

FACTORS CONTRIBUTING TO SLEEP DEPRIVATION IN A MULTI-DISCIPLINARY INTENSIVE CARE UNIT

by

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DECLARATION

I declare that **FACTORS CONTRIBUTING TO SLEEP DEPRIVATION IN A MULTI-DISCIPLINARY INTENSIVE CARE UNIT** is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work had not been submitted before for any other degree at any other institution.

.....

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FACTORS ALTERING HIV AND POSTNATAL CLIENTS' COMMITMENT TO EXCLUSIVE BREASTFEEDING

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Abstract

The purpose of this study was to identify and describe the factors contributing to sleep deprivation in the multi-disciplinary intensive care unit in a private hospital in KwaZulu-Natal Province. Quantitative, descriptive research was conducted to identify the factors contributing to sleep deprivation in the research setting.

Structured interviews were conducted with 34 adult patients.

The results indicate that the following aspects influenced patients' ability to sleep in this unit:

-
-
-
-

KEY TERMS:

??????????????

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- My family for their support.
- Doctor H Moolman, for his assistance with data analysis and interpretation.

To God the Almighty, I praise and thank him for giving me the strength to continue and the wisdom to complete this study.

Dedication

I dedicate this dissertation to my dear father, David Stuart Watson,
who died tragically in February 2008.

A God fearing man, who lived his life completely in all he did and said.

A true inspiration to all who knew and loved him.

I thank God for 'Maboya', my father, as he was known.

He encouraged and wished for all persons, regardless age, colour, gender, culture and
background, to "... be all the man you can be."

He is greatly missed by all who knew and loved him.

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Watson: 15 Jan 2009

CHAPTER 1

INTRODUCTION AND BACKGROUND INFORMATION

1.1 INTRODUCTION

For everyone, to suffer from a bad night's sleep every once in a while, is not an unusual occurrence. According to Urden, Stacy and Lough (2002:77) sleep is the only medication that gives ease. The actual purpose of sleep is not really known, yet it is an essential activity in life. Actually human existence without any sleep at all, is unknown. Maslow, in his Hierarchy of Needs Model, refers to sleep (a state of natural rest), as a 'basic' physiological human need. Sleep is an essential part of the 24-hour cycle, its purpose being to "...prevent physiological and psychological exhaustion (Sleep and noise 2008:1).

Intensive care units (ICUs), according to Rodriguez (2005:37), are probably the most complex and stressful units in any hospital. A typical ICU environment consists of the sounds of various monitors and alarms of varying intensities, the bleeping of the many different machines with flashing lights of various colours, and other ongoing noises and activities. This is considered 'normal and customary' to staff who work in this environment. The language spoken is understood by 'those' who work in the ICU. The noises and activities may lead to feelings of anxiety, stress and inability to rest or sleep, ultimately impacting on the patient's safety and recovery.

Adequate rest and proper immune functioning are closely related. Sleep deprivation is a common occurrence in modern culture. It disturbs one's thinking patterns and weakens the body, making it more susceptible to disease (Cardinal 2006:1). The consequences of sleep deprivation include physical effects, mental impairment, and mental health complications. Inadequate rest impairs one's ability to think, to handle stress, to maintain a healthy immune system, and to moderate emotions (Sleep deprivation 2006:1).

Abnormalities of sleep are common in critically ill patients, but the mechanisms are poorly understood (Parthasarathy & Tobin 2004:1).

Maslow's Hierarchy of Needs provides a theoretical framework, provides insights into the most basic physical needs which must be met before progress can be made upwards in the hierarchy model towards achieving wellness in other dimensions of health. At the first level of the needs hierarchy, are physiological needs for air, water, food, sleep contributing to the immediate physical well-being of the organism (Lowry 2007:6). Health is defined by the World Health Organization as "...a state of complete physical, social, and mental well being, and not merely the absence of disease or infirmity" (Drench, Noonan, Sharby & Ventura 2003:85). In the ICU environment, one may battle to satisfy his/her basic physiological need to obtain sufficient sleep.

It is a challenge to promote an environment conducive to the patient's normal environment and sleep pattern. Considering that in an ICU, lights are on most of the time, one could expect to find adverse effects on newly admitted patients' previously normal circadian rhythms. The circadian rhythm is the schedule of physical and mental changes that occur over the course of a day, responding to light (Sleep deprivation 2006:1).

Current practice in ICU environments is viewed as extremely beneficial to a patient. Due to technological advancements, saving lives, which previously had no chance of survival, is possible. Rapid identification and treatment of emerging complications is also more possible due to technological advances. ICU staff members provide constant vigilance and interventions to sustain critically ill patients. Patients may, however, experience debilitating complications as a result of the many technological innovations and nursing interventions. Nurses need to manage both patients and monitors. Frequent interventions may not be beneficial to the individual patient's sleep.

Grasso, Mascia and Raniera (as cited in Angus & Carlet 2003:133) mention how the intensive care unit represents a hostile environment for the patients where the most

common sources of patient discomfort are pain, forced positioning, physical constraints, nursing and medical procedures, noise, light pollution and sleep deprivation. These key sources for physical and psychological stress enhance the depersonalising effects of the ICU environment, potentially leading to anxiety and depression. Modern technologies may create a mechanistic, dehumanising atmosphere in an ICU.

Individuals, if asked about their hospital experience in an ICU environment, report excessive noise, interfering with their abilities to rest or sleep. According to Baker (1993:84), “annoyance was reported according to sources of noise, such as staff, other patients, equipment, and background sounds and/or interference with activities.”

Cmiel, Karr, Gasser, Oliphant and Neveau (as cited in Mazer 2005:1) describe noise as a “primary cause of sleep deprivation and disturbance among patients.”

ICUs are designed specifically to treat patients who are seriously ill, at risk of developing complications as a result of a present situation, or recovering from a serious operation with the risk of developing complications. The nursing management of patients admitted to the ICU can vary, depending on the diagnosis of each patient.

In a multi-disciplinary intensive care unit (MDICU), a fully conscious patient, who had a myocardial infarction, may lie next to a mechanically ventilated patient with multiple injuries, fractures and many intravenous treatments in progress, admitted to ICU after an accident, and waiting to go to theatre once stabilised. This situation of medical and surgical/trauma cases (of any ages), being admitted to the one MDICU, with the variety of activities and noises, may increase patients’ anxiety and stress levels due to ongoing procedures, sounds and alarms around them.

Critical care nurses, who appreciate the importance of sleep, place a higher priority on protection of the patients’ sleep (Urden et al 2002:77). ICU nurses in such a MDICU should be knowledgeable about each patient’s needs and rights in the ICU, and aim to reduce stressful situations and address factors which may contribute to sleep deprivation.

Effective nursing care, including identification of factors contributing to sleep deprivation and aiming to enhance adequate rest and sleep, will help increase the likelihood and speed of recovery, shortening hospital stays and reducing medical costs.

1.2 BACKGROUND INFORMATION

Sleep is a basic human need, as is food and water. It allows the body to regenerate and recover from illness which has caused admission to the ICU. Alterations in sleep patterns can delay physical and mental healing (Urden et al 2002:77). The ICU 24-hour routine, with many unfamiliar noises and activities, may render patients unable to distinguish day from night. In a windowless ICU unit, such as the unit being researched, there is constant artificial lighting of the same constant strength which removes the circadian rhythm's natural cues. The ongoing nursing activities throughout the night, together with the perceptual disturbances experienced by the patient, and the fact that the nurses are always in close proximity around them, can contribute to sleep deprivation. The unfamiliar environment with the unfamiliar noises, lights, activities, discomfort of the hospital bed and the situation, anxiety and fear, pain, medications, stress and disorientation are some causes of sleep deprivation in an ICU. Sleep is needed in order to regenerate certain parts of the body, especially the brain, so that it can continue to function optimally (Ledoux 2006:1).

Mazer (2005:1) explains that, "patients exposed to continuous extraneous noise can also experience altered memory, increased agitation, less tolerance of pain, and feelings of isolation." In a study done to show the strong relationship between the number of loud sounds-80dB (decibels) or greater- and sleep arousal among elderly patients in a hospital, it was noted that "during an eight-hour period, from 10pm to 6 am.... loud noises markedly disrupted the sleep of patients ... patients spent a huge percentage of the time awake during the night" (Loud noises 1997:1).

Modification of the hospital's sounds produced in the ICU setting is a motivation as well as attempts to screen patients from noise pollution, (such as loud voices, television sets, equipment alarms, intercoms, and beepers). Although the ICU environment possesses characteristics that make patients and families prone to undesirable sequels, ICU nurses can employ creative strategies to minimise the impact of bedside technology to enhance sleep that is important for the survival and recovery of the critically ill patient (Halm & Aphen 2007:1). Sleep probably holds unknown powers that critical care nurses should strive to harness. Adequate sleep is crucial to proper brain function - no less than air, water, and food (Sleep disturbances 2008:1). Not everyone sleeps the same number hours per night. Some people sleep during the day as well as at night, while others sleep only at night. Most individuals require on average 6 to 8 hours of sleep every 24 hours. This differs from individual to individual. One individual may need to sleep at least 7 hours or else he/she feels sleep deprived, whereas another person can function adequately on four hours' sleep per night. By ensuring that the ICU patients get as much sleep and rest as possible, the patient's recovery process will be enhanced.

Lack of knowledge about sleep routines, frequent nursing assessments and interventions also affect the ill patient's ability to sleep. Sleep deprivation should be addressed by the multidisciplinary care plan.

Sleep medication and its effects should be evaluated for each patient, as well as identifying medications that might be preventing or disturbing sleep (Honkus 2007:1).

The type of machines and technological monitors used in the MDICU may vary. Staff members consist of the ICU nurses, doctors, X-ray department staff, cleaners and laboratory staff. These persons are in and out of the unit at various times during the day and night. Patients may identify talking in the hallways, conversations between staff members, visitors and patients, sounds of other patient in distress and mechanical devices' noises, nurses walking about, monitors' sounds, televisions and radios. Lack of noise control is identified as an element that contributes to a patient's sense of helplessness. Noise will increase anxiety and decrease the patients' confidence in the

nurses. Patients may become confused, requiring medication to calm him/her and even the possible need for physical restraints.

Evidence of physical and psychological alterations can be seen in some patients when noise interferes with their sleep. Any sudden loud noise, such as a nurse accidentally dropping a tray, can startle patients. The physiological responses to any loud, unexpected noise include a raised blood pressure, increased pulse, and faster rate of breathing, vaso-constriction and often a shocked look on the face or even anger by the upset patients. According to Dines-Kalinowski (2002:1), as many as 56% of patients are sleep deprived by the end of their first day in the hospital, especially patients in ICU where sleep is so hard to come by because of the frequent treatments and round -the-clock monitoring.

Knowledge of factors contributing to sleep deprivation in the ICU is vital. It appears that if persons report sleeplessness, ICU nurses may resort to medication and night sedation rather than identifying and rectifying factors causing the problems. Night sedation may enhance sleep for some, but for others it may cause hallucinations, anxiety and complete sleeplessness. Some people may not be used to taking night sedation, or may have heard stories about people having bad experiences after taking narcotics. Helton, Gordon, and Nunnery (as cited in Shepley 2006:2) found a correlation between interrupted sleep and negative psychological status such as hallucinations, combativeness, and disorientation in an ICU.

Sleep promotion in critical care an important nursing role, requiring the ICU nurse to be aware of and address the potentially devastating effects of ICU sleep abnormalities. Identifying factors contributing to sleeplessness is vital for enhancing a safe and quiet ICU environment. Penny and Earl (as cited in Mazer 2005:1) state that people who work in noisy environments for long shifts, day in and day out, suffer from stress-induced experiences. It is not uncommon to hear the ICU nurses reporting feelings of burnout, exhaustion, depression and irritability after ongoing periods of noise and procedures,

day after day. The nurses can go home. The patient is left behind to endure the next shift of staff coming on to contribute to the hustle and bustle in the unit.

Hospitals are committed to creating a healing environment for the patient. This involves the issues of responsibility, authority and accountability. The critical care nurse is an independent practitioner and he/she is accountable and responsible for quality care (Urden et al 2002:7), including patients' ability to sleep while in ICU.

The design, number of beds and type of patients admitted to an ICU also play an important role concerning causes of sleep deprivation. A bigger unit would presumably be noisier than a smaller unit. One expects it to be busier because it has more beds, thus more activities and more alarms. Less noise and increased staff efficiency may increase staff productivity and enhance each patient's sense of well-being.

Nurses walking up and down the unit at night might disturb patients. However, one may ask why the nurses are walking up and down as they do, where they are walking from, is the design of the unit such that the nurses have to walk so much. Thus, the shape of the unit, the position of the main nurses' station, and even the sluice room position, are all important considerations when aiming to address factors which contribute to sleep deprivation.

Ferns (2007:41) describes how patient management in the ICU may lead to dehumanisation, lack of personal control, and sensory overload from equipment alarms and bright lights, lack of sleep, experiences of painful procedures, chemical or physical restraint and a loss of dignity. Such stressors may interfere with the meanings in one's life. Noise, lack of sleep, social isolation, enforced immobility, pain from procedures, and poor communication with staff are recognised as stressful by critically ill patients.

Hospitals redesigning or constructing critical care settings should create sites that minimise noise pollution, such as arranging patients in individual rooms (Loud noises 1997:2). This may not always be possible in a smaller hospital due to space limitations.

By moving equipment and alarms away from patients, relocating nurses' stations away from close proximity to patients' beds, switching beepers to vibrating mode, and getting staff to speak more softly, reducing the level of potential noise disturbances may be possible. Patients can use ear plugs or noise cancellation equipment to enhance sleeping in an ICU.

The private hospital where this study was conducted is on the verge of expanding and building a bigger ICU. The numbers of people belonging to prepaid medical aid schemes have increased. When admitted to a private hospital, patients expect quality care. The private hospital's slogan promises patients' excellent care and this is what patients expect. Changing the design of the hospital ICU is merely one alternative to enhance patients' rest and sleep.

Having medical and surgical patients in one ICU might affect people's sleep deprivation levels. Whether there are reasons to suggest the separation of the MDICU unit into separate medical and surgical ICU units, or even having a separate cardiac unit, are other questions. The private hospital under study has no paediatric ward, so even the question of children in the same unit as adults arises. However, with increasing numbers of ICUs, comes the need for increasing nurses' numbers, posing financial challenges.

1.3 RESEARCH PROBLEM

This research stems from the fact that there is an increasing number of myocardial infarction, angina, medical cases, and it is vital for these patients to get enough rest and sleep in a quiet, stress free environment. The researcher has noted that in the MDICU at this private hospital in Kwa -Zulu Natal (KZN), the cardiac patients may find themselves lying next to surgical, ventilated, traumatic cases or even near or next to an ill, crying child. This can lead to anxiety, stress and resultant negative consequences to such individuals, and their families.

It is against this background that the researcher has proposed a study on factors contributing to sleep deprivation in the MDICU. Identification of factors will lead to better knowledge of persons working in the unit. Recommendations will address ways to reduce incidences of sleep deprivation in the ICU.

1.4 RESEARCH QUESTIONS

To facilitate the adequate collection of information that contributes to the understanding of reasons for sleep deprivation in the MDICU, the following research questions need to be answered.

- What factors contribute to a patient's sleep deprivation in the MDICU?
- What factors limit a patient's sleep deprivation in a MDICU?
- What could be done to enhance patients' sleep in a MDICU?
- What recommendations could be made to address the problem of patients' sleep deprivation in a MDICU?

1.5 PURPOSE OF THE RESEARCH

The ultimate purpose is to reduce sleep deprivation levels and enhance sleep patterns for patients to help them recuperate as quickly as possible. Recommendations based on the identified factors influencing patients' levels of sleep deprivation in the MDICU, should contribute to patients' enhanced sleeping in this MDICU.

1.6 RESEARCH OBJECTIVES

Research objectives guiding this study aim to

- Identify contributing factors which lead to sleep deprivation in a patient in a MDICU.
- Identify some of the contributing factors which limit a patient's sleep deprivation in a MDICU.
- Identify what could be done to enhance a patient's sleep in a MDICU.

- Make recommendations to address the problem of sleep deprivation in the MDICU.

1.7 ASSUMPTIONS UNDERLYING THE STUDY

Assumptions are basic principles that are accepted on faith or assumed to be true, without proof or verification (Polit & Beck 2004:711). The assumptions underlying this study are that:

- sleep is vital in order to function adequately
- sleep is vital for healing and recovery from illness
- Maslow's Hierarchy of Needs will be a suitable framework for contextualising the research results.

1.8 ETHICAL CONSIDERATIONS

Because human beings are the objects of study, it is vital to ensure that ethical issues are addressed.

The researcher needs to exercise the utmost care to ensure that all the rights of the individual are safeguarded, ensuring that all the institution's rights are also safeguarded. This research report never uses the institution's name. On the consent forms (see Annexure C) the institution's name is not used. The letter providing information about the study to respondents, regarding the research and the participant's rights (see Annexure C) also does not disclose institution's name.

The letter to the institution's medical superintendent/matron, requesting permission to carry out research does not state the institution's name (Annexure A). A letter from the institutions medical superintendent/matron was received by the researcher granting permission to conduct the research as requested in Annexure A.

The protection of the rights of the human subjects has become high priority among members of scientific and health care communities (Polit & Hungler 1999:29). According to Polit and Beck (2004:51), the rights of subjects must be adequately protected. No treatments or changes were introduced to any of the patients' in order to collect data. Ethical considerations taken into consideration in this research are the principles of beneficence, respect for human dignity and justice, and will be discussed in Chapter 3.

In order to ensure scientific honesty on the researcher's behalf, all sources of information are acknowledged. Complete references in the text and bibliography are given. During data collection, analysis and discussion, objectivity had been maintained. No fabrication or falsification of data has been done.

1.8.1 Informed consent

Informed consent means that respondents have adequate information regarding the research, are capable of comprehending the information, and have the power of free choice, enabling them to consent or decline participation in the research voluntarily (Polit & Beck 2004:151). All respondents have signed the appropriate informed consent form, before participation (Annexure C). No harm and no coercion occurred at any stage to respondents.

1.9 RESEARCH METHODOLOGY

The research design is a quantitative, descriptive design. This is a non-experimental research, using a structured interview schedule as the research instrument. A convenience sample of voluntary patients in the MDICU was observed by the researcher during the night. The researcher was present during the night preceding each patient's interview, in order to observe these patients, and after observation was able to describe and document aspects as they naturally occurred.

1.9.1 Research instrument

The structured interview was conducted by the researcher, after she had observed the patient the night. The researcher asked the questions and wrote down the answers.

The research instrument as pre-tested on four patients who had spent at least one night in the MDICU, and who were excluded from participating in the actual study.

1.9.2 Population and Sample

The research population in this research consisted of all patients' who had spent at least one night in the MDICU in the private hospital participating in this study. The population had to meet a designated set of criteria as established by the researcher, namely the patient had to be at least 21 years of age, male or female, and willing to be interviewed.

Non-probability or convenience sampling was used because the sample consisted of a selected group of patients from the accessible population. The patients comprising the sample, met all inclusive criteria, and had been informed about the study, before they participated. It was planned to interview as many MDICU patients as possible during the period 1 November 2007 to 31 December 2007.

Interviews and observations were conducted only by the researcher. All respondents were asked the same questions in the same sequence. Answers were recorded by the researcher. A statistician (see Annexure D) assisted with processing, analysing and summarising the data.

1.10 RESEARCH STUDY SITE

The research was done in a MDICU in private hospital in KZN Province. The design of ICU units can vary, affecting factors contributing to sleep deprivation.

There were a total of eight beds in the MDICU at the time of study, namely four beds in the main unit, two beds in a unit referred to as the 'high care unit' attached to the ICU (separated by a door), as well as two beds in another unit, also separated from the main ICU by a single door, referred to as the 'isolation room' (used as an 'extended' high care unit when there are no isolation cases and the hospital is fully occupied and patients need admission). Thus it is not unusual that ward patients do get admitted to the MDICU.

The number of nurses range from 3 to 4. If the unit is busy, there is more activity as staff, visitors and others move in and out of the unit. Thus every day is different and so some persons may have a quiet stay whilst other persons might battle to get any rest due to the busy ICU environment.

1.11 DEFINITIONS OF TERMS USED IN THE RESEARCH REPORT

Basic sleep cycle: progression through orderly succession of sleep states and stages. The first cycle begins by going from wakefulness to non rapid eye movement (NREM) sleep, and the two sleep states continue to alternate throughout the night with an average period of about 90 minutes. A night of normal human sleep usually consists of 4-6 NREM/REM sleep cycles (Sleep terms 2007:2).

Circadian rhythm:- innate, daily, fluctuation of behavioural and physiological functions, including sleep waking, generally tied to the 24 hour day-night cycle but sometimes to a different periodicity (example, 23 or 25 hour) when light/dark and other time cues are removed (Sleep terms 2007:2).

Intensive care unit (ICU): an area specifically staffed and equipped for the continuous care of critically ill, injured or post-operative patients and units may be subdivided into intensive care units, intensive care step down units, coronary care units, and high dependency units (Consultative Council on Emergency and Critical Care Services 1990 as cited in Ogle, Copley, Bethune and Parkin 2004: 3)

Mixed intensive care unit (MDICU): an intensive care comprising of both medical and surgical intensive care patients, with admission for gender, any age, race and culture. The unit thus provides care to critically ill patients, patients in need of high care, coronary care, pre and post-operative care and trauma cases.

Nocturnal: “Of the night”- pertaining to events happening during sleep or the hours of darkness (Sleep terms 2007:7).

Nursing: means a caring profession practised by a person registered under section 31, which supports, cares for and treats a health care user to achieve or maintain health and where this is not possible, cares for a health care user so that he or she lives in comfort and with dignity until death (South African Nursing Council Nursing Act Number 33 Of 2005.Section 1.6)

Optimal sleep: average amount of sleep needed every night by an individual for his/her optimal functioning; the number of hours of sleep required by individuals reported vary from 6-10 hours (Sleep terms 2007:8).

