EFFECTIVENESS OF FOOT REFLEXOLOGY ON FATIGUE AMONG PATIENTS WITH CHRONIC RENAL FAILURE ADMITTED IN NEPHROLOGY WARD AT GOVERNMENT RAJAJI HOSPITAL, MADURAI.

M.Sc (NURSING) DEGREE EXAMINATION

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A dissertation submitted to

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CHENNAI – 600 032.

In partial fulfillment of requirement for the degree of

MASTER OF SCIENCE IN NURSING

APRIL – 2016

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ABSTRACT

Tittle : Effectiveness of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai. **Objectives:** The main objective of the study was to evaluate the effectiveness of foot reflexology on level of fatigue among patients with chronic renal failure **Hypotheses:** There is a significant difference between the mean pre-test and post test   level of fatigue in experimental group and there is a significant difference between posttest level of fatigue in experimental and control group patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai. There is significant association between level of fatigue among patients with chronic renal failure with thier selected socio demographic and clinical variable. **Conceptual Frame work:** The conceptual frame of this study is based on modified Daniel L.Stuffle Beam's Evaluation theory. **Methodology:** Quantitative approach and True experimental Pretest-posttest control Group design ,the sample size was 30 experimental and 30 control group. Simple Random sampling technique was used. The intervention applied in this study was foot reflexology for 10 minutes. For each feet **Findings:** The study showed that the paired 't' test mean difference between pretest and post test, the obtained **t = 12.29** and independent "t" test value **t = 9.19** at 0.01 level. **Conclusion:** The findings proved that the foot reflexology significantly Reduces the Level fatigue Among patients with chronic renal failure.

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Introduction

CHAPTER I

INTRODUCTION

"THE FIRST VIRTUE IN A SOLDIER IS ENDURANCE OF FATIGUE; COURAGE IS ONLY THE SECOND VIRTUE."

-NAPOLEON BONAPARTE.

Disease is an unavoidable reality and is a community need. Disease occurs at different dimensions, such as social, behavioral, psychological, morphological and molecular. The disease faces several problems like physical health problems, financial problems. The identified problems are feeling of neglect and loss of importance in the family and environmental problems. These problems further strengthen the feelings of loneliness, feelings of unwantedness, feeling of inadequacy, absolescence of skill and education.

Chronic renal disease is a serious condition associated with premature mortality, decreases the quality of life, and increases health care expenditure. Chronic renal disease refers to an irreversible loss of renal function that develops due to a multifactorial etiology over a period of a few years. Initially it starts as a biochemical abnormality and progresses in stages. Earlier stages of chronic renal disease can be detected through routine laboratory measurements like urea, creatinine, serum electrolytes. Loss of renal function happens progressively leading to loss of excretory, metabolic and endocraine functions.

Kidney damage for three or more months, as defined by structural or functional abnormalities the kidney, with or without decreased glomerular filtration rate (GFR) manifest by either pathological abnormalities; or markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests.

Chronic renal disease is found in persons of all ages. The normal annual mean decline in the glomerulo filtration rate with age from the peak glomerular filtration rate (approximately 120 ml/min/1.73 m^2) attained during the third decade of life is approximately 1 ml/min/1.73 m^2, reaching a mean value of 70 ml/min/1.73 m^2 at age 70 years. Nonetheless, in the United states, the highest incidence rate of End stage renal disease occurs in patients older than 65 years.

National health and Nutrition Examination Survey (III) data, the prevalence of chronic renal disease was 37.8% among patients older than 70 years. Besides diabetes mellitus and hypertention, age is an independent major predictor of chronic renal disease.

Worldwide, Chronic kidney disease population accurately detecting elderly persons, females or other ethnic groups such as Asians. Chronic kidney disease worldwide populations, are 237 to 65181. The median prevalence of Chronic kidney disease was 7.2% in persons aged 30 years or older. In persons aged 64 years or older

prevalence of Chronic kidney disease varied from 23.4% to 35.8%. Cockcroft-Gault (CG) equation. Zhang QL, Rothenbacher D.

India is on report from personal experience. There are three population based studies in India commenting on the magnitude of chronic kidney disease. In a prevention program started at community level in Chennai, the reported prevalence is 0.86% in the project population and 1.39% in the control region. The second study is based on Delhi involving 4972 urban patients. The prevelence of chronic renal failure (defined as serum creatinine more than 1.8 mg/dl) to be 0.79% or 7852 per million population. The third study perhaps the only longitudinal study to identify the incidence of end stage renal disease is based on 572,029 subjects residing in city of Bhopal were 151 and 232 per million population respectively. Government of India and the general public. Prabahar MR, Chandrasekaran V, Soundararajan P.

Tamilnadu, Vellore district, a convenient sample of 5,043 adults were included. Out of the total 5.043 individuals screened, 63.1 per cent were females. 24 patients, 3 were found to have chronic renal failure. The prevalence of proteinuria in this adult rural population was 0.47 per cent (0.30-0.67%). The detection and treatment of chronic kidney disease in 24 individuals is bound to reduce the rate of decline of renal functions. Ahmed I, John GT, Kirubakaran MG, Jacob CK, Muliyil J.

Fatigue is a highly prevalent symptom experienced, persons who live with chronic illness, including those with renal failure who require maintenance hemodialysis. Fatigue is a subjective feeling of tiredness which is distinct from weakness, and has a gradual onset. It describes a physical and / or mental state of being tired and weak. Fatigue is a symptom, rather than a sign. Fatigue is a non specific symptom.

Physical fatigue is the transient inability of a muscle to maintain optimal physical performance, and is made more severe by intense physical exercise. Mental fatigue is a transient decrease in maximal cognitive performance resulting from prolonged periods of cognitive activity. It can manifest as somnolence, lethargy, or fatigue. Medically, fatigue is a non-specific symptom, which means that it has many possible causes.

Fatigue is one of the most frequent complaints of chronic renal failure/dialysis patients and is associated with impaired health-related quality of life. The prevalence of fatigue ranges from 60% to as high as 97% in patients on long-term renal replacement therapy. The importance of fatigue to patients with kidney disease is underscored by the observation that 94% of hemodialysis patients endorsed a willingness to undergo more frequent dialysis if there would be an associated increase in energy level. Despite the importance of fatigue to patients, health care providers remain largely unaware of both the presence and severity of fatigue among chronic renal failure/dialysis patients.

Although the clinical assessment of fatigue in chronic renal failure patients has proven difficult for physicians, it is important to recognize fatigue since there are a number of treatable causes. The recognition of fatigue may be difficult since the recovery from fatigue has great inter-patient variability. After recognizing fatigue and assessing its severity, the physician should first consider the general physiologic and psychological etiologies for fatigue. In chronic renal failure-related causes of fatigue some of the factors that may lead to fatigue are uremia, anemia, sleep disorders and psychosocial distress, which may be amenable to intervention. The fatigue in chronic renal failure will cause the anxiety, stress, depression like psycho-somatic symptoms also.

Massage is effective for producing physical and mental relaxation, reducing fatigue, stress and anxiety, pain, nausea, depression in cancer patients. It communicates caring and is easy for family member's and health care personnel to learn.

The use of reflexology by nurses is easy and practical as noted by one nurse researcher who writes: "Foot reflexology is a way to enhance the nurse-patient interrelationship. It offers a strategy to fulfill the goals for human touch and holistic nursing care. It can be performed at any location, it is non-invasive, and does not interfere with patients' privacy."

On the physical level, reflexology relieves muscle tension, reduces muscle spasms, improves joint flexibility and range of motion, improves posture, lowers blood pressure, slows heart rate, promotes deeper and easier breathing and improves the health of the skin.

On mental level, reflexology induces a relaxed state of alertness, reduces mental stress, fatigue and increases the capacity for clearer thinking.

On emotional level reflexology satisfies the need for caring and nurturing touch, increases the feeling of wellbeing, decreases mild depression, enhances self image, reduces the level of anxiety and fatigue, increases awareness of mind-body connection.

