

A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECT OF ACUPRESSURE ON QUALITY OF SLEEP AMONG CHRONIC KIDNEY DISEASE PATIENTS ON HEMODIALYSIS IN SELECTED HOSPITALS, HOSHIARPUR, PUNJAB

Pushpinder Kaur^{1*}

^{1*}Professor, Sukhjinder Novel Institute of Nursing, Dunera, Pathankot,
Punjab

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Abstract

Chronic kidney disease (CKD) and kidney failure significantly affect the physical and psychological well-being of patients undergoing hemodialysis, with sleep disturbance being one of the most common complications due to uremia and associated metabolic changes. This study aimed to assess the effect of acupressure on the quality of sleep among chronic kidney disease patients receiving hemodialysis. A quantitative research approach with an experimental design was adopted. A total of 60 patients were randomly assigned into experimental and control groups. The Pittsburgh Insomnia Rating Scale-20 (PIRS-20) was used to measure insomnia levels before and after the intervention. In the experimental group, pre-test findings showed that 43.33% of patients had moderate insomnia and 36.67% had severe insomnia. Following acupressure intervention on P6 and K1 acupoints, the majority of patients demonstrated mild insomnia during post-test assessment, and no patient reported severe insomnia. The difference in mean pre-test and post-test insomnia scores was statistically highly significant ($p = 0.001$). In the control group, 53.33% had moderate insomnia during pre-test, and 56.67% remained in the same category during post-test, with only slight improvement ($p = 0.012$). The findings conclude that acupressure is an effective, non-pharmacological intervention for improving sleep quality among chronic kidney disease patients undergoing hemodialysis.

Keywords: Chronic kidney disease, Hemodialysis, Acupressure, Sleep quality, Insomnia, PIRS-20, Non-pharmacological intervention.

Introduction

Sleep is a fundamental physiological need essential for maintaining physical, psychological, and emotional well-being, as it allows the body and mind to recover from daily stressors, conserve energy, promote cellular repair, and maintain cognitive functioning, while inadequate sleep can result in fatigue, reduced concentration, irritability, and serious health complications including cardiovascular disorders, hypertension, and depression, with sleep disorders affecting approximately 12% to 25% of the general population worldwide.¹ Among patients with chronic illnesses, particularly chronic kidney disease (CKD), sleep disturbances are highly prevalent due to physiological changes, treatment burden, and psychological stress. Chronic kidney disease is a progressive and irreversible loss of renal function that often advances to end stage renal disease (ESRD), requiring renal replacement therapies such as hemodialysis, which, while lifesaving, imposes significant physical, emotional, and social burdens on patients.² Sleep disturbances are among the most distressing complications in hemodialysis patients and are caused by multiple factors including uremic toxin accumulation, elevated creatinine and urea levels, pain, pruritus, muscle cramps, restless leg syndrome, sleep apnea, anxiety, depression, and treatment-related discomfort, all of which disrupt

sleep architecture and reduce sleep efficiency.³ Hemodialysis patients are also highly susceptible to emotional disturbances due to chronic stress associated with dietary restrictions, medication regimens, dependency on caregivers, financial burden, functional limitations, altered self-perception, and fear of death, which further contribute to insomnia and poor sleep quality.⁴ Studies have shown that sleep disturbance is one of the most common symptoms experienced by dialysis patients globally, with nearly 80% of hemodialysis and peritoneal dialysis patients reporting sleep abnormalities, a prevalence significantly higher than that of the general population.⁵ Polysomnographic studies have identified reduced total sleep time, reduced sleep efficiency as low as 66%, increased sleep fragmentation, and prolonged wakefulness during the night among dialysis patients.⁶ Subjective sleep complaints such as difficulty initiating and maintaining sleep, daytime sleepiness, jerking legs, snoring, choking sensations, and restless leg syndrome significantly impair quality of life and interfere with activities of daily living.⁷ Research has documented that 50% to 80% of CKD patients experience sleep disturbances, which negatively affect daytime functioning, mental alertness, and emotional stability.^{8, 9} Since sleep disturbance has become a major clinical concern, non-pharmacological interventions such as acupressure are increasingly being explored as effective management strategies. Acupressure, a non-invasive complementary therapy derived from traditional Chinese medicine, involves applying pressure to specific anatomical points to restore physiological balance and promote relaxation.¹⁰ It is believed to improve sleep quality by altering neurotransmitter release, activating endogenous opioid systems, and stimulating endorphin secretion. Acupressure applied to Pericardium 6 (P6) and Kidney 1 (K1) acupoints has shown significant effectiveness in improving sleep quality among CKD patients undergoing hemodialysis.¹¹ Studies by Parfrey et al. identified sleep disturbance as one of the seven most prevalent symptoms among dialysis patients, while Holley and colleagues reported common complaints including trouble falling asleep, night-time awakenings, and restless legs.¹² A cross-sectional study conducted in Brazil among 400 chronic hemodialysis patients found poor sleep quality in 227 individuals, while Sabry et al. reported a prevalence of 79.5% sleep disorders among Egyptian hemodialysis patients.^{13 14} The prevalence of poor sleep quality among hemodialysis patients ranges from 41% to 83%, compared to only 7% to 40% in the general population.¹⁵ In India, where CKD is an increasing public health concern, many patients undergoing hemodialysis face psychosocial stressors including fluid restrictions, food limitations, depression, and social isolation, which worsen sleep disturbances.¹⁶ Despite the high prevalence of sleep-related problems, limited interventional studies have evaluated non-pharmacological therapies for their management. Existing evidence suggests that acupressure significantly improves sleep quality and offers a safe, cost-effective, and nurse-administered intervention. Therefore, there is a clear need to assess its effectiveness among chronic kidney disease patients on hemodialysis. Keeping these facts in view, the investigator observed that many patients suffer from sleep disturbances and lack awareness regarding alternative non-invasive therapies. Nurses have a critical role in providing holistic care through complementary interventions, which motivated the investigator to undertake a quasi-experimental study to assess the effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis in selected hospitals of Hoshiarpur, Punjab.

Aim of study

To assess the effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis.

Objectives

1. To assess quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.
2. To compare quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.
3. To find out relationship between quality of sleep and selected demographic variables among chronic kidney disease patients on hemodialysis.

Hypothesis

H₀- There is statistically no significant difference in quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group at p<0.05 level of significance.

H₁- There is statistically significant improvement in quality of sleep among chronic kidney disease patients on hemodialysis after application of acupressure in experimental as compared to control group at $p < 0.05$ level of significance.

Delimitations

The study will be limited to Chronic kidney disease patients on hemodialysis having sleep disturbances in selected hospitals.

Conceptual framework

The concepts in which a researcher is interested are by definition, abstractions of observable phenomena and our world view (and views on nursing) shape how those concepts are defined and operationalized. A framework is the conceptual underpinning of a study. In a study that has its roots in a specified conceptual model, the framework is often called the conceptual frame work. In this study the conceptual framework is developed on the basis of review of literature, discussion with experts and the experience of the investigator during clinical practice. After an extensive search, the investigator found out that Martha Roger's Science of Unitary Human Being (1970) model is best suited to study the effectiveness of acupressure on reduction of insomnia among chronic kidney disease patients on hemodialysis. This theory directs therapeutic nursing interventions focusing on wholeness including alternative techniques, acupressure, guided imagery, relaxation and stress reduction techniques, therapeutic touch etc.

