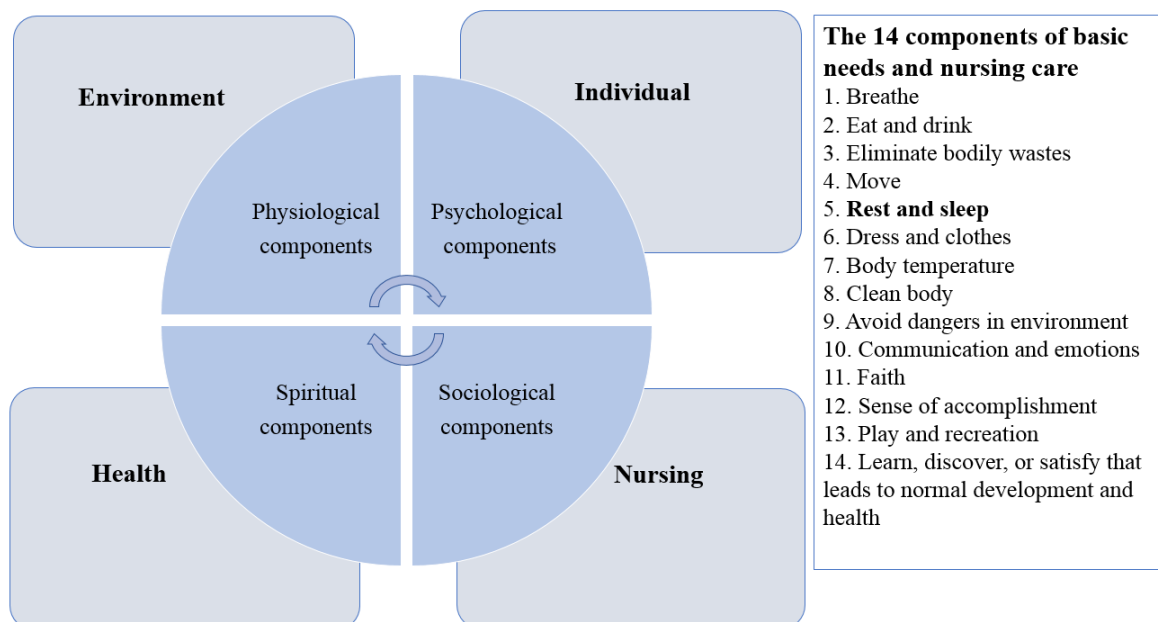


Figure 1. Henderson's metaparadigm concepts and the fourteen components of nursing care.

PATIENTS' SLEEP DURING HOSPITAL CARE

Acute hospitals in Sweden

In Sweden, all hospitals are divided into six healthcare regions. Each region has one or two regional hospitals (hospitals that conduct highly specialized care), a number of county hospitals (regionals hospital, but on a smaller scale) and a number of small county hospitals (hospitals that provide basic healthcare). Today, there is no definition of the concept, acute hospital, in Sweden. The context of this thesis is the definition found in the Swedish Government Official Reports (64):

“a hospital with an emergency department open 24-hours a day, access to performing surgery around the clock, as well as access to a radiology department and an intensive care unit” (64).

Factors affecting patients' sleep during hospital care

Sleeping in hospital is seen as a stressor for many patients' and impaired sleep during hospital care has an impact on patients' experiences (65-73). Patients report significantly reduced sleep duration regarding night-time sleep during care in hospital compared with sleep at home (74-76). Both sleep duration and experienced sleep quality are lower when compared with normal sleep habits at home. Total mean sleep duration during hospital care is 83 minutes shorter compared with sleep at home (75) and mean nocturnal sleep time is described as 5.3-5.5 hours in hospital compared with mean 7 hour at home (74, 76). Patients wake up 44 minutes earlier than their habitual wake-up time at home (75) and have a need of more daytime naps during hospitalization compared with sleep at home (74). Furthermore, several patients report changes in their sleep patterns after hospitalization (71, 77, 78). When comparing patients' experiences of sleep quality and sleep disruptive factors during hospital care with RNs estimations, the results differ. Nurses tend to underestimate patients' sleep problems compared to patients' own experiences (38, 71). Furthermore, regarding factors that were believed to affect patients' sleep, the RNs rated pain, stress and uncomfortable beds as the most disturbing factors. Patients rate other patients, pain, nursing care interventions, noise and missing family as disturbing factors (71, 74, 79).

Various factors may affect patients' sleep duration, sleep quality and sleep experience during hospital care (67, 74, 75, 80-82). These factors can be divided into three categories: environmental factors, physical and pathophysiological factors, and psychological factors (71). Environmental factors from a patient perspective are described as bed comfort as well as

the room and nursing/ medical care during night-time (65, 70, 83-85). Furthermore, sounds and lights are described as sleep-disturbing factors (71, 80, 86-88). Factors that are related to having an impact on physical and pathophysiological experiences are, for example, pain and undermanaged pain (65, 70, 71, 81, 89). The category, psychological factors, includes anxiety, worries and feelings of experienced safety (66, 70, 87, 89) and missing relatives (71).

Nurses' knowledge about sleep and sleep-promotion

Studies show that sleep is an area where there is a lack of communication between patients and nursing staff (28, 84). There is a tendency for the staffs' length of work experience to have an impact on promoting a quiet sleep environment. Health-care staff with more experience argued that inexperienced staff had not been taught the importance of sleep for critically ill patients. Those nurses who had more than five years of work experience felt more comfortable and were more likely to reschedule interventions and medication to allow patients to sleep longer periods during the night (90). Nurses reported that they do not ask patients about their sleep if the patients did not broach the subject but they were aware that patients' sleep was interrupted to a great extent during the night, for example, in order to check for vital signs and to complete tests (84). Thus, research shows that nurses seem to fail to prioritize patients' sleep. An insufficient understanding of sleep physiology may be one explanation (91). Regardless of whether or not sleep is impaired due to shortages or interruptions, sleep disturbance is a risk for negative health outcomes. Education in the field is required and should be included in nursing education (92). Despite this knowledge, there are a few studies that have shown that student nurses do not receive sufficient education regarding sleep and sleep-promotion during their education (93, 94).

RATIONALE

Today, sleeping problems are increasing in the community at large and are considered as a threat to public health. Sleep deprivation and related conditions are regarded as a public health problem in terms of both prevalence and consequences. The topic of sleep is studied using various research approaches and perspectives, for instance, epidemiological, bio-medical and sleep-related physiology science. Sleeping at hospital is considered as a challenge and a stressor for many patients. A person with a disease and/or a bodily injury is vulnerable to sleep deprivation in terms of bio-cognitive consequences, e.g. inflammatory processes, negative effects on the immune system and reduced cognitive performance. Both short and long-term sleep deprivation can cause negative effects. Therefore, sleep deprivation among patients cared for in acute hospital should be considered to be an important area to address actively in order to achieve positive changes and development.

Sleep is considered as a basic need for a person and in nursing care. It is important to meet patients' needs and actively address health-promoting interventions. Nurses are strategically well positioned, being in the immediate vicinity of their patients and thereby, they have also an absolute responsibility to identify sleep problems, as well as to address and promote sleep. Furthermore, nurses have an obligation to identify and minimize factors that may be disruptive for patients' sleep, and to plan and conduct nursing care co-ordinated during the night based on the importance of coherent sleep.

To address patients' sleep, nurses need knowledge about sleep physiology, sleep-promoting interventions and health promotion. From a nursing perspective, it is therefore important to explore and describe how patients' sleep is addressed, promoted and assessed during hospital care. Actions that may lead to a change in a positive direction regarding patients' sleep must be regarded as a profit for society, health care, and not least for the individual.

AIMS

General aim

The general aim of this thesis was to explore and describe, from a nursing perspective, patients' sleep and how sleep is addressed, promoted and assessed during hospital care.

Specific aims

The specific aims for each of the included studies in the thesis were:

Study I - To explore and describe patients' experiences of sleeping in hospital.

Study II - To describe nurses' experiences of patients' sleep at an emergency hospital and their perceptions of sleep-promoting interventions.

Study III - To explore and describe nursing students' perceptions of preparedness to assess and support patients' sleep during hospitalization, and to apply sleep-promoting interventions in a clinical context. Furthermore, the aim was to investigate if, and how, the topic of sleep is explicitly incorporated in nursing education programs.

Study IV - To examine how sleep and patient's sleep are addressed at acute hospitals in Sweden with regard to nursing care, management and the development of knowledge within this area.

Study V - To evaluate the use of self-assessed sleep with the Richards-Campbell Sleep Questionnaire in relation to an objective measurement during hospital care.

METHODS

To cover the general aims of this thesis, various methods were chosen, and diverse data collections were executed (Table 1). A qualitative descriptive methodology was used for **Studies I, II and III**. In **Studies I and III** data were collected through qualitative individual interviews and in **Study II** through a combination of individual interviews and focus groups. In **Study III**, a Mixed Methods research (MM) approach was employed. **Study IV** was a national cross-sectional study and data were collected through a web-based survey. **Study V** was conducted as a non-experimental prospective study executed in a clinical setting with actigraphy and a self-administrated questionnaire.

Overview of the studies

Table 1. Overview of included studies in the thesis.

	Study I	Study II	Study III	Study IV	Study V
Design/ method	Qualitative descriptive study	Qualitative descriptive study	Mixed methods research	Cross-sectional study	Non-experimental prospective study
Participants/ Settings	n= 10 patients on three wards at one acute hospital	n= 22 registered nurses at 4 acute hospitals	n=21 student nurses in nursing education programs at three universities	n=53 Head nurses, clinically active registered nurses, nursing care developers and training staff at 15 acute hospitals	n=25 patients at two hospitals
Data- collection	Individual interviews	Focus-groups and individual interviews	Program and course syllabuses and individual interviews	Structured questionnaire through a web-based survey	Objective data collected through actigraphy and subjective data collected through RCSQ
Data- analysis	Inductive qualitative content analysis	Inductive qualitative content analysis	Descriptive statistics and inductive qualitative content analysis	Descriptive statistics and thematic text analysis	Parametric analytical statistics

Design

Study I

Study I was designed as a qualitative study with individual qualitative interviewees.