1.1 Need For The Study:

"OUR FATIGUE IS OFTEN CAUSED NOT BY WORK, BUT BY WORRY, FRUSTRATION AND RESENTMENT"

-DALE CARNEGIE.

Human body is the most beautiful and generous creation of God. It has the ability to adapt to the various situations provided, but vigorous changes in climatic conditions, factors especially the ones resulting from vigorous industrialization, food pattern, and personal habits can harm it drastically and force it to death.

Chronic illness has a profound effect on the quality of life. Chronic renal failure is a devastating illness which progresses to end stage renal disease requiring extensive life sustaining renal replacement therapies. Demographic data from renal registries in 2012 showed that approximately 10,00,000 end stage renal disease patients received renal replacement therapy through out the world and in India, an estimated 100 persons/million develop chronic renal failure every year.

Prevalence was estimated to be 8-16% world wide, complications include increased all causes and cardiovascular mortality, kidney-disease progression, acute kidney injury, cognitive decline, anemia, mineral and bone disorder, and fractures. World wide, diabetes mellitus is the most common cause of chronic kidney disease, but in some region other causes, such as herbal and environmental toxin, are more common. The poorest populations are at highest risk. Screening and intervention can prevent chronic renal disease, and where management strategies have been implemented the incidence of end-stage kidney disease has been reduced. Awareness of the disorder, however remains low in many communities and among many physicians. Strategies to reduce burden and costs related to chronic kidney disease need to be included in national programs for non-communicable disease. Lancet. Jha V, Garcia-Garcia G, Iseki K, Li Z, Naicker S, Plattner B, Saran R, Wang A Y, Yang CW. 2013.

Recently developed clinical practice guidelines and calibration of the third National health and Nutrition Examination Survey serum creatinine assay provide a basis for estimating the prevalence and distribution of chronic kidney disease in the United States using standardized criteria based on estimated glomerular filtration rate and persistent albuminuria. A nationally representative sample of 15,625 non institutionalized adults aged 20 years and older, kidney function, kidney damage (albuminuria), and stages of (GFR and albuminuria) were estimated from calibrated serum creatinine level, spot urine albumin level, age, sex and race. GFR was estimated using the simplified modification of diet in renal disease study equation and compared with the Cockcroft-Gault equation for creatinine clearance (CCr).

In the last several decades, within various disciplines of western HealthCare, there has been a increasing interest in complementary and integrative treatments for mental and physical disorders. While great striders have been made in surgical and pharmacological protocols, and while biomedical research continues to reveal more precise and effective treatments for a wide range of disease, mechanistic and reductionist approaches have increasingly been recognized as limited. A holistic framework has recently emerged to address the short coming of the allopathic medical model, developed within the dualistic Cartesian paradigm of the early 17th century. Rather than target symptoms alone, integrative approaches seek to provide greater health benefits and last in grief by focusing on the mind/body connection.

These approaches address negative attitudes, behaviors, and lifestyles, which underline disease and psychopathology. The growing interest in both popular and professional circles within the United States and Europe, that safe, effective, and inexpensive alternatives are needed to complement conventional healthcare, results from two separate factors: First, the cost of modern medicine is increasing due to the complexity and sophistication of current treatments; and second, there is an escalating number of so-called " disease of civilization", where conventional surgical, psychotherapeutic and pharmacological treatments are only partially effective (loizzo, 2000).

In United States, massage is considered as an alternative or complementary treatment compared to many areas of world where massage is an integral part of health system. Strong, sustained touch in reflexology can have an even greater effect than other forms of touch. Reflexology speeds the removal of metabolic waste products by increasing the blood flow, allows more oxygen and nutrients to reach the cells and tissues.

Reflexology, a complementary approach to pain, anxiety and fatigue, is a form of bodywork that focuses primarily on the feet. Reflexology has been around for a long time. There is archeological evidence suggesting the use of reflexology in ancient Egypt, China and Japan. Four centuries later Celsus, a Roman encyclopedist, profoundly influenced by Greek medicine, in his book, De Medicina, recorded the

practice of rubbing the limbs and the result obtained by his practice. These descriptions are identical to what is known today as reflexology and two popular adjuncts to reflexology known as referral areas and cross reflexes.

Reflexology had a renaissance in Asia in the 1980s, and the practice remains extremely popular there today. Reflexology came into being in the West in the nineteenth century as European researchers dealt into the nervous system and the phenomenon of the reflex. Initially called as "*reflex therapies*". In the early twentieth century, Dr. William H. Fitzgerald, an ear, nose, and throat physician, brought "zone therapy," a form of reflex therapy, to the U.S. Physiotherapist Eunice Ingham had developed a reflex area system by 1938.

It has been defined by the Reflexology Association of Canada as "A natural healing art based on the principle that there are reflexes in the feet, hands and ears and their referral areas within zone related areas, which correspond to every part, gland and organ of the body. Through application of pressure on these reflexes without the use of tools, crèmes or lotions, the feet being the primary area of application, reflexology relieves tension, improves circulation and helps promote the natural function of the related areas of the body". Reflexology is relaxing. It improves circulation, eases pain, fatigue and anxiety and promotes healing throughout the body.

Research has shown the specific techniques of reflexology to be effective and beneficial in many ways. A survey of 170 reflexology studies from 21 countries shows that reflexology is effective, impacting a variety of physical and psychological concerns. Reflexology Creates relaxation from the moment the reflexologist's hands start their work, the relaxation begins as shown in research using EEG brain activity. All together, 24 studies demonstrate reflexology's relaxation effects.

Reflexology reduces fatigue, the work is documented in 27 studies including research showing impact on individuals of all ages and health states. Research shows that reflexology work helps individuals of all ages with 78 health concerns ranging from aggressive behavior in children to urinary concerns of the elderly. Improves blood flow: Separate studies show that reflexology work increases blood flow to the feet, brain, kidneys and intestines. Aids post-operative recovery: Reflexology work aids recovery after surgery as shown by several studies, reducing pain, fatigue and anxiety and lessening the use of post operative medications and has its impact on physiological measures (e. g. blood pressure and cholesterol; measurements by ECG, EEG). Reflexology helps for many like phantom limb pain sufferers, neuropathy patients, and hemodialysis patients to name a few. Benefits mental health.

Research demonstrates that reflexology can reduce depression (11 studies) and anxiety (9 studies).Complements cancer care: Pain, nausea, vomiting, fatigue and/or anxiety eased for chemotherapy patients, chronic diseased patients and dialysis patients

following reflexology work as shown by 16 studies from 7 countries. Eases pregnancy, delivery and post-partum effects: Women who received reflexology experienced shorter labor times and used less analgesia. In addition, reflexology showed a positive impact on postpartum depression, anxiety, fatigue, urination and bowel movements. Due to these above mentioned benefits the researcher considered that this therapy which would be better for the patients to overcome the fatigue which is the basic nursing care a nurse can meet successfully.

In general terms, the benefits of reflexology have to do with the reduction of stress and anxiety. Because the feet and hands help set the tension level for the rest of the body, they are an easy way to interrupt the stress signal and reset homeostasis, the body's equilibrium. It is a complement to standard medical care. It should not be construed as medical advice. It should not be a replacement to medical help. Reflexologists postulate that malfunctioning of an organ or body system leads to deposits of uric acid or calcium crystalline salts. These, in turn, would impinge on the nerve endings on the feet and obstruct lymph flow. Massaging these areas would break down the crystalline deposits so that they can be reabsorbed and eliminated.

Based on the ample evidence of the effectiveness of reflexology on fatigue and a personal interest in the subject matter, Keeping in mind the above all feasibility and availability, the investigator wishes to evaluate the effectiveness of foot reflexology on fatigue in patients with chronic renal failure.

1.2 Statement of the Problem:

A study to evaluate the effectiveness of foot reflexolgy on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.