Martha E. Roger's Science of Unitary Human Being

Martha E. Rogers' Science of Unitary Human Beings provides a comprehensive conceptual framework for understanding human beings as indivisible, irreducible wholes who continuously interact with their environment. According to Rogers, a human being cannot be understood by analyzing separate body parts or individual systems in isolation, but must instead be viewed as a unified whole that is constantly exchanging energy with the surrounding environment. This theory is highly relevant to nursing research because it emphasizes holistic care, recognizing that health is influenced by the continuous interaction between the person and environmental forces. In the context of the present study on assessing the effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis, Rogers' theory offers a meaningful foundation for understanding how therapeutic interventions such as acupressure can influence the overall well-being of patients. According to Rogers' model, chronic kidney disease patients undergoing hemodialysis are considered unitary human beings who possess the capacity to knowingly participate in the process of change and healing. Their health experiences, including sleep disturbances, are not isolated physiological events but are part of a larger pattern of interaction between the human energy field and the environmental energy field. Rogers proposed that both human beings and the environment are irreducible energy fields that coexist and continuously interact. She identified four major building blocks of her theory: energy field, universe of open systems, pattern, and pan dimensionality. These concepts help explain the dynamic and holistic nature of human health and illness. The first building block is the energy field, which Rogers described as the fundamental unit of both living and non-living entities. The energy field is dynamic, infinite, and continuously changing. She identified two types of energy fields: the human field and the environmental field. In this study, the human field refers to chronic kidney disease patients undergoing hemodialysis who experience sleep disturbances, while the environmental field includes all internal and external factors affecting the patient, such as hospital surroundings, treatment procedures, family support, emotional stress, dietary restrictions, and healthcare interventions. These two fields cannot be separated because they are continuously interacting in mutual process. For example, as the severity of chronic kidney disease progresses, physiological disturbances such as toxin accumulation, fatigue, and discomfort increase, which directly influence sleep quality. Similarly, environmental factors such as noise in the dialysis unit, emotional stress, and treatment-related anxiety also affect the patient's sleep pattern. Acupressure, as a therapeutic intervention, acts on this human-environment energy exchange and promotes balance, thereby improving sleep quality among chronic kidney disease patients.

The second concept is the universe of open systems. Rogers believed that human beings and their environment are open systems with no boundaries except perceptual ones. Energy continuously flows between the human and environmental fields in an unbroken and dynamic process. This means that

individuals are constantly influenced by their surroundings, and likewise, they influence their environment. In relation to this study, chronic kidney disease patients experience their illness and sleep disturbances in diverse ways depending on their interactions with multiple environmental factors such as dialysis routines, family support systems, psychological stressors, healthcare provider interactions, and physical comfort. Since the universe is open and continuously changing, interventions such as acupressure can alter this dynamic interaction by creating positive changes in the energy field, thereby promoting better sleep and relaxation. The third concept is pattern, which Rogers defined as the distinguishing characteristic of an energy field perceived as a single wave. Pattern gives identity to each human and environmental field and reflects the unique experiences and health manifestations of each individual. Patterns are continuously changing but remain integral to the identity of the individual. In this study, sleep disturbances among chronic kidney disease patients can be understood as manifestations of disrupted field patterns. Some patients may experience mild insomnia, while others suffer from moderate or severe insomnia, indicating different wave-like patterns of disturbance. These variations reflect the unique human-environment interactions of each patient. The application of acupressure influences these disrupted patterns by helping restore balance and promoting more harmonious energy flow. The improvement in sleep quality after acupressure demonstrates positive alterations in the patient's field pattern. The fourth concept is pan dimensionality, which Rogers defined as a non-linear domain without spatial or temporal limitations. This concept suggests that human experiences transcend traditional concepts of time and space. Health changes can occur in multiple dimensions and are not restricted to linear progression. In the present study, chronic kidney disease patients on hemodialysis experience multiple manifestations of their illness, including physical discomfort, fatigue, insomnia, emotional distress, and psychological instability. These manifestations may vary over time and differ among individuals. Acupressure has the potential to influence these multidimensional experiences by reducing insomnia, improving relaxation, decreasing restlessness, and enhancing overall quality of life. Through the lens of pan dimensionality, the therapeutic effects of acupressure are viewed as changes occurring across multiple dimensions of the patient's experience.

Rogers further proposed three homeodynamic principles to explain the nature of change within human and environmental fields: resonancy, helicy, and integrality. These principles provide deeper insight into the dynamic processes involved in health and healing. The principle of resonancy refers to the continuous change from lower frequency wave patterns to higher frequency wave patterns in human and environmental fields. Human life processes, including physiological rhythms such as sleep-wake cycles, can be understood as wave patterns. In this study, sleep disturbances among chronic kidney disease patients represent altered wave patterns resulting from disease progression and environmental stressors. As the illness worsens, the natural rhythm of sleep becomes disrupted, moving from balanced to disturbed patterns. Acupressure facilitates a shift toward more harmonious and higher-frequency patterns, thereby improving sleep quality and restoring physiological balance. The principle of helicy describes the unpredictable, continuous, and innovative nature of change in human and environmental field patterns. Rogers explained that human change is spiral-like and moves toward increasing complexity and diversity. In the context of this study, the response to acupressure may vary among patients. Some patients may show significant improvement in sleep quality, while others may experience only partial improvement. This variability reflects the unique and unpredictable nature of human change. Although acupressure may not completely eliminate insomnia in all chronic kidney disease patients, it contributes to progressive positive change by reducing sleep disturbances and promoting relaxation. The principle of integrality refers to the continuous mutual interaction between human and environmental fields. This principle emphasizes that human beings and their environment are inseparable and continuously influencing each other. In this study, the effectiveness of acupressure depends not only on the intervention itself but also on the environmental conditions in which it is applied. A calm, supportive, and comfortable environment enhances the therapeutic effect of acupressure, while a stressful or disruptive environment may reduce its effectiveness. This principle highlights the importance of holistic nursing care, where both patient-centered interventions and environmental modifications are essential for achieving optimal outcomes. Thus, Martha E. Rogers' Science of Unitary Human Beings provides a valuable theoretical

framework for the present study. It supports the view that chronic kidney disease patients on hemodialysis are holistic beings whose sleep disturbances are influenced by complex interactions between human and environmental energy fields. Acupressure, as a non-invasive nursing intervention, promotes positive changes in these energy fields, leading to improved sleep quality. The theory emphasizes that healing is a dynamic, multidimensional, and continuous process, making it highly appropriate for understanding the holistic effects of acupressure among chronic kidney disease patients undergoing hemodialysis.

Review of Literature

Chronic kidney disease (CKD) is a progressive and debilitating health condition that significantly affects the physical, psychological, and social well-being of affected individuals. It is associated with multiple complications that adversely influence patients' quality of life, among which sleep disturbance is one of the most common and distressing symptoms. Poor sleep quality in hemodialysis patients has been recognized as an important predictor of morbidity, mortality, treatment compliance, and overall quality of life. Studies indicate that the prevalence of poor sleep quality, including insomnia, sleep apnea, breathing disturbances during sleep, restless leg syndrome, and excessive daytime sleepiness, ranges from 45% to 80% among hemodialysis patients. Similar to the general population, factors such as stress, anxiety, depression, and persistent worry are significantly associated with poor sleep quality among dialysis patients.¹⁷ Although sleep disturbance is highly prevalent and affects patient outcomes, there are relatively few documented interventional studies that address this problem effectively. Therefore, there is an urgent need to identify and evaluate effective interventions for improving sleep quality among chronic kidney disease patients on hemodialysis. Acupressure has emerged as a valuable non-invasive complementary therapy that has shown positive outcomes in improving sleep quality among patients with chronic illnesses.¹⁰ The review of literature related to the present study has been organized under two major headings: quality of sleep among hemodialysis patients and the effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis. Several studies have investigated the prevalence and severity of sleep disturbances among hemodialysis patients. A longitudinal study conducted at Roudebush Veterans Administration Medical Center, United States, assessed sleep and activity patterns among 145 CKD patients using questionnaires. The study revealed that patients undergoing hemodialysis experienced significantly greater sleep disruption compared to CKD patients not on dialysis. The researchers concluded that dialysis patients experience more severe sleep disturbances, emphasizing the burden of dialysis-related sleep disruption.¹⁸ Similarly, a comparative study conducted at Konya Research and Training Hospital, Turkey, among 233 hemodialysis patients examined sleep quality and its predictors. The findings demonstrated that poor sleep quality was highly prevalent, and depression along with employment status were identified as major predictors affecting sleep quality among these patients.¹⁹

