DISSERTATION ON

"A STUDY TO ASSESS THE EFFECTIVENESS OF EARPLUGS AND EYE MASK ON QUALITY OF SLEEP AMONG CLIENTS ADMITTED IN CRITICAL CARE UNITS, GOVT RAJAJI HOSPITAL. MADURAI-20"

M.Sc (NURSING) DEGREE EXAMINATION

BRANCH - I MEDICAL SURGICAL NURSING

COLLEGE OF NURSING

MADURAI MEDICAL COLLEGE, MADURAI -20.

A dissertation submitted to

THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY,

CHENNAI - 600 032.

In partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN NURSING

JULY 2011

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CERTIFICATE

This is to certify that this dissertation titled**, "A STUDY TO ASSESS THE EFFECTIVENESS OF EARPLUGS AND EYE MASK ON QUALITYOF SLEEP AMONG CLIENTS ADMITTED IN CRITICAL CARE UNITS, GOVT RAJAJI HOSPITAL. MADURAI-20"** is a bonafide work done by **Mr. M.Chellapandi**, College of Nursing, Madurai Medical College, Madurai - 20, submitted to the Tamil Nadu Dr.M.G.R. Medical University, Chennai in partial fulfillment of the university rules and regulations towards the award of the degree of Master of Science in Nursing, Branch I, Medical Surgical Nursing Under our guidance and supervision during the academic period from 2009—2011.

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ACKNOWLEDGMENT

I am thankful to Dean, Madurai Medical College Madurai-20 who permitted me to conduct the study.

I would like to express my deep sense of gratitude to **Dr.Prasannababy M.Sc(N), M.A, Ph.D.,** Principal, College of Nursing, Madurai Medical College, Madurai-20, for valuable suggestions in the field of Nursing Research.

I express my sincere thanks to Prof. **Dr.A.EdwinJoe.,MA(FM).,BL, Dean,** Madurai Medical College, Madurai.

I am privileged to thank **Dr. S.M.Sivakumar., M.S, Medical Superintendent**, Government Rajaji Hospital, Madurai for giving me permission to conduct my study in the Hospital.

My heartful and faithful thanks to **Mrs.S.Poonguzhali,M.Sc(N), M.A,** Reader in Medical Surgical Nursing, College of Nursing, Madurai Medical College, Madurai-20 for constant guidance, encouragement and motivation throughout the study.

With great respect and honor to **Dr. L. Gerald Magelah, M.D**., Senior Resident, Dept. of Endocrinology, Govt Rajaji Hospital, Madurai-20 for constant guidance, encouragement and motivation throughout the study.

My heart full thanks to Prof. **Dr.,Moses Danial.M.D.,** Head of the Department of Medicine, and **Dr.Dharmalignam, MD, DCH**, Chief Medical Officer, Intensive Medical Care Unit, Govt. Rajaji Hospital, Madurai-20 for granting permission to conduct the study.

My deep sense of gratitude, is due to Mrs. **Prof. S. Chandrakala, M.Sc (N),** HOD, Dept of Medical Surgical Nursing, Sacred Heart Nursing College, Madurai, **Mr. N. Sureshkumar, M.A, M.Phil (Clin.Psy)**, Asst. Prof, cum clinical

psychologist, Dept of Psychiatry, Govt. Rajaji Hospital, Madurai, Mrs**. Prof. Jayathangaselvi, M.Sc, (N),** H.O.D, Dept of Medical Surgical Nursing, CSI Jayaraj Annapackiyam College of Nursing, Madurai and Mrs. **M. Jasline, M.Sc (N),** Asst. Prof, Dept of Medical Surgical Nursing, Matha College of Nursing, Manamadurai, for their expert suggestions and validating the content of the tools.

I acknowledge my sincere thanks to **Mr.R.Parthasarathy, M.Sc.,** (Stat) Lecturer in Statistics for his valuable suggestions and guidance in the data analysis and presentation.

I wish to express my gratitude to all faculty members of College of Nursing, Madurai Medical College, Madurai-20, for their valuable guidance in conducting this study.

I am thankful to **Mr.S. Kalai Selvan.MA., B.L.I.Sc**., Librarian, College of Nursing, Madurai Medical College, Madurai, for their cooperation in collecting the related literature for this study.

My immense thanks to **Mr.Suganthan,M.A, M.Phil,.** Assistant Professor, for editing the Dissertation in English.

My heartfelt thanks to **Mrs.S.Shyamala, M.A., M.Ed., M.Phil.,** who helped me in transmitting the tool in Tamil Version.

I extend my immense love and gratitude to **my dear parents, my wife Mrs. R. Chitra Devi, MA, M.Phil, and my children** for their loving support, encouragement, and earnest prayers. I extend my special thanks to all my friends who gave me support and immeasurable suggestions throughout the study.

My earliest gratitude to all my subjects who have participated in my study for their support and kind co-operation to complete my study successfully.

Above all, I acknowledge with gratitude and devotion to the almighty whose grace and blessings accompanied me throughout this study and helped me for the successful completion of this study.

ABSTRACT

Title of the study:

" A study to evaluate the effectiveness of earplugs and eye mask on quality of sleep among subjects admitted in critical care units, Government Rajaji Hospital".

The objectives of the study were:

1. To assess the pre-test level of quality of sleep among experimental and control group.
2. To assess the post-test level of quality of sleep among experimental and control group.
3. To evaluate the effectiveness of earplugs and eye mask on level of quality of sleep among experimental group.
4. To compare the level of quality of sleep between experimental and control group.
5. To associate between pre-test and posttest level of quality of sleep with selected demographic variable.

The framework of the study was based on Roy's adaptation model. The study was conducted in intensive medical care unit and intensive coronary care unit of Government Rajaji Hospital, Madurai. The quasi-experimental Non-equivalent control group design was adopted for this study. Purposive sampling technique was used to select the 60 samples each 30 for experimental and control group. Verran & Snyder-Halpern sleep scale, a visual analog scale was used for data collection.

The data was collected, organized and were analyzed in terms of both descriptive and inferential statistics.

The significant findings of the study were:

1. The finding of the study demonstrated that the total mean score disturbance characteristics of experimental group was 295 (SD 30.45) and it was 319 (SD 28.2) in control group.
2. The mean score of sleep effectiveness characteristics of experimental group was 319 (SD17.44) and 291.2 (SD 30.4) was mean score of control group.
3. The mean sleep supplementation characteristics of intervention group was 88.67 (SD 17.37) and 112.3 (SD 26.9) was the mean score of control group.
4. The mean score of pre test disturbance scale (316.3) is higher than posttest score (289).
5. The mean score of the pre test effectiveness scale (297.5) is lower than posttest score (321).
6. The mean pre test score of sleep supplementation scale (112.17) is higher than the posttest mean score (88.33).
7. The 't' value computed was highly significant ($t_{(29)}$ =2.89 -sleep disturbance score, 3.59-effectiveness scale and 6.71, table value $t_{(29)}$ =1.70, $p<0.05$) between pre test and posttest level of sleep score among experimental group. This finding showed that the earplugs and eye mask was effective in improving quality of sleep among clients admitted in critical care units.
8. The findings of the present study revealed that the 't' value computed between experimental and control group, was highly significant ($t_{(58)}$ disturbance scale=3.07, effectiveness scale-4.4 and supplementation scale=2.99, table value $t_{(58)}$ 1.670, $p <0.05$). It shows that there was much improvement in sleep quality among experimental group as compared to the control group.

9. The findings of the study showed that there was significant association between posttest sleep effectiveness score and demographic variables such as gender, area of residence, usual duration of sleep at home and history of ICU admission.
10. There were no significant associations between posttest sleep effectiveness score and demographic variables such as age in years and nature of occupation.

Based on the findings of the study, it is recommended that,

1. A similar study can be replicated on a large sample thereby findings can be generalized for a larger population.
2. A survey can be done to find out the prevalence of sleep problems among clients admitted in critical care units and their used of earplugs and eye mask, which will help to do further teaching programme.

Conclusion: Earplugs and eye mask are useful simple and cost effective devices can be used to reduce noise and light exposure, thereby to ensure quality of sleep in critical care units. Sound sleep is most deserving for acutely ill clients for speedy recovery.

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CHAPTER I

INTRODUCTION

Background of the study

"Lamp of Learning is an insignia of nursing & nursing education"

-Mary T. Kowsalski

Proper rest and sleep are as important to good health as good nutrition and adequate exercise. Individuals need different amounts of sleep and rest. Physical and emotional health depends on the ability to fulfill these basic human needs. About one third of our live is spent in sleeping. The purpose of sleep is a mystery; however it is necessary to health and a sense of wellbeing. Sleep is a state of rest that occurs for sustained periods. Sleep can be defined as a normal state of altered consciousness during which the body rests; it is characterized by decreased responsiveness to the environment, and a person can be aroused from it by external stimuli. The reduced consciousness during sleep provides time for the repair and recovery of body systems. Sleep restores a person's energy and feeling of well-being. In sleep, sympathetic activity decreases whereas parasympathetic may increase hormonal shifts facilitate anabolic processes Sleep is a complex physiologic and cyclic phenomenon influenced by an individual's biologic clock (circadian rhythms) that regulates not only sleep but also levels of alertness throughout the day. Normally, a person usually passes through four to five complete sleep cycles per night, each consisting of four stages of NREM (Non – Rapid Eye Movement) sleep and a period of REM (Rapid Eye Movement) sleep (McCance and Huether, 2006). Each cycle lasts approximately 90-100 minutes. The cyclical pattern usually progress from stage 1 through stage 4 of NREM, followed by a reversal from stage 4 to 3 to 2, ending with a period of REM sleep. A person usually reaches REM sleep about 90 minutes into the sleep cycle. Seventy five to eighty percent of sleep time is spent in NREM sleep.

Rapid Eye Movement (REM) sleep may be especially important for maintaining mental activities, such as learning, reasoning and emotional adjustment. Sleep also appears to serve as an energy conserving measure for most of the body except the brain. . A person's need for rest and sleep changes throughout life. A young adult generally needs less sleep than a middle aged or elderly adult. A client with a chronic disease requires more rest and sleep than a healthy person of same age. Long sleepers are persons regularly and habitually sleep for more than 9 hours per night and this pattern of sleep does not cause any symptoms or dysfunction. Short sleepers are persons regularly and habitually sleep for less than 6 hours per night and this pattern of sleep does not cause any symptoms or dysfunction. The maximum difference is in the duration of REM sleep. The long sleeper has double the duration of REM sleep as compared to a short sleeper. The average daily amount of sleep varies considerably among adults. Most adults in the age group of 20 to 50 have average 6 to 8 ½ hours of sleep. However 5% to 10% of this age group sleeps more than 9 hours and 2% to 5% sleep less than 6 hours without difficulty (Patria A.Stockert, RN,BSN, MS,PhD,2009)

Factors such as light, temperature, social activities, and work routine affect circadian rhythms and daily sleep-wake cycles. All persons have biological clocks that synchronize their sleep cycles. Hospital or extended care facilities usually do not adapt care to an individual's sleep-wake cycle preference. Typical hospital routine interrupts sleep or prevents clients from falling asleep at their usual time. Failure to maintain the individual's usual sleep-wake cycle negatively influence the client's overall health (Izac, 2006)

Talwar et al reported that the noise level in ICUs often exceed level recommended by the United States Environmental Protection Agency. The agency recommends that noise levels in the hospital setting not exceed 45 dBA during the

day and 35 dBA at night. Noise, of clinical significance, produces physiologic responses analogous to a stress reaction via sympathoexcitation. Such excitation may prevent relaxation and sleep.

Ambient light is another important environmental concern. In fact, light is the major environmental signal that entrains the circadian system in humans to a 24-hour cycle. This important clue is often lost in an environment which maybe windowless, and in which light levels maybe the same day and night. An attempt to decrease light intensity during night hours may improve sleep. It has also been suggested that secondary to inappropriate light exposure, a dyssynchronisation of melatonin secretion with subsequent alteration of the 'biological clock' may contribute to sleep disturbance and delirium in critically ill patients (Arunabh Talwar et al).

A poor night's sleep for a client often starts a vicious cycle of anticipatory anxiety. The client fears that sleep will again be disturbed while trying harder and harder to sleep (Attarian, 2000). A caring nurse individualizes care for each client's need. Always ask clients what they expect regarding sleep. This includes asking about the interventions, they prefer and how to implement them. It is important to understand client's expectations regarding their sleep pattern. When clients ask for assistance because of sleep disturbance, they typically expect a nurse to respond promptly to assist in improving their quantity and quality of sleep (Patricia.A Stockert, RN,BSN,MS, PhD, 2001).

Nursing interventions designed to improve the quality of a person's rest and sleep is largely focused on health promotion. Clients need adequate sleep and rest to maintain active and productive lifestyles. During times of illness, rest and sleep promotion are important for recovery. Nursing care in an acute care, restorative care, or continuing care setting differs from that provided in a client's home. The

primary differences are in the environment and the nurse's ability to support normal rest and sleep habits (Patricia.A Stockert, RN,BSN,MS, PhD, 2001).

Sleep in the intensive care unit (ICU) poses unique challenges for patients, clinicians, nurses, and researchers. Patients spend long periods in bed, remain in a supine position with minimal to no activity, and are typically not exposed to significant light variation over a 24-hour period. These conditions make sleep onset and continuity problematic. In addition, patients are subject to repeated environmental disruptions that further fragment sleep.

Clients in an acute care setting have their normal rest and sleep routine disrupted, which generally leads to sleep problem. In this setting the nursing interventions focus on controlling factors in the environment that disrupt sleep, relieving physiological or psychological disruptions to sleep, and providing for uninterrupted rest and sleep periods for the client (Patricia.A Stockert, RN,BSN,MS, PhD, 2001).

In a hospital the nurse controls the environment in several ways. Close the curtains between clients in semiprivate rooms and dim lights on a hospital nursing unit at night. But, in Intensive Care Units (ICUs), lights are remaining twitched on throughout day and night to facilitate close observation and delivering continuous care to the acutely ill patients. One of the biggest problems for clients in the hospital is noise. Important ways to reduce noise are to conduct conversations and reports in a private area away from client rooms and to keep necessary conversations to a minimum, especially at night. In this high tech era, majority of Intensive care settings have been equipped with life saving equipments and advanced patient monitors. These electrical and electronic monitors produce sounds day and night (Cmiel and others, 2004).