1.3 Objectives:

1. To assess the level of fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,.

2. To evaluate the effectiveness of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,

3. To associate the level of fatigue among patients with chronic renal failure with their selected socio demographic and clinical variables admitted in nephrology ward at Government Rajaji Hospital, Madurai .

1.4 Hypotheses:

H_1   There is a significant difference between the mean pre-test and post test level of fatigue in experimental group among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,.

H_2 :   There is a significant difference between post test level of fatigue in experimental and control group patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai

H₃   There is a significant association between level of fatigue among

patients with chronic renal failure with their selected socio

demographic and clinical variables admitted in nephrology ward at

Government Rajaji Hospital, Madurai.

1.5 Operational Definition :

Effectiveness:

In this study it refers to the extent to which foot reflexology have impact on the level of fatigue among patients with chronic renal failure as measured by brief fatigue inventory.

Foot Reflexology:

In this study it refers to the application of pressure to the upper and the lower arch of the feet utilizing specific thumb, finger and hand techniques without the use of oil, cream or lotion for a duration of 10 minutes per foot for four consecutive days.

Fatigue:

In this study fatigue refers to the unpleasant experience and discomfort perceived by the patients with generalized malaise as measured by brief fatigue inventory.

Chronic Renal Failure:

In this study it refers to the patients who were diagnosed as chronic renal failure ie., an irreversible loss of renal function that develops due to a multifactorial etiology over a period of a months or years. admitted in nephrology ward at Government Rajaji hospital, Madurai".

Nephrology Ward:

In this study it refers to the place where the patients with all renal disorder are admitted at Government Rajaji Hospital, Madurai.

1.6 Assumption:

1. Patient with chronic renal failure may have varying level of fatigue.

2. Fatigue may interfere with the activity of daily living..

1.7 Delimitations:

1. The study period was limited to 4 to 6 weeks.

2. The study was limited to patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.

3. The sample size was limited to 60.

1.8 Projected Outcome:

The foot reflexology will reduce the level of fatigue among patients with chronic renal failure admitted in Nephrology ward at Government Rajaji Hospital, Madurai.

Review of

Literature

CHAPTER - II

REVIEW OF LITERATURE

Review of literature is systematic identification, selection, critical analysis, and reporting of existing information on the topic of material for the study.

Review of literature is important for having a broad understanding of the problem. "The material gathered in the literature review should be treated as an integral part of research data. Since what is found in the literature can not only have an influence which is important on the formalities of the problem and the design of research but also provides useful comparative material when the data collected in the research is analyzed"

This chapter is divided into two parts

Part I: Review of literature

Part II: Conceptual frame work

A literature review uses as its database report of primary or original scholarship and dose not report new primary scholarship itself. In this study the review of literature was done from text book, published journals, articles and electronic sources.

The useful and relevant literature for the present study have been organized and presented under the following sub headings.

2.1. Literature review related to fatigue among chronic renal failure patients

2.2. Literature review related to reflexology

2.3. Literature review related to effectiveness of foot reflexology on fatigue

2.1. Literature review related to fatigue among chronic renal failure patients:

Hayah Abou El Azayiem Bayumi (2015), conducted a descriptive study, in which 59 patients with chronic renal failure treated with hemodialysis at Qena University Hospitals in Upper Egypt .Data collection tool was a personal information questionnaire based on demographic characteristics The second data collecting tool was the fatigue severity scale. . In this study fatigue showed an increase with the increase of dialysis history but this was significant only in terms of disease history. The frequency of fatigue is high in chronic renal failure patients. Overall, men have more fatigue than women when treated with hemodialysis distributed for each patient admitted to chronic renal failure unit.

Horigan et al, (2013), conducted a quantitative study that fatigue is an often debilitating symptom in those with end stage renal disease. As common and extreme as the symptom is in this population, little evidence is available that describes what the experience of fatigue is like for patients with chronic renal failure or how they mitigate its effects.

United States Renal Data System (2012), conducted a descriptive study in which patients with chronic renal failure account for approximately 92% of the overall dialysis population and endure a high symptom burden as they may experience troubling symptoms such as fatigue, decreased appetite, trouble concentrating, swelling in their feet and hands, muscle cramps, and itching].

Manisha Jhamb et al., (2008). Conducted a study in which fatigue is a debilitating symptom or side effect experienced by many patients with chronic renal failure on long-term dialysis. The lack of a reliable, valid, and sensitive fatigue scale complicates the accurate identification of this symptom. In conclusion, fatigue is an important and often under-recognized symptom in the dialysis population. Possible interventions for minimizing fatigue in patients on long-term dialysis should be aimed at improving health care provider awareness, developing improved methods of measurement, better understanding of the pathogenesis, as well as management of known contributing factors.

Pereger TV, Leski M (2006), conducted comparative study to assess the health status in chronic renal failure patients: Generic questionnaire, specific questionnaire and open questions (n=83). Results revealed that chronic renal failure patients and significantly lower scores than general population, especially physical functioning (-1.2 standard deviation (SD) units, P<0.001) and general health (-1.2 SD, P<0.001), but their mental health was similar (-0.2 SD, P=0.13).

2.2. Literature review and studies related to reflexology

Greenfield, S. (2012). conducted a study in the University of Birmingham for Coronary heart disease patients to explore the use of complementary and alternative medicines and therapies (CAM), self-test kits by CHD patients and attitudes to manage their condition to maximize quality of life and prevent recurrence or deterioration. 463 patients were selected and Questionnaire given to those patients. Results shown that 29.1% of patients used CAM and/or self-test kits for self-management but few (8.9%) used both methods. Self-test kit use (77.2 %,) was more common than CAM (31.7 %) with BP monitors being the most prevalent (80.0%).

Shaw.A.et al., **(2011)** conducted a qualitative study in University of Bristol, England, UK with a purposive sample to enhance the use of complementary therapies in children's with asthma. About 50 samples which included 22 adults and 28 children with asthma were selected. Breathing techniques such as the Buteyko method were used to enable the reduction in medication. Self-management of chronic conditions is increasingly promoted with little attention to complementary therapy. Findings shown that the desire for self-help and for complementary therapy.

Chandola,A.et al., (2011) conducted a study in St George's Hospital Medical School, London, UK to evaluate the use of complementary therapies by patients attending musculoskeletal clinics . 166 patients were interviewed .Questionnaire in three sections namely demographic characteristics; nature and duration of the

complaint, the length of any treatment and third (complementary medicine). Findings shown that 109 patients (63%) were satisfied with conventional medical treatment; 63 (38%) had considered the use of complementary therapies, and 47 (28%) had tried the therapy. 26 of the 47 had used complementary therapy and gained some benefit. Patients of female gender (P = 0.009) and patients dissatisfied with current therapies (P = 0.01) considered the complementary medicine. These results indicate substantial use of complementary therapy in patients attending musculoskeletal disease clinics.

Jang, SH. et al., (2009) conducted a quasi-experimental study on non equivalent control group pretest-posttest design to know the effects of self-foot reflexology on stress, fatigue and blood circulation in premenopausal middle-aged women. Participants were 59 premenopausal and they were divided as 30 in the experiment group and 29 in the control group. Self-foot reflexology was performed three times a week for 20 min at each session. The results showed that self-foot reflexology was effective in reducing perceived stress and fatigue and helped blood circulation in premenopausal middle-aged women.

Bourgeault, IL. (2007) conducted a Qualitative study in York Centre, York University, North York to determine physicians' attitudes and reactions to their patients' use of alternative cancer therapies and factors that affect these reactions. 19 oncologists and 35 general practitioners (GPs) were selected by means of purposive sampling; 18 oncologists and 12 GPs agreed to participate. Although physician does not accept the

complementary therapies but they respect the patients' decision to use them and encourage them to continue with standard treatment. Factors influencing the physicians' reactions are the prognosis with standard treatments and doubted that the alternative therapies were harmful as many physicians lack information on alternative cancer therapies. Findings shown that the alternative therapy did not harm the standard treatment.