Qualitative descriptive methodology, such as interviews, can provide clear descriptions of phenomenon and give answers to questions as to whom, what and where (95, 96). Qualitative individual interviews focus upon another person's experiences and perspective and afford researchers opportunities to explore, in an in-depth manner, matters that are unique to the experiences (97, 98).

Study II

In **Study II** the design was a combination of qualitative interviews and focus groups [FG]. In this study, due to the fact that this area is considered to be unexplored, it was essential to explore the participants' experiences. Focus groups are one option for data collection when the aim is exploratory. The combination of FGs and individual interviews in **Study II** can be seen as a methodological triangulation (56, 99), and one advantage is a combination of FGs and individual interviews (100). Focus groups are used to gain new knowledge, to seek beliefs and opinions in a collective context and to collect a widespread range of experiences about phenomena as well as generate meaningful opinions (101-103). The dynamic in a FG is an important aspect, as the participants may answer questions but also choose to adapt their answers by listening to others (101). An FG aims to create an environment that brings together a variety of perspectives (104-106).

Study III

In **Study III**, a Mixed Methods research [MM] approach was adopted. Mixed Methods research is considered a suitable approach when data from one source could be enhanced by data from a second. It is also useful when quantitative data are considered problematic to interpret and present with clarity without qualitative data. MM is useful when quantitative data need an explanation through a wider and in-depth probing (56). Quantitative data, regarding program and course syllabuses, were collected and student nurses' experiences of their education regarding sleep were explored in a qualitative manner through individual interviews.

Study IV

Study IV was designed as a cross-sectional study (107) using a web-based survey. In a cross-sectional design the participants are selected out of the set inclusion and exclusion criteria for the study. The design aims to take a measurement at one point in time (108). For example, this design can provide information about prevalence of outcomes (109).

Study V

Study V was a prospective study with a non-experimental design. Prospective studies can be observational or experimental, and a prospective study design aims to collect new data on current patients (110). **Study V** was designed in order to evaluate the use of self-assessed sleep with the RCSQ in relation to an objective measurement in a clinical context.

Inclusion criteria, sampling and participants' demographics

Study I

Study I aimed to explore and describe patients' experiences of sleeping in hospital. Patients were recruited consecutively from three wards at a university hospital in central Sweden. Inclusion criteria were: a length of stay at hospital of at least three days, 18 years of age or older and being able to speak and understand Swedish. Patients who met the inclusion criteria were identified through the wards' waiting lists. The nurse in charge of the participating patient checked the medical records to ensure that the inclusion criteria were met. Thirty-eight patients who had undergone planned surgery or planned medical treatment and met the criteria for inclusion were asked to participate (20 males and 18 females). When asked to participate, patients received verbal and written information about the purpose of the study. Ten of these patients agreed to participate. The age range for included participants was 39 to 68 years, and eight of ten participants were female. Two of the participants had been cared for in a room with two or more beds and the other eight had been cared for in a single room. The included participants' length of stay at hospital ranged from 5 to 16 days.

Study II

Study II aimed to describe nurses' experiences of patients' sleep in an emergency hospital and their perceptions of sleep-promoting interventions. Inclusion criteria were: one-year's work experience on a ward at an acute hospital. The participants were enrolled into the study by convenience sampling (97) at four acute hospitals in Stockholm. Nurses with various work schedules were included in order to cover the entire 24-hour period of care. To obtain

different views, nurses from nine different specialties (surgical, medical, neurological, cardiology, hepatology, orthopaedic surgery, respiratory medicine, infection and urology) were included in the study. A total of 22 nurses participated, two of them were male. Fifteen nurses participated in FG interviews and seven nurses participated in individual interviews. Included participants' duration of work experience was: in the individual interviews four years (median) with the range 1.5–35 years, and in the FGs seven years (median) with the range 1.5–35 years. Sixteen participants worked night shifts, or three shifts and six participants worked day and night shifts.

Study III

Study III aimed to explore and describe student nurses' perceptions of preparedness to assess and support patients' sleep during hospitalization and to apply sleep-promoting interventions in a clinical context. Furthermore, the aim was to investigate if, and how, the topic of sleep is explicitly incorporated in nursing education programs. Four universities, in a metropolitan area in Sweden, offering a Bachelor of Science in Nursing degree, were approached. The request was made to the principal or the head of department at the universities. Three of the four chose to participate and granted approval to conduct the study. The inclusion criterion was: student during final year in nursing education at one of the three included universities. Information about the study and an invitation to participate in an individual interview were sent to all students who met the inclusion criterion. The information was sent through the universities' web-based platforms. The students were enrolled through convenience sampling and they announced their interest to participate by sending an e-mail to the first author. The distribution between participants was 11 students in semester five and 10 in semester 6 (three of them had graduated as RN a few days before the interview).

Study IV

Study IV aimed to examine how patients' sleep is addressed at acute hospitals in Sweden with regard to nursing care, management and the development of knowledge within this area. In March 2018, 59 out of a total of 71 hospitals in Sweden met the criterion, acute hospital. To accomplish a geographical spread and to include hospitals of various sizes, we conducted a stratified sampling from the six regions. In those regions where there was more than one regional hospital, more than two county hospitals and more than three small county hospitals, a randomization procedure was performed. The hospitals in each region were provided with a number, such as Regional hospital 1 and 2, and a person outside the research group was invited to execute the blinded randomization by choosing between the number one or two and

so on. After randomization, there were six strata each containing one regional hospital, two county hospitals and three small county hospitals (total n= 36 hospitals). Inclusion criteria for participants were: head nurse, registered nurse, nursing care developer or training staff on an orthopaedic, surgery and medical ward, at randomized acute hospitals. Names and e-mail addresses to head nurses on 108 wards at the 36 hospitals were manually retrieved through the hospitals' telephone exchange operators. All head nurses were asked to enrol three registered nurses on their ward and to provide the names and email addresses of one nursing care developer and one member of training staff at their departments and send them to the first author. Nineteen of the head-nurses provided names/e-mail addresses, 15 head-nurses declined participation and 74 head-nurses did not respond to the invitation and request after two reminders. Head nurses on 19 wards at 15 acute hospitals from the six regions agreed to participate. A total of 105 potential participants were identified. One hundred and five potential participants received the survey and 53 completed it (response rate over 50 %). The geographical spread of included acute hospitals is presented in Figure 2.

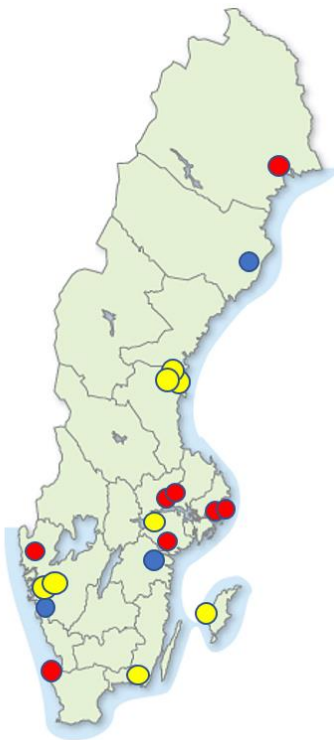


Figure 2. Geographical spread of the completed questionnaire in Sweden (n= 19 wards at 15 hospitals). Blue = Regional hospital, red = County hospital, yellow = Smaller county hospitals.

Study V

Study V aimed to evaluate the use of self-assessed sleep with the Richards-Campbell Sleep Questionnaire in relation to an objective measurement during hospital care. Inclusion criteria were: patients scheduled to be admitted for at least three days on a ward, 18 years of age or older and able to understand and speak Swedish. Two wards at two hospitals were selected in order to meet the required number of participants during data collection. Participants were included consecutively based on departmental occupancy lists and informed by one and the same member of the research group. Altogether, 25 patients (mean age 58 years, 17 men and 8 women) were enrolled in the study.

Data collection

Study I

Data were collected by individual interviews. The pre-set questions for the interviews were discussed and developed within the research group (97, 111). The first author conducted all the interviews, including three pilot interviews. No revisions of the topic guide were made after the pilot interviews and two of the latter were included in the study as they addressed the aim. All interviews started with an open question, ‘Could you tell me about your experiences of sleeping in the hospital?’. The open question allowed and encouraged the participants to talk openly about their experiences of sleeping in the hospital. The author posed follow-up and probing questions and asked for clarification when necessary. The interview continued with the two questions that dealt with views on the relationship between sleep and health, as well as inviting the informants to share their suggestions on how patients’ sleep in hospitals should be managed. The interviews lasted for 18–45 min. and were audio-recorded and transcribed verbatim by the first author.

Study II

During all interviews and FGs, a predesigned and tested topic guide was used. The topic guide was developed by the research group with inspiration from Krueger (101), and confirmed as a form of validation by a team of experts (nurses and lecturers in nursing sciences). Each FG and interview was conducted at, or close to, the informant’s workplace, and all interviews began with an introduction outlining confidentiality principles and the nature of the interview. The questions in the topic guide were used in all the interviews, but the questions were asked in varied order and with flexibility based on how the interviews progressed. In the FGs, all participants were encouraged to contribute, and given enough time

to express themselves. The first author was moderator during the four FGs and conducted the seven individual interviews. During each FG, a co-author attended as an observer and made notes. The notes were presented to those participants who wished to read them. The duration of the interviews was: 56 minutes (median) for the FGs with a range of 52–83 minutes, and 40 minutes (median) for the individual interviews with a range of 31–52 minutes. The FGs and individual interviews were audio-recorded and transcribed verbatim by the first author.

Study III

Program and course syllabuses, as well as intended learning outcomes, were obtained from the three included universities in a large metropolitan area, and a total of 21 individual qualitative interviews were conducted. The interviews were based on a predefined semi-structured interview guide. The interview guide was developed within the research group and inspired by results from study II. The interview guide was tested through a face-to-face trial (56) with one lecturer in nursing sciences and one registered clinically active nurse. Two pilot interviews were conducted and, as these pilot interviews addressed the aim of the study, were included in the analysis. The interviews were conducted at, or close to, the universities (19 of the interviews were conducted face-to-face) and two interviews were conducted through Face time. Written informed consent was obtained prior to the interviews (for the two interviews conducted through Facetime, verbally informed consent was obtained, and these informants then sent their written consent by mail to the first author). All interviews were conducted and audio-recorded by the first author. The duration of the interviews was 25 minutes (median) with a range of 17 to 37 minutes. The twenty-one audio-recorded interviews were transcribed verbatim by the first author (n=10) and by one other person (n=11) appointed for this specific task.