Significance and Need for the Study

Sleep disruption has been recognized as a complication of acute illness for at least 20 years. It is characterized by reduced nocturnal sleep efficiency and altered sleep architecture with increased wakefulness and stage 1 non- REM sleep, together with reduced slow-wave sleep (SWS) and REM sleep, and abnormal sleep wake cycle. Acute illnesses are associated with

abnormal sleep architecture. The ICU environment, in which loud noises, and frequent care-related interruptions are prevalent, may interfere with continuity of sleep. Sleep deprivation is extremely common in the critical care environment. Some of this may be the unavoidable consequence of the need for testing, monitoring, and therapeutic interventions on a 24-hour basis. Other causes may be modifiable (Arunabh Talwar et al).

According to Baba Liman et al, sleep is commonly disrupted in intensive care unit patients. The cause of this sleep disruption include the underlying medical illness itself, intensive care unit (ICU) environment, psychological stress, and effect of many medications and other treatment used to help those who are critically ill.

Sleep is an essential part of life with many important roles, which include immunologic, cognitive and muscular functions. Of the working population, 20% report sleep disturbances and in critically ill patients an incidence of more than 50% has been shown. However, sleep disturbances in the intensive care unit (ICU) population have not been investigated in detail. Sleep disturbances in ICU patients have a variety of reasons: e.g. patient-related pathologies like sepsis, acute or chronic pulmonary diseases, cardiac insufficiency, stroke or epilepsy, surgery, therapeutical interventions like mechanical ventilation, noise of monitors, pain or medication (Walder, B Haase U, Rundshagen I.)

Good sleep is essential to healing. It enhances body's immune system and ability to heal wounds and other types of tissue damage. Patients, especially those in intensive care units (ICUs), are monitored continually and even woken up during the night and all other times when they are sleep. This factor made researchers wonder if the quantity and quality of sleep in the ICU was good enough to promote fast healing. (Mark Stibich, Ph.D.,)

The majority causes of noise in critical care units were the alarm from the electrical equipments such as cardiac monitors, pulse oximeters, suction apparatus and ventilators. (Honker, VL, 2003:183) Another sources of noise are other patients, staff talking and telephones (Redeker, 2000)

Light in Critical care units frequently are on for 24 hours day and night long. It was pointed by 33% of the subjects as sleep distracting factor. Normal circadian patterns of light and darkness can be affected by constant exposure to light. (Bouden P, 1983, cited in Schwab R.J 1994:687). It is said that patients were unable to distinguish night from day because of bright light (Parker, KP 1995:347)

There were many study have been conducted on sleep in critical care settings. But, there were only limited study have been conducted on effects earplugs and eye mask in promoting quality of sleep in critical care settings. Hence, the present study has been conducted in order to assess the effectiveness effects earplugs and eye mask among clients in critical care units on quality of sleep. This will facilitate the critical care unit nurses to use earplugs and eye mask as routine care to enhance the quality of sleep among the critical care clients.

STATEMENT OF THE PROBLEM

“A study to assess the effectiveness of earplug and eye mask on quality of sleep among clients admitted in critical care units, Govt. Rajaji Hospital, Madurai."

Objectives

The objectives of the study were:

6. To assess the pre-test level of quality of sleep among experimental and control group.
7. To assess the post-test level of quality of sleep among experimental and control group.
8. To evaluate the effectiveness of earplugs and eye mask on level of quality of sleep among experimental group.
9. To compare the level of quality of sleep between experimental and control group.
10. To associate between pre-test and posttest level of quality of sleep with selected demographic variable.

Hypotheses

The study is based on the following hypotheses:

H_1: There will be significant difference between the mean pre-test and posttest level of quality of sleep among experimental group.

H_2: There will be significant difference in posttest level of quality of sleep between experimental and control group.

H_3: There will be significant association between posttest level of sleep quality and selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness:

In this study, effectiveness refers to an intended or expected result-quality of sleep produced from wearing earplugs and eye mask as measured by sleep scale.

Earplug

In this study the earplug refers a device made from soft polyurethane foam. It has been designed to provide a custom fit-easily confirm to any size auditory canal. It is used as a non-invasive technique of plugging the both external auditory meatus of the client before going to sleep at night to mask the noise. It will be removed at the awakening.

Eye mask:

In this study, eye mask refers a double layer of green colour cloth with ropes at either side to tie the knot. It is a non-invasive technique of **c**overing the both eyes of the client with eye mask before going to sleep at night to give darkness. It will be removed at the awakening.

Quality of Sleep

In this study, quality of sleep refers the subjective experience of subjective experience of sleep, which will be measured by score obtained by the client in Verran & Snyder-Halpern sleep scale.

Client

In this study, client refers the person who has been admitted in critical care units with acute illness and being stayed for 24 hours.

Critical care units

In this study, critical care units refers the special settings-intensive medical care units and Intensive coronary care unit in hospital with life saving instruments, which provide round the clock service to patients with acutely ill.

Assumptions

The study assumes that:

- clients admitted in the critical care unit are suffering from reduced sleep due to constant noise and lightings.
- earplugs and eye mask will enhance sleep quality among clients admitted in critical care units.
- knowledge regarding sleep disturbances is necessary for nurses.
- evidence based practice is necessary for nurses for promoting sleep among patients admitted in critical care units.

Delimitation

This study is delimited to,

1. The clients with consciousness and who have spent 24 hours in critical care units.
2. Clients who are admitted in Intensive Medical Care Unit and Coronary Care Unit of Govt.Rajaji Hospital during data collection period.
3. Clients in the age group of above 20 years and below 60 years
4. Data collection period of five weeks.

Projected Outcome

This study would help to determine empirically the need for non-pharmacological intervention to promote quality of sleep among clients admitted in critical care units. The findings of the study will help the critical care nurses to arrange earplugs and eye mask to clients to promote quality of sleep.

CHAPTER II

Review of Literature

Introduction

A review of related research and theory on a topic has become a standard and virtually essential activity of scientific research projects. The primary purpose of reviewing relevant literature is to give broad background knowledge and understanding

of the information that is available related to the researcher's problem of interest (Polit & Hungler, 1999)

According to Polit and Hungler (1999) researcher almost never conduct a study in an intellectual vacuum, their studies are undertaken within the content of an existing base of knowledge. Researchers generally undertake a literature review to familiarize them about the topic under study.

Research and non-research literature were reviewed and organized under the following headings.

1. The Acute Care Setting and Sleep
2. Factors Contributing to Sleep Disruption
3. Behaviour Modification to Decrease Noise & Light.
4. The Use of Earplugs and Eye Mask to Improve Sleep Quality

2. Factors Contributing to Sleep Disruption in Acute Care Setting

Tranmer, et al., (1990), conducted a study titled "The sleep experience of medical and surgical patients" in Kingston General Hospital, Arizona. This study described and compared the sleep experience of medical and surgical patients during a hospital stay. During 3 consecutive nights, patients (n = 110) self-reported sleep quality using the Verran and Snyder Sleep Scale (VSH) and potentially disruptive factors using items from the Factors Influencing Sleep Questionnaire (FISQ). Surgical patients, on the first night, received more procedural care ($p = .001$), less sedative medication ($p < .001$), reported more sleep disturbance ($p = .02$), less sleep effectiveness ($p = .03$), and more need for sleep supplementation ($p = .03$). Variance in sleep effectiveness was explained by the FISQ score, age, and length of time in hospital ($F = 6.86$, $p < .001$). Sleep experience of patients varies between diagnostic groupings and across the hospital stay. Unit environmental and personal factors that are amenable to therapeutic interventions strongly influence the sleep experience.

LF Franck, et al, (2010) conducted a survey. The aim of the survey is to describe the memorization of sleep disturbances during an ICU stay and the

patients' reported sleep quality after critical care. They also assessed the possible underlying causes of sleep disturbances including factors related to the critical illness. 60 subjects were randomly selected, who were admitted between December 2008 and May 2009 and discharged thereafter. The researchers adapted Basic Nordic Sleep Questionnaire and two non-validated question to estimate quality of sleep in the ICU. Data were presented descriptively using logistic regression to evaluate the independent effects of sex, age, BMI at admission, length of stay etc. The study reported that among the responding patients, 47% remembered sleep disturbances in the ICU and among them 43% still declared a decreased long-term quality of sleep. In addition, 30% of patients report a worse quality of sleep after the ICU than it used to be before.

Jonathan Y. et.al., (2008) conducted a study at department of Critical Care Medicine, Sunnybrook and Women's College Health Sciences Center, University of Toronto, Ontario, Canada to challenge the traditional hypothesis that excessive environmental noise is central to the etiology of sleep disruption in the intensive care unit (ICU). They characterized potentially disruptive ICU noise stimuli and patient-care activities and determined their relative contributions to sleep disruption. Furthermore, they studied the effect of noise in isolation by placing healthy subjects in the ICU in both normal and noise-reduced locations. Seven mechanically ventilated patients and six healthy subjects were studied by continuous 24-hour polysomnography with time-synchronized environmental monitoring. Sound elevations occurred 36.5 ± 20.1 times per hour of sleep and were responsible for 20.9 ± 11.3% of total arousals and awakenings. Patient-care activities occurred 7.8 ± 4.2 times per hour of sleep and were responsible for 7.1 ± 4.4% of total arousals and awakenings. Healthy subjects slept relatively well in the typically loud ICU environment and experienced a quantitative, but not qualitative, improvement in sleep in a noise-reduced, single-patient ICU room. Our data

indicate that noise and patient-care activities account for less than 30% of arousals and awakenings and suggest that other elements of the critically ill patient's environment or treatment should be investigated in the pathogenesis of ICU sleep disruption.

Tranmer et al. (2003) conducted a study to assess “the type of sleep loss, the duration of the loss, the factors contributing to the loss, and the impact of the loss are uniquely experienced by each patient”. This statement emphasizes the unique nature of sleep. These researchers examined the sleep experiences of both medical ICU (*n*=54) and surgical ICU (*n*=56) patients and found that sleep perceptions changed throughout the course of the hospitalization. According to the study the average sleep time for all participants was 9.16 hours in a 24-hour period. The study states that no information was available on pre-hospitalization sleep time in this study for comparison. Medical acute care unit patients have reported decreased sleep effectiveness scores as their stay progressed. Surgical acute care patients reported more disturbances on the first night and less sleep effectiveness across all nights. Sedative medication was used in this study as a sleep promotion strategy, which decreased sleep disturbances but did not increase sleep effectiveness scores. The findings indicate that sleep promotion strategies need to vary throughout the hospitalization to balance the changes found in sleep effectiveness throughout the hospitalization. This study found that patients in the acute care setting suffer from sleep pattern disturbances.

Friese RS, et al, (2006) conducted a prospective observational cohort study to assess the quantity and quality of sleep in surgical intensive care unit, University of Texas Southwestern Medical Center at Dalleas, Texas, USA. 16 subjects from surgical and trauma ICU were participated in the study. Subjects were selected by using convenient-sampling technique. Participants underwent continuous polysomnography for up to 24 hours to evaluate the sleep pattern. Patients with traumatic brain injury were excluded. Chi goodness of-fit analysis was performed to detect differences in the proportion of time spent in stages 1 and 2, stage 3 and 4 or rapid eye movement sleep between study patients and healthy historical controls. The finding of the study is patients do achieve measurable sleep while care for in a surgical ICU setting. However,

sleep is fragmented and the quality of sleep is markedly abnormal with significant reduction in stages 3 and 4 and REM, the deeper restorative stages of sleep.

Cochran & Ganong (2005) had conducted a comparative study on perception of sleep among ICU patients and Nurses. In this study, a sample of 20 patients and 23 nurses participated. The researchers had found that patients ranked not being able to sleep as the fourth highest ranking of environmental stressors in the intensive care unit, following the top three stressors that included: 1) having tubes in the nose and mouth, 2) being stuck with needles, 3) being in pain. Nurses ranked not being able to sleep as the fifth highest-ranking stressor.

Margaret Topf, RN, PhD, et al conducted a experimental study to assess the effects of critical care unit noise on the subjective quality of sleep in a laboratory. This study hypothesized that subjects exposed to critical care unit sound level would report poorer subjective sleep than subjects in a quieter environment. Sixty subjects were participated in this study. Random sample selection method was used to select the participation in this study. The experimental group heard an audiotape recording of critical care unit sounds throughout the night. Quiet group slept in the laboratory where audiotape recording critical care unit sounds was withheld. A self-rating questionnaire was used to assess subjective sleep. The noise condition subjects reported taking longer to fall asleep, less tune sleeping, more awakenings, poorer quality of sleep compared to quiet subjects. The critical care unit's noise level impact negatively on subjective sleep.

Neil S. Freedman, et.al, (2001) conducted a study to assess the abnormal sleep/wake cycles and the effect of environmental noise on sleep disruption in the intensive care unit at University of Pennsylvania Medical Center, Philadelphia. They have selected 22 (20 mechanically ventilated) medical intensive care unit (ICU) patients with continuous polysomnography (PSG) and environmental noise measurements for 24-48 h to characterize sleep-wake patterns and objectively

determine the effect of environmental noise on sleep disruption. All 22 patients demonstrated sleep-wake cycle abnormalities. There were large variations in total sleep time (TST) with the mean total sleep time per 24-h study period of 8.8 ± 5.0 hours and sleep-wake cycles were fragmented and non consolidated with a mean of 57 ± 18% and 43 ± 18% of the TST occurring during the day and night, respectively. Environmental noise was responsible for 11.5 and 17% of the overall arousals and awakenings from sleep, respectively. The mean noise arousal index was 1.9 ± 2.1 arousals/h sleeps. (*1*) ICU patients are qualitatively, but not necessarily quantitatively, sleep deprived; and (*2*) although environmental noise is in part responsible for sleep-wake abnormalities, it is not responsible for the majority of the sleep fragmentation and may therefore not be as disruptive to sleep as the previous literature suggests.

3. Behaviour Modification to Decrease Noise & Light.

Olson et al., (2000), had conducted study to evaluate the use of quiet times and the limiting the extraneous sound. The researchers have used 843 participants in the study who were admitted in an intensive care unit. The Unit was instituted two-hour quiet times, one in the afternoon and one in the early morning. They found that institution of quiet times did result in decreased mean sound and light levels, but not in increased sleep as measured by trained observers. They also stated that staff had a difficult time adhering to the quiet time and stated they just wanted to “check” on their patients. A limitation to this study was the use of trained observers to measure sleep rather than an objective or subjective sleep measurement. A second limitation was the varied compliance by the staff.