A quasi-experimental study carried out at the University of Calgary, Canada, evaluated sleep disruption among patients with sleep apnea and end-stage renal disease. Two groups were compared, one consisting of ESRD patients and the other with normal renal function. Using the Pittsburgh Sleep Quality Index, the study reported a significantly higher prevalence of sleep disturbances among ESRD patients, concluding that sleep disruption is a common and serious concern in this population.²⁰ Supporting these findings, an experimental study conducted at Athens University Medical School, Greece, assessed sleep disturbance in 101 hemodialysis patients using anxiety and depression scales. The results showed that insomnia and depression were major concerns among the participants. The study concluded that routine assessment and treatment of depressive symptoms could significantly improve psychological well-being, insomnia, and quality of life while potentially reducing mortality risk among hemodialysis patients.²¹ Inflammatory processes have also been implicated in poor sleep quality among hemodialysis patients. A study conducted at Far Eastern Memorial Hospital, Taiwan, involving 114 stable hemodialysis patients assessed sleep quality using the Pittsburgh Sleep Quality Index. Only 23 participants were classified as good sleepers, while 91 were categorized as poor sleepers. The researchers concluded that severe sleep impairment is highly prevalent among hemodialysis patients and that systemic inflammation may play an important role in the pathogenesis of sleep disturbances.²² Another experimental study conducted at McGill University Health Centre,

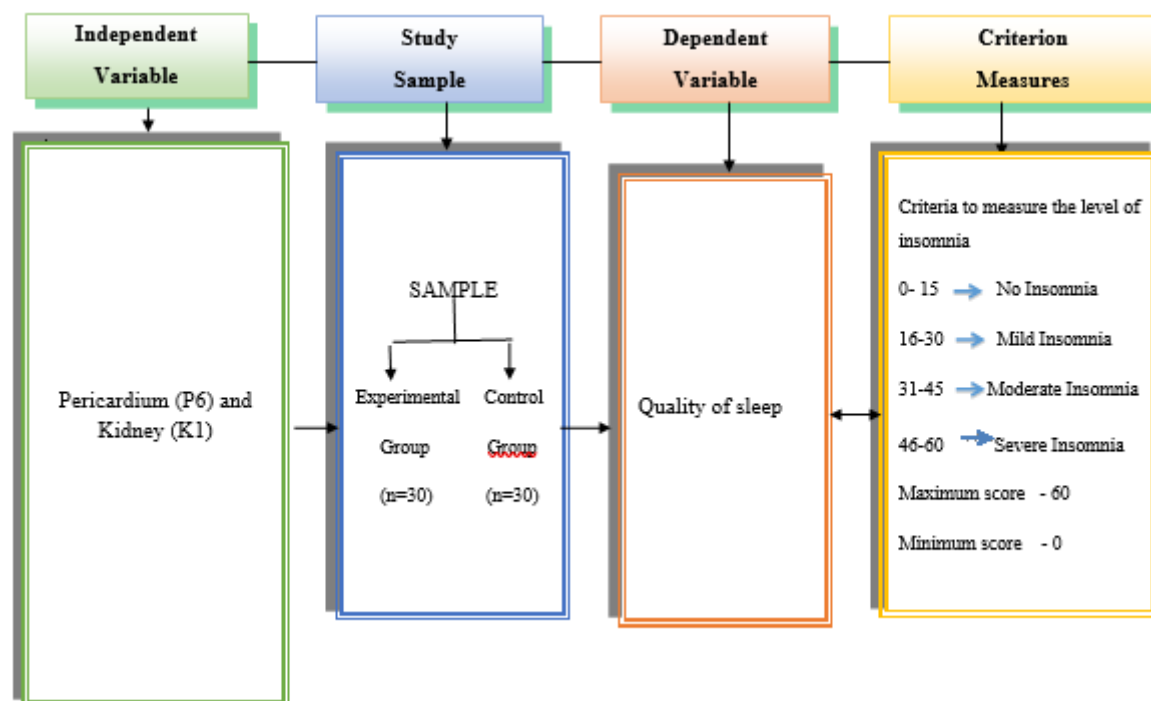
Canada, among 46 hemodialysis patients explored the correlation between physical functioning and sleep disturbances. Although poor sleep quality was highly prevalent, the study found no significant correlation between physical functioning and sleep disturbances, indicating that sleep problems may be influenced more by psychological and physiological factors than by physical performance.²³ Sleep efficiency has also been extensively studied among dialysis patients. A study conducted at the Department of Clinical Pharmacy, Netherlands, involving 112 hemodialysis patients assessed subjective sleep efficiency using sleep questionnaires. The findings revealed that nearly 80% of participants reported poor sleep quality and reduced sleep efficiency, confirming that sleep disturbances are common among this patient group.²⁴ Another study conducted at Kaohsiung Medical University Hospital, Taiwan, involving 150 long-term hemodialysis patients examined the impact of evening dialysis sessions on sleep quality. The results showed that snoring was the most commonly reported complaint, followed by insomnia and restless leg syndrome. Patients receiving evening hemodialysis experienced better sleep quality, less daytime sleepiness, and reduced dependence on hypnotic medications. The study concluded that evening dialysis may have beneficial effects on sleep quality and daytime functioning.²⁵

Research has also shown that sleep disturbances may occur early in the course of chronic kidney disease. A study conducted in Italy involving 124 CKD patients assessed sleep disorders using standardized questionnaires and found that 89.5% of patients reported sleep disturbances. The researchers emphasized that the time of diagnosis of CKD is a psychologically disruptive period that contributes to significant sleep-related complaints.²⁶ In contrast, a study conducted at Far Eastern Memorial Hospital, Taiwan, involving 861 hemodialysis patients evaluated the impact of spiritual and religious activities on sleep quality. The findings indicated no significant relationship between spiritual or religious activity and sleep quality, suggesting that such practices alone may not directly influence sleep patterns among hemodialysis patients.²⁷ Further evidence supporting the high prevalence of sleep disturbances comes from a study conducted among 245 chronic hemodialysis patients in Taiwan, which found a high prevalence of insomnia and poor sleep quality using the Pittsburgh Sleep Quality Index.²⁸ Similarly, a study conducted at Reina Sofia University Hospital, Spain, involving 32 hemodialysis patients used polysomnography to identify sleep disorders. The most common disorder identified was sleep apnea-hypopnea syndrome, followed by insomnia. The researchers concluded that hemodialysis patients exhibit significantly poorer sleep quality and increased apnea-hypopnea indices.²⁹ A cohort study conducted at the University of Pittsburgh Medical Center among 909 dialysis patients reported that approximately 40% experienced a decline in sleep quality during the first year of dialysis treatment, and this decline was associated with shorter survival.³⁰ A cross-sectional study conducted at Kingston General Hospital among 120 CKD patients found that 53% had poor sleep quality, concluding that sleep disturbances begin in the early stages of CKD and worsen as the disease progresses.³¹ The second category of literature focuses on the effect of acupressure on sleep quality among chronic kidney disease patients on hemodialysis. Acupressure has gained considerable attention as an effective complementary therapy for managing sleep disturbances. Sharithi A, Jahani S, Hooshmand M, and Khalili N investigated the effects of acupressure on sleep quality among 48 end-stage renal disease patients on hemodialysis who scored five or more on the Pittsburgh Sleep Quality Index. The intervention group received acupressure on Shenmen (He7), He Gu (Li4), and Sanyinjiao (Sp6) points for four weeks in addition to routine care, while the control group received only routine care. The results demonstrated significant improvements in global PSQI scores and all sleep quality dimensions, including subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The study strongly supported the effectiveness of acupressure as a non-invasive therapy for improving sleep quality among ESRD patients.³² Similarly, Eisa N, Mehdi R, Javad V, and Razieh KK conducted a randomized clinical trial among 62 hemodialysis patients with sleep disorders at Razi Hospital. Participants were randomly assigned to experimental and control groups. The experimental group received acupressure three times per week during dialysis for four weeks, while the control group received routine care. Sleep quality was assessed using the Pittsburgh Sleep Quality Index and sleep logs. The findings showed statistically significant improvements in subjective sleep quality, time required to fall asleep, sleep duration, habitual sleep efficiency, sleep