2.3. Literature review and studies related to effectiveness of foot reflexology on fatigue

JoEllen, M.Sefton.et al., (2015) conducted a Prospective, randomized controlled trial in the University of Virginia Hospital Surgical Units, General Clinical Research Center to evaluate the manual Therapy of foot reflexology on Physiological and clinical changes by comparing with the usual postoperative care and vibration therapy in postsurgical pain and fatigue. About 105 women who underwent an abdominal laparotomy were selected. The treatment groups were: (1) usual postoperative care (UC), (2) UC plus massage therapy (standardized 45-minutes) and (3) UC plus vibration therapy(20-minute) . Findings shown that 3on postoperative day 1, the foot reflexology was more effective than UC for affective ($p = 0.0244$) and sensory pain and fatigue ($p = 0.0428$) and it is better than vibration therapy for affective pain and fatigue ($p = 0.0015$). On postoperative day 2, foot reflexology was more effective than UC for distress ($p = 0.0085$), and better than vibration for sensory pain

and fatigue (p = 0.0085). Vibration was also more effective than UC for sensory pain

and fatigue (p = 0.0090) and distress (p = .0090). The conclusion of the study is foot

reflexology is better than vibration therapy and vibration is better than usual standard

care.

Liza Dion.et al,.(2013) conducted a descriptive pre–post evaluation design to

study the effects of foot reflexology over pain, fatigue and anxiety in the chronic kidney

disease setting using convenient sampling technique. This study included 194 patients.

Those patients with higher levels of fatigue and anxiety and longer hospital stays (>3

days) were given the highest priority for foot reflexology therapy. The findings shown

that the Pre and post treatment fatigue scale changes in which the pre test value is 5.58

but the post test value is 2.09. The difference between the pre test and post test is 3.49.

The "t" value is 25.7 and its 'r' value is 0.65 , hence it is significant at "p" value is

0.001.This suggests that foot reflexology is an potential intervention to help patients to

come out from problems like fatigue and anxiety.

Polit.col.et al., (2011) conducted a experimental research design to examine the

effects of foot reflexology on the levels of fatigue in postoperative renal transplantation

surgery patients at the surgical department of the Police General Hospital, Bangkok. 30

subjects selected by means of randomized sampling technique. They received

30-minute true foot reflexology and also received 30 minutes of mimic foot reflexology.

The findings showed that the mean fatigue score after reflexology at 30 min were lower

than that of before reflexology and it is statistically significant at (p<.05) and the mean fatigue score at 90 minutes after reflexology was lower than that obtained at 0 minute with statistical significance at (p<.05). Likewise, the mean fatigue scores of patients at 0, 30, 90, and 150 minutes after receiving reflexology were lower than that obtained before receiving reflexology with statistical significance (p<.05). It had led to a conclusion that foot reflexology should be considered as a complementary alternative in nursing practice to reduce fatigue in postoperative renal transplantation surgery patients.

Premkumar, B. (2010) conducted a quasi experimental study to determine the effectiveness of reflexology in reducing pain, fatigue and anxiety in specific nephrology conditions of patients admitted in nephrology Ward, CMC Vellore. A sample of 30 patients was selected from the nephrology Ward. Findings showed that after foot reflexology the pain, fatigue and anxiety level of 19 patients (63.3%) were reduced from severe to moderate and for 2 patients (6.6%) was reduced from moderate to mild and for 9 patients (30%) pain, fatigue and anxiety remained in the same level. A significant difference between pre and post nursing intervention in reduction of pain, fatigue and anxiety is significant at (p<0.01). Hence, it is concluded that the foot reflexology is the best nursing intervention which can be introduced into nursing curriculum as a best method for pain, fatigue and anxiety reduction..

McVicar, AJ. (2009) conducted a cross over experimental design study in Anglia Ruskin University, Chelmsford, UK to assess the effect of foot reflexology on anxiety, fatigue, cortisol and melatonin secretion. 30 underwent reflexology (experimental) and other 30 participants received no treatment (control). .Self reported anxiety (Spiel Berger STAI) brief fatigue inventory, cardiovascular parameters (BP and pulse rate) and salivary cortisol and melatonin concentrations were assessed before and after reflexology. Findings shown that the reflexology had powerful anxiety and fatigue reduction effect at $P<0.001$ and Cardiovascular parameters decreased at $P<0.001$. The findings of this study are proved to be beneficial to conduct study in end stage renal disease patients [ESRD] patients as they display deregulation of cortisol and melatonin secretion.

Wang Cui Cheng Rui Dan.et al., (2009) conducted a quasi experimental study using randomized trial to know the effect of reflexology for the treatment of fatigue and anxiety. 240 cases of renal failure patients were randomly divided into bamboo stepping group (120 cases) and the control group (120 cases). Intervention (reflexology) each 20 to 30 min, three times a week were given. The control group did not undergo reflexology. Findings shown that the reflexology was more effective for about 75 cases (62.50%), effective for 34 cases (28.33%) and the overall efficiency is 90.83%, at $P=0.05$ .Hence, reflexology treatment for the renal failure produced a significant effect and proved to be economical, simple.

Gordon,J.S.(2008). conducted a comparative pre-test post test design using single blind randomized trial in Napier University, Edinburgh, UK to know the effectiveness of reflexology on fatigue, depression, anxiety, spirituality, and patients' quality of life by comparing the outcome of patients undergoing dialysis for renal failure who received standard care plus an eight-week program of reflexology. About 50 subjects allocated to experimental (25 subjects) and control group (25 subjects). The Wyatt Quality of Life Model was used in this study. Findings shown that the patients who used reflexology experienced lowered levels of depression at ($p<.024$) and anxiety at ($p<.006$) over time; and also experienced increased levels of spirituality at ($p<.019$) and total quality of life ($p<.000$).

Lee, YM. (2008), conducted a quasi experimental study using convenience sampling in Korea to know the effects of Foot Reflexology Massage on Symptom, Fatigue and Physiologic Parameters of Middle Aged Women. About 118 cases of insomnia patients were divided into 60 cases of the treatment group and the control group of 58 cases. Intervention were given for about 15 min to treatment group .The Results shown were a higher statistical significance at ($P<0.01$) and it showed that the insomnia patients had better efficacy and reduced the symptoms like fatigue, safety, no harmful reaction and the easily accepted.

Oh HS, Ahn SA. (2008) conducted a experimental study using purposive sampling in College of Nursing, Gyeong-Sang National University, Korea on the

effects of Foot Reflexology on Pain, anxiety, fatigue and depression among Middle-aged Women with kidney disease. The subjects were 41 kidney disease patients. Intervention was applied to the experimental group 3 times /week for 4 weeks, (30 minutes each). Findings shown that the efficacy of the foot reflexology in experimental group showed significant improvement in reducing pain at (F=105.77, p=.000), anxiety at (F=20.00, p=.000), fatigue at (F=30.00, p=.000) and depression at (F=20.00, p=.000). Hence, it is concluded that the foot reflexology is effective in relieving of pain, anxiety, fatigue and depression and it is necessary to develop foot reflexology as an independent nursing intervention.

Quattrin, R. zanini. (**2007**) conducted a randomized controlled trial study in University of Udine, Udine, Italy to know the effect of foot reflex therapy as adjuvant therapy in relieving pain, fatigue and anxiety in postoperative patients with renal carcinoma even after receiving analgesia. 61 patients were randomly allocated to an intervention (n = 30) or control (n = 31) group. Intervention group received the usual pain management plus 20 minutes of foot reflex therapy during postoperative days 2, 3, and 4 and control group received usual pain management. Findings shown that the moderately high levels of pain, fatigue and anxiety postoperatively in experimental group when compared to control group. Similarly, less pain at (P < .05), fatigue at (P<.05) and anxiety at (P < .05) were reported by the intervention group when compared with the control group. In addition, patients in the intervention group received significantly less opioid analgesics than the control group (P < .05).