Moore et al. (1998), conducted a interventional study to evaluate the sleep quality among patients in intensive care unit. This study focused on behavior modification on an acute care unit and intensive care unit including limiting phone calls and turning pagers to vibrate as well as instituting a one hour quiet time in the afternoon. The aim of the study was assessing the sleep

improvement after modifying the behavior of the unit. No change was found in sound levels after the staff education and quiet time institution. Another interesting finding in this study was that closing patient doors in the intensive care unit did not decrease sound levels in the patient's room. The authors stated that they felt this was because a significant amount of sound was generated inside the room. The authors have suggested other Interventions to improve sleep interventions other than behavioral modifications that can be used to improve sleep in the hospital include unit re-design, white noise and relaxation techniques. One way to reduce noise is to redesign the patient care unit, general ward and/or intensive care unit, to make acoustical improvements.

Douglas M. Kahn, et al (2006) conducted a study on identification and modification of environmental noise in Medical ICU and Respiratory ICU of Rhode Island Hospital, a 720-bedded teaching hospital in Rhode Island. The objective of the study is to set out to determine cause of noise in ICU settings, and attempt to reduce the number of sound through a behavior modification program. The study was divided into two separate phases: noise identification and a trial of behavior modification. During noise identification, they simultaneously recorded sound peaks and the loudest noise heard subjectively by one observer in the units. Behavior modification such as reducing sounds in television, talking and phone etc. The study was conducted for the period of 3 weeks. Baseline and post behaviour modification noise recording were compared in 6-h intervals after sites were matched by number of patients in a room and Acute Physiology and Chronic Health Evaluation II Scores. The result was that television and talking accounted for 49%. They also significantly reduced the 24-h mean peak noise level. Many of the noises causing sound peaks >80 dBA are amenable to behavior modification and that it is possible to reduce the noise levels in an ICU setting significantly through a program of behavior modification.

4. The Use of Earplugs and Eye Mask to Improve Sleep Quality

Richardson A, et. al., (2008) conducted study at Freeman Hospital, UK, to evaluate eye masks and earplugs to help control patient's exposure to noise and light within the critical care environmental design of high dependency patients within a cardio-thoracic critical care unit. An intervention study using a two group post-test quasi-experimental design of high dependency patients within a cardio-thoracic critical care unit was undertaken by a group of critical care nurses. Sleep

assessment rating scales and open-ended questions to obtain patients' reported experiences of their sleep. Clients self selected into either an intervention or non-intervention group. There were sixty-four patients consented to take part in the study, 34 patients tried the interventions earplugs and eye masks and many found they improved sleep. Both the groups have said that noise was still a factor preventing sleep. Mixed reports have been found with interventions from very comfortable to very uncomfortable.

Xiao-Ying Jiang, et al., (2010) conducted a study at Intensive care unit, Fujian Medical University, Fuzhou, China (2010) conducted a study to examine the efficacy of earplugs and eye shades, the authors studied 14 people in a sleep laboratory simulating the light and noise of an ICU. The subjects spent 9 hours (10 pm - 7 am) at the laboratory for 4 nights. The first night was for adaptation, to allow the participants to get used to their surroundings and the polysomnography equipment. Baseline data were collected during the second night. The patients were then randomly assigned to wear earplugs and eye masks on the third or fourth night and to spend the other night with no sleep aids. Urine samples were collected from each patient on the second, third, and fourth nights of the study, and the participants kept a diary of their rest, diet, and activity throughout the study period. After the third and fourth nights, each volunteer completed a sleep scale and the Chinese version of the Spielberger State Anxiety Inventory, a measure of anxiety level. They were paid for their participation. Patients reported better-perceived sleep quality when they wore the sleeping aids (P = .001), but there were no significant differences in anxiety levels between the conditions. Limitations of the study include that the these findings were obtained from healthy volunteers in a sleep laboratory, observed only in 9-hour blocks; therefore, the implications for real ICU patients, who have many other stressors and are in the ICU around the clock, may be limited. In addition, the effect of light and noise were examined

together, rather than looking at the effect of each component separately. Still, Ms. Jiang and associates conclude that the study "provides a reasonable basis for promoting the use of earplugs and eye masks for ICU patients" and recommend that they be used routinely in this population.

Scotto CJ, et. al., (2009), conducted a study at Cuyahoga Falls General Hospital, Union Town, OH, USA. This study was aimed to determine the effects of ear- plug use on the subjective experience of sleep for patients in critical care. They studied 88 subjects. Subjects were non-ventilated, non-sedated adults admitted to critical care units. They adopted a study design is Quasi-experimental intervention study with random assignment of subjects. The intervention group used earplugs during nighttime sleep hours allowing short-term removal during patient care. Participants completed the Verran-Snyder-Halpern Sleep Scale, an 8 question visual analogue scale, to describe their subjective response to sleep. Two sample T-tests were used to detect differences between the group scores. Mean age 63, 56% males, 93% Caucasian. Total sleep satisfaction scores were significantly better for the intervention group (p=.002). Seven of the subjective categories were independently significant (p= .005-.044). One category, satisfaction with the amount of time needed to fall asleep, was not significant (p= .111). The earplug use improved the subjective experience of sleep for unmedicated critical care patients without interfering with care delivery. And also negligible cost and low level of invasiveness of earplugs makes this preferable as a primary intervention to promote sleep while avoiding unnecessary sedating medications.

Kristy Ann Martin, (2008) conducted a quasi-experimental study to assess the effect of earplugs on perceived sleep quality of acute care patients in St. Vincent Healthcare at Billings, Montana. The pre-test and post-test design was adapted for this study. Participants were selected from Intensive care unit and a telemetry unit of St. Vincent Healthcare in Billings, Montana. Convenience sampling procedure has been used to select the participants. Ten participants

completed the two-night study. Participation was slept with earplugs one night and without earplugs on other night. The Verran and Snyder-Halpern Sleep Scales were selected to measure sleep quality. Descriptive analysis, bivariate correlation, linear regression, and independent samples t-test were done using SPSS. The proposed hypothesis was supported for the sleep characteristic, soundness of sleep, with an improvement greater than 15 mm on the night with the earplugs. Subjective findings identified the positive comments with only one participant unable to tolerate the earplugs. The author has said that the data analysis provides essential information for pilot study although the small sample size makes generalization of the findings difficult.

Snyder-Halpern R, Verran JA.(1987), conducted a study called Instrumentation to describe subjective sleep characteristics in healthy subjects. The purpose of this study was to develop and test the Verran and Snyder-Halpern (VSH) Sleep Scale, an instrument to subjectively measure sleep characteristics. Four major sleep factors and their associated characteristics were proposed for the Sleep Scale. Subjects completed three randomly ordered sleep questionnaires on three consecutive weekday mornings within the first two hours after arising. Scales included the VSH Sleep Scale, a sleep questionnaire and a sleep log. The VSH Sleep Scale had a reliability coefficient of .82 (theta). Construct validity was examined by factor analysis and correlations between Sleep Scale items and corresponding items on the two other study instruments. Scale validity also was assessed by the known groups method. According to the study beginning support for the validity of the VSH Sleep Scale is provided.

Conceptual Framework

Roy's Adaptation Model has been chosen for the present study as this model's framework helps the researcher for examining the relationship between a person and their environment. In this model, "humans are viewed as bio-psychosocial adaptive systems who cope with environmental change through the process of adaptation"(Polit & Beck, 2004, p. 12). In Roy's model, the role of nursing is to promote client adaptation and regulation of stimuli affecting adaptation (Polit & Beck, 2004).

Sister Callista Roy published the theory in the year 1991. According to the theory physiologic function, self-concept, role function and interdependence, the regulator and the

cognator act within these modes. It can be used to indentify adaptive or ineffective response by observing a person's behaviour in relation to the adaptive modes.

Physiologic function: It involves the body's basic needs like oxygenation, nutrition, elimination, activity, rest and sleep, skin integrity, senses, fluid and electrolyte and neurological and endocrine function.

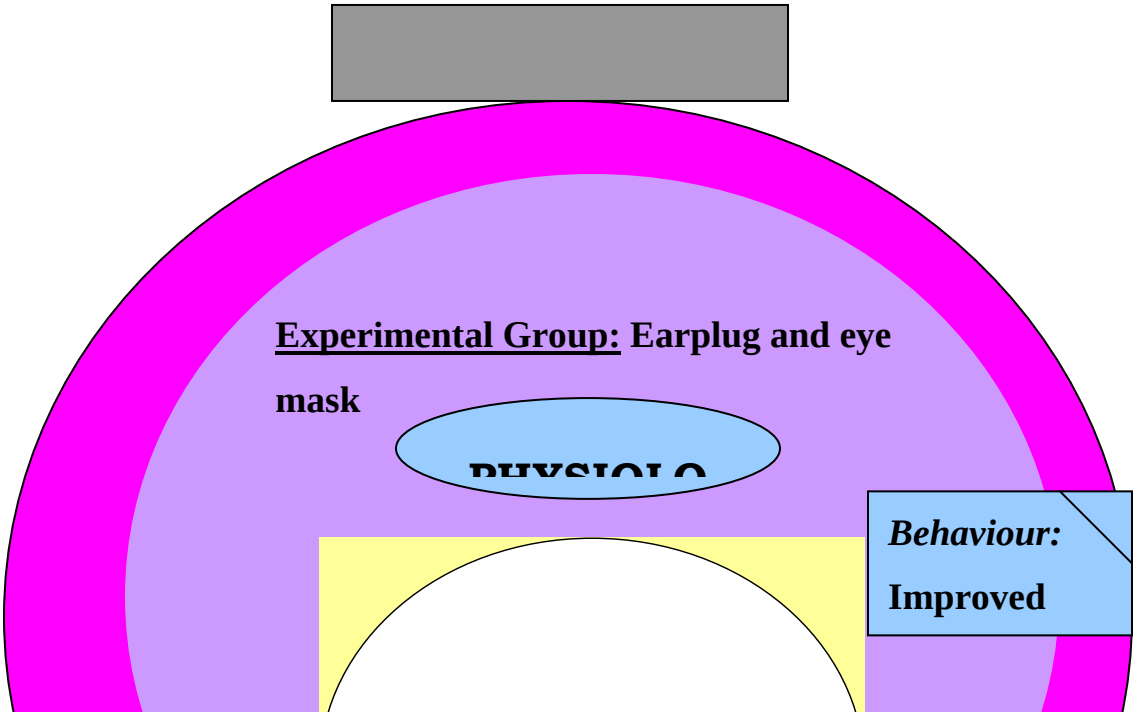
Self-concept: It refers to beliefs and feelings oneself it includes physical, emotion, personality, moral and ethical self.

Interdependence: It involves a person's relation whith significant others and support systems. It meets needs for love, nurturing and affection.

Person: Person is the recipient of nursing care and he is bio-psychosocial being who constantly interact with changing environment.

Environment: It is defined by Roy as all conditions circumstances and influences surrounding and affecting the development and behaviour of person and group.

Roy's Adaptation Model (Roy & Zhan, 2006) provides a new perspective for examining the issues of noise and light in sleep disruption, and was chosen because the noise and light in the acute care environment are environmental change in which the patient needs to adapt to allow for adequate sleep. The use of earplugs and eye mask would help to mitigate noise and light stimulation, which may be affecting a patient's ability to adapt to the hospital environment. If the intervention is found to be successful, this will be considered a positive environmental change.



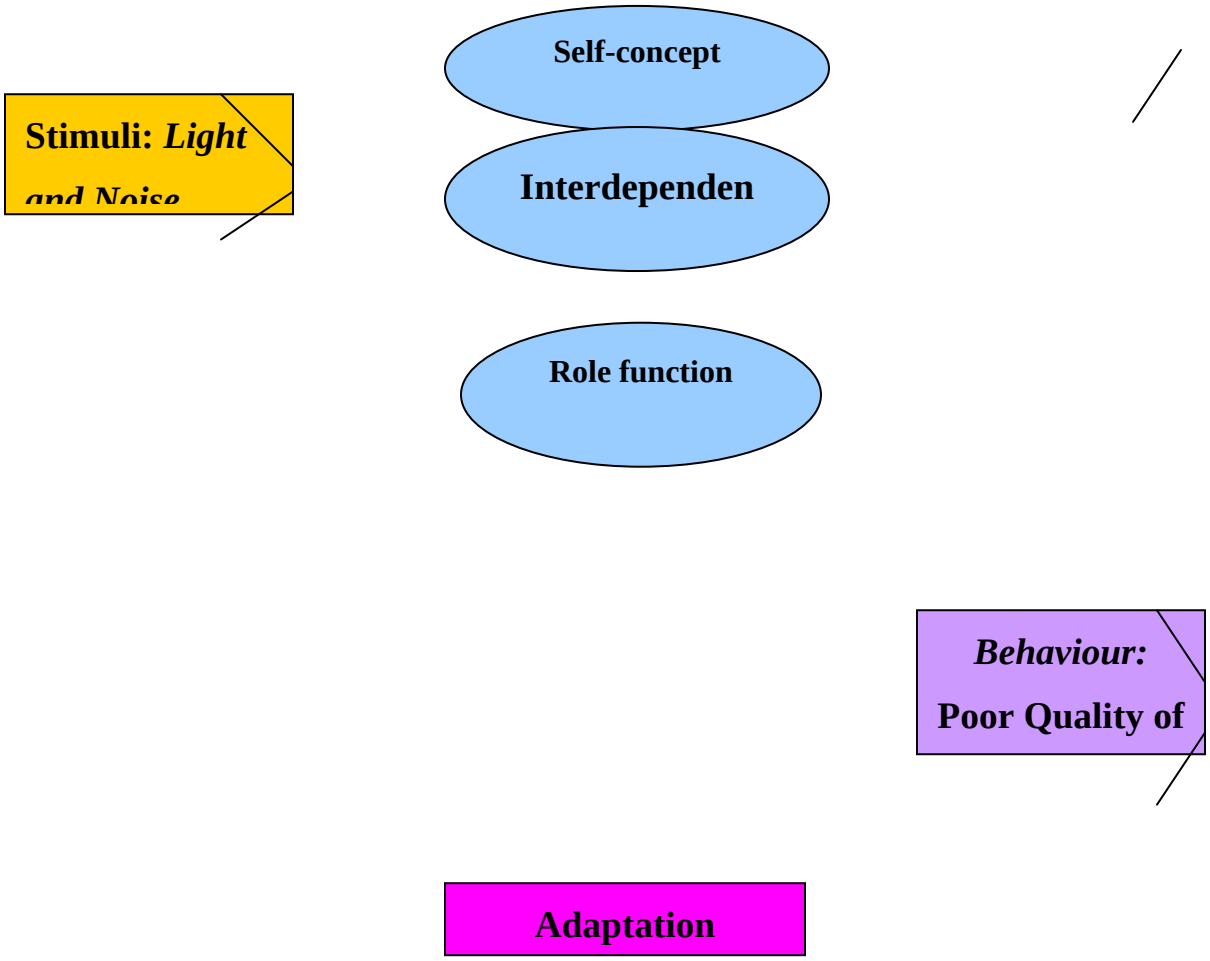


Fig. 1 Conceptual Framework based on Roy's adaptation model

Roy's Adaptation Model (Roy & Zhan, 2006) provides a new perspective for examining the issues of noise and light in sleep disruption, and was chosen because the noise and light in the acute care environment are environmental change in which the patient needs to adapt to allow for adequate sleep. The use of earplugs and eye mask would help to mitigate noise and light stimulation, which may be affecting a patient's ability to adapt to the hospital environment. If the

intervention is found to be successful, this will be considered a positive environmental change.