disturbances, daytime performance, and overall PSQI scores in the experimental group. Sleep logs further revealed reductions in nighttime awakenings and continuous improvement in sleep quality beginning from the first week of intervention.³³ A randomized controlled trial conducted by Shiow-Luan T and Mei-Li C in four major hospitals assessed the effectiveness of acupressure among 98 hemodialysis patients. Participants were randomly allocated to acupressure, sham acupressure, and control groups. Outcomes were measured using the Pittsburgh Sleep Quality Index and sleep logs. The results indicated significantly greater improvement in PSQI scores among the acupressure group compared to the control group. Significant improvements were observed in subjective sleep quality, sleep duration, habitual sleep efficiency, and sleep sufficiency. Sleep log data demonstrated reduced awake time and improved sleep quality over time in the acupressure group.³⁴ The reviewed literature clearly indicates that sleep disturbances are highly prevalent among chronic kidney disease patients undergoing hemodialysis and significantly impair their quality of life. The evidence also supports acupressure as an effective, safe, and non-invasive intervention for improving sleep quality. However, limited studies have been conducted in the Indian setting, highlighting the need for further research to evaluate the effectiveness of acupressure among chronic kidney disease patients on hemodialysis in selected hospitals of Hoshiarpur, Punjab.

Research Methodology

It explains the systematic procedures used to assess the effectiveness of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis in selected hospitals of Hoshiarpur, Punjab. Methodology forms the scientific foundation of a research study and provides a clear framework for collecting valid and reliable data. This chapter includes research approach, research design, research setting, variables, population, sample and sampling technique, criteria for sample selection, development and description of the tool, description of intervention, content validity, pilot study, reliability of tool, data collection procedure, ethical considerations, and plan for data analysis. A quantitative research approach was adopted for the present study. Quantitative research is appropriate when the purpose of the study is to measure variables objectively and statistically evaluate the effectiveness of an intervention. In this study, the quantitative approach was used to determine the effectiveness of acupressure on quality of sleep among chronic kidney disease patients undergoing hemodialysis by comparing pre-test and post-test scores. The research design selected for the study was a quasi-experimental non-equivalent control group pre-test, post-test design. This design was considered suitable because it enabled the investigator to compare the effectiveness of acupressure intervention between experimental and control groups. The design consisted of two groups. The experimental group received acupressure intervention, whereas the control group received routine care without intervention. Both groups were assessed before and after the intervention.



The design of the study was represented as follows:

	PRE-TEST	TREATMENT	POST-TEST
EXPERIMENTAL GROUP	O ₁	X	O ₂
CONTROL	O ₁	-	O ₂

Where, O₁ indicates pre-test assessment, X indicates acupressure intervention, and O₂ indicates post-test assessment.

The independent variable of the study was acupressure administered on Pericardium 6 (P6) and Kidney 1 (K1) acupoints. The dependent variable was quality of sleep among chronic kidney disease patients undergoing hemodialysis. Extraneous variables included age, gender, marital status, educational status, family income, occupation, stage of disease, and frequency of dialysis, which could influence the outcome of the study. The study was conducted in Modern Multispecialty Hospital and Shivam Super multispecialty Hospital, Hoshiarpur, Punjab. These hospitals were selected based on the convenience of the researcher, familiarity with the setting, and availability of sufficient chronic kidney disease patients undergoing hemodialysis. The selected settings provided adequate accessibility to the sample population required for the study. The target population for the study consisted of all chronic kidney disease patients undergoing hemodialysis who fulfilled the inclusion and exclusion criteria in hospitals of district Hoshiarpur. The accessible population comprised chronic kidney disease patients undergoing hemodialysis in Modern Multispecialty Hospital and Shivam Super multispecialty Hospital, Hoshiarpur. The sample size for the study consisted of 60 chronic kidney disease patients undergoing hemodialysis. Among them, 30 patients were assigned to the experimental group and 30 patients to the control group. Purposive sampling technique was used for sample selection. This non-probability sampling method was appropriate because it enabled the researcher to select participants who met the specific criteria relevant to the study objectives. The inclusion criteria for sample selection included patients aged between 18 and 65 years, patients willing to participate in the study, patients undergoing hemodialysis, and patients not taking any supplementary medicines to induce sleep. The exclusion criteria included patients who were unable to follow instructions due to advanced age, severe illness, or psychiatric disorders,

patients receiving supportive therapy other than medicine, patients taking antipsychotic drugs, and patients with upper or lower extremity amputation. The Pittsburgh Insomnia Rating Scale (PIRS-20) was selected as the tool for assessing quality of sleep among chronic kidney disease patients undergoing hemodialysis. The tool for data collection consisted of two sections. Section A included a structured questionnaire designed to collect demographic data such as age, gender, marital status, educational qualification, family income, occupation, stage of disease, and frequency of dialysis. Section B consisted of the Pittsburgh Insomnia Rating Scale (PIRS-20) used to assess quality of sleep. The Pittsburgh Insomnia Rating Scale is a standardized self-report instrument consisting of 20 items that assess sleep disturbances experienced over the preceding seven-day period. It includes questions related to difficulty initiating sleep, duration required to fall asleep, nighttime awakenings, difficulty returning to sleep, and overall sleep satisfaction. The total score ranges from 0 to 60, with scores above 15 indicating insomnia. Patients scoring above 15 were considered eligible for inclusion in the study, while those scoring below 15 were excluded.

The intervention procedure was carefully planned and systematically implemented. Initially, the researcher screened chronic kidney disease patients undergoing hemodialysis using the Pittsburgh Insomnia Rating Scale-20 to identify patients with insomnia or poor sleep quality. Patients scoring above 15 were selected for participation. An acupressure teaching booklet was developed by the researcher to educate patients and their significant family members regarding the acupressure technique. The booklet included information about the importance of sleep, benefits of acupressure, location of Pericardium 6 (P6) and Kidney 1 (K1) acupoints, and the method of applying pressure. The researcher provided the teaching booklet to patients in the experimental group and explained how acupressure on P6 and K1 points could improve sleep quality. Demonstration was given to both patients and their significant family members on locating and applying pressure on these acupoints. Following the demonstration, participants were asked to perform return demonstration to ensure correct understanding of the technique. The researcher personally administered acupressure to subjects in the experimental group for five minutes on each point during their hemodialysis sessions in the hospital. In addition, participants were instructed to perform self-acupressure on P6 and K1 points for five minutes on each point every evening and before bedtime. Family members were also encouraged to assist in administering acupressure when necessary. A record of self-acupressure practice was maintained by the patients or their family members to monitor compliance with the intervention protocol. Quality of sleep was assessed in both experimental and control groups before the intervention and again after two weeks using the Pittsburgh Insomnia Rating Scale-20. Content validity of the research tool was established by experts in the field of nursing to ensure that the instrument adequately measured the intended variables. The acupressure teaching booklet was also validated by acupressure experts to ensure accuracy and appropriateness of the intervention instructions. Necessary modifications were made based on expert suggestions. A pilot study was conducted on a small sample of chronic kidney disease patients undergoing hemodialysis to assess the feasibility and practicability of the study. The pilot study helped refine the research process and ensured smooth implementation of the intervention. Reliability of the Pittsburgh Insomnia Rating Scale was established using appropriate statistical methods to ensure consistency and accuracy of measurement. Ethical considerations were strictly maintained throughout the study. Permission was obtained from the concerned hospital authorities before conducting the research. Informed consent was obtained from all participants after explaining the purpose of the study. Confidentiality and anonymity of participants were ensured. The collected data were analyzed using descriptive and inferential statistics. Frequency, percentage, mean, and standard deviation were used for descriptive analysis. Inferential statistics such as paired t-test and unpaired t-test were used to compare pre-test and post-test scores within and between groups. Chi-square test was used to determine the association between quality of sleep and selected demographic variables. The level of significance was set at 0.05. Thus, the methodology adopted for the present study was systematic, scientific, and appropriate for evaluating the effectiveness of acupressure on quality of sleep among chronic kidney disease patients undergoing hemodialysis.