Study IV

Data collection was carried out through a web-based survey. A questionnaire was developed within the research group. Based on the stated aim of the study and discussions regarding results from Studies I and II, four domains were formulated through operationalization to cover the research question. The four domains were: 1. *Policy documents* (e.g. guidelines), 2. *Care development and education*, 3. *The nursing process* and 4. *Experiences and reflections about sleep and patients' sleep*. Twenty-two questions and statements were formulated that covered the four domains, some of which were followed with the opportunity to give free comments about given answers. The response options in the questionnaire were set and structured. The first two questions in the survey aimed to gather demographic data about the

participants. The questionnaire was tested for face and content validity in two steps (56) (Figure 3). The tested and final version of the questionnaire was developed into a web-based survey by a professional web-survey company.

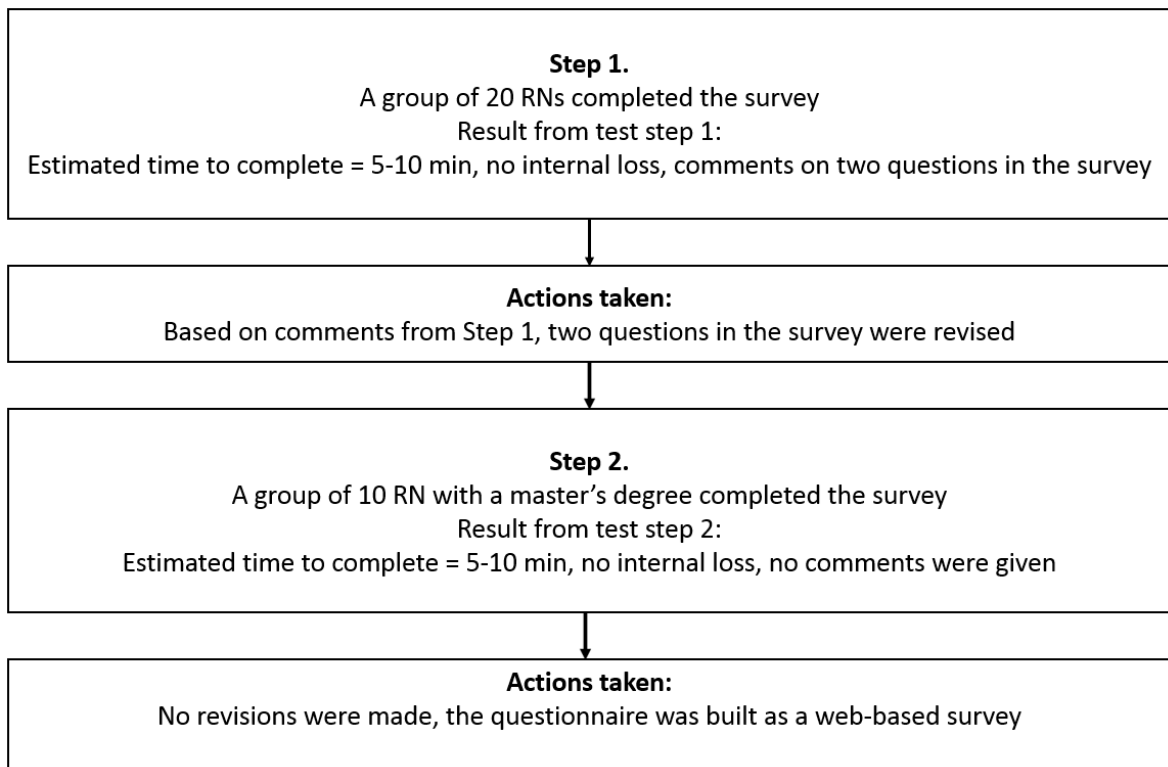


Figure 3. Pre-test of the survey regarding face and content validity, and time of completion.

Study V

After informed consent, all included participants received face-to-face and written information about the study, how to handle the Vivago[®] wristwatch (Figure 4) and how and when to fill out the RCSQ. The recruited patients were instructed to wear the Vivago[®] wristwatch for three consecutive days and nights, except in the shower. The Vivago[®] wristwatch was placed on the patients' non-dominant arm.



Figure 4. Vivago[®] wristwatch.

Participants were instructed to complete the RCSQ first thing every morning for three days. The self-administered questionnaire RCSQ is designed to measure the previous night's sleep and aims to measure patients' subjective perceptions of sleep and sleep quality. It consists of five items pertaining to sleep (sleep depth, falling asleep, wakefulness, going back to sleep and overall sleep quality) (Figure 5). The scores for the sixth additional question about sound during the previous night were not analysed in the present study. A visual analogue scale (VAS) technique was used with a score for each statement ranging from 0 to 100 mm (0 indicating the worst possible sleep and 100 indicating the best sleep) (Appendix I). The questionnaire takes approximately two to five minutes to complete. The RCSQ has been translated into Swedish and has been used in a clinical context on an intensive care ward in Sweden (36) (Appendix II).

1. My sleep last night was:

Deep Sleep _____ **Light Sleep**

2. Last night, the first time I got to sleep, I:

Fell Asleep _____ **Just Never Could**
Almost Immediately **Fall Asleep**

3. Last night I was:

Awake _____ **Awake All**
Very Little **Night Long**

4. Last night, when I woke up or was awakened, I:

Got Back To _____ **Couldn't Get Back**
Sleep Immediately **To Sleep**

5. I would describe my sleep last night as:

A Good _____ **A Bad Night's**
Night's Sleep **Sleep**

Optional Noise Item:

6. I would describe the noise level last night as:

Very Quiet _____ **Very Noisy**

Figure 5. Richards-Campbell Sleep Questionnaire (RCSQ), with permission from the copyright owner Richards).

Data analysis

Content analysis in Studies I, II and III

The scientific theoretical framework regarding qualitative content analysis in this thesis is based on the work of Krippendorff (112). Content analysis is described as a research technique and a scientific tool that allows valid and repeatable conclusions based on a text's content (112). In this project, an inductive approach has been adopted for all qualitative analyses. The aim has been to explore and describe a phenomenon as well as to answer stated aims without a theoretical framework or existing theory. There are different ways of approaching the analysis process regarding qualitative content analysis. One of the first steps in the process concerns the decision of whether the analysis is to focus upon manifest or latent content (113, 114). A manifest analysis is performed with a textual closeness and deals with visible and apparent content in disparity. The focus of interpretation in latent analysis is about relationships and underlying meanings in the text, the latent content (113-115). Both strategies require interpretations, but the levels of interpretation vary and are at different levels and depths of abstractions (112, 113). A latent approach was adopted in **Studies I and II**, and in **Study III** the analysis was manifest.

The different steps of the analysis process were inspired by Graneheim and Lundman (113). These researchers have identified concepts and steps during the process of content analysis: identification of meaning units, condensation (reduction), labelling with codes, creations of sub-categories and categories and/or formulated sub-themes and themes. **In Studies I-III**, meaning units were identified and highlighted and each meaning unit was checked against the study's stated aim. **In Study I**, the meaning units were condensed but in **Studies II and III** were explicit in the transcribed text. In order to preserve the core of the text, no condensation was made because of the risk of shortening the content. In the next step of the process, the meaning units were coded, which entails a form of labelling with a code consisting of one or a few words that are in direct relation to the context. The codes for each meaning unit were checked by the research group and after consensus the process progressed by sorting codes according to similarities and differences. Each group of codes was categorized and a category and/or a theme was formulated (Figure 6).

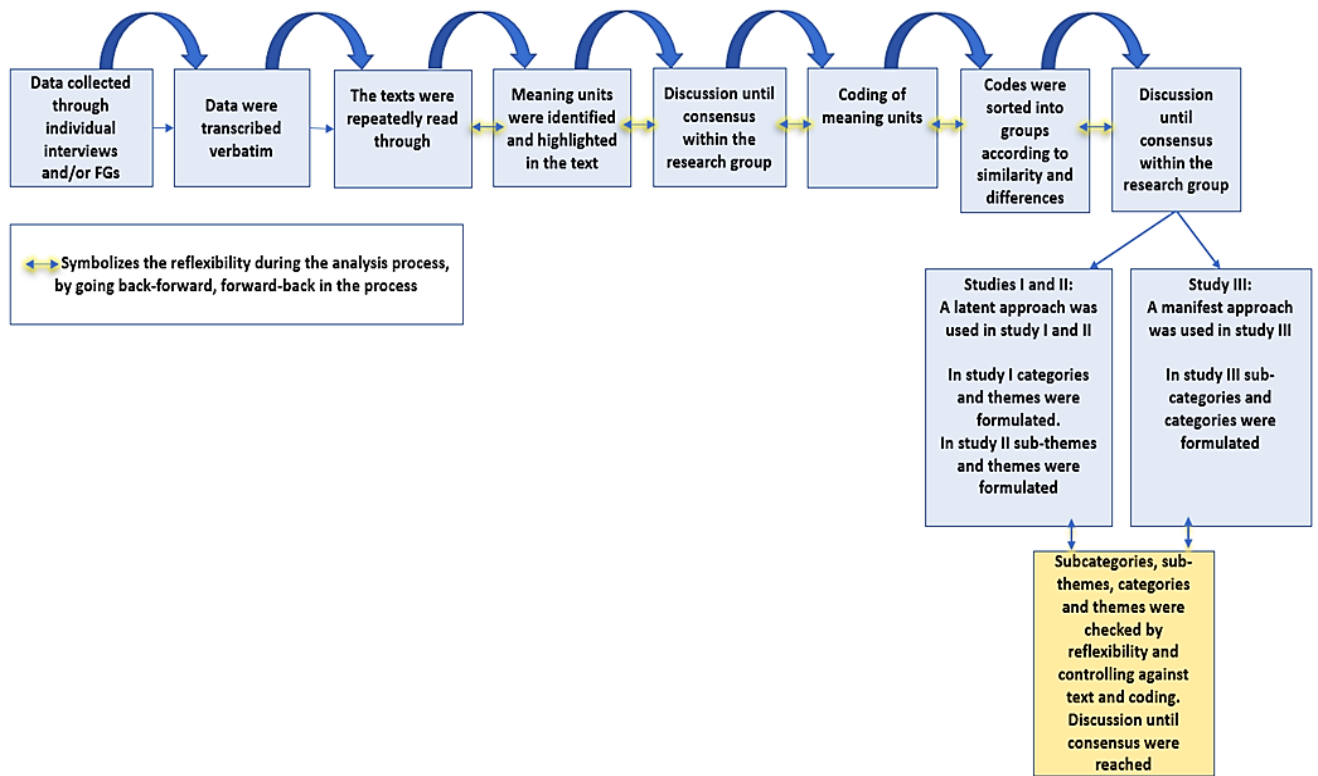


Figure 6. The analysis process during content analysis for Studies I-III.