CHAPTER III
RESEARCH METHODOLOGY

The research methodology indicates the general pattern of organizing the procedure of gathering valid data for an investigation. This chapter provides a brief description of the method adopted by the investigator in this study.

It includes the research approach, research design, the setting, the population, the sample and criteria for the sample selection. It further deals with the development of the tool validity, reliability, pilot study and procedure for data collection and plan for data analysis.

3.1 RESEARCH APPROACH

The quasi-experimental research approach was used for this study. It is a study designed to explore the dimension of a phenomena or to develop or define hypothesis and about the relationship between phenomena (Polit, 1999)

3.2 RESEARCH DESIGN

The non equivalent control group design was chosen for the study to assess effectiveness of earplug and eye mask in promoting quality of sleep among clients admitted in critical care units.

The research design for the study is diagrammatically represented as below.

Group	Day-1	Day -2		Day- 3	
	Pre-test	Treatment	Posttest	Treatment	Posttest
Experimental	O_1	X_1	O_2	X_2	O_3
Control	O_1	--------	O_2	--------	O_3

Figure 2: Schematic representation of the study design

Key:

O1 - Pre-test assessment without intervention for both group during second day admission.

X1 - Intervention with earplug and eye mask on second day of admission.

X2 – Intervention with earplug and eye mask on third day of admission.

O2 - Post test assessment in the morning after first day of intervention.

O3 - Post test assessment in the morning after second day of intervention.

3.3 Variables

Variables are qualities, properties or characteristics of persons, things of situation that change or vary.

Independent variables: The variable that is believed to cause or influence the dependent variable. In this study, earplugs and eye mask are the independent variables.

Dependent variable: It is the outcome variable of interest, the variable that is hypothesized to depend on or be caused by another variable, i.e the independent variable. In this study quality of sleep among clients admitted in critical care units is the dependent variable.

Demographic variables: Age, gender, marital status, occupation, income, socio-economic status, nature of occupation, area of residence, previous hospitalization, sleep habits at home.

3.4 STUDY SETTING

Research setting is the physical location and conditions, in which data collection takes place in a study.

The study was conducted in Critical care units-Intensive Medical Care Unit and Intensive Coronary Care Unit, Govt.Rajaji Hospital, Madurai. The 2218 Bedded hospital is a multi-specialty hospital, which is attached with Madurai Medical College, College of Nursing and School of Nursing It is located in the heart of the Madurai city. It is the largest hospital in the south part of Tamilnadu. It provides tertiary health care services to public, who come from southern districts of Tamilnadu. The hospital has various critical care units with high tech life saving equipments. The average number of patients receives care in the Intensive Medical Care Unit and Intensive Coronary Care Unit is about 30-40 patients every day.

3.5 STUDY POPULATION

The population is all elements (individuals, objects, or substances) that meet certain criteria for inclusion in a study.

The target population of the study was the patients between 20-60 years of age, who had admitted in Intensive Medical Care Unit and Intensive Coronary Care Units as in-patients.

3.6 Sample

A sample is a subset of population that is selected for a particular study and the members of a sample are the subjects.

Patients who receive treatment in Intensive Medical Care Unit and Intensive Coronary Care Unit, Govt.Rajaji Hospital, Madurai and who fit to the selection criteria during the period of date collection.

3.7 SAMPLE SIZE

The sample constitutes of 60 patients who had admitted in the critical care units with acutely ill condition. Thirty participants selected for experimental group and thirty participants for control group.

3.8 Method of Sample Selection

Sampling is the process of selecting subjects who are representative of the population being studied.

Purposive sampling technique was used to select the sample. A type of non-probability sampling method in which the researcher selected the participants for the study on the basis of personal judgement about which one will be most representative or productive also referred to as judgemental sampling (Polit, 1999). The investigator selected the participants for the study.

3.9 Criteria for Selecting the Sample

Inclusion Criteria

1. Subjects who are willing to participate.
2. Subjects of both gender-Female and Male.
3. Subjects' age between 20 to 60 years.
4. Subjects, who are non-smoker and non-alcoholic
5. Subjects who are conscious.
6. Subjects who had no history of night shift work in the past three years.
7. Subjects who had no history of sleep disorders.
8. Subjects who are able to speak or write either Tamil or English language.

Exclusive criteria:

1. Subjects who receive sedatives.
2. Subjects who are on mechanical ventilator.

3. Subjects are visual and auditory disorders.
4. Subjects who had complain of pain. (Above 3 in the numerical pain scale)

3.10 Description of the Tool

Section I: This consists of demographic data such as age, sex, occupation, marital status etc and sleep habits of the subjects such as sleep time, usual duration of sleep and sleep assisting habits at home etc,. The investigator administers this tool.

Section II: This is a Verran and Snyder-Halpern Sleep Scales, which is designed to characterize overall self reported, sleep quality by using three sleep characteristic scales. This scale aimed at performing a subjective evaluation of sleep efficiency during the 24 hours before the assessment. It is applicable to hospitalized patients, relatively easy to use and there is information about its psychometric properties in the environment it was created in. It consists of 16 items: 15 self-report items in a visual analog format and 1 item obtained by adding the scores of two of the 15 self-report items. The 16 items are distributed in three domains or scales. They are:

1.DISTURBANCE SCALE- Perception of the degree the bulk sleep period - was disturbed due to fragmentation and sleep latency**.**

1.1 Fragmentation Characteristics	
Mid-Sleep Awakening (item 9)	Perception of the number of awakening during the sleep period.
Wake After sleep Onset (item 1)	Perception of the amount of time spent awake during the total sleep period
Movement during sleep (11)	Perception of the amount of movement

	during sleep.
Soundness of sleep (item 7)	Perception of sleep depth
Quality of disturbance (item 8)	Perception of the degree of difficulty with sleep disturbance

1.2 LATENCY CHARACTERISTICS	
Sleep latency (item 6)	Perception of the amount of time from settling down to sleep until falling in going to sleep
Quality of Latency (item 10)	Perception of the degree of difficulty in going to sleep

2.**EFFECTIVENESS SCALE-** Perception of the degree the bulk sleep period was- considered to be effective.

2.1 Quality Characteristics	
Rest upon awakening (item 12)	Perception of how rested the person
Subjective quality of sleep (item 14)	Perception of sleep adequacy in terms of overall quality
Sleep sufficiency evaluation (15)	Perception of adequacy of amount of sleep
2.2 Length Characteristics	
Total sleep time (item 2)	Perception of the total time spent in actual sleep during the bulk sleep period
Total sleep period (item 16=1+2 item)	Perception of the total time spent in bed attempting to sleep

3. SUPPLEMENTATION SCALE- perception of the degree to which the bulk sleep-period was augmented with additional sleep time.

Day Sleep (item 3)	Perception of time asleep other than primary sleep period
Morning Sleep (item 4)	Perception of amount of supplemental sleep during the morning hours.
Afternoon Sleep (item 5)	Supplemental sleep during afternoon hours
Wake after final arousal (item 13)	Perception of the time spent in bed from initial morning arousal to final awakening.

3.11 Scoring methods:

The instruments can be self administered with a completion time of five to ten minutes. Each item consists of two statements with opposite meanings located at the ends of a 100-mm. Line. Respondents are requested to answer the items by putting a vertical mark on the line between the statement pairs at a point that best reflects their opinion about them.

To score the answers, a transparency is made with 100 mm lines, marked 5 mm, increments. The left end of the line corresponds to 0 mm and the right to 100 mm. The transparency is placed on top of the answer lines of each item in the completed instruments to obtain a numerical reading in millitmeter. The scores for each scale (Disturbance, Effectiveness and Supplementation) are obtained by adding the scores of the pertinent items. The higher the score, the greater the sleep

disturbance, Effectiveness or Supplementation. Adding up the scale scores is not recommended measures as each scale measure with different concept. Therefore no total score for the three scales. (Kroon & West, 2000). The instrument developers presented results of reliability and validity estimates in four samples; healthy adults in their usual sleep environment, adults with insomnia, also in their usual sleep environment, hospitalized adults in USA and hospitalized adults in Taiwan.

Date Collection Procedure

Data collection is the gathering of information needed to address the research problem.

The data was collected for a period of six weeks. Study was conducted in a government hospital. The objectives of the study were explained to the medical officers and nursing personnel before starting the data collection, so as to get co-operation in the procedure of data collection.

From the universe population, study population was selected. The investigator allotted the sample by purposive sampling technique. The subjects who fit to the inclusion criteria were selected and among the 60 subjects, 30 subjects received intervention -wearing earplugs and eye mask during sleep. This group was considered as experimental group. Another 30 subjects received no intervention-wearing earplugs and eye mask during sleep. This group is considered as control group. Verbal consent was obtained from the clients and family members after explaining nature of the study and the questionnaires in detail.

The researcher was doing the data collection from Monday to Saturday in the morning and evening. Pre-test questionnaire was given to the subject in the morning of first night spent in the unit. Earplugs and eye mask were given to the subject and demonstrated the method of wearing them in the second night and third night spent in the unit. Posttest questionnaire was given to the subjects for completing questionnaire.

Testing of the Tool

Validity

Content validity was ensured by giving the tool to three experts in the field of nursing, one expert in the field of medicine, one expert in the field of clinical psychology and one in the field of statistics for their opining in using the questionnaires for the study.

Reliability

The Verran and Snyder-Halpern (VSH) Sleep Scales have been tested and found to be both a reliable and valid as a sleep measurement tool for perceived sleep in hospitalized patients. In initial testing of this tool, the creators found that it had a reliability coefficient of .82 (theta) (Snyder-Halpern & Verran, 1987).

Plan for data analysis

The data analysis involves the translation of information collected during the course of research project in to an interpretable and manageable form. It involves the use of statistical procedures to give an organization and meaning to the data. Descriptive and inferential statistics will be used for data analysis. To compute the data, a master data sheet was prepared by the investigator.

1. Demographic profile containing sample characteristics would be analyzed using frequency and percentage.
2. Sleep scores would be analyzed by computing frequency, percentage, mean, and standard deviation.
3. Paired ‘t’ test would be used to find out the effectiveness earplugs and eye mask among experimental group.
4. Independent ‘t’ test would be used to compare the level of quality of sleep between the experimental and control group.
5. Chi-square test would be used to find out the association between pre-test sleep score and selected demographic variables.

   For the interpretation of hypotheses and findings, the level of significance would be set at 0.05.

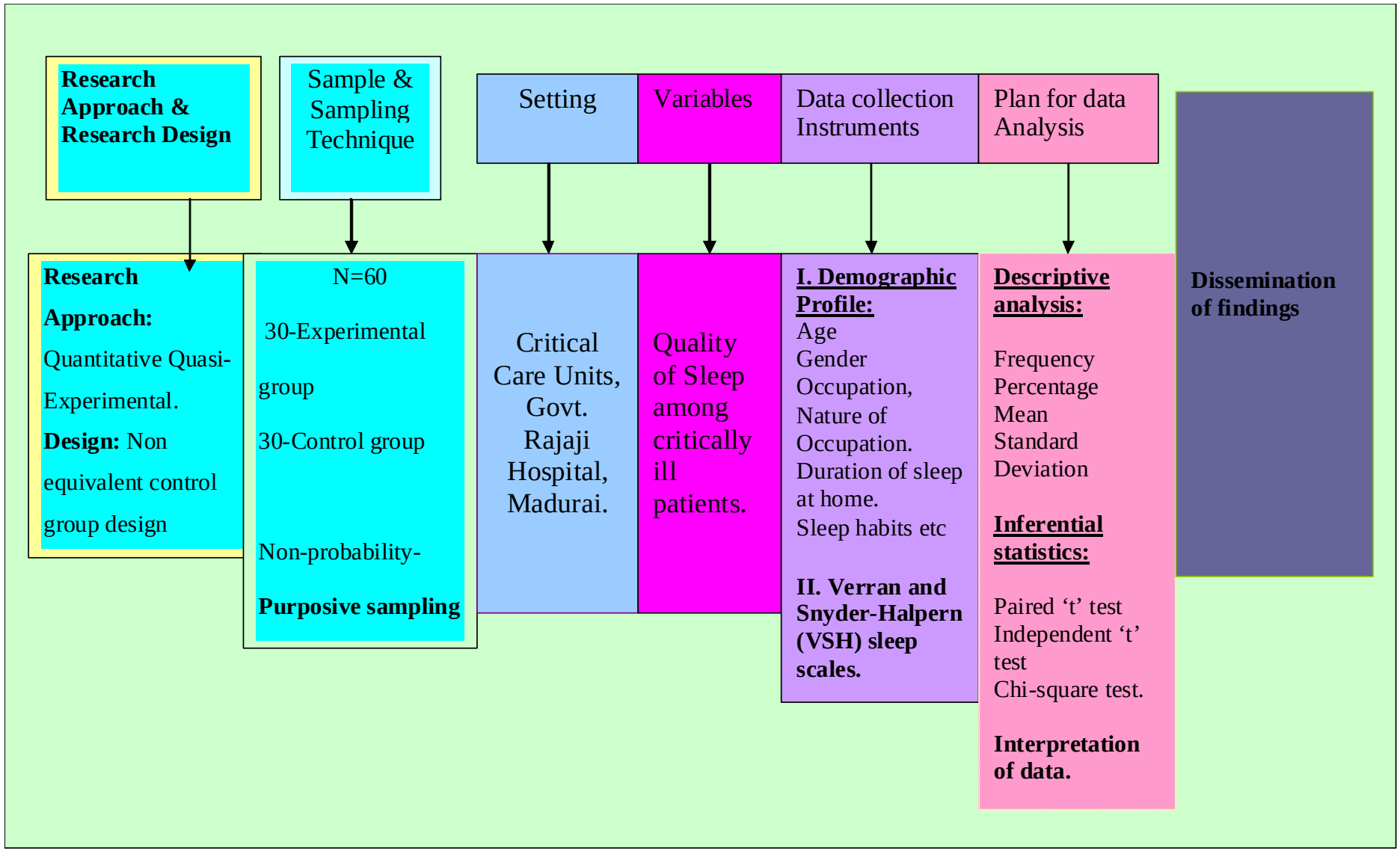


Figure 3: Schematic representation of the research methodology

Pilot Study

A small-scale version or trial run done in preparation for a major study is referred to as the pilot study.