Professional nurse: means a person registered as such in terms of section 31 of South African Nursing Council Act Number 33 of 2005, which states that a professional nurse is a person who is qualified and competent to independently practise comprehensive nursing in the manner and to the level prescribed and who is capable of assuming responsibility and accountability for such practice (South African Nursing Council Nursing Act Number 33 of 2005 Section 30.1).

Prescribed: means prescribed by regulation (South African Nursing Council Nursing Act Number 33 of 2005.Section 1.6)

Registered nurse: means a person registered as a nurse under section 16 of Nursing Act 50 of 1978 (South African Nursing Council Nursing Act .Section 1.Issue 2000).

Restlessness (referring to quality of sleep): Persistent or recurrent body movements, arousals, and/or brief awakenings during the course of sleep (Sleep terms 2007:10).

Staff nurse: means a person registered as such in terms of section 31(South African Nursing Council Nursing Act Number 33 of 2005(Issue 2006) which states that a staff nurse is a person educated to practise basic nursing in the manner and to the level prescribed (South African Nursing Council Nursing Act Number 33 of 2005 Section 30.3)

Transient arousals: brief awakenings from sleep (Sleep terms 2007:14).

Sedatives: compounds tending to calm, and reduce nervousness or excitement and foster sleep (Sleep terms: 10).

Sensory overload: Any increase in intensity of stimuli to greater-than-normal levels or as simultaneous multisensory experiences.

Sleep: a state marked by lessened consciousness, lessened movement of the skeletal muscles, and slowed-down metabolism (Sleep terms 2007:10).

Sleep deprivation: is acute or chronic lack of sufficient sleep (Sleep terms 2007:11).

Snoring: is the sound made by vibration of soft tissues (of the soft palate and the pillars of the oropharyngeal inlet) during partial airflow obstruction. Many snorers have incomplete obstruction of the upper airway, which may develop obstructive sleep apnoea (Sleep terms 2007:13)

South African Nursing Council: established by Section 2 of the Nursing Act, 1978 (Act Number 50 of 1978) that Act by this Act (South African Nursing Council. Act number 33 of 2005.Section 2.1).

Zeitgeber: an environmental time cue that entrains biological rhythms to a specific periodicity. Known zeitgebers are light, melatonin and physical activity(2007:15).

1.12 ABBREVIATIONS USED THROUGHOUT THE DISSERTATION

ICU: Intensive Care Unit

KZN: Kwa Zulu Natal

MDICU: Multi Disciplinary Intensive Care Unit

RN: Registered nurse

SANC: South African Nursing Council

Unisa: University of South Africa

1.13 SCOPE AND LIMITATIONS OF THE STUDY

A total of 99 patients were admitted to the MDICU during the research period 1 November 2007 to 31 December 2007, yet only 34 respondents voluntarily participated. Respondents had to meet criteria as stipulated by the researcher in order to be able to participate. The

1.14 ORGANISATION OF THE REPORT

The dissertation has been organised in the following way.

Chapter 1: Introduction and background information regarding the proposed research

Chapter 2: The literature review is done. Maslow's Hierarchy of Needs theory is discussed in relation to the research problem of sleep deprivation. Other literature is also consulted regarding factors which influence sleep deprivation in ICUs.

Chapter 3: The research methodology is discussed.

Chapter 4: Data analysis and discussions are presented. Data analysis is done by means of descriptive statistics.

Chapter 5: Conclusions, based on the research findings, will be presented. Recommendations for dealing with all identified factors which influenced will be provided. Limitations of the study, impacting on the generalisability of the research findings, will also be addressed.

All books, internet articles, and other information articles, are listed in an alphabetical bibliography.

Letters requesting and granting permission to conduct the research, consent forms and information provided to all potential respondents are included in the list of annexure.

1.15 SUMMARY

In the MDICU in a private hospital in Kwa Zulu Natal, patients might suffer from sleep deprivation during their stay. Introduction to the research and background information was given regarding the research, research problem, aims, objectives, assumptions, operational definitions, ethical considerations, scope and limitations, and organisation of the report.

The next chapter, the literature relevant to this specific topic of sleep deprivation, will be reviewed.

CHAPTER 2

Literature review

2.1 INTRODUCTION

The purpose of this research is to explore and describe factors contributing to sleep deprivation in a MDICU. There is considerable literature on sleep deprivation and factors contributing to patients' sleep disturbances. The topic of sleep deprivation in a MDICU is not noted specifically in the literature.

2.2 PURPOSE OF LITERATURE REVIEW

Available literature was used as a basis from which to compare and interpret findings related to this specific topic. "Scientific research is not an activity of isolated hermits who ignore other findings, rather, it is a collective effort of many researchers who share with one another and who pursue knowledge as a community" (Neuman 1997:89).

2.3 MASLOW'S HIERARCHY OF NEEDS

Basic needs were written about by psychologist Abraham Maslow as early as 1943. Maslow anticipated that in order for human beings to progress totally, they needed to have certain needs satisfied in a definite order. Maslow's Hierarchy of Needs Model illustrates that humans are driven by needs to satisfy basic needs so as to free their minds to pursue higher growth (What are your basic needs? 2008:1). As Green (2007:1) explains, "Man is a perpetually wanting animal" and 'what a man can be, he must be" (Green 2007:7). ????

Maslow proposed seven levels of needs to illustrate his thoughts of the order of needs. However the five layer/level pyramid type model is used more often, with the most basic needs on the bottom of the pyramid, and the higher order, needs at the apex. According to Smeltzer and Bare (2004:5), Maslow ranked human needs as "physiological needs; safety and security; belongingness and affection; esteem and self-respect; and self-actualisation, including self-fulfilment, the desire to know and understand, and aesthetic needs."

Green (2007:1) states that human needs are hierarchically structured in the sense that the arrangement of the needs within the hierarchy of needs model are defined by their respective levels of urgency, intensity and priority. Maslow's model illustrates the need to satisfy the most basic low level needs such as physiological requirements and safety needs before an individual will be motivated to satisfy higher order needs. The lower level four needs, called deficiency or basic needs, must be met in order for one to survive, before the 'growth needs', also called being needs, can motivate a person's behaviour.

Rarely is a state of motivational quiescence achieved. At almost every moment one is host to some motive. However, Lowry (2007:5) explains that when one motive is satisfied, then another moves in to replace it. A 'deficit' in an area refers to a situation where one lacks something, resulting in a need. Thus, if there is no deficit, there is no need ... thus no motivation. As Boeree (2007:3) states, "... you don't miss your water till your well runs dry". The principle of "homeostasis" is used by Maslow to illustrate how needs operate. Green (2007:2) mentions that homeostasis refers to the body's automatic efforts to maintain a constant balance. One is moved to act in order to satisfy a felt deficit need. Once content, the 'switch' to do something is switched off. Just as a furnace thermostat is switched on when the furnace gets too cold, and off if too hot, so too, humans will be switched 'on' to do something when a deficit in the body arises, and switched 'off' when no cause to act exists.

2.3.1 Deficiency or basic needs

These needs, according to Maslow, deal with keeping our bodies alive and our minds safe and healthy (What are your basic needs? 2008:1).

2.3.1.1 *Physiological needs*

Physiological needs are often taken to be the 'starting point' for the motivation theory, and can be referred to as, "very fundamental life or death needs" (Maslow's Holistic Dynamic Needs Hierarchy 2007:1). These biological needs are basic needs required to sustain life. They are things crucial for keeping the body fuelled, maintained, and functioning. One needs to breathe to get oxygen, drink (water), eat to ensure nourishment, maintain a regular body temperature, exercise, rest and sleep, avoid pain and remove body wastes.

Green (2007:4) mentions that basic human needs are organised into a hierarchy of relative prepotency, with physiological needs the most pre-potent of all needs. Air, water and food are basic, physiological needs, all imperative in order to live. They are, however, in levels of importance at any one time. "If the physiological needs are relatively well gratified, there then emerges a new set of needs, which we may categorize roughly as the safety needs" (Maslow's Holistic Dynamic Needs Hierarchy 2007:1).

2.3.1.2 Safety and security needs

These needs deal with shelter, security, law and order, and stability (What are your basic needs? 2008:1). One becomes encouraged to find safe situations, stability and protection, freedom from fear, anxiety, and disorder. Green (2007:4) describes the individual as a 'safety seeking mechanism'. Maslow felt that if one feels that one is in harm's way, the higher needs will not receive much attention. Should one be able to satisfy the needs for safety, then one might not feel threatened physically and emotionally.

It is a common preference to seek safety and stability in our world, to have, "A very common preference for familiar rather than unfamiliar things, or for the known rather than the unknown" (Green 2007:5).

An infant when exposed to any felt threat does not inhibit a reaction to it. Instantly, it would most likely cry to indicate its displeasure. For children especially, there is the need for schedules, limits, and routine, as well having the consistency of having a loving caregiver available (What are your basic needs? 2008:1). Thus, if a mother stays with her child this can reduce the anxiety and fear experienced in the hospital environment.

One may generalise and maintain that "... the average child in our society generally prefers a safe, orderly, predictable, organized world, which he can count on, and in which unexpected, unmanageable or other dangerous things do not happen, and in which, he has all-powerful parents who protect and shield him from harm" (Green 2007:5). However, adults "have been taught to inhibit the reaction" (Green 2007:4). Thus, even when feeling threatened and unsafe, an adult may appear calm. Many adults thrive in constants on their lives, and "... disruptions and changes to these safety needs or routines can cause stress" (What are your basic needs? 2008:1).

2.3.1.3 *Belonging needs*

If both the physiological and the safety needs are fairly well gratified, then the love and affection and belongingness needs will emerge (Green 2007:6). Social needs relate to the need to interact with other persons. When unfulfilled, one desires friends and companions. This includes the need to give and receive love, to sense that one belongs, and the need to have friends. A natural outgrowth of safety needs are belonging needs (What are your basic needs? 2008:2). "... attaining such a place will matter more than anything else in the world ..." (Maslow's Holistic Dynamic Needs Hierarchy 2007:2).

2.3.1.4 *Esteem needs*

Everyone has the need to 'belong', to feel important, to satisfy that need of feeling part of the environment and situation, to feel good about oneself and to be respected by others. "All people in society (with a few exceptions such as people with pathological problems) have a need for a stable, firmly based, normally high evaluation of themselves, for self-respect or self-esteem, and for the esteem of others" (Maslow's Holistic Dynamic Needs Hierarchy 2007:1). Self-esteem is linked to one's sense of self-worth according to Urden et al (2002:59). When ill, one may feel a sense of worthlessness. One may battle to adapt to situations, and may 'refuse to participate in self-care, exhibit self-destructive behaviour... permitting others to make decisions" (Urden et al 2002:62).

Low self-esteem and inferiority complexes are the opposites of the esteem needs. "Satisfaction of the self-esteem need leads to feelings of self-confidence, worth, strength, capability, and adequacy, of being useful and necessary in the world. But thwarting of these needs produces feelings of inferiority, of weakness, and of helplessness" (Maslow's Holistic Dynamic Needs Hierarchy 2007:2).

In everyday society, most individuals satisfy their physiological and safety needs, as well as their belonging and love needs. However, the thing that seems so hard to obtain, is that of respect and self-esteem. Urden et al (2002:62) note that "Illness can rob the person of perspective and shrink both the familiar world and the one of possibility, often leading to low self-esteem, powerlessness, helplessness, and depression".

The last level is what Maslow refers to as 'growth motivation', as opposed to the deficit motivation for the lower four levels.

2.3.2 Growth or being needs

Maslow refers to this last level as growth motivation, comprising four needs (self-actualisation, cognitive needs, aesthetic needs and transcendence), which are spiritual and psychological needs that stimulate one's mind, develop one's creativity, and expand one's spirit.

2.3.2.1 Self-actualisation

The emergence of this self-actualisation need emerges once all physiological, safety, love and esteem needs have been satisfied. Maslow explained that this was only the beginning of human growth. Self-actualisation refers to using one's creative abilities and skills to reach one's highest potential (What are your basic needs? 2008:2). Maslow's initial conceptualisation included only one growth need, namely self actualisation, which refers to the quest to reach one's full potential as a person. As Green (2007:7) puts it "What a man can be, he must be." These are needs which do not involve balance or homeostasis. Once engaged, they continue to be experienced. Occasionally the needs may get stronger as they are "fed". It's an issue of becoming the most complete, fullest, "you".

Even if all these needs are satisfied, one may still expect that a new discontent and restlessness will develop, unless the individual is doing what he or she, individually, is fitted for...What humans can be, they must be. They must be true to their own nature. This need is self-actualisation (Maslow's Holistic Dynamic Needs Hierarchy 2007:2).

Daniels (2001) suggested that Maslow's ultimate conclusion that the highest levels of self-actualisation are transcendent in their nature may be one of his most important contributions to the study of human behaviour and motivation. As one grows physiologically, there are new opportunities to continue advancing and growing. The difference between this need and lower level needs is that it is never entirely satisfied. No individual ever achieves full potential as a person in life. Maslow differentiated the growth need of self-actualisation into two levels of growth needs, prior to the general level of self

actualisation, the cognitive need, thus the need to learn and find meaning, and the aesthetic need, referring to the need for symmetry, order and beauty.

2.3.2.2 Cognitive needs

Maslow acknowledged humans to be curious, needing to know and understand themselves and the world around them. He also understood that humans had a desire to solve problems and try to make the world a better place (What are your basic needs? 2008:2). The cognitive capacities, (perceptual, intellectual, and learning), are tools used to satisfy basic needs. If, however, any threat to them arises, or any lack of, or blocking of their free use, this will be ultimately threatening to the fulfilment of the basic needs.

“Acquiring knowledge and systemizing the universe have been considered as, in part techniques for the achievement of basic safety in the world ... also freedom of inquiry and expression have been discussed as preconditions of satisfactions of the basic needs” (Green 2007:7).

2.3.2.3 Aesthetic needs

Maslow recognised that people appreciate and crave for beauty, and that they will thrive in ordered surroundings and heal psychologically and spiritually when surrounded by beauty (What are your basic needs? 2008:2). Beyond finding fulfilment and realising one's potential, is the transcendence level of needs.

2.3.2.4 Transcendence

This need is the desire to reach out to others and help them (What are your basic needs? 2008:2). It may also refer to spiritual or peak experiences which give one's life meaning, such as when one is able to help others find self-fulfilment and realise their potential.

Maslow's felt that once one becomes more self-actualised and self-transcendent, then one would develop more wisdom through the process. By being wiser, when confronted with most situations, one would rationally know how to cope.

2.4 LIMITATIONS OF MASLOW'S HIERACHY OF NEEDS MODEL

Some cultures appear to place social needs above any other needs. Not all individuals are driven by the same needs in the same order as Maslow's Model illustrates. Maslow has difficulty explaining cases where an individual will neglect a lower level need in pursuit of satisfying higher order needs.

There is little evidence to suggest that people are motivated to satisfy only one need level at a time, except when there is conflict between needs. The statement of, "if one need is satisfied, then another emerges", can give a false impression that a need must be satisfied 100% before the next need emerges. However, in a normal society, most members only partially satisfy their basic needs at the same time.

2.5 FACTORS INFLUENCING SLEEP DEPRIVATION IN A MDICU

Factors influencing sleep deprivation in a MDICU will be discussed according to Maslow's Hierarchy of Needs Model.

2.5.1 Physiological needs

These biological needs are basic needs required in order to sustain life. Maslow's model illustrates the need to satisfy the most basic needs before being motivated to satisfy higher needs.

2.5.1.1 Adequate water

The need to satisfy thirst is a basic need, noted at times to be the most needed, even before hunger or any other need. Reasons for such a basic unmet need include being kept nil per mouth due to one's illness, or awaiting surgery. The use of an oxygen mask causes an extremely dry mouth and thirst. Honkus (2003:5) reports that oxygen can dry the nasal passages, unless humidified. Patients are often too ill or weak to reach for, or hold a glass of water to quench their thirst. A nasogastric tube may cause extreme discomfort to the patient's throat. Thirst may contribute to MDICU patients' sleep deprivation.

2.5.1.2 Adequate food

“Adequate nutrition is essential if a patient is going to improve respiratory and skeletal muscle function and avoid life-threatening infectious complications” (Hall, Schmidt & Wood 2005:210). Hunger may be reported by patients who dislike hospital food, are nil per mouth, or are too afraid to eat for fear of vomiting or experiencing pain. “Taste changes and difficulties in feeding themselves may compromise patients’ nutritional state” (Griffiths 2008:2).

ICU patients may struggle to feed themselves (Griffiths 2008:1). Diets ordered according to patients’ illnesses (low cholesterol, diabetic) may be strange to patients who eat different foods at home. Cultural congruent foods should be available. Some patients may prefer to consume only food brought by their family members.

2.5.1.3 Privacy

Smeltzer and Bare (2004:116) state that “people tend to regard the space in their immediate vicinity as an extension of themselves.” Strict patient bed rest may lead to patient frustration. Hospital beds become uncomfortable, normal body functions become difficult, monitors’ leads get tangled up with the intravenous lines aggravating agitation, frustration, depression and the resultant inability to sleep. Bed spacing may be viewed as insufficient to ensure privacy. ICUs were established to care for the severely ill patients. Morton et al (2005:36) mention that the sickest patients are cared for in the closest proximity to the nurses and each other, where the environmental effects of noise, lights, and frequent interruptions common occurrences, implying that the sickest patients endure most sleep disruptions.

Common to most ICU designs is the notion of close observation and rapid intervention. Morton et al (2005:37) mention how ICU beds are often so close to each other those patients could hear everything happening to the patient in the next bed. The lack of privacy and fears related to overhearing ICU procedures and conversations create anxiety and could aggravate sleep problems.

Having to use bedpans in close proximity to other patients may be uncomfortable, embarrassing and humiliating. Noises of patients in close proximity to each other may be distressing. Smells may be disturbing and upsetting. Patients may feel that during visiting hours lack of privacy makes it difficult to communicate with one's visitors.

2.5.1.4 Sleep and rest

Dolan (1991:72), citing Closs (1988), suggests that 50% of all patients that enter the ICU are sleep-deprived within 48 hours. Sleep deprivation results in a discontinuity of the sleep-wake cycle. Sleep disturbance in the MDICU is defined as "... insufficient duration or stages of sleep that results in discomfort and interferes with quality of life" (Urden et al 2002:82).

As many as 42% of ICU patients are reportedly unable to sleep, and those who managed to sleep described it as "drifting on and off into sleep" (Sleep and noise in the ICU 2008). Sleep deprivation leads to anxiety and fear, which in turn aggravates pain, which adversely increases anxiety levels and discomfort, decreases sleep and increases the risk of delirium. It is difficult to ascertain whether a patient woke up due to pain, for treatment, or for monitoring purposes. Morton et al (2005:39) note that a lack of sleep and rest contributes to patients' fear and anxiety.

2.5.1.5 Pain

According to Urden et al (2002:58), pain affects the whole person. When ill, "... most individuals' need more sleep than usual, and sleep seems to promote recovery" (Urden et al 2002:82).

According to Roberts (1996:742), pain does not dwell in body tissue where it is felt, but is a sensation perceived, identified, evaluated and interpreted in the brain. To the patient, the threat of having to experience pain may add to feelings of powerlessness and also increase susceptibility to other stressors which might otherwise have been better tolerated. According to Ferns (2007:43), "pain, anxiety, frustration and fear are closely linked variables that can lead to aggression." Honkus (2003:5) reports that ICU patients may

have pain for a variety of medical and surgical reasons, as well as due to painful medical procedures.

Primary causes of pain include trauma, fatigue, environmental temperature changes, invasive procedures and/or supportive devices, muscle tension, immobility, sensory restriction leading to sensory deprivation, anxiety, depression, anger, threats to an individual's physical or emotional integrity, perceived threat of what pain implies, loneliness, or feelings of isolation.

Ferns (2007:41) notes that seriously ill patients experience feelings of vulnerability, difficulty in expression and communication, frightening physical experiences, lack of sleep...as well as pain and discomfort. Pain is still commonly experienced by ICU patients despite the ability to control pain with medication. A patient feeling unable to control the environment may report that they "just need to sleep." Pain and anxiety aggravate sleep deprivation which worsens pain and anxiety, making it more difficult to sleep. Morton et al (2005:38) state that when careful attention is given to providing a soothing environment, then less pain medication will be needed and faster recovery may occur.

2.5.1.6 *Disorientation in ICU*

Urden et al (2002:56) state that disorientation is common for patients in ICU, which is influenced by the severity of the physical problem(s), chemical imbalances, sensory overload or deprivation, and previous healthcare system experiences. To cope effectively in life one must be able to perceive and interpret reality accurately. ICU patients may experience difficulty in keeping track of day or night. Watching the clock may be one method of remaining orientated to time, whilst others may feel that having a clock in view, makes time drag, leading to increased frustration and stress, with resultant difficulty in rest and sleep. Watching television or listening to the radio is another means of keeping up to date.

Morton et al (2005:42) define confusion as a feature of delirium resulting in an altered state of consciousness, and characterised by deficits in attention, memory, and executive functions. Primary causes of confusion due to sensory-perceptual alterations occur due to

prolonged immobilisation or bed rest, unrelieved pain, sensory overload, lengthy stay in ICU, or sleep deprivation.

When asked about their stay in ICU, patients may report nightmares and delusions (Griffiths 2008:2). These may be attributed to the illness, the use of opiates and sedative drugs, the unnatural environment of intensive care with its lack of a proper day and night, and to constant noise. Honkus (2003:6) states that the patient's medications may disrupt his/her sleep.

Patients may report that after a few days in the MDIDU, they are able to know the time of day and night by knowing the 'routine' in the MDICU, such as the changeover of staff, lunch times, tea times and other routine events. One window in the ICU could help prevent disorientation.