Pilot study

Pilot study was conducted in the month of January 2015 to ensure the reliability of the tool and feasibility of study. The permission was taken from concerned authorities for the conduction of the study. Purposive sampling technique was used for selection of sample. Tool was administered and acupressure was given in the experimental group. Data were collected and analyzed and study was found to be feasible.

Reliability of tool

Reliability refers to the accuracy or inaccuracy rate in the measurement devices. The reliability was calculated by test-retest method. The reliability of tool was 0.99 hence the tool was reliable.

Data collection procedure

Data collection was carried out during the month of January and February 2015 after taking formal permission from Senior Medical Officer of Modern Multispeciality Hospital and Shivam Multispeciality Hospital, Hoshiarpur. Purposive sampling technique was used for selection of the sample. The total samples consisted of 60 chronic kidney disease patients, 30 each in experimental and control group. Informed written consent was taken from subjects for participation in the study. Data were collected by using validated and reliable tools. The investigator first introduced self to the respondents and explained the purpose of gathering information. The researcher taught the subjects about the application of acupressure on P6 and K1 points on both arms and feet. The subjects in the experimental group were told to record the frequency of acupressure done on daily log for 14 days. Quality of sleep was assessed in both experimental and control group.

Ethical considerations

- Permission was obtained to conduct the study from Senior Medical Officer of Modern Multispeciality Hospital and Shivam Multispeciality Hospital, Hoshiarpur.
- The purpose of the study was explained to all the patients and written informed consent was obtained from them for the study.
- The responses were kept confidential and professional relationship with subjects was maintained.
- Treatment and routine care of the subjects was not disturbed in both control and experimental group.

Plan of data analysis

Analysis and interpretation of data has been done in accordance with objectives of the study. The analysis of data was done by using descriptive and inferential statistics i.e. by calculating percentage, mean score, standard deviation, 't' test, fisher test, ANOVA test.

Analysis and Interpretation

SECTION - I

Sample characteristics

Table 1: Frequency and Percentage distribution of chronic kidney disease patients on hemodialysis according to socio demographic variables

Demographi c Variables	Category	Experimenta l Group (n=30) f	Experimenta l Group %	Contro l Group (n=30) f	Contro l Group %	Fishe r test
Age (in years)	18–32	3	10	6	20	0.45 NS
	32–46	8	26.67	4	13.33	
	46–60	13	43.33	12	40	
	≥60	6	20	8	26.67	
Gender	Male	16	53.33	22	73.33	0.60 NS
	Female	14	46.67	8	26.67	
Marital Status	Married	26	86.67	24	80	0.56 NS
	Unmarried	0	0	0	0	
	Divorce/Separated	2	6.67	5	16.67	
	Widow/Widower	2	6.67	1	3.33	

Educational Status	No formal education	0	0	0	0	0.079 NS
	Up to middle class	9	30	13	43.33	
	Secondary	5	16.67	5	16.67	
	Senior secondary	8	26.67	11	36.67	
	Graduation	8	26.67	1	3.37	
	Post-graduation	0	0	0	0	
Monthly Income (in rupees)	Below 10000	6	20	5	16.67	0.71 NS
	10,001–20,000	11	36.67	9	30	
	20,001–30,000	11	36.67	11	36.67	
	Above 30,000	2	6.67	5	16.67	
Occupation	Government job	2	6.67	0	0	0.39 NS
	Private job	1	3.33	4	13.33	
	Business	3	10	5	16.67	
	Labourer	2	6.67	1	3.33	
	Non-working/Homemaker	22	73.33	20	66.67	
Stage of disease	Stage 1	0	0	0	0	1 NS
	Stage 2	0	0	0	0	
	Stage 3	0	0	1	3.33	
	Stage 4	1	3.33	0	0	
	Stage 5	29	96.67	29	96.67	
Frequency of dialysis	Once a week	15	50	18	60	0.45 NS
	Twice a week	15	50	12	40	
	Thrice a week	0	0	0	0	

NS: non-significant

Table 1 shows frequency and percentage distribution of subjects as per socio demographic variables i.e. age, gender, marital status, educational status, monthly income, occupation, stage of disease, frequency of dialysis. According to age, in experimental group, 43.33% patients of chronic kidney disease were in age group of 46-60 years, 26.67% patients of chronic kidney disease in age group 32-46 years, 20% chronic kidney disease were in age group 60 years or above and 10% chronic kidney disease patients were in age group 18-32. In control group, 40% chronic kidney disease patients were in age group 46-60 years, 26.67% chronic kidney disease patients were in age group 60 years or above, 20% chronic kidney disease patients were in age group 18-32 years and 13.33% chronic kidney disease patients were in age group 32-46 years. 53.33% were male with chronic kidney disease in experimental group and 46.67% were female. In control group 73.33% were male with chronic kidney disease patient and 26.67% were female with chronic kidney disease. In experimental group, 86.67% of the chronic kidney disease patients were married, whereas no patients were unmarried, 6.67% were divorcee/separated and 6.67% of were widow/ widower. In control group, 80% of the chronic kidney diseasepatients were married as well as 16.67% were divorce, and 3.33% of the chronic kidney disease patients were widow/widower. 30% of chronic kidney disease patients had qualification upto middle class, 26.67% upto senior secondary, 26.67% upto graduation, and 16.67% upto secondary in experimental group. 43.33% had qualification upto middle,36.67% upto senior secondary, 16.67% upto secondary and 3.33% of the chronic kidney disease patients had upto graduation level in control group. According to monthly income(in rupees), in experimental group, 36.67% chronic kidney disease patients had monthly income between Rs.10,001-20,000, 36.67% between Rs 20,001 – 30,000, 20% between less than 10, 000 and 2% chronic kidney disease patients had income above Rs 30,000. In control group, 36.67% had income between Rs 20,001 – 30,000, 30% between Rs 10,001-20,000, 16.67% chronic kidney disease patients earning less than Rs 10,000 and only 16.67% had above Rs 30,000. In experimental group,73.33% were not working/

homemakers, 10% had business, 6.67% had government job, 6.67% had laborers and 3.33% had private jobs. In control group, 66.67% were not working /homemakers, 16.67% had business, 13.33% chronic kidney disease patients had private jobs and 3.33% were laborers. 96.67% of chronic kidney disease patients were at stage 5 and 3.33% of chronic kidney disease patients were at stage 4 in experimental group. In control group, 96.67% of chronic kidney disease patients were at stage 5 and 3.33% of chronic kidney disease patients were at stage 3. According to frequency of dialysis, in experimental group, 50% patients of chronic kidney disease came for dialysis once a week and 50% patients of chronic kidney disease came for dialysis twice a week. In control group, 60% patients of chronic kidney disease came for dialysis once a week and 40% patients of chronic kidney disease were came for dialysis twice a week. The fisher exact test has been calculated to compare the sample characteristics of subjects in experimental and control group and difference was statistically non-significant. Hence it was concluded that the experimental and control group were comparable in terms of variables described.