After obtaining the written permission from the Medical officer of critical care units, the pilot study was conducted in a week among 6 clients in the units (3 each in both control and experimental group). Samples were selected based on pre-determined criteria set by the investigator through non-probability convenient sampling. After taking written consent, objectives of the study were explained to each subject and confidentiality was assured. After administering the pre-test, earplugs and eye mask was given to wear on second night and third night at critical care units for the experimental group. Posttest questionnaire that is Verran-Snyder-Halpern Sleep scale, a visual analogue was administered on 2^{nd} day and 3^{rd} day mornings. After administering the pre-test, no earplugs and eye mask was administered for control group in the next two nights. Posttest sleep score was obtained from control group on 2^{nd} and 3^{rd} night spent in the unit.

The collected data were analyzed by using descriptive and inferential statistics. The effectiveness of earplugs and eye mask within the experimental group was calculated by using the paired 't' test and it was found highly significant. Level of quality of sleep between the groups was compared using independent 't' test and it was found that there was much improvement in quality of sleep in experimental group as compared to the control group.

After conducting the pilot study, it was found feasible, authoritative and the subjects were co-operative, the tool was relevant, the time and cost of the study were within limit. The investigator decided to carry out the actual data collection after pilot study.

Protection of Human Rights

The pilot study and the main study were conducted after the approval of the research committee of the Medical College Hospital. Permission was obtained from Head of the Department of Medicine, Govt. Rajaji Hospital, Madurai. The purpose and other details of the study were explained to the study participants and their family members and both oral consent were obtained from the participants.

Summary

This chapter has dealt with the research approach, research design, setting of the study, population, sample, sampling technique, and development of the tool, method of data collection, and plan for data analysis.

Chapter IV

Data Analysis and Interpretation

This chapter deals with analysis and interpretation of data collected from 60 clients (30 each for both experimental and control group) of critical care units,

Govt. Rajaji Hospital, Madurai to assess the effectiveness of earplugs and eye mask on quality of sleep and its association with selected demographic variables.

Master data sheet was prepared and the data were analysed based on the objectives and hypotheses using descriptive and inferential statistics.

Organization of the study findings

The data were coded, tabulated, analysed and interpreted using descriptive and inferential statistics. The data were presented under the following headings:

Section I: Distribution of demographic characteristics of the samples.

Section II: Mean, mean difference and Standard Deviation of Sleep Scores

Section III: Evaluation of the effectiveness of earplugs and eye mask in term of enhancing quality of sleep among experimental group.

Section IV: Compare the level of quality of sleep score between experimental and control group.

Section V: Association between posttest sleep score and selected demographic variables.

Section I: Demographic data

This section deals with the demographic characteristics of the 60 clients of critical care units in terms frequency and percentage

SECTION -I

DEMOGRAPHIC CHARACTERISTICS OF SAMPLE

Table 1a: Frequency and percentage distribution of subjects according to selected demographic variables

N=30+30

SL No	Variables	Experimental group		Control group		Total	
		f	%	f	%	f	%
1	**Age in years**						
a	20-30	6	20	7	23	13	21.7
b	30-40	7	23	6	20	13	21.7
c	40-50	12	40	9	30	21	35
d	50-60	5	17	8	27	13	21.6
2.	**Gender**						
a	Male	20	67	21	70	41	68.4
b	Female	10	33	9	30	19	31.6
3	**Marital status**						

a	Single	2	7	4	13	6	10
b	Live with spouse	24	80	20	67	44	73.4
c	Spouse not alive	3	10	4	13	7	11.6
d	Separated	1	3	2	7	3	5
4	**Occupation**						
a	Coolie	19	63.3	16	53.33	35	58.3
b	Business	5	16.7	7	23.33	12	20
c	Govt/Private employee	3	10	3	10	6	10
d	Retired	1	3.3	1	3.3	2	3.4
e	Dependant	2	6.7	3	10	5	8.3
5	**INCOME (MONTHLY)**						
A	< Rs.1000	25	83	23	77	48	80
B	Rs.1000-5000	3	10	4	13	7	11.7
c	> Rs. 5000	2	7	3	10	5	8.3

Key: f-Frequency, %-Percentage

Table 1b: Frequency and percentage distribution of subjects according to selected demographic variables.

SL No	Variables	Experimental group		Control group		Total	
		f	%	f	%	f	%
5	**SOCIO-ECONOMIC STATUS**						
a	Low	25	83.33	23	76.7	48	80
b	Middle	4	13.33	6	20	10	16.7
c	Upper	1	3.3	1	3.3	2	3.3
6.	**Area of Residence**						
a	Rural	19	63.3	15	50	34	56.7
b	Town	3	10	5	16.7	8	13.3
c	Urban	2	6.7	3	10	5	8.3
d	Semi-urban	6	20	7	23.4	13	21.7
7	**Nature of Occupation**						
a	Heavy	13	43.33	14	46.66	27	45
b	Moderate	12	40	9	30	21	35
c	Sedentary	5	16.66	7	23.33	12	20
8	**Usual duration of Sleep at home**						
a	Less than 6 hours	8	26.67	7	23.3	15	25
b	Above 6 hours	22	73.3	23	76.7	45	75

10	**Previous Hospitalization**						
a	Yes	5	16.66	8	26.7	13	21.66
b	No	25	83.33	22	73.3	47	78.33

Table 1c: Frequency and percentage distribution of subjects according to selected demographic variables.

SL No	Variables	Experimental group		Control group		Total	
		f	%	f	%	f	%
11	**NATURE OF SLEEP ASSISTANCE AT HOME**						
a	Television	4	13.3	3	10	7	11.7

b	Radio	3	10	4	13.3	7	11.7
c	Reading	3	10	2	6.7	5	8.3
c	Drinking Milk	6	20	4	13.3	10	16.7
d	Bathing before Bed	7	23.3	5	16.7	12	20
e	Yoga	0	0	1	3.3	1	1.6
f	Non	7	23.3	11	36.7	18	30
12	**MOST SLEEP DISTURBANCE FACTOR IN THE UNIT**						
a	Unit's Light and Sound -Machine	24	80	20	66.7	44	73.3
b	Staff's Talk	3	10	6	20	9	15
c	Care during Sleep	1	3.3	3	10	4	6.7
d	Non	2	6.6	1	3.3	3	5

The data presented in Table 1a, 1b, 1c reveal the following findings.

In the experimental group majority of subjects (43%) belonged to the age group of 40-50 years, each 20% of subjects belonged to the age group of 20-30 and 30-40 year respectively. 17% of subjects were belonged to group of 50-60 years of age in experimental group. Majority (30%) of subjects in control group belonged to 40-50 years of age. While 27% of subjects belonged to 50-60 years of age, 23 % of subjects were in 20-30 years in control group. Only 20% of subjects belonged to 30-40 years of age in control group.

Majority (70%) of subjects belong to males in control group and 67% in experimental group. In experimental group 33% of subjects were female, but 30% in control group.

In experimental group, 80% of subjects were live with spouse, whereas 67% in control group. Among the others in experimental group, 10% of subjects' spouse not alive, 7% was single and 3 % were separated. In control group, the subjects were single and spouse not alive categories are 13% respectively. 7% of subjects were separated in control group.

Majority of subject were coolie in control and experimental group, 63.3% and 53.33 respectively. In both groups subjects of government/ Private employees and retired were 10% and 3.3% respectively. In control group 23.33% of subjects' occupation were business, whereas it was 16.7 % in experimental group. In experimental groups 6.7% of the participants were dependant and 10% in control group.

The subjects' income less than Rs. 1000 were 83% in experimental group and 77% in control group.10% of subjects in experimental group's income were between Rs.1000-5000, where as 13% in control group. The income above Rs. 5000 was 10% in control group and 7% in experimental group.

Majority of subjects in both experimental and control group were low socio-economic status 83.33% and 76.7% respectively. 20% of subjects were middle socio-economic status in control group whereas 13.33% in experimental group. Each 3.3% of subjects were upper socio-economic status in experimental and control group.

Majority of subjects in both experimental and control group's residence were rural that is 63.3% and 50% respectively. In control group 23.4% of subjects' area of residence was semi-urban and 20% in experimental group. Town was the area of residence for 16.7% of subjects in control group and 10% in experimental group. Urban was area of residence for 10% in control group and 6.7% in experimental group.

There was, 46.66% of subjects' nature of occupation was heavy in control group and 43.33% in experimental group. In the experimental group, 40% of subjects' nature of occupation was moderate and 30% in control group. In control group 23.33% of subjects' nature of occupation was sedentary whereas 16.66% in experimental group.

Majority of subjects in both experimental (73.3%) and control group's (76.7%) usual duration of sleep at home was above 6 hours. In the experimental group, 26.67% of subjects' usual duration of sleep at home was less than 6 hours whereas it was 23.3% of the subjects in control group.

Majority of the subjects in both experimental (83.33%) and control group (73.3%) have not hospitalized previously and 26.7% of subjects in control group have previously hospitalized whereas 16.66% in experimental group.

Among the 6 common nature of sleep assistance at home 23.3% of subjects in experimental group were taking bath before bed and 16.7% in control group. Each 13.3% of subjects' natures of sleep assistance at home in control group were radio and drinking milk. Radio and reading were nature of sleep assistance at home in experimental group 10% respectively. Drinking milk was the nature of sleep assistance for 20% of subjects in experimental group. In experimental group 13.3% and 10% in control group of subjects' nature of sleep assistance was television. Yoga was the nature of sleep assistance in control group whereas no subjects practiced yoga. Majority of subjects (36.7) in control group and experimental group's (23.3%) nature of sleep assistance was none.

Unit's light and machine sound was the most sleep disturbance factor among 80% of subjects in experimental group and 66.7% of subjects in control group. In control group 20% of subjects reported staff's talk was the most sleep disturbance factor and 10% in experimental group. Care during sleep was the most sleep disturbance factor among 10% of subjects in control group and 3.3% in experimental group. The participants' most sleep disturbance factor was none by 3.3% in control group and 6.6% in experimental group.

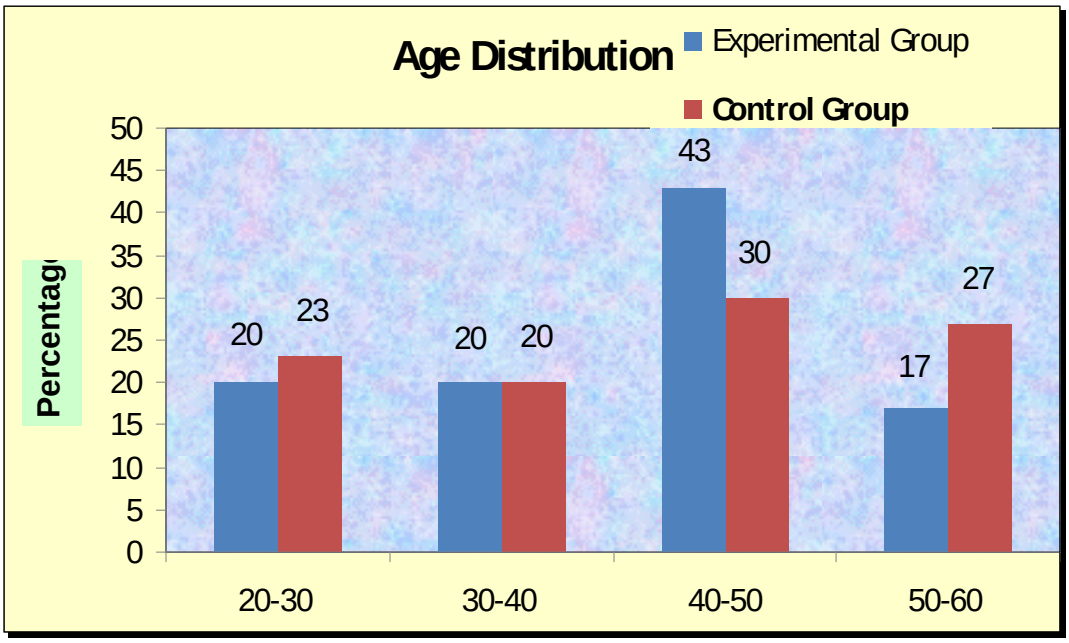


Figure 4: Bar diagram showing the percentage of distribution of subjects according to age.

Majority of subjects in experimental group (43%) and control group (30) belonged to the age group of 40-50 years.

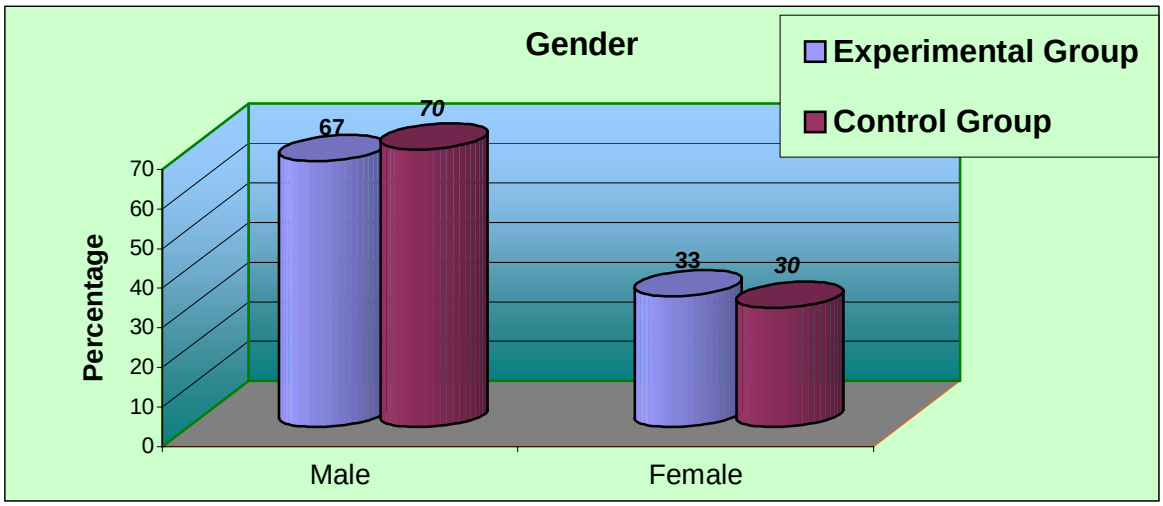


Figure 5: Bar cylinder diagram showing the percentage of distribution of subjects according to gender.

Majority of the participants were male that is 70% in control group and 67% in experimental group.