Dr. Shweta Choudhary PhD. (2007). conducted a true experimental study in All-India Institute of Medical Science, New Delhi, India on hemodialysis in reducing, pain fatigue and anxiety by selecting sixty patients of ESRD who were randomly assigned to a reflexology group and control group .Intervention involved the administration of standard drugs such as NSAID (Diclofenac and Opioids (Pethidine and Fentanyl) to both experimental and control groups. In addition, the experimental group received Fifteen to twenty minutes of foot reflexology. This study show a decrease of the quantity of pain killers in Group I (foot reflexology) to less than 50% in comparison with Group II (control).

Song, RH., Kim,H. (2007) conducted a quasi-experimental one group pretest-posttest study in Department of Nursing, Daejeon Health Science College to examine the effects of foot reflexion massage on sleep disturbance, fatigue, depression disorder, and the physiological index of the elderly. The subjects were 50 elderly people and they were assigned to experimental group (25patients) and a control group (25subjects) respectively. Intervention was provided for 12 sessions, 30 minutes per session. Findings shown that the experimental group improved sleep quality more than the control group. The experimental group had less depression disorder than the control group. The experimental group had higher serotonin levels than the control group. Hence, it is concluded that the foot reflexion massage as a successful nursing intervention to elderly who suffer from fatigue, depression disorder due to a deterioration in sleep.

Jin, SJ., Kim, YK. (2006). conducted a quasi-experimental study in Catholic University of Pusan to know the effects of Foot Reflexology Massage on Sleep and Fatigue of Elderly Women. 50 elderly women were selected for each group. The Intervention was performed for 45 minutes every three days for experimental group. Findings shown that the sleep score of the experiment group is significantly higher than that of the control group (t=-5.944, p=.000) and it increases as the frequency of the foot reflexology massage increases at (F=96.362, p=.000). The fatigue score of the experiment group is significantly lower than that of the control group (t=4.356, p=.000) and it is relieved gradually as the frequency of the foot reflexology massage increases at (F= 118.444, p=.000). Based on the results described above, it is considered that the foot reflexology massage is effective for elderly women in promoting a good sleep and relieving the fatigue.

Tanyakhanok pongpiyapibon. (2006) conducted a quasi-experimental study with one group pre-test-post-test control design to know the effects of reflexology program in management of fatigue in end stage renal disease [ESRD] patient with dialysis. Sample was 40 [ESRD] patients who were equally assigned to experimental and control groups. Findings shown that the post-test mean score on fatigue of an experimental group was significantly lower than that of the pre-test (x = 7.230, x = 3.75, t=16.335, p<.001) and the post-test mean score of frequency of dialysis in an experimental group was significantly lower than of a control group (x = 1.05, x = 1.85, t-=-2.36, p<.05).

Ko YS, Park, MK. (2006) conducted a non-equivalent pretest-posttest quasi-experimental study in department of Nursing, Kwan yang Health College, Korea to know the effects of Self-foot Reflexology on Fatigue and Sleep States in Women Nurses. This study consist of 40 nurses who were assigned to an experimental group (EG, n=20) and to an control group (CG, n=20). The EG participated in SFR for a total of 40 minutes. The CG did not receive SFR during the research period. Findings shown that the score of fatigue in the EG was significantly lower than that of the CG and but the score of sleep states in the EG was significantly higher than that of the CG. Hence, it is very clear that the score of fatigue decreased and sleep states increased in the study. Therefore, it is considered that the SFR as an intervention on clinical nurses. However, it needs more intensive study.

Kim, JH. (2006) conducted an experimental study in a University Hospital in Seoul Korea on 40 patients who was on dialysis to investigate the effect of foot massage on fatigue in renal failure patients. Findings of the study showed that severity of fatigue decreased significantly in the experimental group as compared to the control group following foot massage (t=-3.37, P=0.002). The PR (pulse rate) in the experimental group was lower than that in the control group following foot massage (F=7.73,P=0.008). The SBP (systolic blood pressure) in the experimental group was lower than that in control group following foot massage (F=25.75, P=0.000).

2.4 Conceptual Frame Work

A conceptual frame work is a theoretical approach to the study of problems that are scientifically based and emphasis the selection, arrangement and classification of its concept. Concepts are words that depict objects, properties or events and are basic components of theory.

Conceptual frame work deals with abstraction or concepts that are assembled by virtue of their relevance to a common theme. Conceptualization is a process of forming ideas which is utilized and forms conceptual frame work for development of research design. It helps the researchers by giving direction to go about the entire research process.

EVALUATION THEORY- CIPP MODEL, The CIPP Model for evaluation is a comprehensive framework for guiding formative and summative evaluations of programs, projects, personnel, products, institutions, and systems. This model was introduced by Daniel Stufflebeam in 1966 to guide mandated evaluations of U.S. federally funded projects because these emergent projects could not meet requirements for controlled, variable-manipulating experiments, which then were considered the gold standard for program evaluations. Since then, the model has been widely applied and further developed. Those applying or contracting others to apply the model have included government officials, foundation officers, program and project staffs, international assistance personnel, school administrators, physicians,

military leaders, and evaluators. The model is configured for use in internal evaluations conducted by an organization's evaluators, in self-evaluations conducted by project teams or individual service providers, and in contracted external evaluations. It has been employed throughout the United States and around the world and applies to short-term and long-term.

Evaluation Theory, Context Input Process Product Model (CIPP) is Written for students and professionals. Its chapters can be accessed and used selectively. It includes down-to-earth procedures, checklists, and illustrations of how to carry out a sequence of essential evaluation tasks; identify and assess evaluation opportunities; prepare an institution to support a projected evaluation; design, budget, and contract evaluations; collect, analyze, and synthesize information; and report and facilitate use of findings. The fundamental process by which evaluators hold themselves accountable for delivering evaluation services are useful, practical, ethical, and technically sound.

In this study, the aim was to evaluate the effectiveness of foot reflexology on fatigue among chronic renal failure patients.

Conceptual frame work structures together in a meaningful way. The conceptual framework for research study presents the measure on which the purpose of the proposed study is based. The framework provides the perspective from which the investigator views the problem. Relationships in conceptual frame work are to

assume, frequently neither the direction nor the relationship made explicit for use in practice to test a research.

Here the conceptual frame work was based on CIPP Model was created by Daniel. It is an acronym that stands for context evaluation, Input evaluation, process evaluation, and product evaluation. Context evaluation help prioritize goals, Input evaluation assess different approaches, process evaluations assess the implementation of plans, and product evaluation assess the outcomes. The model is used to evaluation both formative and summative assignments. The CIPP Model advocated that the purpose is not to prove as well as to improve through feedback.

Context evaluation:

It highlighted the environment, surrounding from where the individuals are selected as the subjects. The setting of the study was nephrology ward, Government Rajaji Hospital, Madurai-20.In this study, the factors that are included are Age in years, Gender, Religion, Marital status, Educational status, Occupational status, Family income, type of family, Locality, Duration of illness, Period of feeling fatigue, Number of dialysis cycle.

Input evaluation:

It specified the resources used in the process such as men, money and materials. In this study it includes the procedure of measuring the pre test level of fatigue among the chronic renal failure patients.

Process evaluation:

It referred to the evaluation of implementing process. In this study the process is the foot reflexology which is a nursing intervention and refer to foot reflexology provided for 20 minutes both the foot separately (each foot 10 minutes).

Product evaluation:

This information referred to the output as a result of the intervention.it includes the procedure of measuring   the post test level of fatigue among the chronic renal failure patients.

Feed back:

Referred to the information sent backward from the product evaluation to the input and the process evaluation in order to evaluate the output and to modify or accept the strategies. In this study it refers to the reduction in fatigue level.