SECTION-II

Objectives: 1. To assess the quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.

TABLE 2 (a):Frequency distribution of chronic kidney disease patients on hemodialysis according to levels of insomnia in experimental group

N=30

Levels of Insomnia	Criterion Measurement	Pre-test n	Pre-test %	Post-test n	Post-test %
No insomnia	00–15	1	3.33	5	16.67
Mild insomnia	16–30	5	16.67	15	50
Moderate insomnia	31–45	13	43.33	10	33.33
Severe insomnia	46–60	11	36.67	0	0

Maximum score =60

Minimum score = 0

Table 2(a) shows the frequency distribution of chronic kidney disease patients on hemodialysis according to level of insomnia in experimental group. In the experimental group during pre-test 43.33% chronic kidney disease patients on hemodialysis have moderate insomnia, 36.67% patients of chronic kidney disease have severe insomnia, and 16.67% patients of chronic kidney disease have mild insomnia and 3.33% chronic kidney disease patients have no insomnia. During post-test 50% chronic kidney disease patients on hemodialysis have mild insomnia, 33.33% chronic kidney disease patients on hemodialysis have moderate insomnia, 16.67% chronic kidney disease patients on hemodialysis have no insomnia and no any patient in the experimental group have severe insomnia after the interventions. Hence it can be concluded that mostly chronic kidney disease patients on hemodialysis have mild insomnia (50%) after the application of acupressure and no patient have severe insomnia. So, it shows that there is an impact of acupressure on quality of sleep among chronic kidney disease patients.

SECTION-II

Objectives: 1. To assess the quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.

TABLE 2(b):Frequency distribution of chronic kidney disease patients on hemodialysis according to levels of insomnia in control group

N=30

Levels of insomnia		Criterion measurement		Pre- test		Post- test	
n	%	n	%				
No insomnia		00	15.00	00.00	00	00.00	
Mild insomnia		04	13.33	04	13.33	03	10.00
Moderate insomnia		16	53.33	16	53.33	17	56.67
Severe insomnia		10	33.33	10	33.33	10	33.33

Maximum score =60

Minimum score = 0

Table 2(b) shows the frequency distribution of chronic kidney disease patients on hemodialysis according to level of insomnia in control group. In the control group during pre-test 53.33% chronic kidney disease patients on hemodialysis have moderate insomnia, 33.33% patients of chronic kidney disease have severe insomnia, and 13.33% patients of chronic kidney disease have mild insomnia and no patients of chronic kidney disease patients have no insomnia. During post-test 56.67% chronic kidney disease patients on hemodialysis have moderate insomnia, 33.33% chronic kidney disease patients on hemodialysis have severe insomnia, 10% chronic kidney disease patients on hemodialysis have mild insomnia and no any patients in the control group have insomnia. Hence it can be concluded that mostly chronic kidney disease patients on hemodialysis have moderate insomnia (53.33%) during the pre –test. But it remains same after the post-test.

SECTION-III

Objective 2: To compare quality of sleep among chronic disease patients on hemodialysis in experimental group and control group.

H0: There is statistically no significant difference in quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group at $p < 0.05$ level of significance.

H1: There is statistically significant improvement in quality of sleep among chronic kidney disease patients on hemodialysis after application of acupressure in experimental as compared to control group at $p < 0.05$ level of significance.

Table 3: Comparison of pre-test and post-test mean insomnia scores among chronic kidney disease patients in experimental and control group

N=60

Pittsburgh insomnia rating scale (PIRS_20)

Comparison	Group	n	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	df	t value	P value
Between groups	Experimental	30	39.23	10.22	29.03	9.85	58	0.40 (pre) / 5.49 (post)	0.69 / 0.001
	Control	30	40.23	8.87	41.63	7.82	58		
Within Experimental group	Experimental	30	39.23	10.22	29.03	9.85	29	9.68 ***	0.001
Within Control group	Control	30	40.23	8.87	41.63	7.82	29	2.68 *	0.012

Maximum score= 60

Minimum score= 0

*Significant at $p < 0.05$ level

*** Significant at $p < 0.001$ level

NS= Non-significant at $p < 0.05$ level

Table 3 depicts, the comparison of pre-test and post-test mean scores regarding level of insomnia among chronic kidney disease patients in experimental group. In experimental group, mean pre-test scores was 39.233 and mean post- test scores was 29.033. The difference between mean pre-test and post -test insomnia scores in experimental group was statistically significant at 0.05 level of

significance ($p=0.001$). In control group, mean pre- test scores was 40.23 and mean post-test insomnia scores was 41.63. The difference between mean pre-test and post- test scores in control group was statistically significant at $p<0.05$ level of significance ($p=0.0120$). So it is concluded that from the above findings that acupressure is effective to improve the insomnia among chronic kidney disease patients on hemodialysis. The difference between mean pre-test insomnia scores of experimental and control group was statistically non-significant ($p=0.6872$) but the difference between mean post- test insomnia scores between experimental and control group was statistically significant at $p<0.001$. Hence, Null hypothesis was rejected and research hypothesis was accepted as there is statistically highly significant effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis at $p<0.001$.

Objective -3:- To find out relationship between quality of sleep and selected demographic variables among chronic kidney disease patients on hemodialysis.

Table 4:Relationship of quality of sleep with selected demographic variables among chronic kidney disease patients on hemodialysis in experimental group and control group.

N=60

Socio-demographic Variables	Category	Experimental Group (n=30) Mean	Experimental SD	Control Group (n=30) Mean	Control SD	Test value
Age (in years)	18–32	36.0	5.57	37.33	8.14	F = 2.2 NS
	32–46	22.87	5.87	36.00	1.41	
	46–60	29.15	11.99	44.00	6.99	
	≥60	33.5	6.59	44.12	8.81	
Gender	Male	29.06	10.69	42.18	8.12	t = 0.38 NS / 0.31 NS
	Female	29.0	9.19	40.12	7.19	
Marital status	Married	29.27	9.48	41.71	7.65	F = 2.05 NS / 0.009 NS
	Divorcee/Separated	37	9.89	41.2	10.33	
	Widow/Widower	18	9.89	42	-	
Educational status	Up to Middle	30.78	9.87	42.61	7.52	F = 0.402 NS / 0.57 NS
	Secondary	30.4	11.44	42.6	5.03	
	Senior Secondary	29.5	9.89	39.45	9.39	
	Graduation	25.75	10.01	48	-	
Monthly income	Below 10,000	27.33	10.78	43.2	4.97	F = 0.38 NS / 0.37 NS
	10,001–20,000	28	11.57	43.22	6.34	

	20,001–30,000	29.82	36.7	39.82	10.33	
	Above 30,000	35.5	10.61	41.8	6.65	
Occupation	Government job	35.5	10.61	0	0	F = 0.82 NS / 1.07 NS
	Private job	21	0	39.25	5.12	
	Business	21.67	7.50	47.2	4.15	
	Labourer	28.5	7.78	42	0	
	Not working/Home maker	29.86	10.24	40.5	8.68	
Stage of disease	Stage 1	0	0	0	0	t = 11.799** * / 21.63***
	Stage 2	0	0	0	0	
	Stage 3	0	0	45	0	
	Stage 4	43	0	0	0	
	Stage 5	28.55	9.66	41.52	7.93	
Frequency of dialysis	Once a week	28.8	9.67	48.83	9.16	t = 0.123 NS / 1.05 NS
	Twice a week	29.27	10.37	39.83	5.06	
	Thrice a week	0	0	0	0	