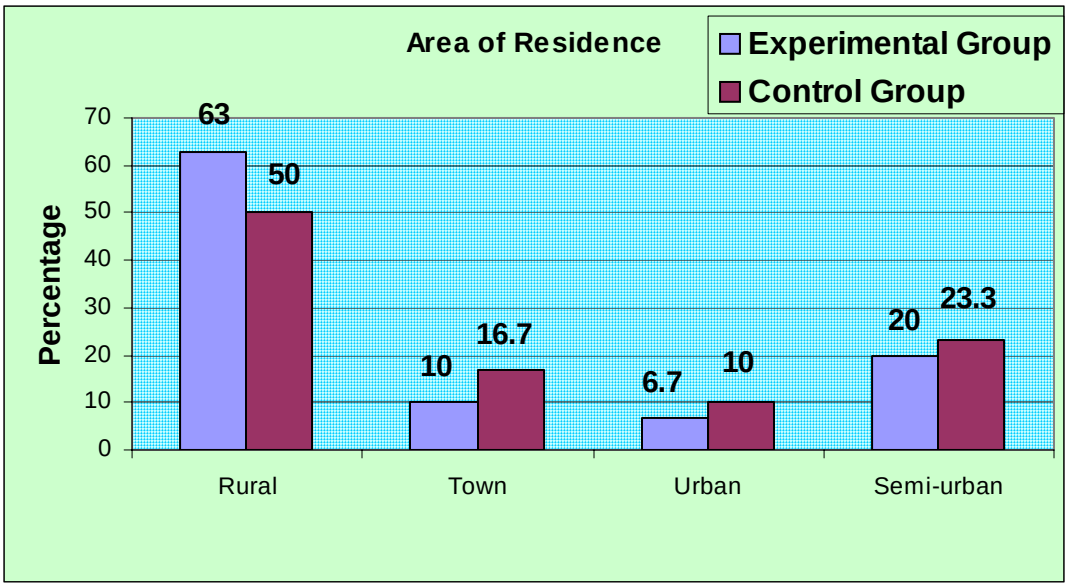


Figure 6: Bar diagram showing the percentage of distribution of subjects according to Area of Residence.

Majority of the participants' area of residence were rural that is 63% in experimental and 50 in control group.

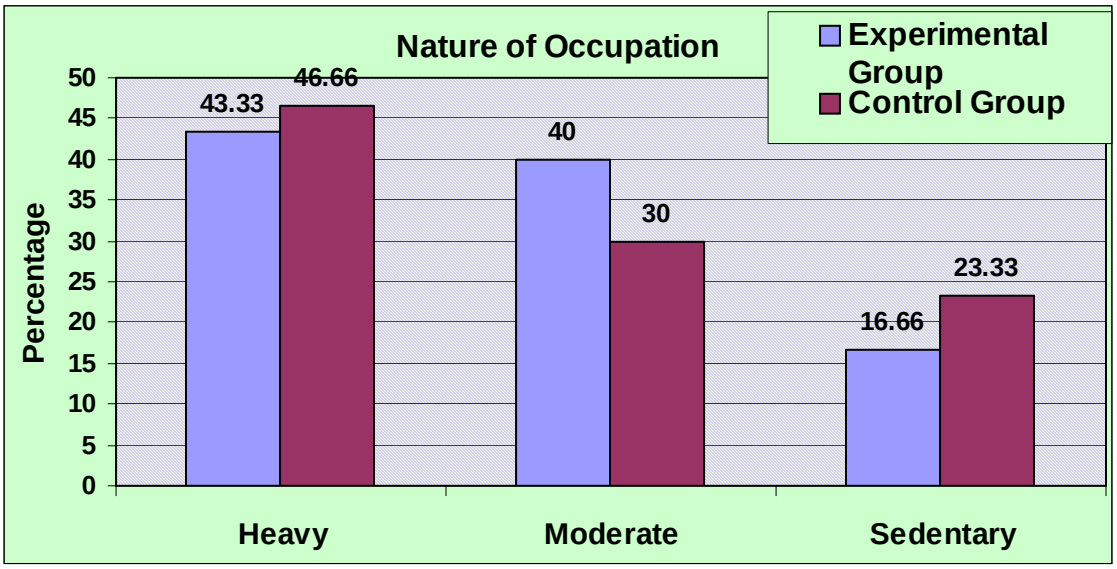


Figure 7: Bar diagram showing the percentage of distribution of subjects according to nature of occupation.

Majority of the subjects' nature of the occupation was heavy that is 43.33% among experimental and 46.66 % control group.

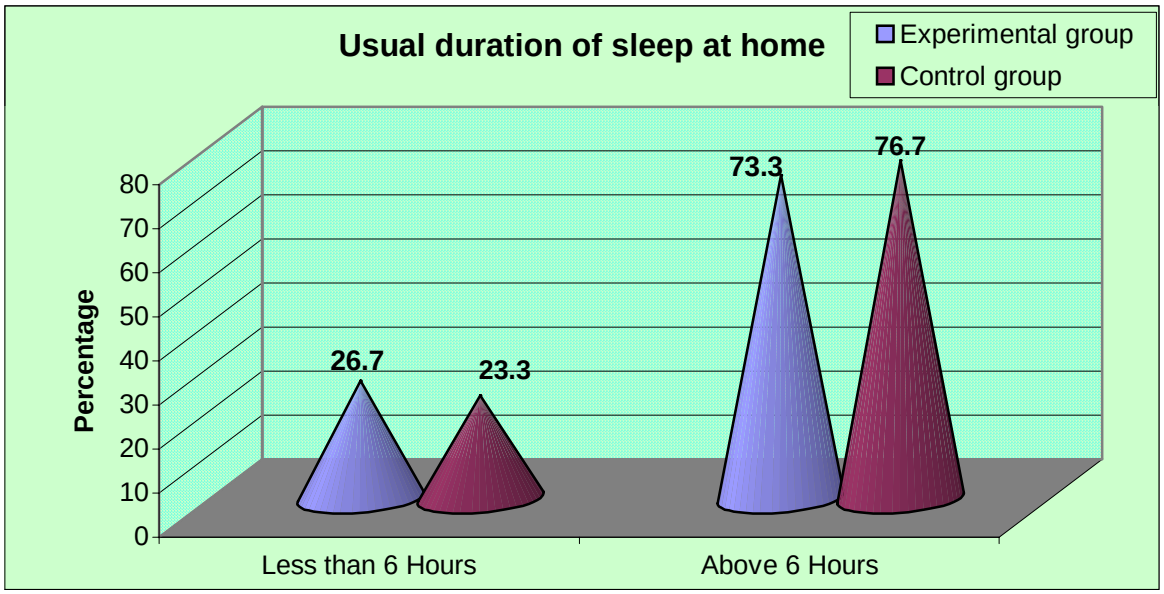


Figure 8: Bar diagram showing the percentage of distribution of subjects according to duration of sleep at home.

Majority of the participants' usual duration of sleep at home was 6-8 hours.

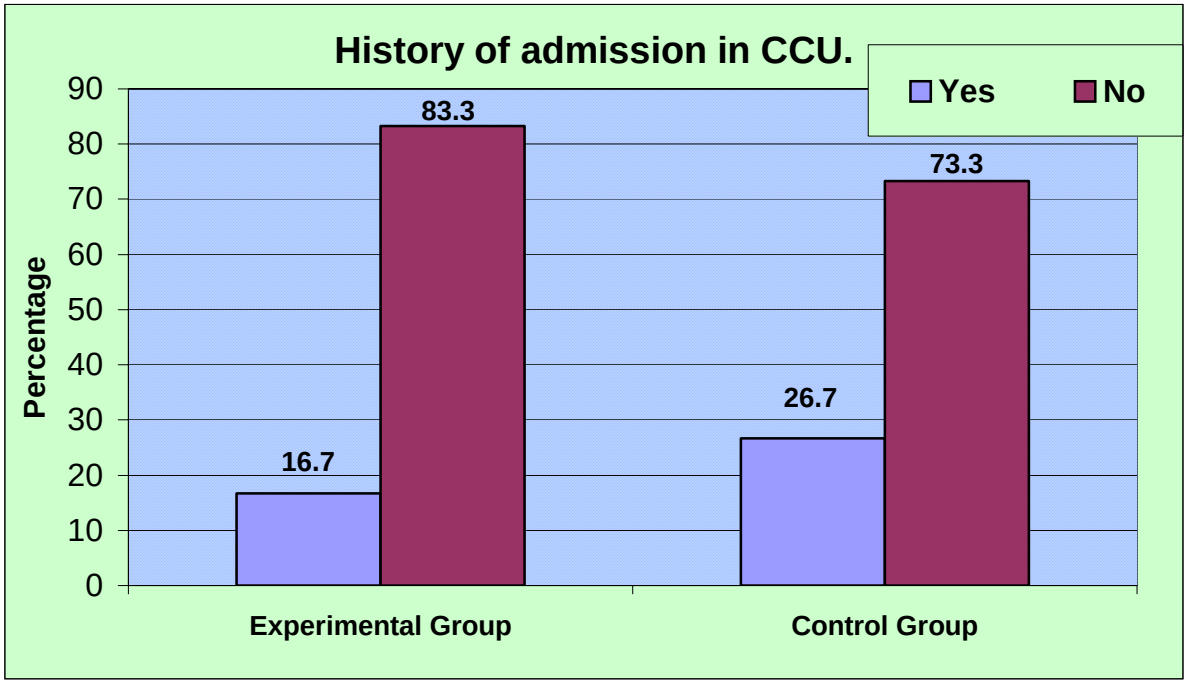


Figure 9: Bar diagram showing the percentage of distribution of subjects according to history of admission in critical care unit.

Majority of the participants had no history of previous history of admission in critical care units.

Section – II

Mean and Standard Deviation of Sleep Scores-Experimental Group

Table2: The mean, standard deviation and differences of pre and posttest score of experimental group.

Total mean score of sleep scales	Pre-test Mean (SD)	Posttest Mean (SD)	Difference Between Mean
Sample Size	30	30	0
Disturbance scale	316.3 (24.98)	289 (26.8)	27.3 Decreased
Effectiveness scale	297.5	321	23.5

	(19.6)	(16.26)	Increased
Supplementation scale	112.17 (21.28)	88.33 (17.04)	23.84 Decreased

The table no: 2, which reports the findings of total means score of sleep scales- Disturbance scale, effectiveness scale and supplementation scale among the experimental group. The posttests mean score of disturbance scale was 289 (SD 26.8); it was 316.3 (SD24.98) in the pre-test. The mean difference between them was 27.3 (SD -1.82). The mean score of posttest on effectiveness scale was 321 (SD16.33) and 297.5 was the mean pre test score. There was increased by 23.5 (SD 3.34) in posttest than pre test. The mean posttest score of supplementation scale was 88.33 (SD 17.04) and the pre test score was 112.17 (SD 21.28). There was decreased 23.84 (SD 4.24) in posttest than control group.

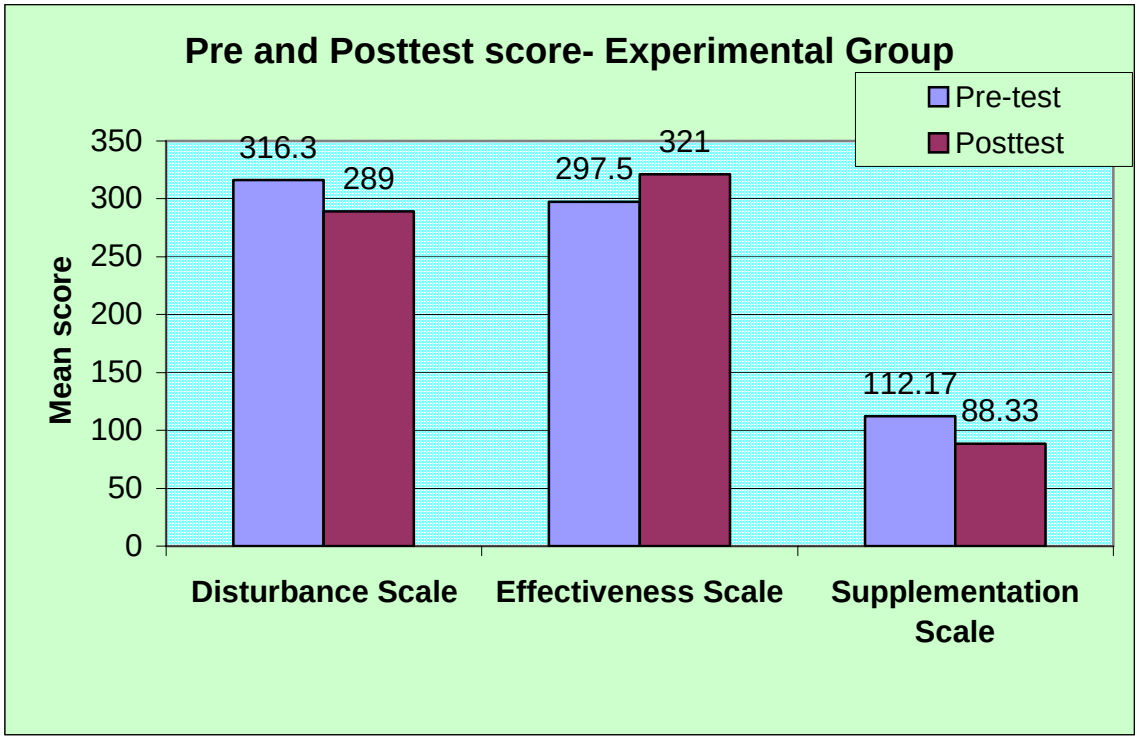


Figure 10: Bar diagram showing the means pre and posttest score of sleep scales in experimental group.

The figure 10 reveals that decreased mean score in sleep disturbance scale and sleep supplementation scale and increased in mean score in effectiveness scale in posttest than pre test among experimental group.

Table: 3 Posttest Mean Scores and standard deviation for Sleep scales by Group

Total mean score of sleep scale	Experimental Mean (SD)	Control Mean (SD)	Difference between Mean
Sample Size	30	30	
Disturbance scale	289 (26.8)	319.8 (28.2)	30.8 Decreased
Effectiveness scale	321 (16.26)	288 (25)	33 Increased
Supplementation scale	88.33 (17.04)	112.3 (26.9)	23.67 Decreased

The data presented in Table 3 shows the posttest mean, and standard deviation of sleep scales score among both experimental and control group. The mean score of disturbance scale

among experimental group was 289 (SD 26.8) and among control group it was 319.8 (SD 28.2). The mean posttest score in effectiveness scale was 321 (SD 16.26) in experimental group and 288 (SD 25) was in control group. There was a increased 30.8 mean score in experimental group than control group. The experimental group scored 88.33 on supplementation scale and 112 by control group. There is a decreased level of sleep supplementation for experimental group than control group that is by 23.67.