2.5.1.7 *Immobility*

Honkus (2003:5) notes that patients complain about uncomfortable hospital beds, with the inability to sleep. Vital signs are monitored on a 24-hour basis. The blood pressure cuff, placed on the arm, inflates and deflates at set intervals according to specific requirements. Electrocardiograph leads, connected to the patient's chest, monitor the patient's heart rate and rhythm, as well as the respiratory rate and rhythm. Electrodes attached to the chest, may irritate the skin.

An oxygen saturation finger probe is placed on one of the patient fingers, monitoring oxygen saturation levels continuously. Depending on the severity of the patient's condition, arterial invasive lines and/or central venous pressure lines, various tubes, a urinary catheter and different monitoring devices might cause patients to feel restrained.

Feelings of immobilisation and claustrophobia are stressful elements to cope with, and not understanding the purpose of the various restraints may lead to anxiety and decreased sleep. Anyone who normally prefers sleeping on their stomach may find it difficult to do so with all the monitoring equipment attached to the body.

The most frequently abused senses in an ICU environment are those of hearing and sight. The MDICU patient may feel trapped, with no escape from this uncomfortable environment with excessive noise and/or other stressors.

2.5.1.8 Noise

Noise may simply be defined as unwanted sound, or as "... any sound that may produce an undesired physiological or psychological effect in an individual or group" (Pugh, Jones & Griffiths 2007). According to Morton et al (2005:38), the ICU beds surrounded by noisy machines and equipment are intimidating to patients, causing discomfort to them. Consequences of this noisy environment include disrupted sleep, impaired wound healing, and activation of the sympathetic nervous system. Honkus (2003:4) mentions that environmental noise in the ICU includes ringing phones, talking, beepers, overhead speakers, and equipment sounds from suction apparatus, mechanical ventilation, the alarms from the cardiac monitors, pulse oximeters, and ventilators.

Culpepper (1988), as cited in Honkus (2003:5), states that patients located in beds near the nurses duty station, sluice room and store rooms are often exposed to more noise and light than others. However, according to Morton et al (2005:37), the close monitoring may lead to patients' complaints about noise, no day-night distinction, and frequent interruptions of sleep and rest. "Patients may find the environment noisy, mechanistic, lacking in privacy, confined, and isolated" (Adam 2008:7).

2.5.1.9 Good ventilation

A patient may battle to sleep when feeling either too hot or too cold. "Room temperatures or not having enough blankets may adversely affect sleep" (Honkus 2003:5). One's body temperature is directly affected by the environment due to the fact that during REM sleep, thermoregulation is absent, and shivering and sweating cannot occur. REM will be decreased when the environment is too cold or too hot.

The ICU air conditioner may disturb adequate sleep.

2.5.1.10 Light

In most ICUs there is "... little daylight, but there is considerable artificial illumination at night" (Location of sleep 2008:1). The artificial light found in the ICU environment is provided by fluorescent bulbs and tubes. According to Morton et al (2005:38), the harsh type of light created, if unshielded, is known to lead to visual fatigue and headaches.

Nocturnal light levels in an ICU may vary, with higher light levels more likely to affect the human circadian pacemaker than lower light levels. One may expect harsh bright lights to make the environment feel somewhat unnatural. When light is reflected off environmental surfaces such as glass, or other shiny surfaces, it may create a glare. Morton et al (2005:38) mention that bright lights may be left on for hours, even when no direct patient care is being performed. Dolan (1991:72) notes that "exposure to bright light and subsequent periods of low light must be carefully controlled, or sleep deprivation may occur".

A zeitgeber is an external influence which can shift the circadian sleep pattern, causing it to peak at different times, or fragment it. Urden et al (2002:81) report lights to be the most influential zeitgeber for sleep. According to Morton et al (2005:39), light is the environmental synchroniser which promote the normal circadian cycle of sleep and wakefulness.

2.5.1.11 Fear/anxiety

Anxiety is a state of apprehension or tension within a person which occurs when an interpersonal need for security or freedom is not met. According to Morton et al (2005:14), any stress that threatens one's sense of wholeness, containment, security, and control, causes anxiety.

Urden et al (2002:56) state that the ICU environment can be 'frightening' to the patients who battle to make much sense of all activities. However, for some individuals, the ICU may be perceived as a safe environment where lives may be saved, and care is given by highly competent caregivers.

A patient, admitted to ICU, finds him/herself surrounded by busy staff members, who are strangers to the patient. As Morton et al (2005:14) mention, the patient may feel a sense of isolation when the hospital staff ignore the presence of the patient, regardless of the patient's alertness levels.

Staff working in the MDICU work in close contact with the patients. They are thus in a 'favourable position to provide a degree of stability and a sense of security to patients in an environment which can be confusing and threatening" (Wright 1987:186). Mistrust of the staff may result should a patient feel uncomfortable, unsupported and insecure.

Staff may perceive the ICU as a place where fragile lives are vigilantly scrutinised, cared for, and preserved. Patients and their families may perceive admission to ICU as a sign of "... impending death, based on their own past experiences or the experiences of others" (Morton et al 2005:13). The actual or perceived threat may cause anxiety, aggravating sleeplessness.

A range of affective and psychotic phenomena can be seen in practice in the ICU's. These include fear and anxiety, both mild and severe psychosis with hallucinations, sleep disturbances and nightmares (Critical illness Ireland. Life support syndrome/psycho-affective disorder in intensive care units: a review 2007:1).

2.5.1.12 Stress

Morton et al (2005:13) define stress as a situation that exists when an organism is faced with any stimulus causing disequilibrium between psychological and physiological functioning." This refers to the rate of wear and tear in the body caused by life at any one time. When anxious or worried, one commonly battles to fall asleep quickly, and according to Honkus (2003:6), the majority of sleep time is spent in the lighter stages of NREM Stage 1 and 2. ICU patients have various medical and/or surgical diagnoses. Regardless of these differences, when requiring admission to hospital, the effect can be "...further compounded when placement in an ICU becomes necessary" (Urden et al 2002:56).

2.5.2 Safety and security needs

Morton et al (2005:39) note that an overwhelming need of ICU patients is the need to feel safe.

2.5.2.1 Safe environment

The ICU environment with advanced technology, monitors, alarms and flashing lights, may make the patient feel intimidated and overwhelmed.

Morton et al (2005:40) note that patients experience anxiety as a result of the interface of the illness with the ICU environment. Patients admitted to ICU instead of the ward may become anxious and fearful, not knowing why they are in ICU. A patient may be afraid of dying.

2.5.2.2 Depression

Symptoms of depression in ICU patients are common. Hall et al (2005:212) mention that depression should be considered in patients who appear unmotivated despite gradual improvement in their condition or in patients with persistent symptoms of delirium despite simplification of their medical regimens. Patients find themselves subjected to various invasive therapeutic techniques, which may be frightening to them. However, the consequences of sleep interruptions to the patients are not only sleep deprivation, but also "... delayed physical and mental healing" (Urden et al 2002:80).

Morton et al (2005:39) note that the ICU environment creates a sense of vulnerability because of physical and emotional dependency, lack of information, and depersonalised care which fosters fear and anxiety. Noises, lights, separation from normal life, the constant ICU activities and many other factors which cause anxieties, frustrations and fears, lead to lower tolerance to pain, frustrations, irritations, feelings of isolation and depression. Pain may lead to depression (Clotchesy, Breu, Cardin, Whittaker & Rudy 1996:53).

On admission to a MDICU the patient is stripped of his/her personal clothing, left to wear only hospital attire easier to manage all the monitoring devices. Psychological causes of depression may include feelings of powerlessness, role changes, life style changes, separation from significant others and threats to body integrity (Roberts 1996:733).

2.5.2.3 Nurses approachability

Maintaining meaningful patient-nurse contact might be difficult as nurses spend a lot of time doing paper work, and monitoring machines in the ICU setting. Urden et al (2002:56) mention that the ICU nurse should be able to work with technology, yet also "...humanize and individualize" the care. Not wanting to disturb a nurse who appears to be busy with papers and machines, may leave the patient uncomfortable and with some unmet needs. Nurses have different personalities, competency levels, experiences and may be viewed as approachable to some patients yet not to others. Caring nursing behaviours according to Urden et al (2002:56), include "alleviating discomfort, caring attitudes and behaviours, advocacy, encouragement, and respect for the individual" whereas non-caring behaviours were related to "... task-oriented behaviours and impersonal communication."

Morton et al (2005:15) mention that Florence Nightingale emphasised holism in nursing - that is, caring for the whole person. In the modern day ICU environment, with much technological advancement, nurses may battle to create an environment of healing where the patient is able to meet both physical and psychological needs. Caring sets up the conditions of trust that allows the patient being cared for to use the help that is offered to meet his/her needs, including sleep and rest.

2.5.2.4 Trust relationship

Urden et al (2002:56) state that "the art of caring requires skills in communication and interpersonal communication, a personal commitment, and the ability to create a sense of trust."

Increased anxiety, agitation, feelings of isolation, altering memory, decreased tolerance to pain and decreased confidence in competence of staff may be the result of the patient

being sleep deprived. Nurses' technical competence and effective interpersonal skills promote patients' sense of security and trust (Morton et al 2005:13), thus enhancing sleep.

A patient who is generally mistrustful of others could experience more stress in a MDICU than one who is generally trustful, aggravating sleeplessness. Morton et al (2005:15) note patients telling that "... when they mistrust their caregivers, they are more anxious and more vigilant of staff behaviours, and lack the feeling of safety and security."

2.5.2.5 Communication

ICU nurses need adequate communication with each patient regarding his/her condition. Knowledge, regarding what ICU means to a patient enhances nurses' abilities to improve care and enhance patients' sleep. However, as Morton et al (2005:13) state, effective communication with critically ill patients is often a challenge and frustrating. The presence of endotracheal tubes inhibits verbal communication; patients' physiological status and medications may alter their adequate cognitive functions, making effective communication difficult.

Preparatory sensory information enhances learning and lessens anticipatory anxiety. Explanations for upcoming procedures, why, when and how, should be given to address patients' fears and anxieties. Patients who receive explanations, in an understandable language, are more likely to develop a relationship of trust with the nurses, enhancing their ability to sleep. Dines-Kalinowski (2002:48) mentions how nurses' taking the time to explain procedures to the patient and answering any questions, may give the patient the peace of mind needed to enhance sleep.

If nurses only touch a patient when performing procedures, which are often painful, the presence of the nurses at his/her bed, becomes synonymous with pain, aggravating stress and sleep deprivation. Communication with patients' in-between nursing activities is important. Patients need to feel updated, needing to know what to expect (Dines-Kalinowski 2002:49). Patients who do not understand the language spoken by the nurses/doctors may feel insecure and anxious. (This situation could be overcome in the MDICU under study, as interpretation services are available.)

2.5.2.6 Other ICU patients

Due to the MDICU design patients' are able to view other patients during the day and night. Lying in an environment where a patient is dying, while nurses continue with the 'normal routine', might be disturbing to such patients. More disturbing is a situation where a patient has died, other patients are aware of the death, and share the space with the deceased patient until the body can be removed from the unit. In the MDICU under study there is no hospital mortuary, so the patient needs to be removed by the person's undertaker, which may take time. Seeing family members distressed in such situations is also upsetting for other patients in the MDICU who may not rest or sleep as a result of such an experience.

Patients in the ICU may groan with pain, cough due to pulmonary problems, become confused due to medication or other reasons, aggressive, loud and abusive to staff, whilst fellow patients around have to endure these noises as well. It leads to increased frustration, stress and anxiety, with reduced sleep for patients.

Pera and Van Tonder (1996:21) note how in an understaffed unit nurses may wish to meet the needs of a seriously ill patient, yet they also need to meet the needs of the other less ill patients who demand care and attention. This occurs in a MDICU where patients of various conditions are found at any one time. A crying baby, or a confused noisy patient, may take the time of all nurses, who need to attend to other seriously ill patients too. A trauma patient admitted to the MDICU may take all nurses to help stabilise him/her, while other patients have to wait for attention. This situation may disturbing patients' ability to sleep.

2.5.3 Social, belonging and love needs

According to Morton et al (2005:37), where early ICU designs had no space for family to visit, the modern ICU designs should meet the needs of patients and family members in spite of the vital life sustaining technology.

Admission to ICU aggravates patient feelings of "... loss of control over their lives" (Definition of intensive care unit psychosis 2008:1). The presence of family members could reduce such stress.

2.5.3.1 *Influence of nurses*

The quality of nursing care impacts on patients' well-being in the ICU. When nurses introduce themselves, patients feel more comfortable in the ICU situation. Patients report less anxiety when knowing 'who' to call, and/or 'how' to call for assistance, if required. Patients may feel preference for certain nurses. Familiarity is known to enhance feelings of security, enhancing sleep for patients. The messages that gestures, tone of voice, posture and facial expressions convey are as important as words. "People want to be treated with warmth and respect" (Bernard & Krupat Health Psychology 1994:128).

2.5.3.2 *Isolation*

Been isolated from family and other persons may result in sudden feelings of anxiety, fear and stress. As Morton et al (2005:14) state anxiety occurs when one experiences threats of helplessness, loss of control, sense of loss of function and self-esteem, failure of former defences, sense of isolation and fear of dying. According to Morton et al (2005:39), patients in ICU report experiencing feelings of lack of privacy, loneliness, fear and uncertainty.

2.5.3.3 *Touch*

Drench, Noonan, Sharby and Ventura (2003:11) note that touch is another form of nonverbal communication, and that expressive or caring touch involves contact that is meant to convey emotional support. Touch by family members is comforting and reassuring (Adam & Forrest 2008:8). According to Park and Sladen (1995:10), the importance of touch plays a valuable role in providing comfort, tranquillity, calm and sleep.

2.5.3.4 Nurses' talking about patients, not with patients

ICU nurses interact with each other during daily routine, with conversations varying from private to patient/work issues. Such conversations may be overheard by patients. Morton et al (2005:38), mention that nurses' are often unaware of the loudness of their conversations and the irritations they may create in the minds of patients. Dolan (1991:41), citing Ruppert and Meisel, reports overhearing nurses' discussions of one's own and/or other patients' diagnosis, prognosis and treatment can be stressful, impacting negatively on one's ability to sleep.

Handover in the MDICU under study takes place at each patient bedside. Patients in close proximity are thus able to hear. The patient being discussed is unable to prevent such routine where all patient confidentiality is forgotten by nurses who discuss the patient's illness, treatment, prognosis and personal details. Feelings of loss of control, embarrassment and anxiety may aggravate sleeplessness for such patients.

2.5.4 Esteem needs

According to Morton et al (2005:20), the threat of illness precipitates coping behaviours associated with loss. Patients' recognise the need to change their previous lifestyle when experiencing a loss of health, the loss of a limb, or of their self-concepts. This change in self-image from what was familiar, to the unfamiliar, may result in a temporary phase of lowered self-esteem, which may contribute to sleeplessness.

2.5.4.1 Personal respect and decency

According to Drench et al (2003:98), a patient's dignity, threatened in the presence of illness or impairment as a result of the altered self-image, may be the primary source of patient anxiety, with resultant sleeplessness. The need to know what is happening to them now, what will happen to them later, what to expect and reasons why, are important to the ill patient, who may otherwise worry, aggravating sleeplessness. "Anxiety can be greatly relieved with simple explanations" (Morton et al 2005:15).

Hospital attire, worn routinely by MDICU patients, allows monitor lead access, but might be regarded by patients' as impractical, embarrassing, uncomfortable aggravating patients' anxiety and sleep disturbances. The women's, apron-like attire, may be revealing and considered inappropriate by women who expose themselves unintentionally. Men may not be as affected by this practice as they continue wearing their own boxer shorts, or hospital shorts.

Patients with urinary catheters might not wear pants. Anxiety and fear of accidental exposure could contribute to sleep disturbance. Nurses may lift up the sheet to examine wound sites or empty drains, whilst the patient has no control over these actions.

2.5.4.2 *Culturally diverse patients*

Henderson and Pimeaux (1981), as cited in Pera and Van Tonder (1996:184), state that the secret of effective nursing lies in the knowledge of similarities and differences between groups, and that holistic patient care will become a reality if patients are approached within the framework of their individual cultural patterns. According to Pera and Van Tonder (1996:194), by virtue of their unique racial or ethnic heritage, certain characteristics are unique to only one group.

Language and culture may vary between patient and nurse, and the need for interpreters may be necessary in order to identify patients' needs, ensure clear communication and alleviate anxiety which may disturb sleep. Urden et al (2002:59) mention that the illness experience may have "different meanings for individuals from different cultures and ethnic groups". Death requires respect.

2.5.4.3 *Importance of retaining important roles in life despite illness*

Morton et al (2005:16) mention that nursing measures which reinforce a sense of control help increase the patient's autonomy and reduce the overpowering sense of loss of control.

➤ **Depersonalisation**

An ICU patient may experience stress when ICU nurses depersonalise his/her ICU care by referring to him/her by diagnosis rather than by his/her name. The patient has the right to “respect, dignity and the absence of discrimination” (Pera & Van Tonder 1996:174).

➤ **Powerlessness**

When having power, one has the potential or actual ability to influence cognition, attitude, behaviour, or emotions of oneself or another person. Powerlessness may be seen as “... the expectancy that one’s own behaviour cannot determine the outcome one seeks, a lack of personal control over certain events or situations” (Roberts 1996:743).

The definition limits feelings of powerlessness to a specific situation and emphasises that the individual’s sensitivity of a lack of control, causes powerlessness. Smokers are not allowed to smoke while in ICU. Cardinal (2008:1) notes “during the night, you go hours without a cigarette. This leads to discomfort and mild withdrawal, making it difficult to fall into a deep sleep.”

Some primary causes of powerlessness according to Roberts (1996:743), are sensory or motor loss, inability to communicate, to perform roles, to control personal care, lack knowledge and privacy, limited decision-making abilities, social isolation, and separation from significant others, as well as the fear of pain.

An intubated patient is unable to communicate his/her needs, leading to frustration and powerlessness. “Technological equipment can control one’s breathing and prevent speaking. Invasive procedures, abrupt or continuous noises, loss of privacy, sleep interruptions, pain, medications, isolation, and minimal contact with significant support persons all create feelings of powerlessness and loss of control” (Urden et al 2002:56).

➤ **Hopelessness**

Roberts (1996:741) defines hopelessness as an emotional state displaying the sense of impossibility, the feeling that life is too much to handle.” Individual feelings of

hopelessness may lead to anxiety and fears about the future, decreasing his/her ability to get adequate rest and sleep. Urden et al (2002:62) mention that when the result is visible to others too, it may lead to “intense feelings of anger, frustration, depression and powerlessness” within the patient. If small attainable steps and cooperation is gained, then hope may be restored, anxiety and fears decreased about the future, better rest and sleep enhanced and better recovery ensured.

2.5.5 Growth needs: self actualisation

When a person is admitted to a MDICU and confined to bed rest, he/she is unable to do the previous normal things. Bed rest means the need to use urinals, bedpans, bed washes and restricted movement. What a self-actualiser needs is self-sufficiency, not dependency. In everyday life various things can interfere with one's aims to fully actualise ones potential. Admission to a MDICU, where one feels deprived of one's basic physical needs, and/or feels unsafe and insecure leads to anxiety and fears. Restricted visiting hours might aggravate feelings of isolation and loneliness.

2.5.5.1 *Motivation to get well as soon as possible*

In healthy persons, sleep deprivation can decrease immune function (Parthasarathy & Tobin 2004:1). Sleep deprivation compromises the immune system by altering the blood levels of specialised immune cells and important proteins called cytokines, resulting in greater than normal chances of infection (Sleep Deprivation 2006).

Morton et al (2005:35) note that patients admitted to ICUs, “... have increased expectations for outcomes”. Longer hospital stays, as a result of unexpected relapses, or complications, might aggravate patients' frustration, anxiety, reduce their sleep, with increased risk of lower immunity and further extended hospital stays.

2.6 SLEEP

Sleep is a state of unconsciousness in which the brain is relatively more responsive to internal than to external stimuli (Normal sleep, sleep physiology, and sleep deprivation: general principles 2005:2). Sleep is more than just the simple decreased

unconsciousness. It is a fundamental part of the normal human circadian rhythm, essential for the preservation of physical sexual and mental body functions. About one-third of a human's life is said to be spent sleeping. A lack of sleep extends the recovery time from illness (Sleep and noise in the ICU 2008:1). Sleep typically occurs at night in successive cyclical stages. The earth's rotation and the alteration between natural light and darkness appear to be in synchrony with the daily alteration between sleep and wakefulness. This cyclic behaviour does not depend on the existence of light and darkness, yet is influenced thereby. According to Dolan (1991:86), even if people had no external time cues, they still exhibited predictable, cyclic patterns of sleep and wakefulness.

➤ **Circadian system**

According to Naskar (2002:3), the period of sleep and wakefulness is controlled by cyclical rhythms regulating physiology and behavioural responses. This phenomenon largely follows a 24-hour cycle, known as diurnal or circadian rhythm. (circ=about, dia=day). "Many physiological processes, among them sleep, are controlled by the circadian rhythms which, in turn, are regulated by the light-dark cycle" (Ashcroft 2000:245).

2.6.1 Sleep stages

According to Talwar et al (2008:151), sleep has been divided into two types:

- rapid eye movement (REM) sleep also known as paradoxical sleep
- non-rapid eye movement (NREM), known as quiet or slow-wave sleep

According to Urden et al (2002:79), NREM sleep is a restorative period which relieves the stressors of waking activities, whereas REM sleep serves to 'refuel' creative brain functions.

2.6.2 Physiological consequences of sleep

Talwar et al (2008:152) note that sleep disturbances such as noise, lights and ongoing patient activities in an ICU, many have negative physiological effects for ICU patients.

These include cardiovascular stimulation, increased gastric secretion, pituitary and adrenal stimulation, suppression of the immune system, delayed wound healing and delirium.