PRODUCT

Significant reduction in fatigue level

Considerable reduction in fatigue level

PROCESS

Foot reflexology provided for 10 minutes on each foot

without |foot reflexology

Experimental Group

Control Group

INPUT

MATERIAL:
Assessment of fatigue using Brief Fatigue Inventory

RESOURCES:
- Researcher
- Chronic renal failure patients with fatigue
- Foot reflexology

CONTEXT

DEMOGRAPHIC VARIABLES
- Age
- Gender
- Religion
- Educational status
- Occupational status
- Family income
- Marital status
- Type of family
- Locality

CLINICAL VARIABLES:
- Duration of illness
- Period of feeling fatigue
- Number of dialysis cycle

SETTINGS
Nephrology ward ,GRH,Madurai.

Fig: 1. CONCEPTUAL FRAME WORK   BASED ON MODIFIED   DANIEL L.STUFFLEBEAM'S EVALUATION THEORY (1966)

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Research Methodology

CHAPTER - III

RESEARCH METHODOLOGY

Research methodology is the systematic way of doing a research to solve a problem. It comprises of the research approach, research design, statistical methods used for analyzing the data and the logic behind it. (**Kothari CR, 2003**) On the whole it gives a general pattern of gathering and processing the research data.

3.1 Research Approach

An Quantitative approach was adopted by the researcher to evaluate the effectiveness of foot reflexology

3.2 Research Design

The research design used for this study was true experimental randomized pre test post test control group design.

$$O_1 \qquad X \qquad O_2$$

$$R$$

$$O_1 \qquad \qquad O_2$$
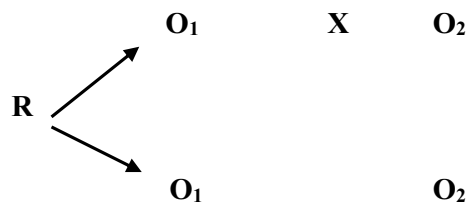
O$_1$ Pretest assessment of experimental group and control group

X   Foot reflexology

O$_2$ Posttest assessment of experimental group and control group

R   Randomization

3.3 Research Variables

Independent variable - Foot reflexology

Dependent variables - Fatigue

Socio demographic variables - Age, sex, religion, occupational status, income, marital status, type of family, locality.

Clinical variables - Duration of illness, period of feeling fatigue and number of dialysis cycle.

3.4 Setting of the Study:

The study is conducted among patients who are admitted in the nephrology ward at in Government Rajaji hospital Madurai. At present there are about 2518 beds available in Multi Specialty Medical College attached Hospital and it provides a comprehensive care to all. Madurai Medical College is second largest in Tamilnadu by man power and serving the poor people of whole south Tamilnadu. The department is working round the clock for 365 days a year doing tireless service to the society managing around 10,000 patients suffering from various diseases operating around 800 emergency cases and preventing about 400 deaths a year. The hospital has a separate nephrology ward in which 25 beds are available and approximately 120 cases admitted to nephrology ward per month.

3.5 Population

Target population

    The target population was patients with chronic renal failure.

Accessible population

    The study population were patients with chronic renal failure admitted in the nephrology ward in Government Rajaji Hospital, Madurai.

3.6 Sample

    Patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai who fulfilled the inclusion criteria

3.7 Sampling Technique

    Samples are selected by simple random sampling technique using lottery method from the nephrology ward.

3.8 Sample Size

    Totally 60 samples are used, 30 as experimental group and 30 samples as control group for the study.

3.9 Criteria for Sample Selection

Inclusion Criteria

- Patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.

- Patients who are willing to participate

- Patients who understand Tamil or English.

- Patients who have fatigue score 3 and above as per Brief Fatigue Inventory

Exclusion Criteria:

- Patients who are critically ill

- Patients who have foot ulcer.   .

- Patients who have loss of peripheral sensation

3.10 Description of the tool

The tool is developed after extensive review of literature, internet search and discussion with the experts. In order to measure the effectiveness of foot reflexology on fatigue among patients with chronic renal failure, a structured questionnaire for socio demographic and clinical variables and brief fatigue inventory is used for the study.

Section A:

This section deals with socio demographic data of the clients. Socio demographic variables including Age, sex, educational status, marital status, Occupation, no of dialysis cycles, type of family, religion, diet pattern, duration of illness, number of dialysis cycle.

Section B:

Consist of Brief fatigue inventory. It consist of nine items, with the items measured on 0-10 numerical rating scale. The interference items are measured on a 0-10 scale, with 0 being "does not interfere" and 10 being completely interferes". Fatigue was categorized using the Brief fatigue inventory as either severe (score 7-10) or no severe (score 0-6), with the latter further subcategorized into moderate (score 4-6) and mild (score 1-3).

Testing of the tool:

3.11 Content Validity

Content validity refers to the degree to which an instrument measures what it is supposed to measure. The content validity of the present tool along with the evaluation criteria checklist was submitted to 5 experts in the field of medicine, medical surgical nursing, for their opinion on the items in the tool. There was 100% agreement by experts and minimal modifications were made in clinical and demographic variable based on the given suggestion.

3.12 Reliability of the tool:

The reliability of the tool was tested using Crohnbach's Alpha method with a sample size of 10 subjects, 5 subjects in each group. The internal consistency reliability coefficients were found to be high with crohnbach's alpha values for brief fatigue inventory scale r-0.82 respectively. Hence the tool was considered highly reliable for proceeding with the main study.

3.13 Pilot Study

Pilot study generally involves a small sample of subjects drawn from the same population as those from which the study sample will be drawn. The pilot study was conducted in the Govt. Rajaji hospital Madurai from 01.06.2015 to 07.06.2015. Prior to the pilot study, permission received from the head of the department of nephrology to conduct the pilot study .The pilot study has been conducted on 10 samples in which 5 samples were taken for experimental group and 5 samples were taken for control group .First the researcher gave self-introduction and established rapport with the participant. The nature of the study was explained to the participant and the written consent obtained from the participant. The results evidenced that there was significance in pre-test and post test level of fatigue among chronic renal failure patients. The pilot study revealed that the study was feasible.

3.14 Data Collection Procedure

Prior to data collection necessary permission received from the Dean, Principal, Head Of the Department (Nephrology) to conduct the study in Nephrology ward. The study is been approved by the ethical committee of Madurai Medical College. Written consent obtained from the participants after introduction and explanation regarding the nature of the study.

The study was conducted for a period of 6 week from 03.08.2015 to 13.09.2015 in nephrology ward. There were totally 25 beds in this ward. Nearly 120 cases come to

nephrology ward per month. In the study process, total 60 samples were collected from the nephrology ward. The patients for the study were selected based on inclusion criteria each day ten subjects were selected by means of simple random sampling method.. Afterwards they were assigned to two groups namely experimental and control groups such as five subjects as experimental group and the other five subjects as control group by lottery method. Pretest was conducted for both the groups, then intervention (foot reflexology) was given for the experimental group. The experimental group recieved foot reflexology for 4 consecutive day and after 4 consecutive days of intervention posttest was evaluated. Similarly, for the control group, the subjects were assessed for pre test fatigue level and foot reflexology were not given and then post test was conducted in 5th day along with the experimental group.

Time of reflexology had been provided according to the convenience of the patient. Foot Reflexology as a intervention is provided for 20 minutes on both the foot separately (each foot 10 minutes) before one hour of meals. Both foot were washed with water and then the comfortable position given to the patient. Only one leg is exposed at a time. A soft touch is provided to establish a rapport with the subjects. Various steps of foot reflexology like effleurage, thumb walking, stretching, Rotation of fingers were given one by one. In the same way, the other leg is exposed and repeated the same. Reflexology will be given once in a day for 4 consecutive days.

3.15 Plans for data analysis

The data collected was analyzed by means of descriptive statistics, and inferential statistics.

Descriptive Statistics:

1. Analysis of the baseline data was done by using frequency and percentage.

2. Level of fatigue among patients with chronic renal failure was analyzed by computing frequency, percentage, mean and standard deviation.