In **Study I** the results are presented through categories and themes, in **Study II** with sub-themes and themes (Table 2), and in **Study III** with sub-categories and categories

Table 2. Example from the analysis process in **Study II**

Meaning units	Code	Subtheme	Theme
‘I experience that it (sleep) is not a prioritized subject. We know they (the patients) are here for three to five days, then they go home, and we treat it a little bit like – sleep poorly for three to five days and then you can sleep when you are discharged and come home. This is what we offer the patients, kind of... We can’t do anything about it, we know that it is not good but there is nothing we can do about it. This is the way sleep problems are treated in health care.’	To feel frustrated	Questioning the organization and procedures	Being trapped between ambition and given frames to practice nursing
‘It’s partly about turning to yourself. Using your own experience, it goes without saying, common sense. I think we had something about sleep during training but not as I remember. We have a memo on the ward regarding night work, but it is not about interventions and things like that. I think that knowledge is about being observant and perceptive of things you hear and see. My experience is my knowledge.’	Own experience	Basing nursing on non-evidence practice in a borderland between common sense and knowing	Framing sleep on nonevidence-based practice, experience and knowledge

Study IV

Collected data from the survey were analysed using descriptive statistics. Categorical variables are presented as numbers (n) and percentages (%). Free text answers from the questions with the possibility to comment or motivate a given answer were read, sorted and divided into groups based on similarities and differences. For each group, categories were formulated, inspired by a thematic text analysis, and the result was presented with an example of one written free-text answer for each category (97).

Study V

For the RCSQ, a total score was derived for each patient by calculating the sum of the scores for the five items. A mean score was then obtained by dividing the sum of the scores by five (0 indicating the worst possible sleep and 100 indicating the best sleep). A total RCSQ mean score was obtained for all patients by summarizing the individual mean scores and dividing it by the number of patients. Vivago[®] recordings were obtained using the software version PWMI 3400. Data regarding number of sleep-periods, minutes of sleep and circadian rhythm were obtained together with graphic presentations of activity levels.

The default settings for sleep time were from 8 pm to noon the following day and for the full 24 hours. In the present study, we chose to manually calculate the numbers of sleep minutes from 11 pm to 6 am, which was the time of night when the patients could be expected to have a continuous sleep period. Results are presented as sleep minutes (11pm to 6 am) and as a percentage of the full 7-hour period, i.e. 420 minutes. The numbers of sleep periods were obtained from the graphs and the average numbers of sleep minutes per period (total number of sleep minutes divided by numbers of sleep periods) were calculated.

Data were assessed for normality of distribution, and statistical analysis was performed to compare differences between groups and days for each of the three days, and for each total RCSQ score. Both RCSQ scores and sleep minutes obtained from Vivago[®] were shown to be normally distributed. Comparisons were thus estimated using parametric analysis (Students' t-test and Pearson's correlation). Collected data met criteria to perform a linear regression with normal distributed residuals with a mean of 0 and constant spread. Pearson's correlations were performed to assess the potential extent of the correlations between sleep minutes and the RCSQ score. We performed a within group comparison. Intra-class correlation was calculated between sleep minutes and the RCSQ total score to assess variance of the data. A linear regression was performed with the RCSQ as dependent variable and sleep minutes as independent variable. All statistical analyses were conducted using IBM

SPSS statistics version 24. A significance value of < 0.05 was set for all statistical tests. Only data from the second and the third night were used for the statistical analysis.

ETHICAL CONSIDERATIONS

All studies in this thesis have been approved by the Regional Ethical Review Board in Stockholm, Sweden. Study I (2010/1087-31/5). Study II (2012/846-31/2). Study III (2012/846-31/2, 2018/396-32, 2018/896-32). Study IV, the Board decided that legislation concerning ethical review was not applicable to the study stating that it did not find any obstacles regarding ethical considerations (2017/873-31/4). Study V (2016/768-31/4).

Research within the project has been conducted in accordance with good research practice and ethical principles. The research has followed the Helsinki Declaration (116) and ICN (117). The four ethical requirements - information requirement, consent requirement, confidentiality requirement and utility requirement have been considered throughout the project, from design to publication. Reflections about ethical considerations and considerations regarding risk-benefit perspectives have been considered. Discussions were held in the research group regarding the character of the questions to be used in the interviews and the questionnaire. There is always a risk that an interview can arouse negative feelings, and this was discussed prior to data collection. No invasive methods of data collection have been used. The collection of data with, for example, actigraphy was not considered to pose a risk to the research subject in terms of physical harm.

In accordance with the Helsinki declaration, all participants in all studies were provided with written research information and descriptions regarding the voluntary nature of their participation and their indisputable right to withdraw without explanation and without consequences for future treatment, education or work. Informed consent was obtained from all participants to maintain the voluntary principle, and all collected data were coded to ensure confidentiality. In Study IV, a completed survey was considered to be informed consent.

Collected data have been handled in accordance with current regulations and the Helsinki declaration (116). To meet the confidentiality requirement, the results from the studies with quantitative design have been reported at group level in order to protect the identity of individual participants, universities and hospitals. The findings in studies with a qualitative design have been presented so that no individual can be identified. The data collected have been encrypted and the code list has been stored in a secure place, which was accessible only to members of the research group. Collected data have, and will be, stored and archived in accordance with established procedures at Karolinska Institutet and the Sophiahemmet

University. In line with the utility requirement, participants have received information about how they can access and read the results after the completed study.

Based on the overall aim of this thesis, nursing perspectives and the nurses' ethical code (117) have been considered during the project. The nurses' ethical code, states that nursing care should be performed with respect for human rights and by considering people's values, customs and beliefs. The code of ethics for nurses gives a framework for standards of conduct based on four elements: nurses and people, nurses and practice, nurses and the profession, and nurses and co-workers. The ICN suggests that nurses have four fundamental responsibilities: to promote health, to prevent illness, to restore health and to alleviate suffering (117).

FINDINGS

General summary of findings

Study I shows that patients' sleep during hospital care is affected by various factors.

According to student nurses, registered nurses and head nurses **in Studies II-IV**, sleep should be considered as a nursing topic, and sleep during hospital care is considered as an important part of nursing care by nurses and student nurses. Furthermore, **Studies I-IV**, conclude that sleeping in hospital can be a stressor and that current interventions cannot be regarded as sufficient. Also, sleep deprivation during hospital care may result in negative consequences for the patients. One overall finding from this thesis is that education regarding sleep and patients' sleep seem to be undermanaged and non-prioritized areas, both in nursing education programs but also in clinical settings. In the findings from **Studies II and III**, participants discussed and asked about assessment tools regarding patients sleep. Findings from **Study V** indicate that the RCSQ seems to be functional in a clinical setting and may be a valuable tool for initiating a dialogue about sleep with patients on hospital wards.

Patients' experience of sleeping in hospital

Study I aimed to explore and describe patients' experiences of sleeping in hospital. The result was presented through four themes. Theme 1. *Bedside manner*, patients described how nursing staff behaviour aroused various feelings and how this affected their sleep.

Experiencing a feeling of security, e.g. a sense of being well taken care of, experiences of being in safe hands and the feeling that the care was reliable, had an impact on their sleep during hospitalization.

“To be listened to creates, at least for me, the feeling that you can relax and feel safe. All this affects the healing process but also I feel relaxed and can flow with the treatment and not least relax and sleep” (quote from individual interview in Study I).

Patients described how they had no knowledge of what was happening on the ward and this resulted in a feeling of being unsafe. Furthermore, when specified times for planned care were not adhered to this brought a feeling of abandonment. Theme 2. *Physical factors* related to how patients experienced how the hospital environment and their perceived health status had an impact on sleep. All patients in this study talked of how the ward's environment had an impact on their sleep. The patients also described how their perceived conditions, both physical and mental, influenced sleep, for example, pain, worries about the future, and anxiety. Furthermore, inadequate pain relief during the night and having to wait a long time

to obtain pain relief had a negative impact on sleep. The third theme, *3. Being involved* referred to the patients' experiences of being able to influence, and be involved in, their care. Patients described how the ward's routines had a negative effect on their sleep. They understood and accepted that checks for, e.g. vital signs, had to be made, but they questioned the timing and that the checks were not individualized. Being informed about what nursing care entailed created a sense of security which had a positive effect on sleep. Patients described the importance of having some control over their situation and how this need was reinforced when they became patients, and how this affected sleep negatively. Theme 4. *Integrity* concerned the patients' experiences of how their integrity was affected during hospitalization and how it came to have an impact on their sleep. Patients may experience many situations that can threaten their integrity. Hence, being exposed to information about the other patients in the same room elicited emotions during the night that had a negative effect on sleep.

Nurses' experiences of patients' sleep and perceptions about sleep promotion

Study II aimed to describe nurses' experiences of patients' sleep at an emergency hospital and their perceptions of sleep-promoting interventions. The results in **Study II** comprised three themes, with eight sub-themes, describing nurses' experiences about patients' sleep and their perceptions of sleep-promoting interventions at emergency hospitals. Theme 1. *Being trapped between ambition and given frames to practice nursing*. Participating nurses expressed a desire and ambition to work in ways that promote patients' sleep during hospitalization. They sensed that they lacked the opportunities to work effectively in promoting sleep based on patients' wishes and expressed feelings of being trapped between their ambitions and a desire to do well. The nurses reported having ambitions and plans for sleep-promoting interventions but felt that these were unattainable due to lack of time and non-functional routines. All nurses in this study disclosed that lack of time often led to less good solutions. They reported choosing pharmacological solutions rather than trying out other interventions regarding patients' sleep.