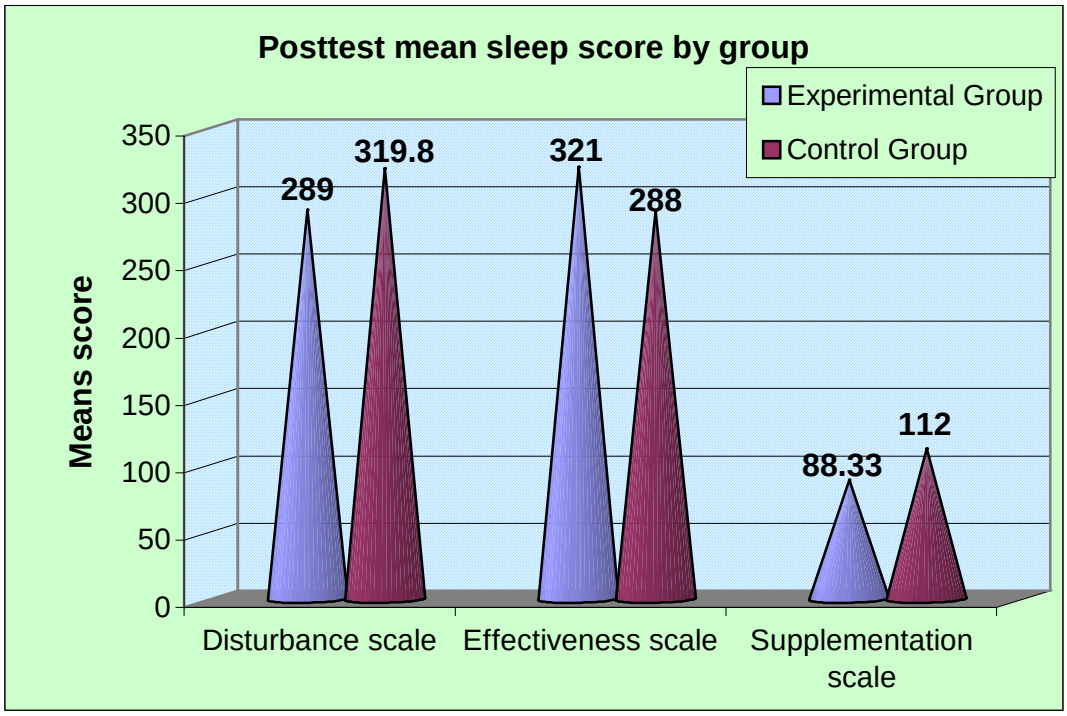


Figure 11: Bar diagram showing the posttest mean sleep score.

The figure 11 reveals that decreased mean score in sleep disturbance and sleep supplementation and increased mean score in effectiveness in posttest among experimental than control group.

Table 4: Descriptive Statistics for Posttest-Disturbance, Effectiveness and Supplementation Scales

N=30+30

	Minimum	Maximum	Mean
Disturbance- Experimental	250	350	289
Disturbance-Control	280	375	319.8

Effectiveness- Experimental	295	350	321
Effectiveness-Control	235	325	288
Supplementation- Experimental	55	120	88.33
Supplementation-Control	65	155	112.3

The data presented in the table 4, shows the minimum, maximum and mean posttest score of sleep scales. While the minimum score of disturbance scale in the intervention group was 250, it was 280 in the control group. The maximum score the disturbance scale in the experimental group was 350 and 375 in control group. The mean score was 289 in experimental group and 319.8 in control group.

The minimum mean score on effectiveness scale among experimental group was 295 and 235 was among control group. The maximum score of experimental group was 350 and 325 among control group. The mean score on the scale was 321 in experimental group and 288 in control group.

The minimum mean score of supplementation scale among control group was 65 and 55 among experimental group. The maximum score of the scale in experimental group was 120 and 155 in control group. The mean score of the scale was control group112.3 and 88.33 in the experimental group.

Section III

Evalaution of the effectiveness of earplugs and eye mask in term of enhancing quality of sleep among experimental group.

In order to find out the significant difference between mean pre-test and posttest sleep scores paired ‘t’ test was used.

Following hypothesis was stated:

H_1: There will be significant difference between the mean pre-test and posttest level of quality of sleep among experimental group.

Table 5: Mean, standard deviation (SD), mean difference, standard deviation difference, and 't' -value of pre-test and posttest sleep score of experimental group.

N=30

S. No	Mean Sleep score		Standard Deviation	Difference between Mean	Dependant 't' test value
1	**Disturbance Characteristics:**				
	Pre-test	316.3	24.98	27.3	't' value * 2.89 p value: 0.005
	Posttest	289	26.8		
2.	**Effectiveness characteristic:**				
	Pre-test	297.5	19.6	-23.5	't' value * 3.59 p value:0.007
	Posttest	321	16.26		
3	**Supplementation Characteristics:**				
	Pre-test	112.17	21.28	23.84	't' value * 3.43 p value:0.001
	Posttest	88.33	17.04		

Table value t (29)=1.70, p<0.01, * Significant

The data presented in Table 5 shows that the 't' value computed between mean pre-test and post-test sleep scores were statistically significant at 0.05 level of significance ($t_{(29)}$, Disturbance scale=2.89, effectiveness scale= 3.59 and supplementation scale=6.71, table value t (29)=1.70, p<0.01). It shows that earplugs and eye mask was effective in improving the sleep quality among experimental group hence, research hypothesis was accepted

IV. Compare the level of quality of sleep between experimental and control group.

Independent 't' test was computed in order to compare the level of sleep quality between experimental and control group.

Following hypothesis was stated:

H_2: There will be significant difference in posttest level of quality of sleep between experimental and control group.

Table 6: Mean, standard deviation (SD), mean difference, standard deviation difference, and 't' -value of posttest sleep score among experimental group and control group

N=30+30

S.No	Sleep score	Mean	Standard Deviation	Mean difference	Independent 't' test value
1	**Disturbance Characteristics:**				
	Experimental Group	289	26.8	30.8	't'value:*3.07 p value:0.03
	Control Group	319.8	28.2		
2.	**Effectiveness characteristics:**				
	Intervention Group	321	16.26	33	't' value: *4.4 p value:0.001
	Control Group	288	25		
3	**Supplementation Characteristics:**				

	Intervention Group	88.33	17.04	23.71	't' value:* 2.0 p value: 0.004
	Control Group	112.04	26.9		

Table value $t_{(58)}$ =1.670, p<0.01. * Significant.

The data presented in the Table 6 shows that the 't' value computed between paired difference of mean sleep scores among experimental and control group is statistically significant ($t_{(58)}$ Sleep disturbance=3.0672, sleep effectiveness= 4.3807 and sleep supplementation=2.98, table $t_{(58)}$ =1.670, p<0.01). It shows that there was much reduction in sleep disturbance and sleep supplementation and improvement in effectiveness of sleep among the experimental group as compared to the control group hence, research hypothesis was accepted

Section V: Association between posttest sleep scores and selected demographic variables.

In order to find the association between the posttest sleeps scores of critical ill clients and selected demographic variables such as age, gender, nature of occupation, duration sleep at home and history of previous ICU admission, chi square test was computed.

The following hypothesis was stated.

H_3: There will be significant association between posttest level of sleep quality and selected demographic variables.

Table 7: Association of effectiveness mean sleep score with selected demographical data.

Variable	Frequency Score of sleep effectiveness scale		$\chi 2$	Calculated p value
	Less than mean	More than mean		

AGE IN YEARS:				
20-30	5	1	5.493	0.13 NS
30-40	2	4		
40-50	5	8		
50-60	4	1		

GENDER:				
Male	6	14	7.57	* 0.005 S
Female	8	2		

AREA OF RESIDENCE:				
Rural	2	17	10.55	* 0.01 S
Town	1	2		
Urban	1	1		
Semi urban	4	2		
Nature of Occupation:				
Heavy	5	8	4.43	0.18 NS
Moderate	8	4		
Sedentary	3	2		
Usual duration of sleep at Home:				
Less than 6 Hours	7	1	11.64	* 0.006 S
More than 6 Hours	8	14		
History of ICU Admission:				
Yes	4	1	4	* 0.045 S
No	8	17		

* Significant, NS= not significant at $p < 0.05$ level

The data presented in Table 7 shows that there was significant association between posttest sleep effectiveness scores and demographic variables such as gender (χ^2=7.57, P value 0.005, table value 0.01), area of residence (χ^2=10.55, p

value=0.01, table value=0.01), usual duration of sleep at home (χ^2=11.64, p value=0.006, table value=0.05) and history of ICU admission (χ^2=4, p value=0.045, table value=0.05). It shows that the posttest sleep scores on effectiveness of sleep were influenced by these demographic variables. And there was no significant associations between posttest effectiveness sleep scores and demographic variables such as age in years and nature of occupation, Hence the research hypothesis was rejected for these two variables.

SUMMARY

This chapter has dealt with analysis and interpretation of data using descriptive and inferential statistics. To determine the effectiveness of earplugs and eye mask on quality of sleep, ‘t’ test was computed and was found to be significant. The findings of the study revealed that there was association between posttest sleep effectiveness score and demographic variables such gender, area of residence, usual duration of sleep at home and history of ICU admission and there was no association between posttest sleep effectiveness score and demographic variable such as age and nature of occupation.

CHAPTER V

DISCUSSION

The findings of the study have been discussed with reference to the objectives and hypotheses stated in introduction and in relation with the findings of other studies.

SECTION I: DEMOGRAPHIC DATA

The findings of the study demonstrated that the majority (46%)of the subjects in the experimental group and 30% of subjects in control group belonged to age group of 40-50 years. Majority (70%) of subjects belong to males in control group and 67% in experimental group. In experimental group, 80% of subjects were live with spouse, whereas 67% in control group. Majority of subject were coolie in control and experimental group, 63.3% and 53.33 respectively. The subjects' income less than Rs. 1000 were 83% in experimental group and 77% in control group. Majority of subjects in both experimental and control group were low socio-economic status 83.33% and 76.7% respectively. Majority of subjects in both experimental and control group's residence were rural that is 63.3% and 50% respectively. Majority of subjects in both experimental and control group's residence were rural that is 63.3% and 50% respectively. There was 46.66% of subjects' nature of occupation was heavy in control group and 43.33% in experimental group. Majority of subjects in both experimental (73.3%) and control group's (76.7%) usual duration of sleep at home was above 6 hours. Majority of the subjects in both experimental (83.33%) and control group (73.3%) have not hospitalized previously in Critical care units. Majority of the subjects' sleep assistance at home (experimental group: 23.3% and control group 16.7%) were taking bath before bed. Unit's light and machine sound was the most sleep disturbance factor among 80% of subjects in experimental group and 66.7% of subjects in control group.

Section II: Sleep scores among experimental group and control group.

The finding of the study demonstrated that the total mean score disturbance characteristics of experimental group was 295 (SD 30.45) and it was 319 (SD 28.2)

in control group. The mean score of sleep effectiveness characteristics of experimental group was 319 (SD17.44) and 291.2 (SD 30.4) was mean score of control group. The mean sleep supplementation characteristics of intervention group was 88.67 (SD 17.37) and 112.3 (SD 26.9) was the mean score of control group.

Section III: Effectiveness of earplugs and eye mask on sleep:

The findings of the study revealed that there was significant difference between the mean pre-test and posttest sleep scores. The mean score of pre test disturbance scale (316.3) is higher than posttest score (289). The mean score of the pre test effectiveness scale (297.5) is lower than posttest score (321). The mean pre test score of sleep supplementation scale (112.17) is higher than the posttest mean score (88.33). The three domains the sleep scales demonstrate the reduced sleep disturbance, improvement in effectiveness of sleep and need for sleep supplementation after the intervention. And the 't' value computed was highly significant ($t_{(29)}$ =2.89 -sleep disturbance score, 3.59-effectiveness scale and 6.71, table value $t_{(29)}$ =1.70, $p<0.05$). This finding showed that the earplugs and eye mask was effective in improving quality of sleep among clients admitted in critical care units.

A study was conducted to evaluate the effectiveness of earplugs and eye mask on quality of sleep revealed that patients reported better-perceived sleep quality when they wore the sleeping aids. Total sleep satisfaction scores were significantly better for the intervention group (p=002). Seven of the subjective categories were independently significant (p=.005-.044). (Carrie J Scotto, Carol McClusky, Scotta Spillan and Justine Kimmel, 2009) as measured with Verran-Snyder & Halpern Sleep Scale, which supports the present study.

Section IV: Comparison of the level of quality of sleep between experimental and control group.

The findings of the present study revealed that the 't' value computed was highly significant ($t_{(58)}$ disturbance scale=3.07, effectiveness scale-4.4 and supplementation scale=2.99, table value $t_{(58)}$ 1.670, $p < 0.05$). It shows that there was much improvement in sleep quality among experimental group as compared to the control group.

Section V: Association between posttest sleep score and selected demographic variables.

The findings of the study showed that there was significant association between posttest sleep effectiveness score and demographic variables such as gender, area of residence, usual duration of sleep at home and history of ICU admission.

Majority of the participants in both groups were males. Since, there is an association between gender and sleep score, it is more effective for male clients. Majority of the participants were from rural background. As there is an association between area of residence and sleep score, the intervention is effective among clients from rural areas. Majority of the participants' usual duration of sleep at home was above 6 hours. As there is significant association between duration of sleep at home and the intervention, it is effective among clients who slept more than 6 hours at home. There is a significant association between history of admission in critical care units and sleep score. As majority of clients had no history of previous admission in critical care units, the intervention is effective for the new clients.

There were no significant associations between posttest sleep effectiveness score and demographic variables such as age in years and nature of occupation. Since majority of the clients were between 40-50 years of age, the age group did not influence the intervention and sleep score. Majority clients' nature of the occupation was coolie. As there was no significant association between sleep score and nature of occupation, the nature of occupation was not influenced the sleep score.

Summary:

This chapter has discussed the findings of the present study in the light of similar studies conducted in the past.

Chapter VI

SUMMARY, IMPLICATION AND RECOMMENDATION

This chapter deals with the summary of the study recommendations, implementation and conclusions drawn. It focuses on the implications and gives recommendations and give recommendation for nursing practices, nursing research, nursing administration and nursing education.

6.1 SUMMARY OF THE STUDY

The focus of the study was to determine the effectiveness of earplugs and eye mask on quality of sleep among subjects admitted in critical care units, at Govt Rajaji Hospital, Madurai. The design of the study was carried out the following objectives.