- *Cardiovascular system.* Normally, at the onset of sleep and throughout NREM sleep, an increase in parasympathetic tone occurs along with a decrease in sympathetic tone. With the shift to NREM, there is a decrease in heart rate, blood pressure, stroke volume, cardiac output and systemic vascular resistance.
- *Respiratory system.* During NREM sleep, respiration is regular and predominantly under metabolic control, as opposed to REM when sleep is irregular and more dependent on behavioural factors.
- *Immune function.* According to Weinhouse and Schwab (2006:711), it is possible that the sleep quality of a critical ill patient could affect his/her immune response. Talwar et al (2008:159) note that it is likely that sleep loss weakens the immune response.
- *Temperature.* When asleep, the body temperature usually drops by 1-2 degrees Celsius, probably due to the normal circadian variation. In a cold environment, wake time, sleep latency and movement time is increased. The total sleep time decreases since thermoregulation, maintained during NREM, tends to be attenuated during REM.
- *Hormones.* Most hormones circadian rhythms. Between 4 and 8 am, adreno corticotrophic hormone (ACTH) and cortisol secretion peaks. During the day the thyroid stimulating hormone (TSH) levels are low, increasing towards evening and peaking at night prior to sleep.

During the deep sleep stages, 80% of the total daily growth hormone is released. This hormone stimulates protein synthesis while sparing catabolic breakdown.

There is a peak in the release of cortisol during the early morning hours, helping the body to heal. However, (Honkus 2003:179), when one is sleep deprived, the body continues to secrete cortisol, causing the immune system to become less effective.

Talwar et al (2008:158) note that the loss of sleep may have adverse effects on carbohydrate metabolism and on endocrine function. According to Weinhouse and Schwab (2006:711), sleep deprivation is associated with insulin.

- *Neurocognitive or psychological.* According to Forest and Godbout (2005), as cited in Weinhouse and Schwab (2006:712), sleep loss is associated with irritability, memory loss, inattention, delusions, slurred speech, in coordination, and blurred vision. Talwar et al (2008:159) speculate that “ICU psychosis”, a term describing delirium in an ICU patient, is caused partly by sleep deprivation.
- *Quality of life.* Sleep deprivation may lead to depression. Talwar et al (2008:159) note that the importance of post-traumatic stress disorder has been documented in discharged ICU patients, and that sleep disturbances might be predisposing factors.
- *Wound healing.* Urden et al (2000:82), citing Davidhizar (1995), state that in NREM, such protein synthesis and tissue repair occurs, including the repair of the epithelial and specialised cells of the brain, skin, bone marrow, and gastric mucosa.

2.6.3 Medications’ effects on sleep

Medications often administered in the ICU such as theophylline, anticholinergics, dopamine, salicylates, and steroids may also “... contribute to anxiety feelings” (Urden et al 2002:58). Medications which easily cross the blood-brain barrier, such as propranolol and metoprolol, can contribute to disturbed sleep and nightmares. Although Metholdopa increases REM sleep, it can also cause nightmares. Because diuretics increase the need to void, they can disturb sleep. Angiotensin-converting enzyme inhibitors and calcium channel blockers are known to disturb sleep.

Morphine, barbiturates, and analgesics reduce REM sleep, resulting in lighter sleep stages. Patients who are receiving continuous infusions of catecholamines to support blood pressure and cardiac output may have difficulty sleeping as a result of the stimulation of the reticular activating system (Honkus 2003:6) in the brain.

2.6.4 Sleep patterns for differing age groups

Not all individuals sleep the same number of hours. On average, the time spent sleeping every 24 hour period is 6 to 8 hours. When admitted to ICU, the unfamiliar environment may disrupt the normal sleep patterns. According to the Pretoria Sleep Laboratory (Sleep Disorders 2007), sleep of 8 – 8.4 hours is considered fully restorative for adults. Urden et al (2006:83) state that “A sufficient amount of sleep has been achieved when one awakens without the alarm and gets through the day without feeling sleepy”.

The total sleep time per day for an infant can be up to 14-16 hours, often divided into multiple periods. Thus, infants can be awake when adults would normally be sleeping, causing sleep disturbances for such adults. This could happen in a MDICU where patients of all ages need to sleep within close proximity to each other. There is thus an overall decrease in total sleep duration with age. Lack of sleep for an elderly person can result in an inability to achieve the maximum quality of life.

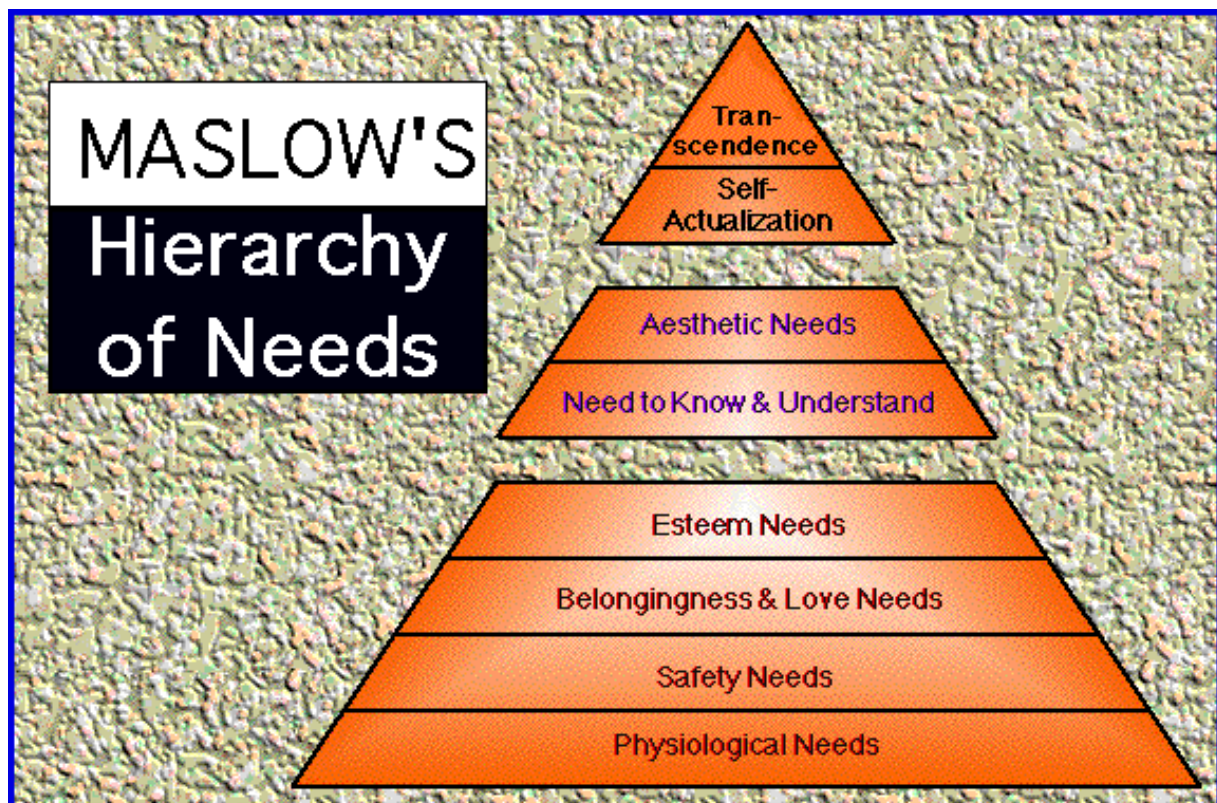


Figure 2.1: Maslow's Hierarchy of Needs

(Lowry 2007)

2.7 SLEEP DEPRIVATION

Sleep deprivation is said to be classified into three classes: total (loss of sleep for a full 24-hour period or more), partial (less than the average 7 to 8 hour sleep in a 24-hour period), and selective (artificially created by remaining awake purposefully) . Sleep deprivation has also been classified as either acute or chronic, where acute is analogous to total sleep deprivation, and chronic sleep deprivation assumed to be related to partial deprivation, but may include some selective sleep deprivation. A patient having to wake up earlier than the person's normal wake up time, due to the ICU's morning routine work, is such an example. Signs of sleep deprivation include impaired intellectual functioning, labile affect, anxiety, depression, agitation, and confusion, disorientation to time, place, or person; and impaired cognitive functioning. Angus (2003:133) cites Grasso, Mascia, and Raniera who state that "sleep disruption is a multi-factorial phenomenon and underlying disease, pain, anxiety, and medications, together with environmental factors, are all potentially able to contribute to sleep disruption".

Sleep patterns can and do vary across human cultures. Differences have been noted between cultures/societies having lots of artificial light compared to those that do not.

2.8 CONCLUSION

The literature review gives an overview of Maslow's Hierachy of Needs Model. Each stage is reviewed concerning a MDICU patient's needs. A MDICU often represents an unfriendly, hostile environment for the patient and his/her family. Physical and psychological stress which heighten the depersonalisation of the ICU environment, aggravating anxiety and depression, include forced positioning, physical restraints, nursing and medical procedures, noise, lights and sleep deprivation.

MDICU patients' ages and cultures are also significant. Adequate knowledge of factors which may contribute to sleep deprivation in a MDICU should enable nurses to address these factors to enhance MDICU patients' ability to sleep.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the research methodology including the research design, research setting, research population and sample, research instruments, data collection procedures and data analysis. According to Burns and Grove (2001:26), research methodology is the application of all steps, strategies and procedures for gathering and analysing data in a research investigation in a logical and systematic way. The selection of the research methodology for this study was guided by the aim to identify factors that contributed to sleep deprivation in a MDICU.

The objectives were to:

- identify factors which contributed to patients' sleep deprivation in a MDICU.
- identify factors which limit patients' sleep deprivation in a MDICU.
- identify ways in which patients' sleep could be enhanced in a MDICU.
- make recommendations to limit patients' sleep deprivation in the MDICU.

3.2 RESEARCH DESIGN

This section defines and discusses the selected research design and the rationale therefore. According to Burns and Grove (2001:223) the research design guides the research in planning and implementing the study in a way that is most likely to achieve the intended goal. The research design is a blue print for conducting the study in order to control factors that could interfere with the validity of the research results (Burns & Grove 2005:211). The selected design is non-experimental, quantitative, explorative and descriptive.

3.2.1 Non-experimental research

The main purpose of the non-experimental study is to describe the phenomena and to explore the relationship between variables in the natural setting. The intention of descriptive research is to observe, describe and document aspects of a situation as they naturally occur, thus according to Polit and Beck (2004:192), experimental designs are not considered appropriate for this particular study. Data collected, observations made, and/or situations occurring during the data collection period are obtained in a natural situation. "Manipulation is neither attempted nor considered desirable, as noted in Polit and Beck (2004:188), the emphasis being on the natural everyday world of humans and, "...on the normal experiences of humans" (Polit & Hungler 2004:188).

In this study patients' sleep patterns were observed in the MDICU without manipulating the situation in any way. A large number of human characteristics are not subject to experimental manipulation according to Polit and Beck (2004:188). No treatments or changes were introduced to any of the patients' in order to collect data. Structured

interviews were conducted with patients to determine their perceptions of their sleep patterns. Thus this study met the specifications of non-experimental research.

When studying humans, the non-experimental research method is suitable especially considering ethical considerations. It might not be morally acceptable to manipulate human situations and/or variables as such manipulations might cause harm physically or mentally to respondents.

3.2.2 Quantitative research

Quantitative research involves the systematic collection of quantifiable information from respondents. "The quantitative researcher believes that the best or only way of measuring properties of phenomena, the attitudes of individuals towards certain topics, is through quantitative measurement" (Mouton 2001:49). "The quantitative researcher must develop methods to observe or measure the research variable as accurately as possible as stated in Polit and Beck (2004:50).

According to Burns and Grove (2005:23), quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. This study complied with the quantitative research characteristics as stipulated by Polit and Beck (2004:50) as, "...using structured procedures and formal instruments; being objective during the collection and analysis of data".

- Quantitative research uses structured procedures and formal instruments. In this study, a structured interview schedule and an observation checklist were used to collect data from the patients in the MDICU.

- Quantitative research focuses on specific concepts, which in this study were the sleep deprivation factors and the eligible patients in the MDICU at the time of data collection period 1 November till 31 December 2007.
- On the basis of the researcher's preconceived ideas, predictions are made about "...how phenomena will behave in the real world if the theory is true" (Polit & Beck 2004:29). The quantitative researcher aimed to understand how and why things vary and to learn how differences in one variable were related to differences in another. In this study, there was an indication that patients in the MDICU experienced sleep deprivation, which meant that there was a relationship between the patients in MDICU and the problem of sleep deprivation.
- Quantitative methods emphasise objectivity in the data collection and analysis. In this study objectivity was achieved through the use of the structured interview schedule, the observation checklist, and the statistical methods used for data analysis.

The researcher chose the observation technique where the researcher collected data by "...observing and recording aspects of the participants behaviour" (Polit & Beck 2004:50). Observations during the night, by the researcher, were done, to note how many hours each patient, participating in this research, actually slept.

Structured interviews were conducted with these patients the following morning to find out how many hours they thought they had actually slept, what kept them awake, what made them wake up and what they thought could be done to get more sleep in the MDICU. The information gathered is quantitative implying that it is numeric information which results from some type of formal instrument which can be analysed with statistical procedures

(Polit & Beck 2004:15). Numbers were assigned to each recorded observation checklist and each patient's answers to specific items during the structured interviews so that each observation checklist's information could be compared and contrasted with the information on a specific completed interview schedule as pertaining to the same patient. As Polit and Beck (2004:52) mention, data needs to be processed and analysed through statistical procedures.

3.2.3 Descriptive research

According to Polit and Beck (2004:192), descriptive research entails observing, describing and documenting aspects of a situation as it naturally occurs. The focus of descriptive studies is on the situation as it is, that is, conditions that exist, practices that prevail, beliefs, attitudes and ongoing processes (Babbie 2001:93).

The descriptive design was appropriate in this research because factors contributing to sleep deprivation in the MDICU were investigated, and described, without manipulating any variables. Brink (1999:109) maintains that "...descriptive designs provide descriptions of variables in order to answer the research question".

The aim of this study was to explore and identify factors contributing to sleep deprivation in the MDICU, and once identified to describe them.

According to Polit and Beck (2004:20) exploratory research investigates the full nature of the phenomena, the manner in which it is manifested and other factors to which it is related. Exploratory research design begins with a "...phenomenon of interest" (Polit &

Beck 2004:20). This exploratory, descriptive design was appropriate for this study because rather than just "...observing and describing it" (Polit & Beck 2004:20), it investigated it completely, which led to an understanding as to why some patients may suffer from sleep deprivation in the MDICU under study. Recommendations for enhancing better sleep patterns in the MDICU were thus also able to be made.

3.2.4 Rationale for the selected research design

The researcher works in the MDICU under study and was able to conduct patients' observations during the night to determine the number of hours they actually slept. Structured interviews conducted the following morning determined how patients experienced the specific night's sleep. The quantitative research method suited this study. All factors identified as contributing to sleep deprivation in the MDICU during data collection and analyses were described in quantitative terms. By using this design, factors contributing to sleep deprivation in the MDICU were identified, categorized, summarized and described.

Where possible, answers to open-ended questions were grouped and quantified. However, some answers to open-ended questions were used to illustrate specific research findings (without conducting any qualitative analysis whatsoever).

3.3 RESEARCH METHODOLOGY

Polit and Beck (2004:723) define methodology as referring to "...the steps, procedures and strategies for gathering and analysing the data in a research investigation". This section discusses the research methodology, the research population, the target population, sample and sampling procedures, number of respondents, the research setting and ethical considerations relevant to this research.

3.3.1 Research Population

Burns and Grove (2004:746) describe a research population as comprising all elements (individuals, objects, events or substances) that meet the sample criteria for inclusion in a study. It is the total group of persons that meets the designated set of criteria established by the researcher. As Polit and Beck (2004:289) note, the research population comprises "...the entire aggregation of cases in which the researcher is interested."

The target population for this research comprised all patients who had slept in the MDICU during the data collection phase 1 November till 31 December 2007.

Burns and Grove (2001:813) define a target population as a "group of individuals who meet the sampling criteria". According to Polit and Beck (2004:734), the target population includes the entire population in which the researcher is interested and to which he or she would like to generalise the results of a study. In section 3.3.3 the inclusive (sampling) criteria will be specified.

3.3.2 Accessible population

The accessible population is defined by Polit and Beck (2004:711) as the population of people available for a particular study, often a non-random subset of the target population.

In this study the accessible population were those patients of the target population, who were in the MDICU during those nights the researcher worked in the unit for the entire night. The researcher was thus able to conduct observations during the night and conduct structured interviews the following morning.

3.3.3 Inclusive Criteria

The inclusive (eligibility) criteria are the specifications that designate the specific attributes of the target population determining which subjects are selected for participation in a specific study (Polit & Beck 2004:717).

The respondents in this study had to be

- Patients' sleeping at least one night in the MDICU under study.
- At least 21 years old
- Willing to participate in the study and had to sign a consent form confirming this.
- Patients in the MDICU on a night when the researcher was present for the entire night.
- Capable of being interviewed by the researcher. The ability to understand and/or speak English was a factor to consider, as all interviews were conducted in English.

3.3.4 The sample and the sampling procedure

A sample is a subset of a population selected for a study" (Burns & Grove 2005:746). According to Burns and Grove (2001:366), the sample is selected from the population that meets the sampling criteria.

Sampling is the process of selecting a number of individuals from the target population in such a way that the selected sample represents as nearly as possible the characteristics of the whole population. According to Burns and Grove (2005:746) sampling includes selecting groups of people, events, behaviours or other elements with which to conduct a study.

The sample for this study was obtained from patients who met the eligibility (inclusive) criteria. Brink (1999:141) mentions that "there are no hard and fast rules that can be applied to determining the sample size; however, both scientific and pragmatic factors influencing sample size must be considered when deciding on the number of subjects to be included in the study".

All patients who slept in the participating MDICU during the nights when the researcher worked during the data collection phase from 1 November till 31 December 2007, and who met the inclusive criteria, were requested to participate in the study. Eventually 34 patients were observed and interviewed, constituting a sample of 34. These 34 patients constituted 34.3% of a population of patients who slept in the unit during the data collection phase.

The sampling procedure used in this research was non-probability or convenience sampling. Convenience sampling involves the selection of the most readily available persons as participants in a study (Polit & Beck 2004:715). Participants had to meet all

inclusive criteria. According to Polit and Beck (2004:291), when using non-probability sampling, elements are selected by non-random methods. Polit and Beck (2001:295) indicate that non-probability sampling is both convenient and economical. Burns and Grove (2001:375) indicate that non-probability sampling is inexpensive and assessable, and usually requires less time to acquire than other types of samples.

The disadvantage of the non-probability sampling technique is that it is a non-random sampling method, implying that not every element in the population has the same chance of being included in the sample. This limits the generalisability of the research results beyond the sample (Burns & Grove 2001:245).

Not every patient who slept in the specific MDICU had an equal chance of being included in the sample, only those who met the inclusive criteria specified in section 3.3.3. Therefore, some segment of the population of MDICU patients might have been systematically over or under represented (Polit & Beck 2004:295).

3.3.5 Recruitment of respondents/sampling procedure

Polit and Beck (2004:303), note that, “recruiting a subject for participation in a study involves identifying eligible candidates and persuading them to participate”.

Specific efforts were made to include patients from all age groups, medical and surgical cases, both genders, thus aiming to cover all categories of persons sleeping in the MDICU.

3.3.6 Research setting

The research setting refers to the place where the information is collected. In this study it refers to the area where voluntary respondents in the MDICU might have experienced sleep deprivation.

3.4 DATA COLLECTION TECHNIQUES:

Polit and Beck (2004:716) state that, "data refers to information obtained during the course of an investigation", and that "...data collection involves the gathering of information in order to address a research problem". According to Brink (1999:150), there are a variety of data collection techniques. The techniques used most frequently by nurses are observation, self report and physiological methods.

The survey research method is used in this research. Surveys obtain information from a sample of population by means of a self report method implying that data is obtained by the researcher directly questioning respondents about the phenomenon of interest (Polit & Beck 2004:337). Self-reports, according to Polit and Beck (2004:319), are methods of data collection whereby a great deal of information can be gathered by questioning people. Brink (1999:153) states that, "self report instruments include questionnaires, scales, and interviews". Observational research, according to Polit and Beck (2004:320), is where data is collected by observing and recording behaviours or activities relating to a phenomenon of interest. In this study an observation checklist and a structured interview schedule were used to collect data.

3.4.1 The research instruments

In this study two research instruments were used in order to collect data. The researcher observed the number of hours each patient slept during the night and recorded these observations on a specific observation checklist. The following morning a structured interview was conducted with every participating patient regarding his/her perceptions of sleeping in the MDICU. The completed interview schedule and observation checklist for every patient was numbered similarly (for example 10a and 10b) so that the data from these two instruments could be compared for each patient. Polit and Beck (2004:362) mention that great care must be taken in the development of a questionnaire to word questions "...clearly, unambiguously and simply". According to Polit and Beck (2004:349), when structured interviews are used, subjects are asked to respond to the same questions in the same order and with the same set of response options. The structured interviews are formalized so that all respondents hear the same question in the same order, as the "...the order of the question is specified" (Burns & Grove 2005:396). The development of this structured interview schedule ensured that similar data would be collected from the respondents and this would enhance objectivity throughout the data collection process.

"The interview encounter has the explicit purpose of one person obtaining information from another, during a structured conversation, based on a pre-arranged set of questions" (Babbie & Mouton 2004:249).