“There are things that you would like to do for the patient regarding their sleep, but you do not have the time, so you go and fetch a sleeping pill for them...” (quote from participant in focus group no 2).

From the nurses' experiences of successfully promoting sleep, one strategy was active listening. The nurses suggested that sleep-promoting interventions should be based on a person-centred approach. The second theme, *2. Framing sleep on nonevidence-based*

practice, experience and knowledge and sub-themes concerns the areas of nursing practice, knowledge and assessment. Several nurses stated that they lacked knowledge about sleep and that they did the best they could under the circumstances. However, they did not consider it to be enough and expressed an interest in learning more about sleep. Several nurses reported using sleep-promoting strategies that they had tested on themselves and that the interventions were based on their own experience and perceptions of sleep instead of being evidence-based. The theme, *3. Being aware of the importance of sleep and consequences of sleep deprivation*, describes how nurses think that sleep is of importance for patients and that it is an area that should be given more priority. Nurses in this study stated clearly that they had a responsibility in this area, partly because they considered themselves to be close to their patients. They gave several examples of how they were able to notice if a patient received enough sleep. They argued that nurses should address patients' sleep to a greater extent; all agreed that sleep is a basic need and that it should be given higher priority.

Student nurses' preparedness to address and promote patients' sleep in their future role as a registered nurse

Study III aimed to explore and describe student nurses' perceptions of preparedness to work with patients' sleep and sleep-promoting interventions. Furthermore, the aim was to investigate how sleep is explicitly incorporated in nursing education programs, syllabuses and learning outcomes. The word, sleep, occurred explicitly three times in two different learning outcomes at one of three included universities. The findings for **Study III** are presented through three categories with underlying sub-categories.

Category, *1. Education and acquisition of knowledge during nursing education program*, describes student nurses' perceptions of how the area of sleep was handled within their education, and a description of their knowledge, knowledge acquisition and their questioning of using own experiences as knowledge in a clinical context. The student nurses' descriptions gave a coherent picture together with the findings from the exploration of education documents, and patients' sleep are not highlighted during the programs. The students were aware that interventions used in health care should be based on scientific evidence. This means that they were critical of their own knowledge about sleep and considered it as superficial and mainly based on their own experiences.

Category, *2. Perceptions of how patients' sleep is addressed in health care* with sub-categories includes how student nurses perceived patients' sleep during their clinical training in several different hospital settings, and descriptions of how they perceived that health care

organizations address the issue of patients' sleep. Most informants reported being astounded during their clinical training at the extent to which patients' sleep is impaired during hospital care. They provided descriptions of how sleep is adversely affected by patients being disturbed by other patients, and nursing care staff failing to co-ordinate their interventions and responsibilities with regard to patients' sleep. Since the students had been working clinically at several departments and clinics during their training, they had a broad and comprehensive picture. They gave examples of patients having asked in desperation to be discharged because of insufficient sleep during their hospital stay. Most felt that the area was not given priority and that lack of time was one explanation. However, they reported also that staff did not appear to be interested in sleep or how sleep deprivation affects the patient's entire situation. Most students stated that the handing out of sleeping pills appeared to be the only sleep-promoting intervention used.

Category, 3. Student nurses' preparedness to address the topic patients' sleep and sleep promotion comprises student nurses' perceptions about their preparedness for working in the field, and their descriptions of planned strategies to work with patients' sleep. Student nurses described themselves as being equipped to varying degrees to work with sleep and patients' sleep in the clinic. Most described themselves as quite prepared as they had their own experiences of disturbed sleep and sleep problems. Some students felt unprepared and expressed concern about how to handle and promote patients' sleep in their future work as registered nurses. The majority stated that they were prepared to the point that they would be able to ask experienced colleagues and managers on the ward or read guidelines about sleep management on the ward, when and if problems arose regarding sleep and patients' sleep.

"I will use what I have learned privately about sleep, through my own experiences. What are you supposed to do when you haven't had any input during training?" (quote from an individual interview in Study III).

Structured questions were asked regarding examinations, lectures, seminars, or written assignments in which sleep had a prominent place. Five of 21 informants replied that sleep had been taken up in an exam, eleven answered that it had not, and five did not remember. Regarding lectures on the topic, eight responded yes, nine no and four did not remember. Concerning seminars about sleep, three answered yes, seventeen said no and one did not remember. During the interviews, the students were also asked if they had had a lecture or received any other kind of education about assessment and self-assessment scales that could be used in health care to evaluate sleep. All responded that they had not received such

knowledge. None of the respondents had had a written assignment about sleep during their education (Figure 7).

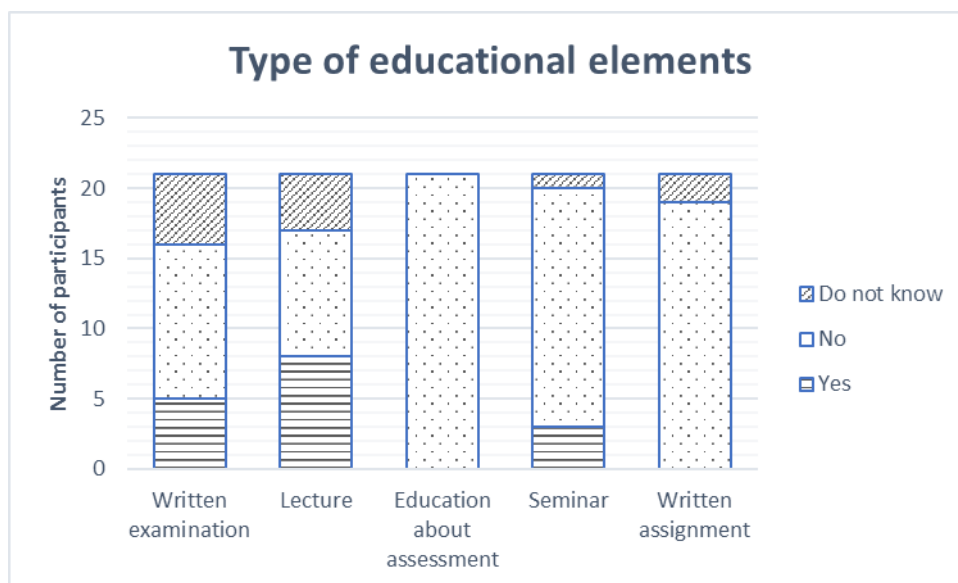


Figure 7. Description of answers from the structured questions during the interview about education and sleep, (n=21).

Patients' sleep at acute hospitals in Sweden – how is the area addressed?

Study IV aimed to examine how sleep and patients' sleep are addressed at acute hospitals in Sweden regarding nursing care, management and the development of knowledge within this area. The results from **Study IV** are presented according to the four domains in the questionnaire. The first domain, *Policy documents*, aimed to explore whether established guidelines regarding sleep and management of patients' sleep exist at the departments and on the wards. The results show that 72-79 percent (of n = 53) responded "does not exist" and 21-24 percent, "do not know". Guidelines regarding patients' sleep are thus not common in a clinical context. Regarding domain 2, *Care development and education*, none of the responding departments have a designated person responsible for the area of sleep, and 70 percent stated that the area is not discussed in, for example, training and educational days held for the nursing staff. Furthermore, the results show that contact with an on-call physician is commonly used as a kind of sleep-promoting intervention when patients are unable to sleep. Two-thirds of the respondents reported contacting the on-call physician for prescriptions of sleep medicine.

Domain 3, *Nursing process*, aimed to explore and describe the nursing process in the area of patients' sleep. Seventy percent declared that they documented patients' sleep in medical records and over 90 percent of the responders based their documentation on nurses'

observations. This shows that patients' sleep is discussed during handovers but rarely addressed on the medical round, and that assessment instruments are used only to a limited extent. In domain 4, the participants answered questions about whether they perceived sleep to be a nursing topic, and if they felt that sleep is important for patients who are hospitalized. The participants' answers clearly show that this is the case. Eighty-seven percent believed that impaired sleep quality and sleep deprivation affected the health of patients and led to negative consequences regarding recovery.

"A very important area, but I feel, unfortunately, that many people who do not work nightshifts do not think it is important" (free-text answer from the survey in study IV).

Self-assessment of sleep in a clinical context

The aim of **Study V** was to evaluate the use of self-assessed sleep with the Richards-Campbell Sleep Questionnaire in relation to an objective measurement during hospital care. **Study V** examined the relationship between patients' subjective experience of sleep according to RCSQ and objective measurements by Vivago[®]. The correlation between data for Day 2 is illustrated and was found to be significant (Figure 8). The degree of explanation for the relationship was thus about 49 percent. When analysed, no significant correlation was obtained for Day 3 (R square = 0.033, p = 0.405).

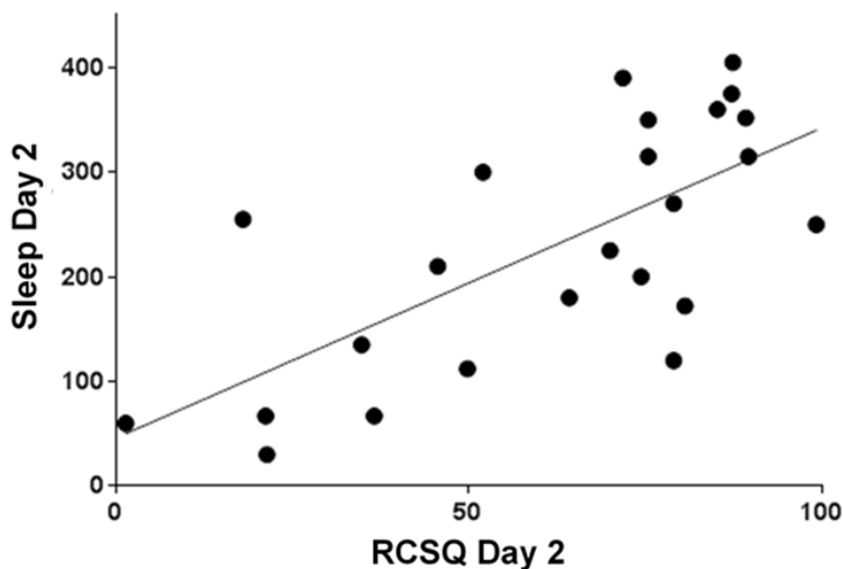


Figure 8. Relationship between RCSQ and Vivago[®] assessments. Pearson's correlation between mean RCSQ score and sleep minutes (11pm-6am) for Day 2. R square = 0.4867, p = 0.0002.