Inferential Statistics:

1. Paired "t" test, Unpaired "t" test was used to find out the effectiveness of Foot reflexology on the level of fatigue.

2. Chi-square analysis was used to determine the association between the level of fatigue and selected socio demographic variables among patients with chronic renal failure

3.16 Protection of Human Rights:

The study was conducted after receiving approval from the ethical committee of Madurai Medical College, Madurai, and from the head of the department of nephrology to conduct the study in nephrology ward. Both verbal and written consent was obtained from all the study subjects and the data collected was confidential. The names of the subjects were not disclosed in any form. Assurance was given that they can withdraw from the study at any time. The possible benefit of participating in the study was explained to all the subjects and anonymity was maintained throughout the study.

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┌─────────────────────────────────────────────────────────────────────┐
│          Research approach – Quantitative approach                    │
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                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│  Research design: True experimental –Randomized-Pre and post test    │
│                    control group design                               │
└─────────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────┐
│          Study setting: Nephrology ward GRH, Madurai                  │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│       Target population -    Patients with chronic renal failure      │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│  Accessible population- patients with chronic renal failure admitted  │
│  in Nephrology ward, Government Rajaji Hospital, Madurai.             │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│  Sample: Patients with chronic renal failure, who met inclusion       │
│  criteria admitted in Nephrology ward at Government Rajaji Hospital,   │
│  Madurai-20                                                            │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│          Sampling technique: Simple Random Sampling                   │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│  Sample size: 60 subjects (30 subjects – Experimental, 30 subjects    │
│                    – Control)                                          │
└─────────────────────────────────────────────────────────────────────┘
                                 ▼
┌─────────────────────────────────────────────────────────────────────┐
│       Pre assessment of fatigue using Brief Fatigue Inventory         │
└─────────────────────────────────────────────────────────────────────┘
           ▼                                         ▼
┌──────────────────────────────┐    ┌──────────────────────────────────┐
│ Experimental group:Foot      │    │ Control group: without Foot      │
│ reflexology for 20 Minutes   │    │ reflexology                      │
└──────────────────────────────┘    └──────────────────────────────────┘
           ▼                                         ▼
┌─────────────────────────────────────────────────────────────────────┐
│          Post Test Using Brief Fatigue Inventory                      │
└─────────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────┐
│  Data Analysis and interpretation of the findings done by             │
│  descriptive, inferential statistics                                  │
└─────────────────────────────────────────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────┐
│  Dissemination of the Research findings and Recommendations           │
└─────────────────────────────────────────────────────────────────────┘
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3.17 Schematic Representation of the study methodology

Data Analysis And Interpretation

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter presents the analysis and interpretation of the data collected to determine the impact of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital Madurai.

The analysis of data involves the translation of the information collected during the course of the research project into interpretable, convenient and descriptive terms and to draw inferences from them using statistical methods. The purpose of analysis is to summarize, compare and test the proposed relationships and infer findings. The collected data was tabulated and analyzed using descriptive and inferential statistical in order to meet the objectives of the study, and to test the hypotheses.

The data collected were interpreted under the following sections

Section – I

Distribution of socio demographic variables and clinical variables among patients with chronic renal failure

Section - II

Description of level of fatigue among patients with chronic renal failure

Section - III

Effectiveness of foot reflexology on pretest and post test fatigue level score among patients with chronic renal failure.

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Section - IV

Comparison of post test mean fatigue level score among patients with chronic renal failure in experimental and control group.

Section - V

Association between the level of fatigue among patients with chronic renal failure with their selected demographic variables and clinical variables.

SECTION - I

Distribution of socio demographic variables and clinical variables among patients with chronic renal failure

Table – 1: Frequency and percentage distribution of socio demographic variable among patients with chronic renal failure

n=30

Demographic variables		Experimental group		Control group	
		f	%	f	%
Age	21 - 35 yrs	9	30.0	8	26.7
	36 - 50 yrs	9	30.0	12	40.0
	51 - 65 yrs	10	33.3	7	23.3
	> 65 yrs	2	6.7	3	10.0
Sex	Female	18	60.	17	56.7
	Male	12	40.	13	43.3
Religion	Hindu	26	86.7	24	80.0
	Muslim	3	10.0	4	13.3
	Christian	1	3.3	2	6.7
Educational status	No formal education	11	36.7	12	40.0
	Up to middle school level	7	23.3	9	30.0
	Higher secondary level	9	30.0	7	23.3
	Diploma/Degree	3	10.0	2	6.7

Occupational status	Unemployed	3	10.0	8	26.7
	Gov. employee	9	30.0	9	30.0
	Private	15	50.0	10	33.3
	Self employee	3	10.0	3	10.0
Family income	Rs. < 5000	10	33.3	6	20.0
	Rs. 5001 - 10,000	3	10.0	7	23.3
	Rs. 10,001- 15,000	6	20.0	6	20.0
	Rs. > 15000	11	36.7	11	36.7
Marital status	Married	24	80.0	24	80.0
	Unmarried	4	13.3	4	13.4
	Spouse not alive	2	6.7	1	3.3
	Divorced	0	0.0	1	3.3
Type of family	Nuclear family	22	73.3	19	63.4
	Joint family	5	16.7	7	23.3
	Extended family	1	3.3	4	13.3
	Separated family	2	6.7	0	0.0
Food habit	Vegetarian	7	23.3	6	20.0
	Mixed diet	23	76.7	24	80.0
Locality	Rural	22	73.3	20	66.7
	Urban	8	26.7	10	33.3

From this table, it is clearly understood that with regard to the age in experimental group about 30%(9) of them falls within the age group of 21-35, about 30%(9) of them falls between the age group of 36 –50 , about 33.3%(10) of them falls between the age group of 51-65 and 6.7%(2) of them falls between 65 and above. In control group, about 26.7%(8) of them falls between the age group of 21-35 years, 40% (12) of them falls between the age group of 36 –50 years, 23.3%(7) of them falls between the age group of 51-65 years and 10%(3) of them falls between 65 and above.

Similarly, with regard to gender in experimental group about 60%(18) of them are male while 40%(12) of them are female. In control group about 56.7%(17) of them are male while 43.3%(13) of them are female.

The table also shows that the religion in experimental group about 86.7%(26) are Hindu, 10%(3) of them are Muslim and 3.3%(1) is Christian. While in control group, about 80%(24) are Hindu, 13.3%(4) are Muslim, and 6.7%(2) are Christian.

With regard to educational status about 36.7%(11) of them are not having formal education, 23.3%(7) of them are having up to middle school level education, 30.3%(9) of them are having higher secondary level education, 10%(3) of them are having diploma/degree level education in experimental group. While in control group, about 40%(12) of them are not having formal education, 30%(9) of them are having up to middle school level education, 23.3%(7) of them are having higher secondary level education, 6.7%(2) of them are having diploma/degree level education.

The table shows that the occupational status in experimental group about 10%(3) are unemployed, 30%(9), are government employee, 50%(15) are private and 10%(3) are self employee. In control group the occupational status about 26.7%(8) are unemployed, 30%(9), are government employee, 33.3%(10) are private and 10%(3) are self employee.

The table also shows that the family income in experimental group about 33.3%(10) are falling under the income of below 5000, about 10%(3) of them are falling between the income of 5001-10,000, 20%(6) between the income of 10,000-15,000 and about 36.7%(11) between the income of above 15,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of 5,001-10,000, about 20%(6) of them falls between 10,000-15,000 and 0nly 36.7%(11) of them all above the income of 15,000.

This distribution of marital status in experimental group consists of about 80%(24) are married, 13.4%(4) are unmarried, 6.7%(2) are spouse not alive and nobody got divorce. In control group about 80%(24) are married, 13.4%(4) are unmarried, 3.3%(1) are spouse not alive and 3.3%(1) got divorce.