3.4.1.1 *The structured interview schedule*

The structured interview schedule consisted of four sections:

Section A Biographic data, requesting information such as patients' age, gender, occupation, previous medical and surgical history and general home situation. (Questions A.1 – A.19)

Section B Specific factors in the MDICU that could influence sleep deprivation in a MDICU were addressed. (Questions B.1 –B.60)

Section C Aimed to identify specific factors enhancing the patients' sleep in the MDICU. (Questions C.1 – C.13)

Section D Consisted of questions indicating how factors contributing to sleep deprivation could be addressed in the MDICU from the patients' perspectives. (Questions D.1 – D.19)

3.4.1.2 *Pre-testing of the research instrument*

According to Polit and Beck (2004:728) the pre-test is the trial administration of a newly developed instrument to identify flaws and assess time requirements.

One purpose of the pre-test according to Polit and Beck (2004:328) is to determine how much time it takes to administer the entire instrument package and whether respondents find it burdensome. By pre-testing the new instrument the researcher is able to evaluate and refine it. The method of selecting respondents for pre-test subjects was done in same way as it was done in the real study, namely that the patients participating in the pre-test had to meet all the inclusive criteria as stated in section 3.3.3.

The respondents in the pre-test were excluded from the real study. As a result of pre-testing the structured interview schedules on three (3) patients, questions which were confusing were changed. Items which asked two questions, instead of one, were corrected.

Irrelevant questions, such as to how many children he/she had, patient highest qualification, yearly income and relationship issues were also excluded. Questions on death and dying were not asked due to the sensitivity of such issues to seriously ill patients in the MDICU.

The structured interview contained 111 questions. However, answering these questions did not take long, as most could be recorded by making a tick in the appropriate box on the structured interview schedule. Most patients managed to supply answers within 30 minutes. The MDICU patients did not become exhausted as a result of being interviewed. The interviewer, an experienced ICU nurse, monitored each patient's level of exhaustion throughout the interview.

3.4.1.3 *Development of the structured interview schedule*

The research instrument used in this research, namely the interview schedule, refers to oral questions which are asked in a face-to-face interview, as described in Polit and Beck (2004:349). The interview schedule consisted of both open- and closed – ended questions. Closed questions offer the respondent's alternative replies from which they must choose the one "...most closely approximating the answer" (Polit & Beck 2004:713). Open-ended questions do not restrict the respondents' answers to the pre-established alternatives. Respondents were thus able to include any other relevant information, in their own words, in response to the open-ended questions thus overcoming some of the shortcomings of closed-ended questions. All closed ended questions in this study had a space below each question where the individual could add to what had been chosen, if he/she felt the need

to. The researcher aimed to ensure adequate data collection by using open- and closed-ended questions as recommended in Polit and Beck (2004:350), as this technique offsets the strengths and weaknesses of each.

All questions were guided by the purpose and the objectives of the research, as well as by literature. Structured interviews can be demanding on researcher and respondents. The interview schedule must not lead to any negative feelings or inadequate data due to the nature of the questions asked.

To allow a flow of thought during all data collection, the questions were arranged in a logical sequence which made the answering of questions easier and faster. This aimed to make answering questions a less tedious and/or unpleasant experience.

The respondent was asked the question by researcher, and the given answer was immediately correctly recorded on the appropriate form, by the researcher.

Section A, the demographic data section, comprised of items which the researcher could complete from the participating patients file prior to conducting the interview. Time required for each interview was thus shortened. Section B, C and D contained open- and closed ended questions.

3.4.1.4 *Motivation for use of the research instrument*

In order to collect data the researcher interviewed each identified respondent individually face to face. Babbie and Mouton (2002:250) state that "The presence of an interviewer also generally decreases the number of 'do not know' and 'no' answers".

Not all patients have the same reading ability, and/or understanding of questions, so assistance in an unbiased manner is vital to enhance the adequacy of information obtained. Babbie and Mouton (2004:249) state that “errors during this phase can render the whole research undertaking futile” so “...if the respondent clearly misunderstands the intent of a question or indicates that he/she does not understand, the interviewer can clarify matters, thereby reducing the number of non- responses” (Babbie & Mouton 2004: 250).

By using the structured interview schedule similar data was collected from the voluntary respondents, thus enhancing objectivity throughout the data collection process. Babbie (2001:268) states that the use of structured instruments can lead to obtaining information that is relatively superficial since interviewers rarely probe deeply into such complexities as contradictions of human behaviours and feelings.

This study, however, did not intend to do any deep probing, but merely to identify factors enhancing and/or impending patients' sleep in the MDICU, using an exploratory, quantitative and descriptive survey approach. According to Brink (1999:157) interviews are frequently used in exploratory and descriptive research.

3.4.1.5 *Advantages and disadvantages of face to face interviews*

According to Polit and Beck (2004:351) despite this being the most powerful method of securing information since the interviewer will meet face to face and obtain information from each interviewee, it does have both advantages and disadvantages:

Advantages:

- The respondent is more reluctant to refuse to talk to the researcher/interviewer who is directly in front of them. Thus the response rate tends to be high.
- Interviews offer some protection against ambiguity of confusing questions since the interviewer can ask probing questions to clarify any ambiguous answers.
- The interviewer has strict control over the ordering of the presentation of the questions and has greater control over the sample in the sense that the interviewer knows whether or not the person being interviewed is the intended respondent.
- There is less chance of leaving questions unanswered or to give 'don't know' responses.
- The researcher/interviewer, by observing the respondent is able to judge the respondent's level of understanding and co-operation which may be useful in interpreting responses.

Disadvantages:

- The presence of the interviewer may affect the respondent's perception of a question or answer given.
- It is time consuming to conduct face to face interviews. This was not a problem in this research since the researcher did work in the MDICU in question, which meant no extra travelling time to research site. The only time investment was the approximate 30 minutes required to conduct each interview, and the time required to complete the checklist while the patients slept during the night preceding the interviews.

The sampling technique consisted of the researcher observing the patient during the night to see how many hours the patient slept, followed by the structured interview schedule the following morning.

3.4.2 The observation checklist

This is a 12 hour observation chart for each respondent. Burns and Grove (2001:419) define a checklist as a technique to indicate whether a behaviour occurred. The researcher observed the respondent during the night and marked on the chart whether the patient was asleep or not. Other information on the checklist noted what patients were in the unit at the time in bed 1 – 7 (See Annexure E), and how many nurses were on duty during the night concerned (See Annexure F).

Observation approach method

The researcher worked in the research setting, had a nurse/patient relationship and a researcher/respondent relationship with each respondent, and was able to directly observe the respondent in the natural setting of the MDICU. It was vital, however, to ensure as Polit and Beck (2004:391-392) note that the researcher should aim to eliminate any form of observational biases on her part, such as

- Anticipation of what is to be observed may affect what is observed.
- Hasty decisions before adequate information is collected may result in erroneous classifications or conclusions.

- Emotions, prejudices, attitudes, and values of the observer may result in faulty inference.

According to Polit and Beck (2004:391), human perceptual errors and inadequacies are a continuous threat to the quality of observed information.

The field of nursing is particularly well suited for observational research. Nurses are in the advantageous position to observe, relatively unobtrusively, the behaviours and activities of the patients, their families, and hospital staff (Polit & Hungler 1999: 313). The observation checklist was used by the researcher to keep track of all observations made during the night. It included what the researcher saw and heard and description of what happens. The night of observation is determined by the researcher.

3.5 RELIABILITY OF THE RESEARCH INSTRUMENT

According to Babbie (2001:140) the reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring and whether a particular technique, applied repeatedly to the same object, yields the same result each time.

3.5.1 Reliability of the research instrument

Reliability is primarily concerned not with what is being measured but with how well it is measured. Babbie (2001:140) maintains that "...reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring and

whether a particular technique, applied repeatedly to the same object, yields the same result each time". According to Polit and Beck (2004:416), the less variation an instrument produces in repeated measurements of an attribute, the higher is its reliability. An ideal instrument results in measuring relevant, accurate, unbiased, sensitive, un-dimensional and efficient data. This is done through validity and reliability testing of the instrument. According to Polit and Beck (2004:730), reliability refers to the degree of consistency or dependability with which an instrument measures the attribute it is designed to measure.

The reliability of a measuring tool can be assessed by using the techniques of stability, internal consistency and equivalence (Polit & Beck 2004:416).

3.5.2 Structured interview schedule

According to Polit and Beck (2004:319) structured data collection approaches usually yield data which is quite easy to quantify and analyse, as well as imparting objectivity to the data collected by eliminating bias as a result of the researcher's personal feelings or beliefs. Polit and Beck (2004:416) state that the reliability of an instrument is the degree of consistency with which it measures the attribute it is suppose to be measuring. Thus, if independent administration of the same instrument consistently yields the same (or similar) results under comparative conditions, it will be considered reliable .

3.5.2.1 *Stability of the research instrument*

According to Polit and Beck (2004:417), stability of an instrument refers to the extent to which the same results are obtained on repeated administrations of the same instrument. Brink (2006:164) and Polit and Beck (2004:417) describe the test-retest method where stability is measured by giving the same respondents an instrument on two occasions within a short period of time and examining their responses for similarities. This researcher aimed to conduct the same interview schedule to the sample of three voluntary respondents in the pre-test on two occasions and then would compare the scores obtained. Areas that needed to be revised after the pre-test would be revised. The researcher pre-tested the research interview schedule in order to ensure that the instrument did measure what it was intended to measure.

However, on proceeding with the structured interview schedule on the consecutive night, respondents stated that most answers were the same as initial pre-test, with some answers different due to the different night's activities. This is true as each individual night may hold different 'night experiences' as the unit activities may/do vary on different nights. However, the structured interview schedule was able to identify factors which contributed to sleep deprivation, recorded after a night; however, factors for each different night would/may naturally vary. The aim was to identify factors which did contribute to sleep deprivation, and the researcher was of the opinion that this is what the structured interview did achieve. Questions needing to be re-arranged or changed were also corrected. Confusing questions were changed. Questions which had two questions in one question were corrected. Irrelevant questions to the research itself were excluded. Questions seen as sensitive issues were excluded. The questions were thus changed, and the structured interview schedule then seen as reliable. To pre-test on two consecutive nights was not a good idea, as respondents appeared to find the attempt to interview as somewhat tedious. The

researcher thus did not find much value in testing on the two consecutive nights, with the intention of comparing, however the interview schedule did achieve its intended purpose.

- **Advantages of test-retest**

Polit and Beck (2004:418) mention that “The test-retest method is a relatively easy and straightforward approach to estimating reliability. It is a method that can be used with self-report, observational, and physiologic measures”. If there are no major discrepancies between the results of the pre-test and the actual test, then the instrument is seen as reliable.

- **Disadvantages of test-retest**

According to Polit and Beck (2004:418), the following disadvantages must be noted:

- Many traits of interest do change over time, independently of the stability of the measure. Attitudes, behaviours, moods, knowledge, physical conditions, can be modified by intervening experiences between the two testings.
- Patients’ responses or observer’s coding on the second administration will be influenced by the memory of their responses or coding on the first administration, regardless of the actual values on the second day. A busy night has more disturbing noises, lights and activities which disturb the patient, such as the ventilator alarms which were not there on the first night when the specific patient was not ventilated, and the night was quieter, enhancing sleep.
- Subjects may actually change as a result of the first administration.

- People may not be as careful using the same instrument a second time. If they find the procedure boring on the second occasion, then the responses could be haphazard, resulting in spuriously low estimate of stability.

3.5.2.2 *Equivalence*

According to Polit and Beck (2004:420) equivalence refers to the degree of similarity between alternative forms of a measuring instrument. The aim is to determine the consistency or equivalence of the instrument in yielding measurements of the same traits in the same individuals.

This technique was not used in this study as the researcher was the only observer, and the only person conducting the structured interview schedule.

3.5.2.3 *Internal consistency*

Polit and Beck (2004:721) note this to be when all subparts of an instrument measure the same characteristics. According to Polit and Beck (2004:418), an instrument may be said to be internally consistent or homogenous to the extent that its items measure the same trait. According to Babbie (2001:142), it is always good to make more than one measurement of any subtle or complex social concept. The split-half technique is used for assessing internal consistency. This approach involves the contrasting of the section of the interview schedule which impedes sleep in the MDICU with the section which enhances sleep in the MDICU. If there are no contradictions, this indicates reliability of the structured

interview schedule. Thus once the structured interview schedule pre-test was done, the sections impending sleep were contrasted with the section enhancing sleep. The reliability was then evaluated. Amendments were done as needed before the real study. Questions which were relevant to the subject of investigation were used in order to enhance reliability of the instrument.

The pre-test was done on respondents who were not included in the actual study, but did have the same characteristics to those who were interviewed in the study (Polit & Hungler 1999:289).

3.5.3 Observation checklist

Observations that were relevant to the subject of investigation were used in order to enhance the reliability of the observation checklist.

3.5.3.1 *Stability of observation checklist.*

The assessment of the stability of the measuring tool is derived through the procedures here that evaluate the test-retest reliability (Polit & Hungler 1999:412). The researcher conducted the same observation process on the sample of voluntary respondents in the pre-test on two occasions and then compared the scores obtained with the structured interview schedule and the respective observation checklist for each night.

The researcher thus observed each respondent one night and then the following night again. However, one respondent had been discharged when wanting to conduct the test the following night so was not available. The other two respondents had slept well the first

night, yet as a result of the unit becoming busy the consecutive night, the respondents were disturbed during the night with various noises, alarms and lights as a result of admissions. Thus the observation checklist was notably different to the first observation checklist. The researcher did however still feel that the observation checklist was reliable as it did measure the observations for each night, and the researcher was aware that each night in MDICU may vary, with consequences as noted.

- **Advantages of test-retest**

As mentioned in Polit and Beck (2004:418), this method is a relatively easy and straightforward approach to estimating reliability. Areas needing revision after the pre-test are then revised as needed. If there are no major discrepancies between the results of the pre-test and the actual test, then the instrument is seen as reliable.

- **Disadvantages of test-retest**

According to Polit and Beck (2004:418), the following disadvantages must be noted:

- Respondents might have slept well the initial night yet not slept at all the following night, leading to observations not being accurate as situations are different. The MDICU might have been quiet the first night of observation, yet the following night it could be very busy. Thus the observations could be different.
- The researcher's coding on the second administration might have been influenced by the memory of the responses or coding on the first administration, regardless of the actual values on the second day.

- Respondents' perceptions might actually change as a result of the first administration.
- People may not be as careful using the same instrument a second time. If they find the procedure boring on the second occasion, then the responses could be haphazard, resulting in spuriously low estimate of stability.
- The patient may have been discharged so unable to do the second observation test

3.5.3.2 *Equivalence*

This technique was not used in this study as the researcher was the only observer, and the only person conducting the structured interview schedule.

3.5.3.3 *Internal consistency*

Polit and Beck (2004:721) define internal consistency as "...the degree to which the subparts of an instrument measure the same attribute or dimensions as a measure of the instrument's reliability". The split-half technique was used for assessing internal consistency. This approach involved contrasting the section of the interview schedule on factors which impede sleep in the MDICU with the section factors which would enhance sleep in the MDICU. It was noted that the sections did complement each other.

Observation checklist may have needed to be modified to ensure that it was reliable and correlated with actual night proceedings, and was able to record notable factors. No modifications were done to observation checklist. Respondents who were part of the pre-

test were not included in the actual study, but had the same characteristics as those interviewed in the actual study.

3.6 VALIDITY

According to Burns and Grove (2005:754), validity of a research study refers to the ability of a study to produce accurate results. An instrument must measure exactly what it is supposed to measure in order to produce accurate results. Polit and Beck (2004:422) note that validity refers to the degree to which an instrument measures what it is supposed to be measure. Factors which can influence the internal and external validity of the measuring instruments in this research will be addressed in the following sections.

3.6.1. Internal validity

This concept indicates the extent to which factors identified as leading to sleep deprivation in the MDICU under study really are the factors which led to disrupted sleep, and are not the result of respondents who were not totally honest and open about the MDICU environment. Burns and Grove (2005:215) state that internal validity refers to the extent to which effects detected in the study are a true reflection of reality rather than the result of extraneous variables. Internal validity thus refers to the fact that the study generated accurate and valid findings of the specific phenomena studied.

3.6.1.1 *Threats to internal validity*

Any factors unrelated to the study, but which may affect the research study, do pose a possible threat to the internal validity of the data. It is thus important to select respondents who are eligible to participate, and who are willing to give truthful answers, and not answers which they feel will be desirable by the interviewer.

3.6.2 External validity

One aspect of a study's external validity concerns the adequacy of the sampling design. According to Burns and Grove (2005:217) and Polit and Beck (2004:718), external validity refers to the extent to which study results can be generalized to other settings or samples. External validity was ensured in this study by having patients both young and old, from all medical and surgical diagnosis, participated.

3.6.2.1 Threats to external validity

Polit and Beck (2004:218) explain that the external validity of a research project can be threatened by the Hawthorne effect, the type of sampling method selected, the validity of the research instrument (in this study the structured interview schedule) and the predictive value of the research instrument.

The Hawthorne effect means that respondents' normal behaviour may be affected because of being aware of being watched by the researcher during the night, and/ or the need to answer questions the following morning when the researcher would conduct the structured interview. According to Brink (2006:101) and Polit and Beck (2004:218) the Hawthorne

effect occurs when participants behave in a certain manner because they are aware that they are being observed.

According to Burns and Grove (2005:754), validity refers to the ability of a study to produce accurate results. It must therefore be able to actually measure the concept in question, namely those factors which are contributing to sleep deprivation in this MDICU, and be able to do so accurately.

Scores achieved from all data collected should thus reflect the actual reasons for sleep deprivation and not other random or erroneous details. According to Brink (2006:101), researcher effect refers to a situation where the researcher's characteristics or behaviour influences the subjects' behaviour. Inaccurate information results when a patient is asked a question, and gives an answer presumed to be what he/she thinks the researcher 'wants' them to give, and not the actual answer they really wish to answer. By requesting honesty from all respondents' and explaining to each respondent the research aims and the vital importance of accurate answers, the researcher aimed to minimise this risk.

The non-probability sampling method, using the convenience sample of thirty four (34) respondents was used in this study. No respondents were coerced into participating in this research study. Because one studied a mere convenient sample and not the entire population or a random sample, it does lead one to view all research results with caution. Thus the sampling method used in this study, which does not allow for generalisation to entire population, may have compromised external validity.

3.6.3 Validity of the research instrument

According to Polit and Beck (2004:422), validity refers to the degree to which an instrument measures what it is supposed to measure. There are three methods of validating a research instrument, namely criterion-related validity, construct validity and content validity.

3.6.3.1 Criterion - related validity

Polit and Beck (2004:715) define this as the degree to which scores on an instrument are correlated with some external criterion. Predictive validity refers to the degree to which an instrument can predict some criterion observed at a future time, whilst concurrent validity refers to the degree to which scores on an instrument are correlated with some external criterion, measured at the same time.

An essential component is the availability of a reasonably reliable and valid criterion with which measures obtained from the target instrument can be compared. In this study it was difficult to predict such criteria with which to compare the instrument. [Please study Burns & Grove on triangulation of data sources and research instruments; triangulate \(compare\) results obtained from checklists and interviews.](#)

3.6.3.2 Construct validity

This is based on the logical relationship among variables (Babbie 2001:142). Construct validity is used by researchers concerned with questions like what is this measuring device really measures, and being more concerned with the underlying attribute than with the

scores that the instrument produces. Polit and Beck (2004:425) state that the significance of construct validity is its linkage with theory and theoretical conceptualization, and that there is an emphasis on logical analysis and the testing of relationships predicted on the basis of theoretical considerations. A common approach to this technique is the known-group technique, where groups are expected to differ on the critical attribute because some known characteristics are administered in the instrument. In this study, since there were known characteristics like gender and age, the technique was thus applicable. There may have been differences in reasons between the medical and surgical patients as to what factors contributed to sleep deprivation in the MDICU. Differences were also expected to arise between different ages as well, and to the experiences in the MDICU.

3.6.3.3 *Content and face validity*

Polit and Beck (2004:423) state that content validity concerns the degree to which an instrument has an appropriate sample of items for the construct being measured. The issue of concern under content validity is whether the items of the research instrument are representative of the content domain that the researcher intends to investigate. In order to ensure content validity of the instrument, the instrument should be submitted to a panel of judges considered to be experts in the field of study.

It was vital to ensure that questions were relevant. Face validity, according to Polit and Beck (2004:423) refer to whether the instrument looks as though it is measuring the appropriate constructs. For face and content validity of the data collection instrument, the researcher requested assistance from the thesis supervisor as well as from the

professional nurses working in the MDICU. By doing this, the researcher relied on their individual judgment to establish its content validity. One professional nurse, who was in hospital over this period, answered the structured interview questions regarding the hospital experiences, and indicated that questions were relevant and would measure what was intended. 4 staff working in the research MDICU did see the structured interview schedule questions while the researcher was still finalizing it. Input regarding valid or/and invalid questions was given by them. 3 of the staff working with the researcher on night duty as team members were aware of the researchers study. The researcher constructed the structured interview questions and questioned these nurses on validity of questions, advice on other questions and adjusted the interview sheets as she, the researcher felt correct. The other nurse was a fellow research student who reviewed the questions. Concern regarding the number of questions was noted by this staff. In addition the researcher's supervisor reviewed the structured interview question sheet and adjustments were made accordingly.

The pre-test was used as it is valuable in eliciting unnoticed flaws in the questionnaire which had been unnoticed by the researcher. By implementing the pre-test of data collection instrument, an objective view of the schedule was possible.

To ensure content validity of the measuring instrument, namely the structure interview schedule form, the researcher endeavoured to answer the two questions to determine whether the content of the instrument was representative or adequate of the research topic.

- Does the instrument really measure the concept of factors causing sleep deprivation in the MDICU?
- Does the instrument actually provide an adequate sample of items that represent the concept of sleep deprivation? For example, do the items describing sleep deprivation really describe sleep deprivation?