Furthermore, a relationship between the two means of assessing patients' sleep was also investigated by relating the patients' individual self-assessment of sleep during the night, i.e. the RCSQ score, to the activity graphs given by the Vivago[®] software for the particular night. A clear correlation was detected in individual patients and one example is illustrated in Figure 9.

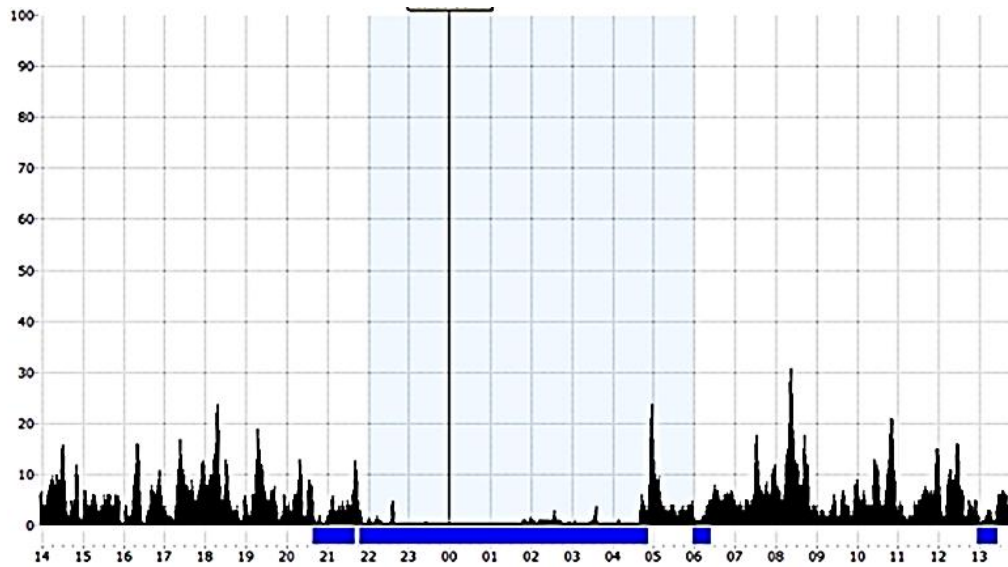


Figure 9. Vivago graph[®] depicting a “good night’s sleep” respectively in good agreement with mean RCSQ score. Subject 10, Day 2, RCSQ = 89.2, sleep minutes (11pm-6am) = 352.

The total mean score for RCSQ varied from zero to 100 inter-individually as well as intra-individually, but no pattern describing better sleep quality during the first or second night of monitoring (Day 2 and Day 3, respectively) could be detected (Figure 10).

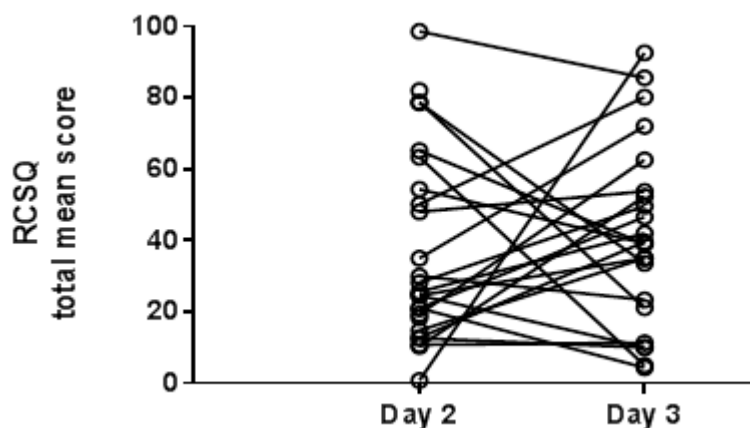


Figure 10. Individual RCSQ scores for Day 2 and Day 3 for 23 patients.

Twelve patients scored higher on day three, nine patients scored lower on day three, and two patients scored approximately the same low value on both days. $p \geq 0.05$.

GENERAL DISCUSSION OF FINDINGS

The general aim of this thesis was to explore and describe, from a nursing perspective, patients' sleep and how sleep is addressed, promoted and assessed during hospital care. Data were collected from different perspectives by including patients, student nurses and registered nurses. Furthermore, quantitative data were collected through assessment, survey and documents in nursing education. In the following discussion, findings from **Studies I-V** are discussed from three perspectives, *Patients' sleep during hospital care*, *Nursing care and sleep promotion* and *Nurse's education and knowledge about sleep*. No comparable studies about patients' sleep based on a nursing perspective have been carried out in a Swedish acute hospital context. The findings from this thesis may be seen as a first step to chart, and identify, gaps in knowledge where future interventions may be directed.

Patients' sleep during hospital care

Earlier research on patients' sleep in hospital has mostly focused on physical factors, such as the impact of health care environment, i.e. light and sound. Fewer studies have focused on patients' emotional experiences of sleep in hospital (66, 118). Patients in **Study I** revealed how their sleep was disturbed by various factors, and the findings showed that it was not only physical factors that had an impact. The patient's perspective was confirmed in both **Study II** and **III** based on the views of nurses and student nurses, who described patients' sleep as undermanaged, disturbed and insufficient. Findings from **Study I** showed that nurses' bedside manner matters, the feeling of being well taken care of and being in safe hands had a positive effect on patients' sleep during hospital care. These were areas that nurses in **Study II** described as strategies to promote sleep. One example was taking time to have conversations in order to reduce anxiety among patients during the night. In line with person-centred care, this could be seen as a start but happened rarely. Regarding the patient as having expert knowledge about her/his own needs and well-being, as well as ensuring that the patient becomes involved in the care to a greater extent is fundamental. Patients in **Study I** expressed that when they were well-informed and knew that there was a plan for the night, it had a positive effect on their sleep. This seems like a simple and basic non-pharmacological sleep promotion, but why is this strategy not being used on wards to a greater extent? Findings from **Study II** and **III** draw attention to the fact that time is a crucial factor, or rather lack of time. Most nurses reported that lack of time was often a critical factor for whether or not conversations with patients were given priority. This is in line with Ye et al. (28) who found that healthcare staff do not talk to, or ask, patients about their sleep to any great extent. One important aspect regarding nursing staff conversations with patients about their sleep is how

the question is posed. If we continue to ask patients, “Have you slept well?” instead of asking them in a more person-centred way, “Please, can you tell me about your previous night and your sleep, I am interested in your views.” the answers will differ. It is important to consider the patient’s perspective and response carefully when planning nursing care. Although it was not the purpose of **Study V** to test the user-friendliness of the RCSQ from a patient perspective, the results indicate that it is functional in a clinical context, partly on the basis of the high response rate but also as the internal loss was zero. The majority of included participants gave their free text responses as they wanted to explain their assessments. This could be interpreted as patients having a desire to put their sleep experiences into words and wanting to discuss their sleep with the nurse. Daily assessments with, for example, the RCSQ could also contribute to an increased nursing documentation regarding sleep. The patient’s assessment could be the basis for drawing up care plans for sleep, something that is rarely performed according to the findings from **Study IV**.

Findings from **Study I** show that patients wish for more flexible and individual solutions. Several patients reported that they were aware of the importance of checks/disturbances for, e.g. vital signs and medication, during the night but questioned the timing. Nurses and student nurses (**Study II** and **III**) revealed that they had an ambition to personalize the care and timing but felt trapped in a routine-based planned care. Hope et al. (119) conclude that nursing staff found it problematic to balance supporting the patients’ need of cohesive sleep with checking for vital signs. In accord with previous research (87), this thesis shows that nurses recognize how disturbed sleep and sleep deprivation among patients lead to negative consequences for patients, for example, delayed post-operative mobilization and a decreased threshold for pain and stress. To the best of our knowledge, there are no conclusive studies on correlations regarding patients' sleep deprivation and, for example, care time, emergence of complications and health economics. In future studies, patients’ perspectives should be included through PREM and PROM, in order to obtain an overall picture of the situation.

Nursing care and sleep-promotion

According to the participants in **Studies II, III** and **IV**, patients’ sleep should be considered as a nursing topic. In the results of **Study II**, it is clear the nurses believe that sleep is a basic need and should be addressed by their profession. They also reveal an ambition and desire to advance in the area. These findings are confirmed by Lee et al. (92) who emphasize the importance of sleep education in nursing and thus confirm, with reference to Henderson’s nursing theory, that sleep is to be considered as a basic need (62). One recurring factor that affects nurses' methods and choices about how to address sleep promotion is time. In **Study**

II and **III** lack of time is described as a crucial factor. Findings from **Study IV** show that patients' sleep is addressed through handovers between nurses and shifts but that it is unusual for it to be highlighted and discussed during medical rounds. This results in the on-call physician frequently being contacted to provide a quick solution, such as sleeping medication. The physician prescribing the latter has often never met the patient. These findings from **Study IV** were confirmed in **Study III**, where nursing students describe that administration of sleep medicine as one of few sleep-promoting interventions used on wards. If patients' sleep was discussed during the day within the team that surrounds the patient and if it was based on the patient's individual assessment of his/her sleep, the choice of sleep promoting interventions may possibly be more varied.

Findings from **Studies II** and **III** indicate that self-assessment instruments regarding patients' sleep are not used on wards. Hence, findings from **Study V** indicate that RCSQ could be used in a clinical context. Nurses in **Study II** described difficulties concerning observations about patients' sleep and research shows that nurses tend to over-estimate patients' sleep (38, 120). Nurses do not always include the patients' subjective experiences in nursing documentation regarding sleep (69). In line with PCC and a person-centred approach, the patients' views should be considered and valued in a partnership. If this was accomplished to a greater extent than today, assessments and estimations of patients' sleep would be more accurate, and the area might be more emphasized.