*** Significant at $p < 0.001$ level of significance

NS- non- significant at $p < 0.05$ level of significance

Table 4 depicts that the mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 36 in age group of 18-32 as followed by 33.5 in age group of more than 60, 29.15 in age group 46-60 and 22.87 in age group 32-46. In control group, the mean insomnia scores were more in 44.12 in age group more than 60 followed by 44 in age group 46-60, 37.33 in age group 18-32 and 36 in age group 32-46. The association of mean scores among chronic kidney disease patients on hemodialysis in experimental and control group who were in various age groups was found statistically non-significant at $p < 0.05$ level. According to gender, the mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 29.06 in males as followed by 29.0 in females. The mean insomnia scores in control group were more i.e. 42.18 in males as followed by 40.12 in females. The association of mean insomnia scores in experimental and control group according to different categories of gender was found statistically non-significant at $p < 0.05$ level. The mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 37 among divorcee/separated followed by 29.27 among married, 18 among widow/widower. The mean insomnia scores among chronic kidney disease patients on hemodialysis in control group were more i.e. 41.71 among married followed by 41.2 among divorcee/ separated, 42 among widow/widower. The association of mean insomnia scores in experimental and control group according to different categories of marital status was found statistically non-significant at level $p < 0.05$. According to educational status, the mean

insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 30.78 in patients who were up to middle followed by 30.4 in patients who were up to secondary, 29.5 in patients who were up to senior secondary and 25.75 in patients who were graduate. The mean insomnia scores among chronic kidney disease patients on hemodialysis in control group were more i.e. 48 who were graduate followed by 42.61 in patients who were up to middle, 42.6 in patients who were up to secondary and 39.45 in patients who were up to senior secondary. The association of mean scores was found statistically non –significant at level $p < 0.05$. The mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 35 in patients who had an income above 30,000 followed by 29.82 in patients who had an income 20,001-30,000, 28 in patients who had an income 10,001-20,000 and 27.33 in patients who had an income below 10,000. The mean insomnia scores among chronic kidney disease patients on hemodialysis in control group were more i.e. 43.22 in patients who had an income 10,001-20,000 followed by 43.2 in patients who had an income below 10,000, 41.8 in patients who had an income above 30,000 and 39.82 in patients who had an income 20,001-30,000. The association of mean scores was found statistically non-significant at level $p < 0.05$. According to occupation, the mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 35.5 in government employees, followed by 29.86 in home makers or not working, 28.5 in laborers, 21.67 in businessmen, and 21 in private employees. The mean insomnia scores among chronic kidney disease patients on hemodialysis in control group were more i.e. 47.2 in businessmen, 42 in laborers, 40.5 in not working/ home makers and 39.25 in private employees. The association of mean scores was found statistically non-significant at level $p < 0.05$. According to stage of disease, the mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 43 in patients who were in stage 4 and followed by 28.55 in patients who were in stage 5. In control group, the mean insomnia scores among chronic kidney disease patients on hemodialysis were more i.e. 45 in patients who were in stage 3 and followed by 41.52 in patients who were in stage 5. The association of mean scores was found statistically significant at level $p < 0.05$. According to frequency of dialysis, the mean insomnia scores among chronic kidney disease patients on hemodialysis in experimental group were more i.e. 29.27 in patients who came for dialysis twice a week followed by 28.8 in patients who came for dialysis once a week. In control group, the mean insomnia scores among chronic kidney disease patients on hemodialysis were more i.e. 48.83 in patients who came for dialysis once a week followed by 39.83 in patients who came for dialysis twice a week. The association of mean scores was found statistically non-significant at level $p < 0.05$. Hence it can be concluded from above findings that age, gender, marital status, educational status, occupation, monthly income, and frequency of dialysis had no statistically significant impact on mean insomnia scores regarding quality of sleep among chronic kidney disease patients in experimental group and control group. But stage of disease had a statistically extremely significant at level 0.001 impact on insomnia mean score regarding quality of sleep among chronic kidney disease patients on hemodialysis in both experimental group as well as in control group.

MAJOR FINDINGS

According to Section-I, Findings related to sample characteristics

- 43.33% of chronic kidney disease patients on hemodialysis in experimental group were in age group 46-60 years. 40% of chronic kidney disease patients on hemodialysis in control group were in age group 46-60 years.
- In experimental group, 53.33% subjects were males and in control group 73.33% subjects were males.
- Most of the chronic kidney disease patients on hemodialysis i.e. 86.67% in experimental group were married and 6.67% were divorcee/separated and widow/widower each. In control group, 80% were married and 3.33% were widow/widower.
- According to educational status, 30% chronic kidney disease patients on hemodialysis in experimental group had qualification upto middle and 16.67% subjects had education upto secondary. In control group, 43.33% subjects had education upto middle class and 3.37% were graduate.

- According to monthly family income, 36.67% chronic kidney disease patients on hemodialysis in experimental group had income of Rs. 10,001-20,000. In control group, 36.67% had income of Rs. 20,001-30,000.
- Most of the chronic kidney disease patients on hemodialysis in experimental group i.e. 73.33% were not working and also in control group i.e. 66.67% were not working.
- According to stage of disease, majority of chronic kidney disease patients on hemodialysis both in experimental group and control group i.e. 96.67% were in stage 5.
- According to frequency of dialysis, majority of chronic kidney disease patients on hemodialysis in experimental group i.e. 50% came for dialysis once a week and 50% twice a week. In control group, 60% patients came for dialysis once a week.

According to objective 1- To assess quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.

In experimental group, during the pre-test 43.33% patients with chronic kidney disease patients on hemodialysis had moderate insomnia and after the intervention i.e. acupressure post-test was conducted which showed that 50% patients had mild insomnia. In control group, during pre-test 53.33% patients with chronic kidney disease on hemodialysis had moderate insomnia and during post-test 56.67% patients with chronic kidney disease on hemodialysis had same results i.e. moderate insomnia.

According to Objective 2- To compare quality of sleep among chronic kidney disease patients on hemodialysis in experimental and control group.

Mean insomnia score among chronic kidney disease patients on hemodialysis in experimental group and control group were compared. The pre-test mean insomnia score i.e. 39.23 in experimental group was less than that of pre-test mean insomnia score i.e. 40.23 in control group and post-test mean insomnia score i.e. 29.03 in experimental group was also less than post-test insomnia score i.e. 41.3 in control group. Hence, it can be concluded from the above findings that difference was found in the mean insomnia scores during pre-test and post-test and statistically it is significant at $p < 0.001$ level of significance (0.001).

The findings led to the rejection of null hypothesis and acceptance of research hypothesis.

According to Objective 3- To find out relationship between quality of sleep and selected demographic variables among chronic kidney disease patients on hemodialysis.

- According to age the difference between mean insomnia scores according to different categories of age among chronic kidney disease patients on hemodialysis in both experimental and control group was tested by 'F' test and found statistically non-significant at 0.05 level of significance. Hence, it can be inferred that there is statistically non-significant impact of age on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to gender the difference between mean insomnia scores according to different categories of gender among chronic kidney disease patients on hemodialysis in experimental group was tested by 't' test and found statistically non-significant at 0.05 level of significance ($p = 0.71$). The difference between mean insomnia scores among chronic kidney disease patients on hemodialysis in control group was tested by 't' test and found statistically non-significant at 0.05 level of significance ($p = 0.31$). Hence, it can be inferred that there is statistically non-significant impact of gender on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to marital status the difference between mean insomnia scores according to different categories of marital status among chronic kidney disease patients on hemodialysis in both experimental group and control group was tested by 'F' test and found statistically non-significant at 0.05 level of significance. Hence, it can be inferred that there is statistically non-significant impact of marital status on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.