Burns and Grove (2001:400) state "The content-related validity evidence examines the extent to which the method of measurement includes all the major elements relevant to the construct being measured". The three sources from which the evidence was obtained was the literature, representatives of the relevant population and the content experts. An instruments content validity according to Polit and Beck (2004:423) is necessarily based on judgement, and there is no objective method of ensuring the adequate content coverage of an instrument.

3.6.4 Value of a controlled environment:

Both validity and reliability was enhanced because the researcher works in the MDICU under study, and was able to carry out the interview schedule at times suitable. Observations were done by the researcher during the night, while on duty. The respondents', who were questioned the following morning before the researcher went off duty, did not overhear other persons comments regarding their nights rest, or discussions amongst the staff on duty at handover regarding the night activities which may have caused disturbances in unit. Each respondent was asked questions after waking regarding their night rest. Questions were asked in a privately room, and other patients were not able

to listen to these conversations, questions or answers from the respondent. The researcher also requested that participants not discuss the interviews amongst themselves. This was done to avoid informing potential interviewees about the questions prior to the actual interviews.

During the entire research time, the interview schedule was kept by the researcher. The interview schedule form was opened at start of interview and on completion of data collection the completed forms were returned to the appropriate folders. As the researcher was the only person conducting interviews, the researcher was able to ensure that all respondents received the same explanation regarding the research study. Aims to carry out the entire interview process in the same uniform way for each respondent, and under same conditions for all, was attempted. Thus validity and reliability were promoted. Once data had been collected, review by the thesis supervisor, and assistance of the consultant statistician to assist in processing all the results was needed, and done. Because the external source, the statistician, was used in the study, both the validity and the reliability of the research were strengthened. The researcher considers the data thus gained, to be both objective and having no bias.

3.7 DATA COLLECTION PROCEDURE

Permission to conduct this research study was granted by the Hospital Superintendent of the specific hospital after the research proposal had been discussed with management concerned. The researcher, who worked in the research setting, was the only person

collecting data. All data collected was confidential. All respondents were voluntary respondents. Data was collected from 1 November 2007 to 31 December 2007.

3.8 ETHICAL CONSIDERATIONS

Ethical considerations taken into consideration in this research are the principles of beneficence, respect for human dignity and justice.

3.8.1 Principle of beneficence

The principle encompasses the maxim: Above all, do no harm (Polit & Hungler 1999: 134). According to Polit and Beck (2004:712) beneficence is referred to as a fundamental ethical principle that seeks to prevent harm and exploitation of and maximum benefits for, study participants.

3.8.1.1 *Freedom from harm*

It is unacceptable, as noted in Polit and Beck (2004:143), to expose one's research respondents to any form of experience that may result in serious or permanent harm. In this research no experiments or procedures of any physical kind are performed on the patients, thus no such risk of incurring any form of physical harm during the research exists. The researcher doing the study was a qualified ICU nurse who was competent to do the study.

In the structured interview, it was noted that some questions which could be asked regarding the patients personal life, views, fears, anxieties and/or reasons, experiences and other, may be a sensitive subject which they prefer not to discuss. The researcher ensured that patients were not forced to divulge information they wished not to. The researcher asked such questions with sensitivity.

3.8.1.2 *Freedom from exploitation*

In this study the researcher had a nurse-patient relationship (in addition to a researcher-respondent relationship) with her respondents, and it was vital that special care was taken to ensure that people's vulnerabilities were not exploited.

Patients had been admitted to MDICU as a result of their conditions, and did not expect to become a part of a research during the stay.

In the research, this was done by means of the following:

The respondents were given information regarding the proposed research (see annexure C). He/she was assured, in this document; of strict confidentiality and anonymity should they participate. He/she was informed regarding their rights to self determination and full disclosure. Decision to participate was made voluntarily, and only after they were aware of this above information.

The actually consent form, Annexure C, was signed by the respondents after he/she had been made aware of annexure C details.

The signed consent form was sealed and placed in a sealed container/envelope.

Once the structured interview had been completed with the respondent, the completed form was put into another/separate sealed container.

By doing this, the researcher was unable to link the signed consent to any one of the other sealed, completed interview envelopes. This ensured that respondents remain anonymous, and any information gained during an interview could not be linked to him/her personally, thus ensuring confidentiality. This ensured that, as stipulated in Polit and Beck (2004:145) regarding freedom of exploitation, involvement in this research study did not place respondents at a disadvantage or expose them to situations for which they have not been prepared.

3.8.1.3 *Benefits from research*

In this research study, the patients might not benefit in any way from participating in the research. However, many individuals may and do participate in a study out of the desire to be helpful, as noted in Polit and Beck (2004:146). Results from the research may ultimately ensure that as a result of identifying factors which may presently lead to sleep deprivation in the MDICU sleep, and after addressing them, that then sleep will be enhanced for future patients admitted to the MDICU.

3.8.1.4 *The risk/benefit ratio*

There were no physical tests, no experiments, only questions.

3.8.2 Principle of respect for human dignity

Respondents in the study were given all information regarding the research process. This principle ensured that the right to self determination and the right to full disclosure are respected (Polit & Beck 2004:147).

3.8.2.1 *The right to self-determination*

The patient has a right to his/her privacy as to reasons why he/she did not sleep, worries they have, or other causes for sleeplessness in the unit. The patient has a right to refuse to be interviewed. He/she has the right to refuse to answer any question.

Polit and Beck (2004:147) state that the rights to self determination means that prospective respondents have the right to voluntary decide whether or not to participate in a study without the risk of incurring any penalties or prejudicial treatment. All respondents did so voluntarily. No person was forced to participate. The patients would continue to be treated with all respect and care before the structured interviews ever started. All required information regarding the research was given to the respondent by researcher, before respondent made any decisions.

3.8.2.2 *The right to full disclosure*

The aims of the investigation should be communicated to the informant as fully as possible (Mouton 2004:244). Full disclosure means that the researcher fully described the nature of the study, the respondents' right to refuse participation, the researcher's responsibilities, and the likely risks and benefits that would be incurred (Polit & Beck 2004:147).

The right to full disclosure and the right to self-determination are the two major elements on which informed consent is based. In the letter of consent, which the respondent was given prior to any form of data collection, required research information regarding the research was given.

3.8.3 Principle of justice

This principle includes that the respondents' rights to fair treatment and their rights to privacy (Polit & Beck 2004:149).

3.8.3.1 *Right to fair treatment*

Respondents have the right to fair and equitable treatment before, during, and after participation in the study (Polit & Beck 2004:149).

In this research the respondents were not promised any benefits such as payment to participate, or any other promises. If however any such promises are made in a research, the researcher must ensure that all such agreements between researcher and respondent, are honoured.

3.8.3.2 *The right to privacy*

In the research it is vital to ensure that person's right to privacy is respected at all times. Any research with a human does automatically constitute some form of intrusion into that individual's personal life. Researchers should ensure that their research is not more

intrusive than needs be and that respondents' privacy is maintained throughout the study.

The protection of rights of human subjects is become high priority.

The patients right to privacy also includes such things as that they.

- Should not be interviewed at mealtimes.
- Should not be interviewed at night when they want to sleep.
- Should not be interviewed for long periods (Mouton 2004:243)
- No respondent is forced to divulge any information they do not wish to. No person is forced to participate.

All the research respondents have the right to expect that all information given during the course of the questionnaire will be kept in strictest confidence. The research should aim to achieve anonymity.

Anonymity occurs when even the researcher is unable to link the questionnaire information with a respondent. The structured interview in this research has no identifying name on the questionnaire, thus all responses are considered anonymous. Any information gained could not be linked to any respondent. The data collected by the researcher was safeguarded and kept anonymous and confidential by adhering to the following steps as Polit and Beck (2004:150) suggested:

- No identifying information was collected from the respondents in the research done as there was no need to obtain it.
- Information obtained was only accessible to the researcher and statistician.
- All respondents were assured of confidentiality and anonymity.

- All respondents were guaranteed that no information they provided would be made publicly known or given to other persons other than those concerned with the research.
- The research report will portray statistics, figures and discussions regarding the reasons for sleep deprivation in the unit. All raw data documents used in the research would be destroyed once the research report had been accepted.
- No name of the institution where the research is done was given at any stage.

3.8.4 Steps followed to ensure ethical issues considered

To ensure that ethical issues are taken into consideration, various steps were followed:

- A letter was written to the management/ supervisor of the private hospital where the research was done with an attachment of the research proposal to request permission to carry out the research in the multi-disciplinary intensive care unit. (See Annexure A). This was done to ensure that the research study met the ethical standards for permission from the institution and to protect the rights of the institution where the study was done.
- Authorization was given by the medical superintendent of the private hospital where the study was to be done. (Annexure B). Any suggestions regarding the conducting of the survey was noted and taken into consideration.

- The protection of the rights of the respondents was a priority in this study. The respondents/ respondents were clearly informed about the purpose of the study and that their responses would remain anonymous. (Annexure C)
- The respondents were asked to voluntarily participate. They were also informed that they could discontinue doing so at any point should they wish to without incurring any ill effects whatsoever. This ensured their rights to self determination and full disclosure remained protected. (Annexure C)
- The right to privacy was also be respected in this research to ensure that it is not intrusive into the respondent's personal lives.
- To ensure scientific honesty on the part of the researcher, no plagiarism was committed and any source of information was acknowledged.
- Objectivity was applied during data collection, analysis and discussion.

Factors over which the researcher had control and which could influence the rate of co-operation, according to Polit and Beck (2004:302), included the following

- Conduct face-to-face recruitments: This was better considering the researcher works in the research setting. Polit and Beck (2004:351) mention that the response rate tends to be high in face-to-face interviews.
- Pleasantness of the researcher: The researcher was pleasant, courteous, respectful and non-threatening, as suggested in Polit and Beck (2004:362) as well.
- Explanation and record benefits: The researcher was able to explain reason for the research and its benefits, without misleading or exaggerating.
- No gifts or rewards would be awarded as a result of participation in this study. It is important for respondent to know.

- The researcher informed respondents that they could have access to the results if they so wished. A letter of summary could be sent to them, if they so wish.
- Collection of data at a convenient time for the subject was done.
- Confidentiality and anonymity was assured. A consent form (Annexure C) was signed by each respondent.

When conducting structured interviews the researcher did and had to remain neutral.

“If the interviewer does anything to affect the responses obtained, the bias thus interjected might be interpreted as a characteristic of that area” (Babbie & Mouton: 251).

One must take into consideration that, “researchers always work with fallible measures” (Polit & Beck 2004: 415). The researcher took all possible measures to ensure control was maintained and that the sample selected was the best representative sample, ensuring information was as efficient, valid, reliable and accurate as possible. However, it is impossible to do so and avoidance of bias was vital.

3.8.1 Consent for conducting the research

Consent to conduct the research study was obtained from superintendent of specific hospital where research was conducted, as well as from all respondents.

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3.8.5.1 *Consent from hospital management*

Written permission was first obtained from the management of the private hospital where the research was carried out. The management was approached regarding the proposal to undertake the research in the MDICU.

The researcher explained the purpose of the planned research and how she proposed to undertake such a study. (Annexure A).

The management was also informed regarding the anonymity and confidentiality of each voluntary respondent.

3.8.5.2 *Consent from Research Respondents*

All respondents would be voluntary respondents. Nobody would be forced to participate. All respondents were fully informed regarding the research study. No remuneration was offered for participation in the research study.

If any patient refused to participate, no negative ill-effects would be suffered by them as a result of refusal to participate. The researcher constructed this informed consent form. (Annexure C).

All respondents were assured of confidentiality and anonymity.

3.9 METHODS OF DATA ANALYSIS

Data analysis is the systematic organization and synthesis of research data. This includes categorising, ordering, manipulating and summarising the collected data and describing it all in meaningful terms. Data in this research was collected by means of quantitative research. According to Brink (2006:170) statistics is a powerful tool available to the

researcher in analysing quantitative data. The services of a statistician were employed in order to conduct appropriate statistics.

3.10 LIMITATIONS OF THE STUDY

Despite all measures being taken to minimise errors through using structured interview schedule as well as observation checklists, the information obtained was vulnerable to the researcher's distortion and biases. The researcher worked on specific shifts thus was unable to consider all patients during the entire research period. Only those patients in the unit, on the nights that the researcher was on duty, were approached to be voluntary respondents. Specific activities which may have influenced some patients during this research period did not affect all patients, who may have had different experiences and activities during their time spent in ICU. Some specialist doctors, who worked in this research setting, took leave over this Christmas period. Thus some patients, who would normally have been treated in the MDICU under study, were transferred to another hospital where they could obtain specialist attention. Type of patient in the MDICU over this period thus may have varied from when all doctors would normally have been available. As the rest of the hospital was at times at full capacity, the 'overload' patients were admitted to the MDICU for care, due to that fact that beds were open in the ICU, and staffs were on duty. As mentioned in Chapter 1, the design of various ICU's may vary, which may also influence sleep disturbances. The ICU when busy will be more disruptive than during quiet times. Number of staff on duty during various periods also plays a role in contributing to sleep deprivation.

3.11 CONCLUSIONS

This chapter covered the research methodology used in this research study which includes the research design, research setting, population and sampling, data collection, data analysis, ethical considerations and limitations.

Chapter 4 will present the data analysis and discussions of research results.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

Data were collected from 1 November 2007 to 31 December 2007 and were analysed using the SPSS (version 12) program, with the assistance of a statistician.

Specific objectives of this study were to identify:

- factors which contributed to patients' sleep deprivation in a MDICU
- factors which limit patients' sleep deprivation in a MDICU
- ways in which patients' sleep could be enhanced in a MDICU

Based on the results of these three objectives, recommendations will be made to limit patients' sleep deprivation in the MDICU.

The research results will be discussed according to the sequence of the structured interview, namely biographical data, factors contributing to patients' sleep deprivation in a MDICU (discussed according to the levels of Maslow's Hierarchy of Human Needs), sleep enhancement factors and suggestions for improving patients' abilities to sleep in a MDICU. The findings pertaining to the latter two aspects will be presented in tables 4.2 and 4.3 and only the most important aspects will be discussed in order of priority, based on the frequency of specific responses. (Recommendations for limiting patients' sleep deprivation in the MDICU will be presented in chapter 5.)

A total of 34 respondents who met the inclusion criteria, voluntarily participated in this study. These 34 respondents represented 34.3% of the 99 patients admitted to the MDICU during the data collection period.

4.2 BIOGRAPHIC DATA

This section relates to all demographic data obtained from the 34 respondents concerning age, gender, medical and surgical history, home life and present hospital circumstances in order to contextualise the rest of the information about factors influencing sleep deprivation in a MDICU.

Figure 4.1 illustrates that 29.4% (n=10) of respondents were between 61 and 70 years of age, and 26.5% (n=9) were 51 to 60 years old, implying that 19 (55.9%) of the respondents were at least 51 years old, and the average age was 56.1 years.

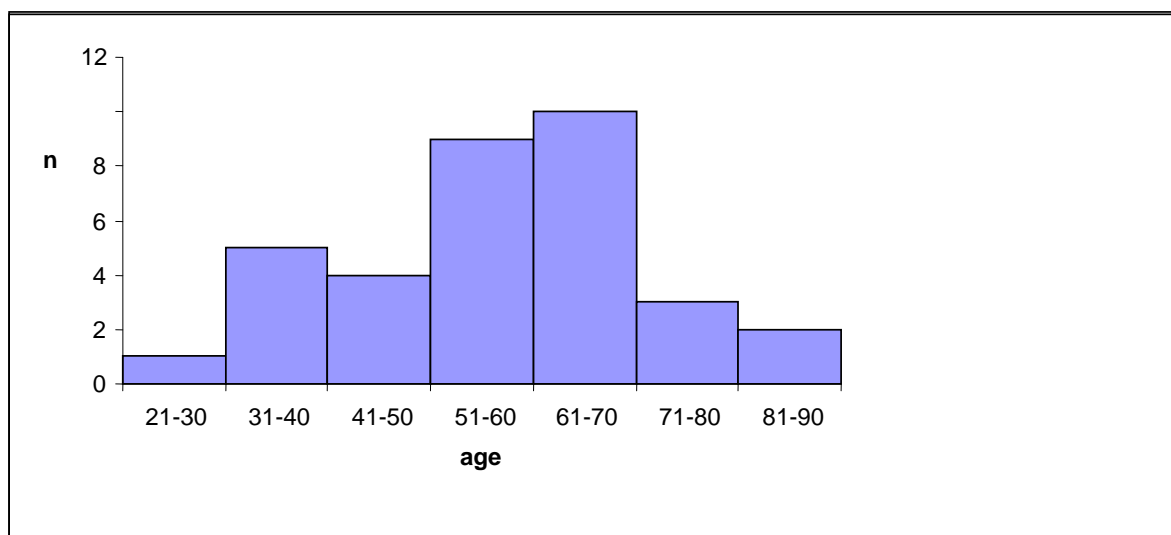


Figure 4.1: Respondents' age distribution

As patients of all ages are admitted to the MDICU, 94.1% (n=32) of the respondents indicated that children should not be in the same unit as adults. The remaining 5.9% (n=2) felt that when needing care, regardless of age, care should be given.

There were more female (52.9%; n=8) than male (47.1%; n=16) respondents, but no significant difference between the number of hours slept could be detected between males and females.

Details about the 34 respondents' occupations were not requested, but 47.1% (n=16) were employed, 35.3% (n=12) were pensioners and 17.7% (n=6) were housewives.

Respondents were questioned about their sleeping patterns at home, so as to provide a comparative baseline for their sleeping patterns while in the MDICU. Of the respondents, 47.0% (n=16) reportedly slept fairly well home, 35.3% (n=12) slept very well, and 17.6% (n=6) experienced fragmented sleep patterns. Out of the 34 respondents, 70.6% (n=24) reported that they did not get adequate sleep since their admissions to the MDICU, and could also not rest intermittently during the day, to make up for their lack of sleep during the night. The number of hours of sleep for individual patients was correlated with that reported by the patient, and these two sets of figures showed no significant differences.

Respondents were classified into medical, surgical and cardiac categories. Cardiac patients appeared to sleep less than the other two categories of patients, but this difference was not statistically significant. Of the respondents, 29.4%(n=10) had cardiac conditions, with 50.0% (n=5) of them reporting sleeping well the first night in MDICU as a result of medication. The remaining five (50.0%) cardiac patients, who did not sleep well, identified noise as the main reason for sleep disruption, despite medication.

Of the patients, 44.1% (n=15) suffered from hypertension and 20.6% (n=7) were diabetics and 8.8% (n=3) suffered from both hypertension and diabetes; 20.6% (n=7) had respiratory conditions.

Neither the number of patients in the MDICU, nor the bed position of the patient significantly influenced the patient's ability to sleep.

4.3 FACTORS INFLUENCING SLEEP DEPRIVATION IN A MULTI-DISCIPLINARY INTENSIVE CARE UNIT

Factors influencing sleep deprivation in a MDICU are summarised in table 4.1 and the most important aspects will be discussed in terms of Maslow's Hierarchy of Human Needs.

Table 4.1 Factors influencing sleep deprivation in a MDICU (n=34 unless otherwise indicated in specific cells)

Factor	f	%	Factor	f	%
Not knowing nurses names	32	94.1	Disliked having to use urinals/bedpans	11	32.4
Noise caused by alarms	31	91.2	Feeling hot at night	11	32.4
Pain	31	91.2	Unpleasant smells	10	29.4
Stress	31	91.2	Uncomfortable MDICU bed	9	26.5
Medical jargon spoken by doctors	30	88.2	Unaware of availability of ICU phone	9	26.5
Blood pressure cuff-restricts movement	30	88.2	Doctors/nurses discuss patients at their bedsides	9	26.5
Blood pressure cuff smells	30	88.2	Worries about work	10	29.4
Monitors- restricting movement	30	88.2	Nurses/doctors used cell phones: patients not allowed to do so	8	23.6
Alarms affecting sleep	28	82.4	Patients' snoring	8	23.6
On admission nurses were friendly, approachable and respectful	28	82.4	Distrusting some nurses	7	20.6
Time disorientation	28	82.4	Nurses' task orientated attitudes	7	20.6
Having to wear hospital attire (n=18 females)	15	83.3	Worries about visitors' travels	7	20.6
Thirst	27	79.4	Nurses' friendly attitudes (after a few days in ICU)	6	17.7
Lines and tubes restricting movement	25	73.5	Hunger	6	17.7
Anxiety	24	70.6	Television	5	14.7
Inadequate sleep while in ICU	24	70.6	Fear of ventilators in close proximity to beds	4	11.8
Lights	22	64.7	Feeling cold at night	4	11.8
Lack of privacy	22	64.7	Deaths in the MDICU	4	11.8
Unable to wear pants due to urinary catheters	21	61.8	Lack of caring	4	11.8
Noises from patients	20	58.8	Nurses' walking about	4	11.8
Worries about family	20	58.8	Stress of watching the clock	4	11.8
Abdominal discomfort	20	58.8	Do not see the doctor often enough	3	8.8
Smoking (n=7 smokers)	4	57.1	Doctors who talk to nurses and not to patients	3	8.8
Unfamiliar nurses affect sleep adversely	19	55.9	Feeling isolated/scared if nurses' names are unknown	3	8.8
Overhearing nurses talking: misinterpreted by patients	19	55.9	Worries about other patients' thoughts	3	8.8
Ongoing activities in ICU	17	50.0	Continuous intravenous fluids	2	5.9
Space in MDICU	17	50.0	Male nurses to bed bath female patients	2	5.9
Hospital attire (n=16 males)	8	50.0	Isolation due to bed position	2	5.9
Unfamiliar environment	16	47.1	Cover bodies and heads	2	5.9
Coughing	15	44.1	Groups of visitors	1	5.9
On admission- nurses introduce themselves	15	44.1	Nurses who give orders made patients feel powerless	1	2.9
On admission- given explanations as needed	13	38.2	Conversations between nurses at night	1	2.9
Urinary catheters cause discomfort (n=21 patients)	13	38.2			
Nurses' talks about other patients were worrying	12	35.3			

4.3.1 Physiological needs

Sleep and rest is a physiological need, and inadequate rest and/or sleep leaves the physiological needs unsatisfied, the basic level of needs in terms of Maslow's Hierarchy of Needs, as discussed in chapters 1 and 2 of this dissertation. Kaplow and Hardin (2007:55) mention that since the late 1970s, research has confirmed that sleep is routinely disturbed in intensive care patients.