Furthermore, findings from **Studies II, III** and **IV** conclude that non-pharmacological sleep promoting interventions are not used to an excessive extent, and nurses and student nurses in **Studies II and III** described how they used their own experiences as interventions. The strategy of some participants in **Study III** was to ask nurses and head nurses, on the ward where they started to work, for advice on interventions and how they should think about addressing patients' sleep. Furthermore, they stated that they planned to read the relevant guidelines and documents. Unfortunately, **Study IV** reveals that there are no such documents and that the subject is not addressed during competence development days. Nurses in **Study II** reported that they do not have sufficient knowledge about evidence-based interventions. This naturally raises the questions, who will support newly-graduated nurses and provide them with knowledge when they have questions about sleep. Also, how are nurses supposed to address, promote and assess patients' sleep during hospital care without extended knowledge within the area?

Within other areas of nursing, such as pain and nutrition, there are nurses with special responsibility for these issues. In **Study IV**, the answer to the question of whether there was

designated member of staff at the department / clinic responsible for sleep was, with few exceptions, 'no'. Based on the current workload at acute hospitals in Sweden, it is unrealistic to expect individual nurses to seek information about evidence-based sleep-promoting interventions during their shifts. One suggestion is that it would be effective to assign one nurse on each ward to the role of "sleep-manager". The latter would be given the opportunity to extend their knowledge in the field of sleep and take responsibility for spreading knowledge to colleagues.

Nurses' education and knowledge about sleep

Redeker and Phillips McEany (2) and Lee et al. (92) describe sleep as an area that should be part of nursing education. Knowledge about sleep enables registered nurses to identify and address the area based on evidence, thus contributing to their work with health promotion. The results from **Studies II, III and IV**, which describe lack of knowledge, meagre education in the area and that no one is responsible for the area at the clinic must be seen as cause for concern in relation to patients' experiences in **Study I** and other research studies (67, 71, 121, 122) regarding sleep during hospital care. The nurses in **Study II** describe their overall knowledge about sleep as shallow and to some extent insufficient. This was confirmed by nursing students' in **Study III** from their experiences during clinical training. The findings from **Study III** from a Swedish context are unfortunately in line with previous studies regarding student nurses' knowledge and preparedness concerning sleep (93, 94, 123). McIntosh and MacMillan (93) describe that students reported that their educational program did not prepare them in this area and they felt that they had learnt most about sleep promotion through clinical experience and their own life experiences. Furthermore, **Study IV** reveals that the field of patients' sleep is very limited regarding competence development in a clinical context. Over 70 percent answered that they did not have guidelines or policy documents regarding patients' sleep at their department or ward.

Based on the results of **Study V**, regarding the use, or rather the under-use, of self-assessment instruments regarding sleep, we completely agree with Menear et al. (124) who emphasize that it is surprising that, for example, the RCSQ is only used to a limited extent in clinical contexts. With reference to the findings of **Studies III and IV**, this could be explained to some extent by the fact that education about assessment tools regarding sleep is not included in the investigated nursing programs. Findings from **Study IV** confirm this, when zero percent of the respondents reported the use of assessment tools regarding sleep in their clinical context. There is an idea, as yet unexplored, that patients get used to sleeping in hospitals and that sleep is considered to improve for every night that passes. Findings from

Study V contradict this and show that twelve patients scored higher (better sleep) on day three, nine patients scored lower (worse sleep) on day three and two patients scored approximately the same low value on (worse sleep) both days. This result clearly demonstrates the importance of using self-assessment for sleep on a daily basis. Findings from **Studies II** and **IV** describe how patients are affected by sleep deprivation and negative consequences of the latter, such as impaired ability to receive information and delayed mobilization after surgery. These results have clear links to research in the field (6, 16, 18) which describes negative consequences such as effects on memory, learning and concentration as a result of sleep deprivation. The findings conclude that patients' sleep is an area that should be considered as important, needs to be recognized and action taken. From a nursing perspective, these overall findings could contribute to increased knowledge about how nursing care and patients' sleep are addressed during hospital care. Nurses have an ambition and a desire to address patients' sleep. Greater knowledge about sleep and time and resources to implement changes would empower them to take action.

METHODOLOGICAL CONSIDERATIONS, LIMITATIONS AND STRENGTHS

Various research methods were used, i.e. qualitative methods for **Studies I, II and III** and a quantitative methodology for **Studies III, IV and V**, to answer the specific aims of the thesis. In all of the studies, there were both methodological considerations, limitations and strengths which are addressed and discussed below.

When conducting studies in a clinical context, there are always ethical issues to consider and the fact that patients are not there for the sake of research. **Study I** was performed in a hospital in a catchment area considered multicultural, with a number of patients whose mother tongue is not Swedish. Several potential participants did not meet the set inclusion criteria for this study because of the language. This could be considered as a limitation, and if the inclusion criteria for language had also included English, more patients would have been able to participate. Furthermore, patients in **Study I** who received care in a single room and those who stayed in rooms with several beds were not evenly distributed. This may have had an impact on their experiences regarding sleep. Gender distribution in the studies was not even. However, a gender perspective was not in focus in this research. The predesigned and tested topic-guides, used in **Studies I-III**, enhance credibility, and to achieve transferability (125), sampling, settings and inclusion of participants were explicitly presented. Credibility was also enhanced by having the same person conduct all the interviews. In **Study II** the included participants were from nine different wards spread over four different acute hospitals, and this variation should be considered as a strength for this study's transferability. A challenge with focus groups as a method for data collection is to bring together people from different departments at the same place and time. In **Study II**, the invitation to attend was initially sent to approximately 600 potential participants (registered nurses). During the study, we managed to conduct four focus groups with a total of fifteen participants and seven individual interviews. Sample size in qualitative studies can be discussed and saturation is one commonly used concept. The aim for the study, broad or narrow should be considered to be of importance regarding the sample size (126). In **Studies I-III**, when the aims were explanatory, an inductive approach was adopted, and the use of triangulation regarding data collection (combination of individual interviews and FGs) in **Study II** could be seen as a way of enhancing dependability. Quotations were included in the findings in order to enhance credibility even more. An additional strength in **Studies I-III** was that the same person performed all interviews / moderated all FGs. In **Study III**, transferability to other settings

(other universities) may be low due to differences between Bachelor of Science in Nursing degrees in Sweden and other countries. One limitation in **Study III** is that only three universities were included but, on the other hand, the three included universities are amongst those in Sweden with the greatest number of students in their nursing education programs. Another limitation in **Study III** regarding the research method, mixed methods, is that collected data were analysed in two separate ways: However, the findings were summarized, and the conclusion for **Study III** is based on the overall findings of the study

In **Study IV**, the aim was to describe how nursing care, management and development regarding sleep and patients' sleep are conducted at acute hospitals in Sweden. Stratified sampling through the regions was performed in order to reach attain transferability. One strength in **Study IV** was the blinded randomization, carried out to ensure both a geographical spread and a range of different sizes of acute hospitals in Sweden (region, county and smaller county hospitals). The response rate from invited potential participants was low despite reminders. Only 19 out of 108 potential wards were included, which must be seen as a limitation, but a response rate with answers from 53 participants out of 105 is a strength. The survey was developed within the research group and was based on results from **Studies I and II**. Operationalization was used to verify that the survey covered the stated aim of the study. Both in the pre-test and the completed surveys, there was no internal loss, indicating high validity regarding face and content validity. This enhances the study's dependability and transferability. Furthermore, the national geographic spread for included hospitals and wards is representative for the regions and should be considered as a strength regarding the transferability of the results. Regarding **Study V**, the use of a valid instrument was a strength and also the low external, as well as internal, loss in the data collection. The translated version of the RCSQ was previously tested in a clinical setting but only in an intensive care unit (36). The assessment over three days and nights was performed in line with previous recommendations in the literature (127). However, one methodological limitation may be that the comparison between the two different outcomes of the two means of assessment does not capturing the same dimension and the external validity is limited due to the small number of participants.

SUMMARY AND CONCLUSIONS

Sleeping in hospital is considered as a stressor by patients, student nurses and nurses.

Patients' sleep during hospital care is undermanaged and a non-highlighted area, and this thesis shows that there are several challenges for nurses, nursing managers and organizations at acute hospitals if the situation is to be improved. This thesis reveals that sleep deprivation appears to be common among patients during hospital care, and from a nursing perspective, consequences, both physical and psychological can be observed. Nurses have an obligation to address, assess, promote and evaluate sleep as a part of nursing care. In its present form, the Richards-Campbell Sleep Questionnaire may have the potential to facilitate nursing actions to promote sleep amongst hospitalized patients in line with person-centred care.

Nurses describe their knowledge in the area as shallow, and report using their own experiences as a source of knowledge. Furthermore, education about sleep and patients' sleep in the investigated nursing programs seems to be deficient. This situation may lead to future nurses relying on their own experiences instead of evidence-based knowledge in the field of patients' sleep, and registered nurses in clinic being unable to contribute to the development of the area. Patients' sleep needs more attention from registered nurses and a greater level of knowledge about non-pharmacological approaches as well as the implementation of assessment tools in order to give sleep during hospital care the attention it warrants.

The results of the thesis should not be interpreted as meaning that nurses should not perform nursing care and controls of vital signs during the night. Rather, it suggests that nursing care during the night should be delivered in a more co-ordinated and personalized way. This is, of course, a challenge for nurses, i.e. to balance patients' sleep with adequate monitoring during the night. However, greater knowledge about sleep may encourage them to take action.

Addressing and implementing person-centred care may be the right way forward.

CLINICAL IMPLICATIONS

One important aspect is that student nurses and nurses perceive the area of patients' sleep as important and express a will to address it more actively. **Studies II, III and IV** clearly show that nurses need support from their organizations and nursing management to move the area forward. Observations regarding patients' sleep should be based on the patient's subjective experience. Using, e.g. self-assessment instruments, and conversing with patients about their sleep may be one way forward. Patients' experiences about their sleep and nurses' observations need to be highlighted during medical rounds, reported during handovers and included in nursing documentation.