- According to educational status the difference between mean insomnia scores according to different categories of educational status among chronic kidney disease patients on hemodialysis in both experimental group and control group was tested by 'F' test and found statistically non-significant at 0.05 level of significance. Hence, it can be inferred that there is statistically non-significant impact of educational status on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to family income/ month the difference between mean insomnia scores according to different categories of family income/ month among chronic kidney disease patients on hemodialysis in both experimental group and control group was tested by 'F' test and found statistically non-significant at 0.05 level of significance. Hence, it can be inferred that there is statistically non-significant impact of family income/ month on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to occupation the difference between mean insomnia scores according to different categories of occupation among chronic kidney disease patients on hemodialysis in both experimental group and control group was tested by 'F' test and found statistically non-significant at 0.05 level of significance. Hence, it can be inferred that there is statistically non-significant impact of occupation on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to stage of disease the difference between mean insomnia scores according to different categories of stage of disease among chronic kidney disease patients on hemodialysis in experimental group was tested by 't' test and found statistically significant at 0.05 level of significance ($p = 0.0001$). The difference between mean insomnia scores among chronic kidney disease patients on hemodialysis in control group was tested by 't' test and found statistically significant at 0.05 level of significance ($p = 0.001$) Hence, it can be inferred that there is statistically significant impact of stage of disease on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.
- According to frequency of dialysis the difference between mean insomnia scores according to different categories of frequency of dialysis among chronic kidney disease patients on hemodialysis in experimental group was tested by 't' test and found statistically non-significant at 0.05 level of significance ($p = 0.90$). The difference between mean insomnia scores among chronic kidney disease patients on hemodialysis in control group was tested by 't' test and found statistically non-significant at 0.05 level of significance ($p = 0.316$) Hence, it can be inferred that there is statistically non-significant impact of frequency of dialysis on quality of sleep among chronic kidney disease patients on hemodialysis in both experimental and control group at 0.05 level of significance.

Discussion

Chronic kidney disease (CKD) is a progressive and debilitating disorder affecting more than 70 million people worldwide, and its prevalence is expected to rise due to increasing rates of diabetes, hypertension, cardiovascular diseases, and population ageing. As the disease progresses, patients experience significant deterioration in physical and psychological health, including sleep disturbances. Dialysis patients commonly face multiple complications related to CKD, including somatic symptoms and psychosocial issues, among which dyssomnia is one of the most frequently reported problems. Sleep disturbances may initially occur during the adjustment phase of dialysis, but in many patients, these problems persist for months or years, severely affecting quality of life. Acupressure, a non-pharmacological complementary therapy, is widely used for managing insomnia, and it is believed to improve sleep quality by enhancing gamma-aminobutyric acid activity in the brain, thereby promoting relaxation and sleep regulation.³⁷ The present study aimed to evaluate the effect of acupressure on sleep quality among CKD patients on hemodialysis and to compare outcomes between experimental and control groups. Findings revealed that in the experimental group during pre-test, 43.33% had moderate insomnia, 36.67% had severe insomnia, 16.67% had mild insomnia,

and 3.33% had no insomnia, while in the control group, 53.33% had moderate insomnia and 33.33% had severe insomnia, indicating a high prevalence of sleep disturbances among hemodialysis patients. Similar findings were reported by Ahmad A E et al., where 85.78% of dialysis patients had sleep disturbances.³⁸ Walker S et al. also reported that 83.3% of dialysis patients experienced sleep-related problems including restless legs syndrome and sleep apnea.³⁹ Iliescu E A et al. further reported poor sleep quality in 53% of CKD patients.⁴⁰ In the present study, post-test mean insomnia score in the experimental group reduced from 39.23 to 29.03, whereas in the control group it increased slightly from 40.23 to 41.63, indicating the effectiveness of acupressure. A significant difference was observed in post-test scores ($p=0.001$), while pre-test differences were non-significant. These findings are supported by Nasiri E et al., who reported significant improvement in sleep quality after intervention with reduced Pittsburgh sleep scores in the experimental group compared to control group ($p=0.001$).⁴¹ Regarding demographic variables, no significant association was found between sleep quality and age, gender, education, income, occupation, or disease-related variables. Similar findings were reported by Farhad Lashkari et al., where no significant difference in age was observed between study groups ($p=0.68$).⁴⁰ Ahmad A E et al. also reported that gender had no significant impact on sleep quality, though females showed slightly higher insomnia scores in some studies, and overall differences remained statistically non-significant.³⁸ Tsaya S L et al. similarly found gender differences in insomnia but without statistical significance.³⁴

Summary

The present study was conducted to assess the effect of acupressure on the quality of sleep among chronic kidney disease (CKD) patients on hemodialysis in selected hospitals of Hoshiarpur, Punjab. A quantitative research approach with a quasi-experimental design was used. Pittsburgh Insomnia Rating Scale-20 (PIRS-20) was used for data collection, which assesses sleep disturbances over the past 7 days. The tool consisted of two sections: socio-demographic variables such as age, gender, marital status, education, income, occupation, stage of disease, and frequency of dialysis, and the PIRS-20 scale measuring insomnia severity. Scores above 15 indicated insomnia and were included in the study. A pilot study was conducted on 6 patients to ensure feasibility. The main study was carried out on 60 CKD patients on hemodialysis selected from Modern Hospital and Shivam Hospital, Hoshiarpur. Ethical permission was obtained, and informed consent was taken from all participants. Acupressure was administered to the experimental group three times by the researcher, while the control group received routine care only. Data were analyzed using descriptive and inferential statistics. The results showed a significant reduction in insomnia levels in the experimental group after acupressure intervention compared to the control group. The difference between pre-test and post-test scores in both groups was found to be statistically significant at $p<0.001$, indicating that acupressure was effective in improving sleep quality among CKD patients on hemodialysis.

Conclusion

Based on the present study findings, the investigator found that the difference had been found in the mean insomnia scores during the pre-test and post-test that was statistically significant at 0.001 level of significance. It indicated that acupressure had some impact on quality of sleep as it was simple, non-invasive and easily administered technique can be used by health care professionals. So, we need to motivate and create awareness among the care providers regarding effective utilization of complimentary therapies or alternative therapies in reduction of insomnia or to improve quality of sleep.

Limitations

- The study has been conducted on a small sample due to time constraints so findings cannot be generalized.
- The sampling techniques is purposive sampling.

Implications

The findings of the present study have important implications for nursing education, practice, administration, and research. In nursing education, the study provides useful evidence for incorporating knowledge related to acupressure and complementary therapies into the nursing curriculum. It can be utilized in seminars, workshops, and conferences to enhance student nurses'

understanding of sleep disorders among chronic kidney disease patients on hemodialysis and the role of acupressure in improving sleep quality. It also helps student nurses develop awareness regarding non-pharmacological interventions for patient care. In nursing practice, the study highlights the significance of nurses' active involvement in assessing sleep disturbances and implementing acupressure as an effective intervention. Nurses can educate patients and family members regarding acupressure techniques and provide counseling to improve sleep quality among hemodialysis patients. In nursing administration, the findings emphasize the need for organizing in-service education programs and structured teaching sessions for nurses regarding complementary therapies. Nursing administrators can promote evidence-based practices by facilitating routine assessment of sleep quality and integrating acupressure protocols in dialysis care settings. In nursing research, the study serves as a foundation for future investigations on acupressure and sleep quality among chronic kidney disease patients. It provides valuable data for tool standardization and encourages replication of similar studies in larger populations and diverse settings. The study also contributes to the limited literature available on non-pharmacological management of insomnia in chronic kidney disease patients on hemodialysis.

Recommendations

The following recommendations are made on the basis of the findings of the present study:-

- A similar study may be replicated on a larger sample to validate and generalize the findings.
- A true experimental study may be carried out to assess the effect of acupressure on quality of sleep among chronic kidney disease patients on hemodialysis.
- Longitudinal research design should be used to assess changes over time of effect of acupressure on quality of sleep and quality of life among chronic kidney disease patients on hemodialysis.
- A Randomized control study may be carried out to assess impact of auricular acupressure on specific points for hemodialysis patients with insomnia.

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