4.3.1.1 Thirst

Table 4.1 shows that 79.4% (n=27) of the respondents indicated that thirst contributed to their sleep deprivation. Respondents reported that nasogastric tubes (5.9%; n=2) and oxygen masks (44.1%; n=15) resulted in sore throats, thirst and pain. Honkus (2003:5) explains that oxygen dries the nasal passages and intensifies thirst. Medicinal or anti-bacterial mouthwashes (5.9%; n=2) reportedly aggravated some patients' thirst while others (11.8%; n=4) were too weak to hold a glass of water.

4.3.1.2 Hunger

Table 4.1 shows that hunger was a concern of only 17.7% (n=6) of the respondents. Two out of these six respondents were nil per mouth at the time of the interview. The other four respondents reported being hungry despite having eaten.

4.3.1.3 Space in the MDICU/privacy

Table 4.1 indicates that 17 (50.0%) respondents considered the space between the beds in the MDICU to be inadequate. Although 5 (14.7%) respondents reported this space to be sufficient, these specific patients had all been admitted to private wards where there was more space than in the general area of the MDICU.

Seven (20.6%) respondents noted that doctors and nurses worked around trolleys, curtains, beds and other equipment. Of the respondents, 11.8 % (n=4) feared the ventilators and their sounds, and were worried about accidentally touching these machines, disrupting their functions.

The lack of privacy and ICU fears are also reported by Morton et al (2005:37) who claim that these experiences could create "...undue anxiety and the potential for physiological instability in vulnerable patients".

Of the respondents, 55.9% (n=19) mentioned overhearing nurses' conversations which were misinterpreted; 14.7% (n=5) reported a lack of privacy during visiting hours, when conversations could be overheard by others. Nurses' and doctors' discussions of patients' conditions at their bedsides, within hearing range of other patients' and/or visitors, was reported by 26.5% (n=9) to be uncomfortable and embarrassing as no confidentiality was maintained. Those 61.8% (n=21) respondents who had indwelling urinary catheters, and who could thus not wear pants, reported feeling uncomfortable. Respondents (5.9%; n=2) with diarrhoea reported feeling undignified and embarrassed when they had to use bedpans in close proximity of other patients in the MDICU.

As Smeltzer and Bare (2004:116) mention, people tend to generally regard the space in the immediate vicinity as an extension of them, and any threatening person/situation to this space may lead to anxiety and discomfort. Some respondents (14.7%; n=5) stated that visitors might stare at patients in the MDICU, making patients feel like 'fish in a bowl'. Curtains drawn between beds provided inadequate privacy (11.8%; n=4) in the MDICU. Morton et al (2005:44) maintain that the presence of family members decreases a patient's vulnerability in an ICU and enhances his/her feelings of security. However, family members' presence in a MDICU could have negative consequences for other patients.

4.3.1.4 Noise

Of the respondents 58.8% (n=20) identified different sounds as being disruptive to sleep while 5.9% (n=2) noted that noisy, confused patients disturbed their sleep. Despite having taken sedation, 50.0% (n=17) mentioned that noise from ongoing activities in MDICU aggravated their sleeplessness. Feelings of lack of control in an ICU environment (Morton et al 2005:39) can be a major stressor.

Most (82.4%; n=28) of the respondents said alarms contributed to their sleep deprivation. However, 14.7% (n=5) reported that alarms were initially disturbing, but

that they got used to these sounds while 91.2% (n=31) identified alarms as the main noise factor in the MDICU.

While 85.3% (n=29) of the respondents were not disturbed by nurses' walking about the unit at night, and 14.7% (n=5) said some noise was expected, 20.6% (n=7) reported feeling comforted by the nurses' footsteps. Urden et al (2002:56) mention that some patients perceive all the activities in an intensive care unit as making them feel safe and cared for.

Of the respondents, 50.0% (n=17) indicated that ongoing activities during the evening, such as suctioning, disturbed their sleep. Admissions during the night, deaths and ICU sounds such as telephones also contributed to MDICU patients' sleep disturbances. Some respondents reported that coughing (44.1%; n=15) and snoring (23.5%; n=8) disturbed their sleep.

Four respondents (11.8%) indicated that nurses should control noise in the MDICU during the night. Table 4.1 shows that 91.2% (n=31) identified alarms as the main noise factor in MDICU, noting that nurses attended to alarms as quickly as possible. However, alarms sometimes sounded for long periods as nurses were busy elsewhere. Only 3 (8.8%) respondents indicated that nurses should respond faster to alarms.

4.3.1.5 Immobility

All 34 (100%) respondents were physically independent before admission to the MDICU.

Knowing that nurses were going to bed bath them in the morning did not disturb 79.4% (n=27) of the respondents' sleep. Two (5.9%) female respondents (n=2) would be reassured knowing that they would not be washed by male nurses.

Of the respondents, 26.5% (n=9) indicated that the MDICU beds were uncomfortable, causing backache. Being made more comfortable in bed would have enhanced these patients' abilities to sleep in the MDICU.

4.3.1.6 Urinary catheters

As many as 61.8 % (n=21) of the respondents had urinary catheters and 38.2 % (n=13) reported that discomfort, caused by urinary catheters, disturbed their sleep.

4.3.1.7 Continuous intravenous fluids

Continuous intravenous therapy (5.9%; n=2) caused periodic discomfort, as it resulted in frequent voiding of urine. Some respondents (32.4%; n=11) disliked using urinals or bedpans and postponed their use as long as possible, disturbing their sleep. Out of the total of 16 male respondents, 23.5% (n=8) found it difficult to pass urine while lying in bed, and mentioned that it would be more practical if they could stand up next to their beds to use the urinals.

4.3.1.8 Abdominal discomfort

Of the respondents 58.8% (n=20) reported that abdominal discomfort disturbed their sleep, although only 6 (17.7%) were post-operative patients.

4.3.1.9 Blood pressure cuffs

Most respondents (88.2%;n=30) indicated that the blood pressure cuffs inflated and deflated at intervals set by nurses, which was uncomfortable and painful, disturbing their ability to sleep.

These same respondents (88.2%; n=30) reported that the blood pressure cuffs had an unpleasant smell. For one (2.9%) respondent, the blood pressure cuff instilled a sense of security.

4.3.1.10 Lines and tubing

Table 4.1 shows that 73.5% (n=25) reported that all lines and tubes connected to their bodies contributed to these patients' sleep deprivation. Naso-gastric tubes, drains, colostomy bags and intercostal drains restricted movement. Some respondents feared

causing problems if they disrupted any tubes during their sleep, making it harder for them to sleep.

4.3.1.11 Monitors

Table 4.1 shows that 88.2% (n=30) of respondents identified monitor leads as restricting movement. Monitors' lines became entangled with intravenous lines, tubing and even the patients' arms. Alarms went off when monitor lines disconnected and the oxygen saturation probes on their fingers lost signals, further restricting patients' movements in bed, and making it harder for them to sleep properly.

4.3.1.12 Smoking

While in the MDICU, patients are not allowed to smoke. Often patients are at bedrest, or mobility restricted. Table 4.1 shows that 20.6% (n=7) of respondents were smokers, with 57.1% (n=4) of the seven smokers reporting that the urge to smoke disturbed their sleep. The remaining 3 felt that this did not disturb their ability to sleep.

Of the 7 smokers, 85.7 % (n=6) suffered from hypertension, and the other one had suffered a myocardial infarction four years ago, yet they all still smoked.

4.3.1.13 Worries about work and family

Only 29.4% (n=10) of the respondents worried about their work and 58.8% (n=20) worried about their families, disturbing their sleep.

4.3.1.14 Pain

As many as 73.5 % (n=25) respondents were unable to sleep well during their first night in MDICU. Analgesics reportedly assisted only 29.4% (n=10) of them to sleep.

Out of the 34 respondents, 10 had been admitted for coronary conditions, having received morphine. However, only 5 (50.0%) of these 10 coronary patients reported sleeping well. Consequently even the administration of morphine did not enable the other 5 coronary patients to sleep during their first night in the MDICU.

Out of the 34 patients, 31 (91.2%) experienced pain during their first night in the MDICU. Out of these 31 respondents, 30 (96.8%) reported pain relief as a result of pain medication. One respondent, reported no pain relief as the patient in the next bed was dying and family members were distressed. Although 91.2% (n=31) respondents identified pain as a contributing factor to sleep deprivation in the MDICU, 64.7% (n=22) reported that feelings of anxiety made pain worse. Ferns (2007:43) mentions the link between pain, anxiety, frustration and fear, which may adversely affect the patients' abilities to sleep. Uncontrolled pain triggers physical and emotional stress responses, which may aggravate sleeplessness (Morton et al 2005:46).

Two (5.9%) other respondents who had slept well the first night, said sedatives helped them to sleep.

4.3.1.15 Time orientation

All 34 (100%) respondents could see a clock from their beds, and 85.3% (n=29) indicated that it helped them to sleep as it assisted them to keep track of time. However, a few respondents (11.8; n=4) indicated that watching the clock could become stressful, as it seemed to make time drag. One respondent noted that when the patient in the bed next to him closed the curtains, he had no vision of the clock and would lose track of time.

Not knowing whether it is day or night was disruptive as 82.4% (n=28) of respondents reported missing the sun. Having windows in the unit, would make it easier to keep track of time for 73.5% (n=25) of the respondents. However, some respondents (26.5%; n=9) reported that while seriously ill, they were not concerned about windows, only when they felt better.

4.3.1.16 Smells in the MDICU

Of the respondents, 29.4% (n=10) noted that unpleasant smells (the blood pressure cuff, chemical agents, perfumes, diarrhoea and vomit) contributed to their sleep disturbances.

4.3.1.17 Maintaining a comfortable temperature in the MDICU

Of the respondents, 32.4% (n=11) woke up feeling hot, and 11.8% (n=4) reported feeling too cold. Maintaining a comfortable temperature throughout the night could help promote patients' sleep as noted by 26.5% (n=9) of the patients.

4.3.1.18 Lights

Only one respondent reportedly slept with a light on near the bed while at home, but 64.7% (n=22) identified the lights in MDICU to contribute to their sleep deprivation. According to Dolan et al (1995:72) constant lights are noxious factors in an ICU.

4.3.2 Safety and security needs

Urden et al (2002:56) mention that the ICU is a frightening environment for patients.

4.3.2.1 Safety of the MDICU environment

Of the respondents, 70.6% (n=24) reported anxiety as a result of being unable to sleep, while 64.7% (n=22) experienced anxiety as a result of pain.

Stress is defined by Morton et al (2005: 13) as a situation that exists when an organism is faced with any stimulus that causes disequilibrium between psychological and physiological functioning. As many as 91.2% (n=31) of the respondents reported that the ICU environment caused stress. The most common feelings reported were being scared (n=5), worried (n=4), anxious (n=4), and concerned about their conditions (n=2). According to Morton et al (2005:42), they may be worried about the diagnosis, the prognosis, the treatment, finances, loneliness and/or disturbing dreams.

4.3.2.2 Nurses' attitudes

Most respondents (82.4%; n=28) reported that on admission, MDICU nurses were friendly, displayed good attitudes and were approachable, and 91.2% (n=31) reported that nurses addressed visitors respectfully.

However, in response to open-ended questions, some respondents (20.6%; n=7), indicated that nurses were 'just doing their jobs' and were not interested in their patients (5.9%; n=2), expected patients to know what is happening in a MDICU (2.9%; n=1), and were not helpful (2.9%; n=1). Only 17.6% (n=6) of the respondents stated that nurses were friendly. Lack of caring was noted by 11.8% (n=4) of the respondents.

Most (88.2%; n=30) respondents mentioned that nurses gave adequate nursing care day and night, but 8.8% (n=3) found nurses to be 'task orientated' (doing necessary tasks only then moving quickly onto the next patient).

Of the respondents, 20.6% (n=7) were of the opinion that they could trust only some of the nurses, indicating that trust develops when one nurse works with the same patient over a few days. Of the respondents, 5.9% (n=2) reported that permanent MDICU nurses had to check up on, teach and assist moonlighters. Most respondents (88.2%; n=30) preferred familiar nurses, 55.9% (n=19) mentioned battling to sleep when unfamiliar nurses were allocated to them. With staff changeover, 23.5% (n=8) of the respondents reported having to develop new relationships of trust, which could disturb their sleep.

Most respondents (94.1%; n=32) reported sleeping better once they knew the nurses. The remaining 5.9% (n=2) reported that as long as the nurses seemed to be doing their job, it did not matter. If patients were feeling uncomfortable with a nurse around their bed, they would talk to the nurse (38.2%; n=13), while 38.2% (n=13) would keep quiet, regress, remain hopeless in the situation, and powerless to effect change, and 11.8% (n=4) said they would talk to a MDICU nurse with whom they were familiar.

When asked what could be done to prevent patients feeling uncomfortable with new nurses, 26.5% (n=9) indicated that nurses should communicate in order to ease such situations; 38.2% (n=13) indicated that having a familiar nurse around does ease feelings of discomfort; 11.8% (n=4) felt that nurses unfamiliar to a unit should introduce themselves to the patients; 20.6% (n=7) linked the need for communication and their ability to relax; 5.9% (n=2) linked communication and trust.

Of the respondents only 5.9% (n=2) reported about the situation of having male nurses care for them. Certain activities such as having a male nurse wash a female patient,

was reported to be uncomfortable for these respondents. Knowing that a female nurse would assist them to wash, would decrease these two patients' anxiety levels and enhance the ability to sleep.

4.3.2.3 Communication

The need for improved communication was identified by 26.5% (n=9) of the respondents. Table 4.26 shows that on admission to the MDICU, only 38.2% (n=13) of respondents reported getting adequate explanations regarding the monitors, lines, drips, alarms, and other tubing where present.

Table 4.1 shows that on admission to MDICU, 44.1% (n=15) of the MDICU patients noted that nurses introduced themselves, but 94.1 % (n=32) indicated that it was important to know the nurses' names. 7Table 4.1 indicates that only one (2.9%) of the respondents found nurses' conversations during the night to be disturbing. This respondent who was troubled by the sound of nurses voices and chairs, was in the bed closest to the nurses station. Of the 7 respondents, 14.7% (n=5) reported feeling comforted hearing nurses talking at night, which increased feelings of security just knowing the nurses were about. These respondents stated that as long as the nurses were not loud, this 'noise' was comforting.

Of the respondents 8.8% (n=3) reportedly did not see their doctors often enough, and considered doctors' visits as being limited not allowing sufficient time to discuss their concerns with the doctors. Having the doctor only phone and not come in physically was also reported by three respondents to be disturbing. 8.8 % (n=3) of respondents reported appreciating it when the doctor took time to draw pictures to explain operations, as one specialist surgeon did. Most (88.2%; n=30) respondents indicated that doctors should avoid medical jargon and use lay terms with patients. One respondent noted that the surgeon had discussed the operation with him in the recovery room, but that he was unable to remember anything about these discussions. He suggested that doctors should wait until the patient is fully awake before discussing such matters.

Only three (8.8%) of the MDICU patients complained about doctors who spoke to nurses and not to the patients.

Nurses and doctors discuss patient conditions at the bedside of patients or at times within hearing range of other patients and visitors. This was reported by some (26.5%; n=9) respondents to be uncomfortable and embarrassing. However, 8.8% (n=3) mentioned that when seriously ill, they were not concerned about this issue, but once they started recovering, they felt that their privacy had been invaded by such behaviours.

Although not questioned about death and dying, 11.8% (n=4) of the respondents noted that death in the MDICU caused anxiety, contributing to their sleep deprivation.

4.3.3 Social needs

While in ICU as a patient, being separated from home and family can be very disturbing, contributing to sleep disturbances. Respondents reported on the importance of the type of nursing staff in an ICU, nurses' attitudes and other behaviours.

4.3.3.1 Nurses' attitudes and behaviours

Table 4.1 indicates that 82.4% (n=28) of the respondents experienced nurses treated them respectfully and only one (2.9%) patient reportedly felt powerless as a result of the nurses' behaviours. A lack of caring by nurses was identified by 11.8% (n=4) respondents during the study which could have influenced their abilities to sleep. However, no specific reasons were given for this perceived lack of caring on the nurses' part.

4.3.3.2 Telephone contact

Some respondents (26.5%; n=9) were unaware of the MDICU's phone's availability. All respondents had been informed that cell phones were not allowed in the MDICU, but 23.6% (n=8) mentioned that nurses and doctors used cell phones in MDICU.

4.3.3.3 Nurses talking about patients, not with patients

Some respondents (55.9%; n=19) reported that during their stay in MDICU, overhearing nurses' conversations, and possibly misinterpreting these conversations, caused anxiety, aggravating their sleeplessness. Twelve (35.3%) of the patients also indicated that it disturbed them to hear nurses' talking about other patients.

4.3.4 Esteem needs

When becoming ill, the patient's dignity is threatened (Drench et al 2003:93).

4.3.4.1 Doctor-patient relationships

Of the respondents 88.2% (n=30) identified the need that doctors should not use medical jargon when communicating with the patients. Three (8.8%) of the patients reported being upset when their doctors spoke to the nurses instead of to the patients as this approach did not enable the patients to be active decision-makers about their treatments.

4.3.4.2 Clothing

Out of the 18 female respondents, 83.3% (n=15) stated that they would sleep better if able to wear their own pyjamas, while 50.0% (n=8) of the 16 male respondents felt this way.

4.3.4.3 Cultural aspects

According to Kaplow and Hardin (2007:96) cultural awareness is defined as the process through which nurses learn to recognise and respect the cultural beliefs and values of others, while acknowledging their own personal biases and values.

One respondent (2.9%) mentioned that in his/her culture visitors came in groups, while a maximum of two visitors per bed were allowed in the MDICU. Two (5.9%) respondents mentioned the importance of covering their bodies and heads, which was difficult to accomplish in the MDICU with monitors and hospital attire. With increasing

frequency of caring for patients from the various cultural backgrounds, the importance of the increasing demand for culturally competent care was highlighted by these respondents.

4.3.5 Self actualisation needs

No self-actualisation needs were verbalised or observed by the respondents, probably because their main level of focus was at the basic physiological level in terms of Maslow's Hierarchy of Human Needs.

4.3.6 Concluding remarks about factors influencing patients' sleep deprivation

As indicated in table 4.1 the ten most important factors contributing to all (males and females combined) patients' sleep deprivation in the MDICU could be classified as falling within the basic physiological level of Maslow's Hierarchy of Human Needs, namely:

- Not knowing nurses' names (94.1%; n=32)
- Noise caused by alarms (91.2%; n=31)
- Stress (91.2%; n=31)
- Inability to understand medical terms used by doctors (88.2%; n=30)
- Blood pressures cuffs restricting movement and smelling badly (88.2%; n=30)
- Restriction of movement by monitors (88.2%; n=30)
- Alarms disturbed their sleep (82.4%; n=28)
- Friendly, approachable and respectful nurses when admitted to the MDICU (82.4%; n=28)
- Time disorientation ((82.4%; n=28)
- Thirst (79.4%; n=27)
- Restricted movement due to lines and tubes (73.4%; n=25)

4.4 FACTORS LIMITING MDICU PATIENTS' SLEEP DEPRIVATION

The factors limiting the MDICU patients' sleep deprivation are reflected in table 4.2.

Table 4.2 Factors limiting MDICU patients' sleep deprivation (n=34 unless otherwise stated in specific cells)

Factor	n	%	Factor	n	%
Be informed about condition	33	97.1	Being given effective medication	12	35.3
Knowing nurses' names	32	94.1	Making patients comfortable in their beds	12	35.3
Familiarity with nurses	32	94.1	Control smells in MDICU	10	29.4
Nurses treat patients with respect	31	91.2	Effective communication	9	26.5
Prefer familiar nurses	30	88.2	Backache relief	9	26.5
Avoid medical jargon	30	88.2	Straightening linen	9	26.5
Nurses striving to meet all patients' needs	30	88.2	Maintain suitable MDICU temperature	9	26.5
Blood pressure cuffs smell badly-not to wear these constantly	30	88.2	Using lay terms so that patients can understand	7	20.6
To be able to see a clock for time disorientation	29	85.3	Family members to report safe arrivals after visits	7	20.6
Wearing own pyjamas (n=18 females)	15	83.3	Nurses are task orientated	7	20.6
Friendly, approachable and respectful nurses on admission to the MDICU	28	82.4	Nurses' friendly attitudes	6	17.7
Reassuring nurses	25	73.5	Private ward	5	14.7
Windows-better time orientation	25	73.5	Feeling better knowing the nurses in the MDICU can hear them	5	14.7
Being able to phone home from the MDICU	25	73.5	Nurses should be more caring	4	11.8
Being able to wear own sleepwear	23	67.7	Control devices that can disturb sleep	4	11.8
Nurses should explain all required aspects of care	21	61.8	Deaths in the MDICU	4	11.8
Knowing who to call/how to call someone	21	61.8	Ability to contact nurses at night	3	8.8
Knowing other patients' diagnoses	19	55.9	Cultural awareness/ respect for others	3	8.8
Need to understand doctor/nurse	17	50.0	Attend to alarms faster	3	8.8
Wear own pyjamas (n=16 male patients)	8	50.0	Doctor who phones as well as does visits in the MDICU	3	8.8
Using urinals while standing (n=16 males)	8	50.0	Not to depersonalise the patient	3	8.8
Good nurse-doctor-patient communication	16	47.1	Control noisy patients	2	5.9
On admission nurses should introduce themselves	15	44.1	Nurses should not give orders that make patients feel powerless	1	2.9
Given required explanations on admission	13	38.2	Blood pressure cuff made the patient feel secure	1	2.9
More flexible visiting hours	13	38.2			

4.5 WAYS IN WHICH PATIENTS' ABILITIES TO SLEEP IN A MDICU COULD BE ENHANCED

The ways identified by the respondents in which the MDICU's patients' abilities to sleep could be enhanced are summarised in table 4.3.