11. To assess the pre-test level of quality of sleep among experimental and control group.
12. To assess the post-test level of quality of sleep among experimental and control group.
13. To evaluate the effectiveness of earplugs and eye mask on level of quality of sleep among experimental group.
14. To compare the level of quality of sleep between experimental and control group.
15. To associate between pre-test and posttest level of quality of sleep with selected demographic variable.

The duration of the data collection was 30 days. The researcher after establishing the rapport with subjects, pre test assessment was done. Posttest assessment was done after intervention among experimental group and without intervention among control group.

6.2 **MAJOR FINDINGS OF THE STUDY.**

There is a statistical significance in the effectiveness of earplugs and eye mask on quality of sleep among clients admitted in critical care units.

- In pre test, the mean sleep disturbance characteristics score was 316.3 among experimental group and 318.5 among control group. But, there was significant significance in posttest score of disturbance. The mean posttest score of sleep disturbance characteristics was 289 in experimental group and 319.8 was in control group. This reduced means score of sleep disturbance in the posttest among experimental group demonstrate effectiveness of the interventions.
- In pre test the mean sleep effectiveness characteristics score of experimental group was 316.3 and 294.7 was in control group. In posttest, there was significant increased in effectiveness score among experimental group. Total posttest mean score of sleep effectiveness characteristics in experimental

group was 321 and 288 was in control group. The increased mean sleep effectiveness scores in the posttest among experimental than control group demonstrates the effectiveness of the interventions on quality of sleep.

- In pre test the mean sleep supplementation characteristics score of experimental group was 112.17 and 108.7 in control group. There was significant reduction in mean sleep supplementation score among experimental group than control group. Total posttest mean sleep supplementation score of experimental group was 88.33 and 112.3 was in control group. The reduced mean score in the posttest of experimental group indicates reduced need for sleep supplementation and increased score of means score of in the posttest than pre test in control group indicates the need for further supplementation.
- There was significant difference between posttest mean sleep score among experimental and control group.
- There was significant difference between pre test and posttest sleep score among experimental group ($t_{(29)}$, Disturbance scale=2.89, effectiveness scale= 3.59 and supplementation scale=6.71, table value $t(29)=1.70$, $p<0.05$).
- Comparison of the level sleep score between experimental group and control group was highly significant ($t_{(58)}$ Sleep disturbance=3.08, sleep effectiveness= 4.38 and sleep supplementation=2.99, table $t_{(58)}=1.67$, $p<0.05$).
- There was significant association between posttest sleep score and demographic variables such as gender, area of residence, usual duration of sleep at home and history of ICU admission.. And there was no significant association between the posttest sleep score and demographic variables such as age in years and nature of occupation,

6.3 NURSING IMPLICATIONS

The findings of the study have implications for nursing practice, nursing education, nursing administration, and nursing research.

NURSING PRACTICE

Since the earplugs and eye mask are one of the simplest device to control noise and light exposure during night, the nurse could provide the patient with accurate and objective information concerning earplugs and eye mask. Nurse may assume an integral and valuable role n overcoming the sleep problems due to noise and light exposure. Nurse should advocate the patients and families in the informed choice process. Critically ill clients can fulfill their role if they develop healthy practices such as using earplugs and eye mask during their stay in critical care unit. Since the nurses are one of the largest healthcare providers and health promotion in one of the major roles the nurses have to play, they can teach their patients to wear earplugs and eye mask to promote sleep in critical care units.

NURSING EDUCATION

Nursing education should emphasize more preparing prospective nurses to impart health information and assist the patients in developing their self-care potentials. The student nurse should be well prepared with adequate knowledge to give prompt information and intervention to the patients regarding wearing earplugs and eye mask in promoting sleep in critical care unit. A nurse can serve as a resource person to patient and their families for dissemination of accurate information concerning promotion of sleep in critical care unit; participating in educational programs among health care workers working in various critical care units. In service education can be planned for nurses at various levels to enable them to improve their knowledge on sleep promotion activities like wearing earplugs and eye mask in critical care units and specify the contributions nurses can give to improve sleep and quality of life among critically ill patients.

Nursing Administration

The concept of extended role of nurse offers many opportunities for a nurse administrator; nurse may use the study findings to improve the quality of care critical care units. The nurse administrators in the higher level of authority must hold discussions and meetings on the prevailing scenario on role of earplugs and eye mask on quality of sleep in critical care units. Nurse administrators should provide the information regarding the various aspects of modification critical care environment to promote quality of sleep such as wearing earplugs and eye mask, dim light in night, reduce conversation in unit, keep low volume of sound from phone, life saving equipments to their subordinates to update their knowledge for the effective health system administration. Administrators should organize in-service education programmes, refresher courses, panel discussions and workshops for nurses, and encourage them to participate in these activities. The nurse administrator should make arrangements to see that sufficient manpower; money and materials are available for disseminating health services.

Nursing Research

Research has to be conducted with a view to contribute knowledge to the body of nursing, to expand and broaden the scope of nursing. This is possible only if nurses take initiative to conduct further research. Earplugs and eye mask are simple devices and successful therapy to improve quality of sleep in critical care units but still it faces challenges in the application of it. Research in the area of effectiveness of earplugs and eye mask on quality of sleep is found to be necessary to make positive and significant contributions. Thus, the nurse researcher should conduct further research on effectiveness of earplugs and eye mask on quality of sleep in critical care units.

6.4 Limitations

- The study was confined to a specific hospital, which imposes limits on generalization.
- The sample size was small, thus restricts the statistical inferences of results.

6.5 Suggestions

- Nurses and clients in critical care units may be taught to acquire necessary acknowledge and skills regarding earplugs and eye mask to enhance quality of sleep so as to perform and practice it among client admitted in critical care units.
- Earplugs and eye mask should be an integral part of comprehensive management of sleep problems in critical care units.

6.6 Recommendations

On the basis of findings of the study, it is recommended that:

3. A similar study can be replicated on a large sample thereby findings can be generalized for a larger population.
4. A survey can be done to find out the prevalence of sleep problems among clients admitted in critical care units and their used of earplugs and eye mask, which will help to do further teaching programme.
5. An in-service programme about the importance of earplugs and eye mask on quality of sleep can be conducted among staff working in critical care units.

6. A follow up study can be done to determine the effectiveness of earplugs and eye mask in promoting quality of sleep among clients in critical care units.

6.7 Conclusion:

Earplugs and eye mask are useful simple and cost effective devices can be used to reduce noise and light exposure, thereby to ensure quality of sleep in critical care units. Good sleep is most deserving for acutely ill clients for speedy recovery.

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VERRAN AND SNYDER-HALPERN SLEEP SCALE

Sample no: ☐ **VISUAL ANALOG SLEEP SCALE**

Direction: Answer each question by placing a vertical mark across the answer line at a point which BEST REFLECTS YOUR OPINION.

Example: Happy_____|_____ Sad

Answer all of the following questions about your last night's sleep. Consider the night's sleep to begin from the time you first tried to go to sleep to the time you were finally "up" in the morning.

1.Did not awaken _____

Was awake 8 hours.

2. Had no sleep _____

Excluding timeawake, had 8 hours of sleep

3. Did not sleep during the day yesterday _____

Slept 8 hours during the day

4. Did not sleep yesterday morning _____

Slept off and on yesterday morning

5. Did not sleep yesterday evening _____

Slept off and on yesterday evening

6. Fell asleep immediately _____

Did not fall asleep

7. Slept lightly _____

Slept deeply

8. Had no trouble with disrupted sleep _____

Had a lot trouble with disrupted sleep

9. Didn’t wake at all _____

Was awake off and on all night

10. Had no trouble falling sleep _____

Had a lot of trouble falling asleep

11. Didn’t move _____

Tossed all night

12. Awoke exhausted _____

Awoke refreshed

13. After morning stayed awake _____

After morning awakening, dozed off and on

14. Had a bad night’s sleep _____

Had a good night’s sleep

15. Had enough sleep _____

Did not have enough sleep

From:

M.CHELLAPANDI,

M.Sc (N) II Year student,

College of Nursing,

Madurai Medical College,

Madurai-20

To:

The Professor and Head of the Department

Dept of Medicine

Government Rajaji Hospital,

Madurai.

Through: The Principal, College of Nursing, Madurai Medical College, Madurai.

Respected Sir/madam,

SUB: Requesting permission to conduct dissertation-data collection in critical care units, Govt. Rajaji Hospital, Madurai.

I am a final year M.Sc Nursing student in College of Nursing, Madurai Medical College, Madurai. In partial fulfillment of Master degree in Nursing. I have selected the

topic " A study to assess the effectiveness of earplugs and eye mask on quality of sleep among critical care units, Govt. Rajaji Hospital, Madurai", for dissertation to submit to The Dr. M.G.R Medical University, Chennai-32.

Hence, I request you to kindly permit me to conduct my dissertation –data collection at critical care units, Govt. Rajaji Hospital, Madurai.

Kindly do the needful.

Thanking you.

YOURS SINCERELY

Date:

Place: (M. Chellapandi)

VSH SLEEP SCALE – CHECK LIST

Sample No: Experimental / Control Group

1.DISTURBANCE SCALE- Perception of the degree the bulk sleep period - disturbed due to fragmentation and sleep latency**.**

1.1 Fragmentation Characteristics	Pre test score	Posttest score		
		Day 1	Day 2	Mean
Mid-Sleep Awakening (item 9)				
Wake After sleep Onset (item 1)				
Movement during sleep (11)				
Soundness of sleep (item 7)				
Quality of disturbance (item 8)				

1.2 LATENCY CHARACTERISTICS				
Sleep latency (item 6)				
Quality of Latency (item 10)				

2.**EFFECTIVENESS SCALE-** Perception of the degree the bulk sleep period was-considered to be effective

2.1 Quality Characteristics	Pre test score	Posttest score		
		Day 1	Day 2	Mean
Rest upon awakening (item 12)				
Subjective quality of sleep (item 14)				
Sleep sufficiency evaluation (15)				
2.2 Length Characteristics				
Total sleep time (item 2)				
Total sleep period (item 16=1+2 item)				

3. SUPPLEMENTATION SCALE- perception of the degree to which the bulk sleep-period was augmented with additional sleep time.

	Pre test	Posttest score

	score	Day 1	Day 2	Mean
Day Sleep (item 3)				
Morning Sleep (item 4)				
Afternoon Sleep (item 5)				
Wake after final arousal (item 13)				

SECTION – A

DEMOGRAPHIC VARIABLES

SAMPLE NO:

1. Age: ☐

i. 20-30, ii 30-40 iii. 40-50, iv 50-60

2. Gender: i. Male ii.Female ☐

3. Family income (per month): ☐

i. > Rs.1000 ii. 1000-5000 iii. Rs. 5000-10000 iv. Above 10000

3. Socio-economic status: ☐

i. Low class ii.Middle class iii.Upper class

4. Marital status:

i. Single ii. Spouse alive iii. Spouse not alive iv. Separated. ☐

5. Residence:

i. Rural ii. Town iii. Urban iv. Semi urban ☐

6. Occuapation:

i. Coolie ii. Govt/Private Employee iii. Pensioner iv. Dependent ☐

7. Nature of the job:

i. Heavy ii. Moderate iii Sedentary ☐

8. Usual time of going to bed at home:

i. < 7PM, ii. 7-9 PM iii 9-11 PM iv. > 11 PM ☐

9. Duration of sleep at home:

i. Less than 6 Hours ii. Above 8 hours ☐

10. Had been hospitalized at critical care units previously: Yes / No ☐

11.Do have routine assistance for sleeping: Yes / No ☐

(TV, Radio, Reading, Drinking milk, bathing, Yoga,)

If yes, Mention_____

12. Which was the most disturbing factors disturbed your last night sleep?

Letter seeking consent of the subject for participation in the study

ùYWôu Utñm vùSùPo – aôpùTou ÕdL A[®å

EeLðûPV º\kR AÀlÀWôVjûR ùYÇlTåjR ¨iP ÅûP úLôh¼p ùNeájç AûPVô[m CPîm

1. ÅÆdL ÅpûX _____ 8 U½ úSWm ÅÆj¾ìkúRu
2. ÕeLÅpûX _____ ÅÆjR úSWm RÅW 8 U½úSWm ÕdLm
3. úStñ TLÄp ÕeLÅpûX _____ TLÄp 8 U½ úSWm ÕdLm
4. úStñ LôûXÂp ÕeLÅpûX _____ úStñ LôûXÂp AqYlúTôç Õe¸ú]u.
5. úStñ UôûXÂXo ÕeLÅpûX _____ úStñ UôûXÂp Õe¸ú]u.
6. EP]¼VôL ÕdLm YkRç _____ EP]¼VôL ÕdLm YWÅpûX
7. úUúXôhPUô] ÕdLm _____ BrkR ÕdLm
8. RûPlThP ÕdLjRôp ÀWfNû]Ls Juñm CpûX _____ RûPlThP ÕdLj¾]ôp ¿û\V ÀWfNû]Ls
9. ÕdLj¾p GZÅpûX _____ CWî êïYçm AqYlúTôç êÆlTçm ÕeáYçUôL CìkúRu

10. ÕdLm YìYRtdá GkR ÀWfNû]ëm CpûX ——————— ÕdLm YìY¾p LxPm

11. ÕdLj¾p EPp AûNîLs CpûX ——————— CWî êïYçm EPp AûNîLs CìkRç

12. Cû[lúTôå GïkúRu ——————— éjçQofºúVôå GïkúRu

13. LôûXÂp GïkRÀu TLp êïYçm ÅÆk¾ìkúRu ——————— LôûXÂp GïkR Àu AqYlúTôç LiLs ùNôd¸Vç

14. CWî ÕdLm úUôNUôL CìkRç ——————— CWî SpX ÕdLm CìkRç

15. úTôçUô] ÕdLm ——————— úTôçUô] ÕdLm CpûX

Dear Participants!

I am final year M.Sc (Nursing) student of college of nursing, Madurai Medical college, Madurai. As a partial fulfillment of the course, I have undertaken the following research study.

" A study to assess the effectiveness of earplug and eye mask on quality of sleep among patients admitted in critical care units, Govt.Rajaji Hospital, Madurai."

I invite you to kindly participate in the study. As a part of my study I would like to provide you a earplug and eye mask to wear prior to sleep through out study night. I require you to answer the questions to the best of your capacity. You will be asked to express your quality of sleep.

The successful completion of the study mainly depends on your active co-operation and participation. I also assure you that your identity and response will be kept confident throughout research process and thereafter.

Thanking you.

Yours sincerely,

(M.CHELLAPANDI)

Signature of the Participant