To comprehend the importance of co-ordinating care and medical procedures during the night, nurses need basic knowledge of sleep physiology. In order to highlight the area, patients' sleep during hospital care, it needs to be addressed during training days at clinics. The relevant literature should also be easily accessible on the wards.

Based on the prevailing workload that many wards experience, it is unreasonable to expect each individual nurse to develop and extend knowledge within the area of sleep during their shifts. Introducing a nurse, with responsibility for sleep on the ward, as a kind of "sleep-manager" and giving this nurse the opportunity to extend his or her knowledge about sleep, could be a way forward. This "sleep-manager" nurse could then spread knowledge to colleagues through, for example, journal clubs and discussions.

Education in the field should be reviewed in nursing education programs. With education and extended knowledge within the area, patients' sleep could be developed. Furthermore, nursing care must be conducted and practiced based on evidence and not on the basis of personal experience. To achieve this, extended education and implementation of research results in the field are essential.

FUTURE RESEARCH

Based on the findings of this thesis, it is obvious that nursing care and research about patients' sleep during hospital care would benefit from a wider perspective. Future research should not only be conducted with an aim to minimize physically disturbing factors such as light and sound, but also focus upon how nurses address, assess and promote sleep. The results from **Study I** show that the nurse's bedside manner and communication with the patients during the night affect patients' sleep in different directions. This is an area that needs to be explored and described in future studies. The patients' accounts bring a new perspective and open the way for possible change in the way nursing care is performed. Further studies in the field should be conducted in a way that includes the patients as co-researchers in the studies. Using PREM and PROM to a greater extent in nursing research may be one method to achieve this.

According to the results of this thesis, nursing students and registered nurses perceive their knowledge about sleep, sleep promotion and patients' sleep to be insufficient. They are only prepared to actively address patients' sleep to a certain extent. Further and larger studies in the field of education and how patients' sleep is integrated into nursing education are needed. One obstacle may be that today there is little relevant course literature for studies at university level, which may be due to the fact that the area has not previously been updated from a nursing perspective. There are several studies that have been performed using non-pharmacological measures, but these studies unfortunately have too few participants and significant conclusions cannot be drawn. Furthermore, studies on health economics and patients' sleep during hospital care could contribute with new and important knowledge. For example, to study correlations between patients' experienced and assessed sleep quality during hospital care and length of hospital stay may be interesting and of central importance.

SUMMARY IN SWEDISH (SVENSK SAMMANFATTNING)

Sömn är ett grundläggande behov för alla människor och fyller därmed en livsviktig funktion. Sömn är viktigt för att upprätthålla god hälsa och det finns samband mellan exempelvis sömnbrist och ett nedsatt immunsystem. I samband med sjukdom och/eller kroppsskada har människan ett ökat behov av sömn och det finns en säkerställd association mellan sömnbrist och ett flertal sjukdomstillstånd samt en ökad dödlighet. Flertalet studier har visat att sömnstörningar är vanligt förekommande hos patienter som vårdas på sjukhus. Sömnbrist och därmed en nedsatt sömnkvalitet kan påverka patienters koncentrationsförmåga, leda till svårigheter att hantera ångest och bidra till förändringar i humör samt förmågan att hantera smärta och stress i samband med sjukdom. Att främja sömn i samband med sjukhusvård bör anses som en viktig arbetsuppgift inom professionen omvårdnad. Sjuksköterskan behöver grundläggande kunskaper i sömnfysiologi för att identifiera, initiera och utföra omvårdnadsinterventioner. Bristande kunskap inom området sömn kan leda till att symptom som är relaterade till sömnbrist inte identifieras. Forskning om patienters sömn i åldersgruppen 18–65 år vid vård på akutsjukhus är idag begränsad och utökad kunskap inom området skulle kunna komma att främja patienters sömn.

Det övergripande syftet för avhandlingen var att utifrån ett omvårdnadsperspektiv utforska och beskriva patienters sömn och hur patienters sömn hanteras vid vård på akutsjukhus. Specifika frågeställningar formulerades för vardera delarbete och olika metoder och analyser har använts för att besvara det övergripande syftet. **Studie I** utfördes som en kvalitativ intervjustudie där tio patienter som vårdades på akutsjukhus intervjuades kring deras upplevelser av att sova på sjukhus. I **studie II** insamlades data genom kvalitativa individuella intervjuer och fokusgrupper med sammanlagt 22 legitimerade sjuksköterskor vid fyra akutsjukhus. Syfte var att beskriva sjuksköterskors uppfattningar om patienters sömn och upplevelser av sömnfrämjande åtgärder vid vård på akutsjukhus. **Studie III** utfördes genom mixad metod där 21 sjuksköterskestudenter i termin fem och sex vid sammanlagt tre lärosäten intervjuades utifrån deras uppfattningar kring förberedelse att handha och främja patienters sömn. Vidare inhämtades programdokument såsom kursplaner och utbildningsplaner från de tre lärosätena och dokumenten genomsöktes efter ordet sömn. **Studie IV** designades som en tvärsnittsstudie där totalt 53 legitimerade sjuksköterskor, vårdutvecklare och utbildningsledare vid 15 akutsjukhus i Sverige besvarade en webbaserad enkät. I **studie V** inkluderades sammanlagt 25 patienter vid två sjukhus i en icke experimentell studie som syftade till att beskriva korrelationer mellan ett subjektivt och ett objektivi mått gällande sömn.

I **studie I, II** och **III** användes induktiv kvalitativ innehållsanalys som analysmetod (latent analys i studie I och II och manifest analys i studie III). Resultat från **studie I** visade att det inte enbart är miljöfaktorer såsom ljud och ljus som stör patienters sömn utan att personalens bemötande och omhändertagande också inverkar på sömnen. **Studie II** bekräftar patienternas upplevelser (studie I) och visade att flertalet sjuksköterskor uppfattade patienters sömn som negativt påverkad. Sjuksköterskorna upplevde att det var svårt att arbeta med patienters sömn utifrån tidsbrist, att de saknade kunskap om området och att de upplevde stöd från ledning och organisation som bristande. En positiv aspekt gällande resultatet var att sjuksköterskor har en ambition och vilja att arbeta med patienters sömn i en större utsträckning än vad som görs idag. Resultatet från **studie III** där sjuksköterskestudenter beskrev hur de uppfattar sig vara förberedda att arbeta med patienters sömn bekräftar resultaten från såväl **studie I** som **studie II**. Sjuksköterskestudenter i **studie III** ansåg inte att området sömn var integrerat i sjuksköterskeutbildningen. Analysen av kursdokument som genomfördes i **studie III** visar med tydlighet att sömn inte finns explicit uttryckt i kursplaner och lärandemål. Resultatet från **studie IV** visar på att patienters sömn som område, utvecklas och kvalitetssäkras i en blygsam utsträckning och området belyses exempelvis inte under fortbildning och utvecklingsdagar i klinik. Dock visar resultatet på en samstämmighet med **studie II**, att det finns en vilja att utveckla området och det framgår med tydlighet att nedsatt sömnkvalitet och duration av sömn har en negativ inverkan på patienters återhämtning. I **studie V** påvisades korrelation mellan utfallsmåtten RCSQ och Vivago för dag 2 men inte för dag 3. Vidare visar resultatet från att skattning med RCSQ bör utföras dagligen.

Sammanfattningsvis visar avhandlingen på att patienters sömn i samband med vård på sjukhus är ett eftersatt och outvecklat område. Sjuksköterskor och sjuksköterskestudenter beskriver sina kunskaper inom området som ytliga och att undersökta sjuksköterskeprogram inte bedriver undervisning kring sömn och patienters sömn i den utsträckning som behövs för att området ska kunna utvecklas i en positiv riktning. Sjuksköterskor har ett ansvar att identifiera, initiera och planera för omvårdnad och patienters sömn ska betraktas som ett omvårdnadsområde. Resultatet tyder på att Richards-Campbells Sleep Questionnaire skulle kunna användas i klinik som ett led i att hantera och främja sömn på ett individualiserat sätt. Avhandlingen visar på att det finns ett flertal utmaningar för sjuksköterskor, chefssjuksköterskor och hälso- och sjukvårdsorganisationer inom akutsjukvård att hantera för att förbättra rådande situation. Patienters sömn behöver uppmärksammas i en högre utsträckning än vad som görs i dag och sjuksköterskor behöver fördjupade kunskaper inom området sömn och sömnfrämjande interventioner.

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Tänk att nu leker livet som i mina drömmar. Jag kan inte se hur jag utan alla er, lever mina drömmar. Ibland kan vägen kännas lång, Men jag vänder aldrig om, Jag vägrar att stå still.
Och nu när jag ser en helt ny värld, Som barnet lever och lär, Så vet jag vad jag vill.*

(Shirley Clamp)

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APPENDIX

Appendix I

Scoring instructions for RCSQ

Richards Campbell Sleep Questionnaire (RCSQ)

Scoring Directions:

1. Scores may range from 0 (indicating the worst possible sleep) to 100 (indicating the best sleep).

100 ----- 0

2. A score for each question is given based on the length of the line in millimetres from the 0 point to the cross of the patient's "X".

3. The total RCSQ sleep score is derived by adding the individual scores for items 1-5 for each question and dividing by five.

4. Item 6 should be scored individually. It was not part of original RCSQ, but can be used as a measure of noise.

Note: Photocopying or use of various fonts' sizes may change the length of the lines on the visual analogue scale. Please measure to be certain that the lines are exactly 100 millimetres prior to using the scale.

Appendix II

The Swedish version of RCSQ

Richards Campell Sleep Questionnaire (RCSQ)

1. Min sömn i natt var:

Djup _____ Lätt

2. När jag skulle somna i natt (första gången):

Somnade jag _____ Kunde jag nästan
nästan omedelbart aldrig somna

3. I natt var jag:

Vaken _____ Vaken
mycket lite hela natten

4. I natt när jag vaknade eller blev väckt :

Somnade jag _____ Kunde jag inte
om omedelbart somna om

5. Jag skulle beskriva min sömn i natt som:

En god natts sömn _____ En dålig natts
sömn sömn

6. Jag skulle beskriva ljudnivån i natt som:

Mycket tyst _____ Mycket
högljudd

Originalversion: Richards K.C., 1985
Översatt av Frisk U. och Nordstöm G., 1999