Table 4.3 Ways in which MDICU patients' abilities to sleep in a MDICU could be enhanced (n=34 unless otherwise stated in specific cells)

Recommendation	n	%	Recommendation	n	%
Visible clock	34	100	Attend to smells in MDICU	10	29.4
Need to know about/understand condition	33	97.1	Effective communication	9	26.5
Pain medication (n=31 patients who had pain)	30	96.8	Make beds comfortable for patients	9	26.5
Reduce stress levels	31	91.2	Maintain suitable temperature for patient	9	26.5
Treat patient with respect	31	91.2	Effective communication	9	26.5
To see the doctor often enough- feeling secure	31	91.2	Avoid discussing patient at bedside- doctor/nurse	9	26.5
Avoid medical jargon	30	88.2	Straighten linen/comfort	9	26.5
Need adequate staff/familiar nurses	30	88.2	Unfair for doctors and nurses to use cell phones but forbidden for patients	8	23.5
Nurses attempt to meet needs	30	88.2	Get family to phone when home after hospital visits	7	20.6
Give adequate nursing care	30	88.2	Know names of nurses	7	20.6
Blood pressure set intervals	30	88.2	Hearing sounds of nurses is comforting	7	20.6
Provide single use blood pressure cuff-no smell	30	88.2	Comforting to hear nurses' conversations at night	5	14.7
Wear own pyjamas- of 18 female	15	83.3	Switching off television sets at night	5	14.7
Alarms	28	82.4	Nurses should be more caring	4	11.8
Ability to see the sun	28	82.4	New staff should introduce themselves	4	11.8
On admission- nurses to be friendly, respectful and approachable	28	82.4	Death situations- remove bodies as soon as possible from MDICU	4	11.8
Having a window in the unit	25	73.5	Nurses need sound control devices	4	11.8
Awareness of ability to use phone in MDICU	25	73.5	Noise control	4	11.8
Dim lights at night	22	64.7	Nurses should attend to alarms faster	3	8.8
Nurses introduce themselves on admission	21	61.8	Nurses' must use opportunities to talk to doctors	3	8.8
Wear hospital attire	21	61.8	Cultural awareness	3	8.8
Knowing what is wrong with other patients	19	55.9	Call bells for when needing assistance	3	8.8
Nurses not to discuss patients	19	55.9	Control noisy patients	2	5.9
Own pyjamas (n=16 males)	8	50.0	Administer sedatives	2	5.9
Good communication- understand the doctor	17	50.0	Females reassured that males would not bed bath them (n=18 females)	2	5.9
Adequate nurse-patient-doctor communication	16	47.1			
Control alarm volumes	14	41.2			
More flexible visiting hours	13	38.2			
Make patient comfortable (in general)	12	35.3			
Medication	12	35.3			

4.6 DISCUSSIONS ABOUT INFLUENCES ON MDICU'S PATIENTS' ABILITIES TO SLEEP

The research findings indicated similar trends affecting patients' sleep deprivation, limiting patients' sleep deprivation and enhancing patients' abilities to sleep. The major findings pertaining to these three categories will be compared and contrasted.

4.6.1 Nurses' roles

According to tables 4.1 and 4.2, 94.1% (n=32) of respondents indicated that knowing the nurses' names was the most important factor contributing to sleep deprivation and enhancing sleep. Most (94.1%; n=32) respondents mentioned that familiarity with nurses, and nurses who treated patients (91.2%; n=31) respectfully enhanced their abilities to sleep. Table 4.2 shows that 88.2% (n=30) of the respondents preferred familiar nurses as this enabled them to sleep better. Table 4.3 indicates that 91.2% (n=31) of respondents recommended that nurses should treat patients with respect, and 88.2% (n=30) recommended adequate staff/familiar nurses in the MDICU, to enable them to sleep better. Table 4.2 shows that 88.2% (n=30) of the respondents noted that nurses who aimed to meet all patients' needs, and nurses who were re-assuring (73.5%; n=25) would enhance their sleep. Table 4.1 and Table 4.2 respectively show that 82.4% (n=28) of the respondents noted that on admission, friendly, approachable and respectful nurses reduced patients' fears and anxieties, helping them to get more sleep.

4.6.2 Understanding their conditions

Tables 4.2 and 4.3 show respectively that 97.1% (n=33) of the respondents noted that understanding their conditions enhanced sleep. Table 4.2 shows that 88.2% (n=30) of the respondents recommended that doctors and nurses should avoid using medical jargon in discussions with patients. Table 4.1 indicates that 88.2% (n=30) of the respondents noted that doctors who used jargon with patients contributed to their sleep deprivation. Table 4.2 notes that nurses and doctors who avoided talking medical jargon, enhanced 88.2 % (n=30) of respondents' abilities to sleep. Table 4.3 shows that 91.2% (n=31) of respondents noted the importance of seeing their doctor, as this increased their feelings of security.

4.6.3 Pain

Table 4.1 shows that 91.2% (n=31) of respondents identified pain as contributing to sleep deprivation. Table 4.3 shows that for the 31 respondents who reported pain, 96.8% (n=30) achieved pain relief as a result of pain medication.

4.6.4 Alarms

Table 4.1 shows that 91.2% (n=31) of the respondents identified alarms as the main noise factor contributing to their sleep deprivation. Tables 4.1 and 4.3 show that alarms disturbed the sleep of most (82.4%; n=28) of respondents.

4.6.5 Immobility

Table 4.1 shows that the blood pressure cuff, as well as the monitor leads, were identified as contributing to sleep deprivation as a result of restricting patients' movements in their beds (88.2%; n=30). These same respondents also noted that the blood pressure cuff had an offensive smell contributing to their sleep disturbance. Table 4.2 shows that these same respondents noted that sleep would be enhanced if they did not have to wear the blood pressure cuff. Table 4.3 shows that these 88.2% (n=30) indicated that blood pressure should be recorded at required intervals only, and unnecessary readings should be avoided as it was painful and disturbed sleep every time the cuff inflated and deflated. Table 4.1 also shows that the lines and tubing were identified as contributing to sleep deprivation as a result of restricting movement for 73.5%(n=25) of respondents.

4.6.6 Time disorientation

Table 4.3 shows that all (100%; n=34) respondents could see a clock from their beds in the MDICU, which enhanced their abilities to sleep as it assisted in keeping track of time of day and night. Table 4.2 shows that 85.3% (n=29) of respondents noted that sleep was enhanced when able to see a clock from their bed position, 82.4% (n=28) indicated that time disorientation contributed to sleep deprivation in the MDICU (see table 4.1). Many (73.5%; n=25) respondents suggested that having a window in the unit,

would limit time disorientation, and enhance sleep (table 4.2) and 82.4% (n=28) suggested that the ability to see the sun would enhance sleep.

4.6.7 Stress

Table 4.1 shows that 91.2% (n=31) of respondents indicated that stress contributed to sleep deprivation in the MDICU. Table 4.1 shows that 70.6% (n=24) of respondents identified anxiety as contributing to sleep deprivation in the MDICU.

4.6.8 Having to wear hospital attire

Table 4.1 shows that having to wear hospital attire is an important factor contributing to sleep deprivation in the MDICU. Of the 18 females, 83.3 % (n=15) indicated that it contributed to sleep deprivation, while 50.0% (n=8) of the 16 male respondents felt this way.

4.6.9 Thirst

Table 4.1 shows that 79.4 % (n=27) of respondents identified thirst as contributing to sleep deprivation in the MDICU.

4.6.10 Lights

Table 4.1 shows that 64.7 % (n=22) of respondents identified lights in the MDICU as contributing to sleep deprivation while table 4.3 shows that dimming the lights (64.7%; n=22) in the MDICU was recommended in order to enhance sleep for patients in the MDICU.

4.7 DISCUSSION OF FINDINGS IN RELATION TO MASLOW'S HIERARCHY OF HUMAN NEEDS

All adverse conditions identified by respondents are physiological needs. The frequency of identified needs becomes less as one moved upwards toward the higher levels of needs. Maslow' Hierarchy of Needs (2009:1) posits a hierarchy of human needs based on two group: deficiency and growth needs. Within the deficiency needs, (physiological

needs, safety needs, belonging and love needs, and esteem needs) each lower need must be satisfied before moving up to the next higher level.

Once all of these deficiency needs have been satisfied, then if at a later time a deficit occurs in any of them, the person would become motivated to act to remove the felt deficit. Maslow anticipated that in order for human beings to progress totally, certain needs have to be satisfied in a definite order. Only once the deficiency needs are met, will the individual be ready to act on the growth needs (aesthetic needs, needs to know and understand, self actualisation and transcendence).

According to this study, patients identified mostly physiological deficits. Self-actualisation needs were not identified.

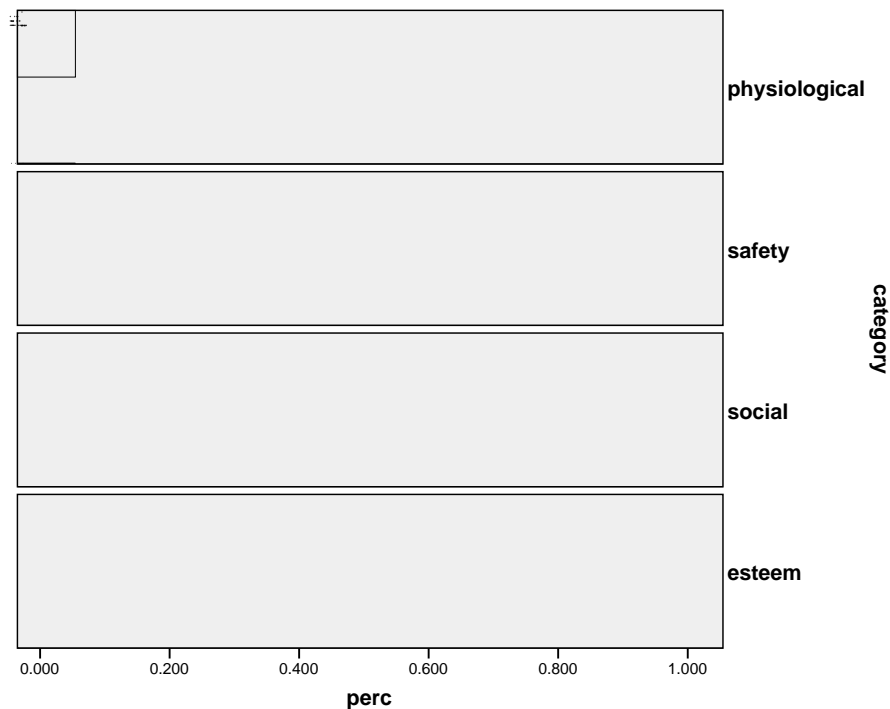


Figure 4.2 Dot plots of adverse conditions (percentages) according to Maslow's Hierarchy of Needs

4.12 CONCLUSION

The study identified factors contributing to sleep deprivation while in the MDICU, and factors limiting sleep deprivation. Most adverse factors contributing to sleep deprivation are lower level deficiency or basic needs.

The next chapter will present the conclusions, limitations and recommendations of this study, as well as propose areas for possible future research

CHAPTER 5

Conclusions, limitations and recommendations

5.1 INTRODUCTION

The main purpose of this research was to identify factors that contributed to sleep deprivation in a specific MDICU.

The conclusions, based on the research results in chapter 4, will be used to answer the research questions which were formulated in chapter 1 as follows:

- What factors contribute to patients' sleep deprivation in a MDICU?
- What factors limit a patient's sleep deprivation in a MDICU?
- What can be done to enhance patient's sleep in a MDICU?
- What recommendations could be made to address the problem of patients' sleep deprivation in a MDICU?

5.2 OBJECTIVES

The objectives which guided the study were to

- identify contributing factors which lead to sleep deprivation in a patient in a MDICU
- identify some of the contributing factors which limit a patient's sleep deprivation in a MDICU
- identify what could be done to enhance a patient's sleep in a MDICU
- make recommendations to address the problem of sleep deprivation in the MDICU

5.3 CONCLUSIONS IN RELATION TO THE OBJECTIVES GUIDING THE STUDY

The conclusions are based on the analysis of the data obtained from the 34 structured interviews conducted by the researcher after having personally observed each respondent during the night prior to the interview. Each objective will be listed and conclusions given in relation to that specific objective.

5.3.1 Factors contributing to patients' sleep deprivation in a MDICU

According to the research results summarised in table 4.1, the following factors had the most significant impact on patients' sleep deprivation:

- Not knowing nurses' names (94.1%; n=32).
- Noise caused by alarms (91.2%; n=31).
- Stress (91.2%; n=31).
- Inability to understand medical terms used by doctors (88.2%; n=30).
- Blood pressures cuffs restricting movement and smelling badly (88.2%; n=30).
- Restriction of movement by monitors (88.2%; n=30).
- Alarms disturbed their sleep (82.4%; n=28).
- Friendly, approachable and respectful nurses when admitted to the MDICU (82.4%; n=28).
- Time disorientation ((82.4%; n=28).
- Thirst (79.4%; n=27).
- Restricted movement due to lines and tubes (73.4%; n=25).

5.3.2 Factors limiting patients' sleep deprivation in a MDICU

According to table 4.2, the most important factors that limited patients' sleep deprivation in the MDICU included:

- Being informed about their conditions (97.1%; n=33).
- Knowing nurses' names (94.1%; n=32).
- Familiarity with nurses (94.1%; n=32).
- Nurses treating patients respectfully (91.2%; n=31).

- Preference for familiar nurses (88.2%; n=30).
- Doctors and nurses should avoid using medical jargon (88.2%; n=30).
- Nurses striving to meet all patients' needs (88.2%; n=30).
- Not to wear blood pressure cuffs constantly because of discomfort and bad smell (88.2%; n=30).
- Being able to see a clock for time orientation (83.3%; n=29).
- Friendly, approachable and respectful nurses (82.4%; n=28).

5.3.3 Factors enhancing patients' abilities to sleep in a MDICU

According to table 4.3, the most important factors that limited patients' sleep deprivation in the MDICU included:

- A visible clock (100.0%; n=34).
- Understanding their condition (97.1%; n=33).
- Administer pain medication (96.8%; n=30 out of 31 patients who experienced pain).
- Reduce stress levels (91.2%; n=31).
- Treating patients with respect (91.2%; n=31).
- Seeing the doctor often enough (91.2%; n=31).
- Doctors and nurses who do not use medical jargon when communicating with patients (88.2%; n=30).
- Adequate staff/familiar nurses (88.2%; n=30).
- Nurses who attempt to meet patients' needs (88.2%; n=30).
- Nurses who give adequate nursing care (88.2%; n=30).
- Blood pressure cuff set at intervals – not continuous recordings (88.2%; n=30).
- Provide single use blood pressure cuff-no smell (88.2%; n=30).
- Limit alarm sounds (82.4%; n=28).
- Being able to see the sun (82.4%; n=28).
- Respectful, friendly nurses on admission to the MDICU (82.4%; n=28).

5.4 LIMITATIONS OF THE STUDY

The conclusions listed in section 5.3 need to be interpreted against the following limitations of the study:

- Only one MDICU participated in the study, consequently the research findings might not be generalisable to other settings.
- Only 34 patients were interviewed, limiting the possibility of generalising the findings.
- A convenient sample was used, implying that not every patient had a known chance of being included in the sample, further limiting the generalisability of the study's findings because randomness was not adhered to.
- Only patients who volunteered to participate in the study were interviewed. It cannot be assumed that those who were willing to participate had similar experiences to those who refused to participate.
- All the interviews were conducted by the researcher, implying that no inter-rater reliability coefficients could be established.
- The researcher worked in the MDICU and was known to the respondents, which might have influenced their responses to specific items.
- Although tests of statistical significance were conducted by a statistician on correlations and cross-correlations, no statistically significant results were obtained.
- Maslow's Hierarchy of Human Needs proved not to be a meaningful framework for contextualising the study, because most patients' needs were only at the physiological (survival) basic needs level.

5.5 RECOMMENDATIONS

A few measures could help to address patients' sleep deprivation in the MDICU, based on the research results.

5.5.1 Measures that doctors and nurses can take to enhance MDICU patients' abilities to sleep

Most of these measures could be implemented with little effort, and limited expenses.

- Doctors should visit patients regularly in the MDICU, inform patients about their conditions in understandable lay terms, phone the MDICU between visits to enquire about the patients' wellbeing, and talk to the patient rather than to the nurse. There should be sufficient time for patients to raise their concerns during doctors' visits.
- Doctors and nurses should not use medical jargon, should not talk about patients within hearing distance of other patients, include patients in their conversations and ensure that patients understand their conditions and their treatments.
- Nurses who work in the MDICU should be friendly, approachable and respectful at all times.
- Nurses should introduce themselves and ensure that every patient knows who to call and how to call for assistance.
- All patients in the MDICU should be informed about the accessibility of the MDICU phone and their visitors should be encouraged to call this number when they had arrived home safely after visiting hours. Patients should be informed why cell phones can not be allowed in the MDICU. Nurses and doctors should also not use cell phones in the unit.
- Doctors and nurses should ensure that effective pain medication has been prescribed for, and administered as required to every patient.
- Nurses should ensure patients' comfort by ensuring that patients are not thirsty or hungry (if possible), and do not hesitate to ask for bedpans/urinals, making patients comfortable in bed, re-assuring them about the tubes, intravenous fluids and monitors around their beds.

5.5.2 Physical measures that can be taken to enhance patients' abilities to sleep in the MDICU

- Noise must be controlled. The volumes of alarms, telephones and television sets should be subdued. Nurses should talk quietly.
- Patients' needs for space around their beds should be accommodated as far as possible.
- A clock, and preferably the sun through windows, should be visible to assist patients' time orientation.
- Lights should be dimmed at night, if possible.

- Blood pressure recording should not be done continuously but only at the required preset intervals to reduce discomfort. Bad smelling blood pressure cuffs should be replaced with new ones, preferably with single-use ones.
- Where possible, patients should be allowed to wear their own night clothes.
- When possible, visiting hours should be more lenient.
- When possible, a dying person should be moved to a private ward to provide privacy to his/her family members and to reduce the stress and anxiety of the other patients in the MDICU.

When designing new MDICUs, sufficient space between beds should be planned. Windows should enable patients to see the sun and to remain orientated to time.

5.6 FINAL CONCLUDING REMARKS

Technological and medical advances, as well as newly developed pharmacological agents, enable many critically ill patients to survive in ICUs who might not have done so in other situations. Despite the best surgical techniques and drugs, critically ill patients still require sleep to recuperate. By implementing the recommendations listed in section 5.5 of this dissertation, nurses and doctors can enhance MDICU patients' abilities to sleep, make their stay in the MDICU more pleasant, and assist them to regain their physical strength more rapidly.

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ANNEXURE A

**Requesting permission from the superintendent
to conduct the study**

ANNEXURE B

**Permission granted by the superintendent
to conduct the study**

ANNEXURE C

**Information for respondents
Informed consent form**

ANNEXURE D

Statistician's details

ANNEXURE E

Patients present in the MDICU

ANNEXURE F

Nurses working in the MDICU

ANNEXURE G

Structured interview schedule

REQUEST LETTER

Intensive Care Unit
Date: _____

Dear

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN THE INTENSIVE CARE UNIT

I am in the process of completing my Master's degree (Health Studies) with the University of South Africa (Unisa). In order to complete this degree, I am required to submit a dissertation for examination. My final date for submitting the completed proposal is February 2009.

My proposed topic now is: **Factors contributing to sleep deprivation in a multidisciplinary intensive care unit.**

In order to collect information, I need to conduct personal interviews with at least 30 patients in the MDICU who are willing to participate. All these patients will be informed about my research and will remain anonymous and confidential. I will be the only person collecting data, at times when it will not interfere with patient care.

I hereby request permission to conduct the interviews with adult patients in the MDICU who are willing to be interviewed and to sign a consent form.

Please find attached the written information that will be provided to each patient prior to being interviewed.

I look forward to you letter informing me about your decision.

Yours faithfully

Registered Nurse Heather Watson
Unisa student number: 529-399-5

RESPONDENT'S CONSENT FORM

In signing this document, I _____ (full name), am giving my consent to be interviewed by Registered Nurse Heather Watson, who is presently an employee of the private hospital where I am a patient in the multi-disciplinary intensive care unit. I do understand that the interview which will be conducted, is part of a study for a Master's degree at Unisa. I do understand that the focus of the research is on factors contributing to sleep deprivation in the mixed intensive care unit.

I understand that I will be interviewed whilst still in hospital at an appropriate time which does not interfere with my hospital care. I will be asked some questions about my experiences in the intensive care unit, my feelings since admission, family and work situations, health-related issues, questions regarding patients around me during my stay or any information related to sleep deprivation in the intensive care unit. The interview could take 1 – 2 hours.

I have been informed that the participation is entirely voluntarily, and that even after the interview has begun, I can refuse to answer specific questions or terminate the interview at any point. My answers will not be given to anyone else and no reports of this study will ever identify me in any way. I have also been informed that my participation or non-participation or my refusal to answer questions will have no effects on services that I, or any of my family members may receive from the hospital.

I will receive no direct benefit from participating in this study, but this research may improve future patients' ability to sleep in the MDICU.

I understand the results of the research will be given to me, if requested. Registered Nurse Heather Watson (telephone number 034 31272990) is the person to contact if I have any questions about the study or about my rights as a study participant.

Respondent/Participant: _____

Researcher/Interviewer: _____

Date of interview: _____