In experimental group, about 73.3%(22) of them belong to nuclear family, 16.7%(5) of them belong to joint family, 3.3%(1) belongs to extended family and 6.7%(2) belongs to separated family. In control group, about 63.4%(19) of them belong to nuclear family, 23.3%(7) of them belong to joint family, 13.3%(4) belongs to extended family and none of them belongs to separated family.

In experimental group about 23.3%(7) of them are vegetarian and about 76.7%(24) of them belong to mixed diet. In control group about 20%(6) of them are vegetarian and about 33.3%(10) of them belong to mixed diet.

In experimental group about 73.3%(22) of them are in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them are rural and about 33.3%(10) of them are belong to urban area.

AGE DISTRIBUTION

Fig.2. Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their age.

The above figure shows, it is clearly understood that with regard to the age in experimental group about maximum of them were in about 33.3%(10) of them falls between the age group of 51-65 and minimum of them that was 6.7%(2) of them falls between 65 years and above. In control group, about 40% (12) of them falls between the age group of 36 –50 years, and 10%(3) of them falls between 65 years and above.
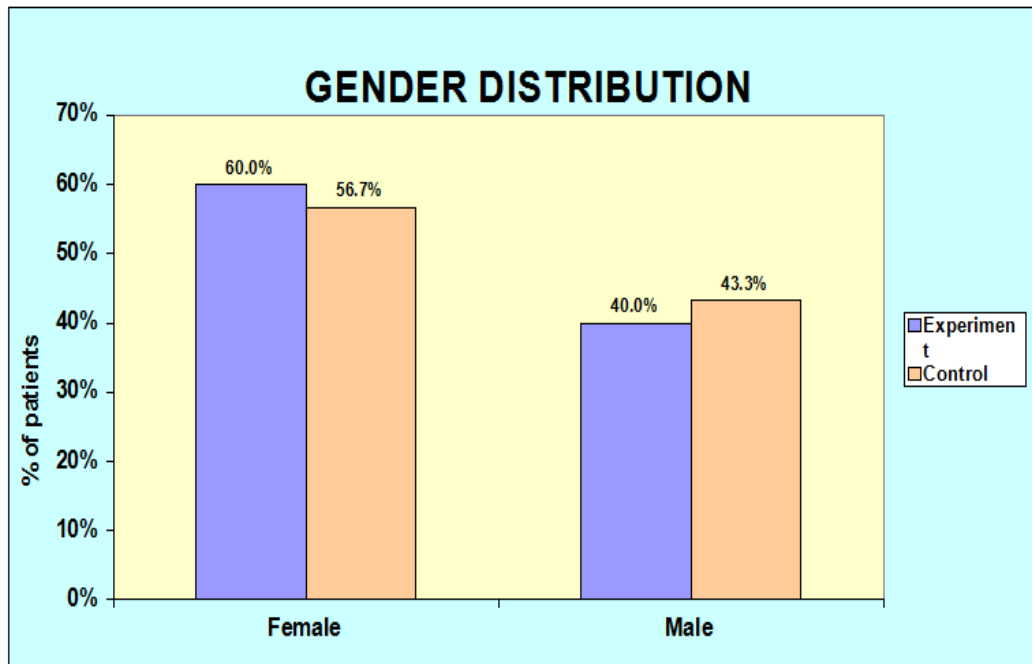
Fig.3. Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their gender

The above figure shows, with regard to gender in experimental group about 60%(18) of them were male while 40%(12) of them were female. In control group about 56.7%(17) of them were male while 43.3%(13) of them were female.

Fig. 4 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their religion

The above figure shows that the religion in experimental group about majority of the patients, 86.7%(26) were Hindu, 10%(3) of them were Muslim and 3.3%(1) was Christian. While in control group also majority of the patients 80%(24) were Hindu, 13.3%(4) were Muslim, and 6.7%(2) were Christian.

Fig. 5 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their educational status

The above figure shows with regard to educational status maximum were about 36.7%(11) of them were not having formal education, 10%(3) minority were having diploma/degree level education in experimental group. While in control group, maximum about 40%(12) of them were not having formal education, 6.7%(2) of them were having diploma/degree level education were in minority.

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Fig. 6 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their occupational status

The above figure shows that the occupational status in experimental group majority of them were 50%(15) private and 10%(3) minority were un employee and self employee. In control group the occupational status about 33.3%(10) majority were private and 10%(3) minority were self employee.

Fig. 7 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their monthly income

The above figure shows that the family income in experimental group about 36.7%(11) maximum were between the income of above 15,000 and 10%(3) minimum of them were between the income of Rs. 5001- 10,000. In control group, about 36.7%(11) maximum of them falls above the income of 15,000, about 20%(6) minimum of them falls between the income of 10,000-15,000 and income below Rs.5000.

Fig. 8 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their marital status

This distribution of marital status in experimental group consists of about 80%(24) were married, 6.7%(2) were spouse not alive. In control group about 80%(24) were married, 3.3%(1) were spouse not alive and 3.3%(1) got divorce.
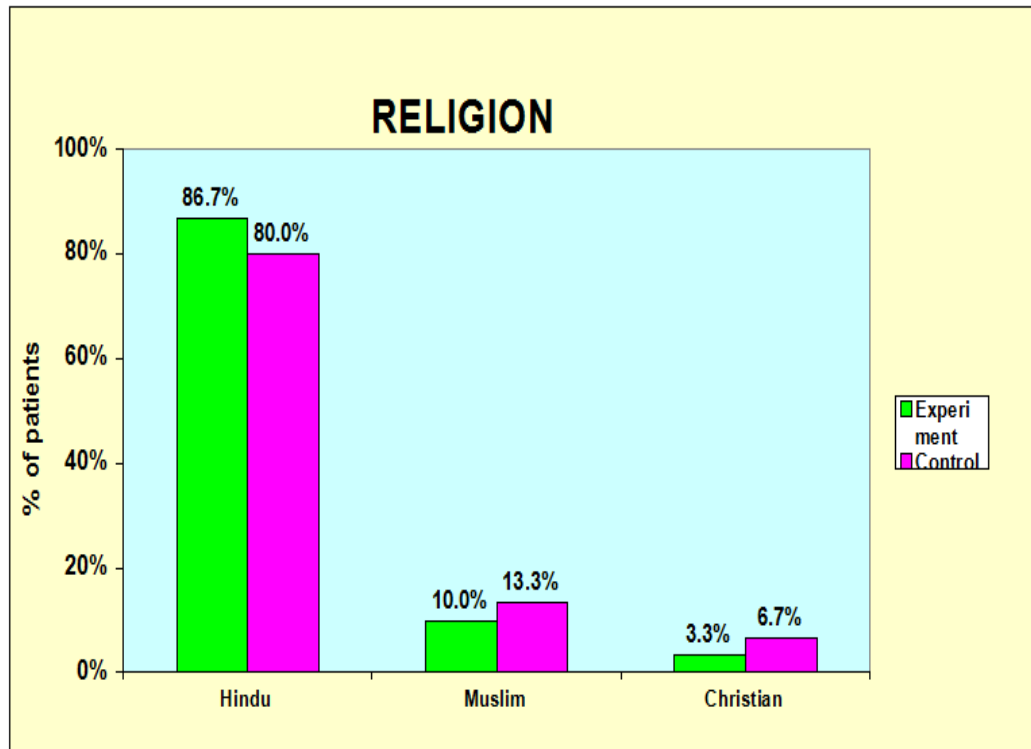
Fig. 9 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their type of family.

In experimental group, about 73.3%(22) of them belong to nuclear family, 3.3%(1) belongs to extended family. In control group, about 63.4%(19) of them belong to nuclear family, 13.3%(4) belongs to extended family.

Fig. 10. Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their food habit

In experimental group about 23.3%(7) of them were vegetarian and about 76.7%(24) of them belong to mixed diet. In control group about 20%(6) of them were vegetarian and about 33.3%(10) of them belong to mixed diet.
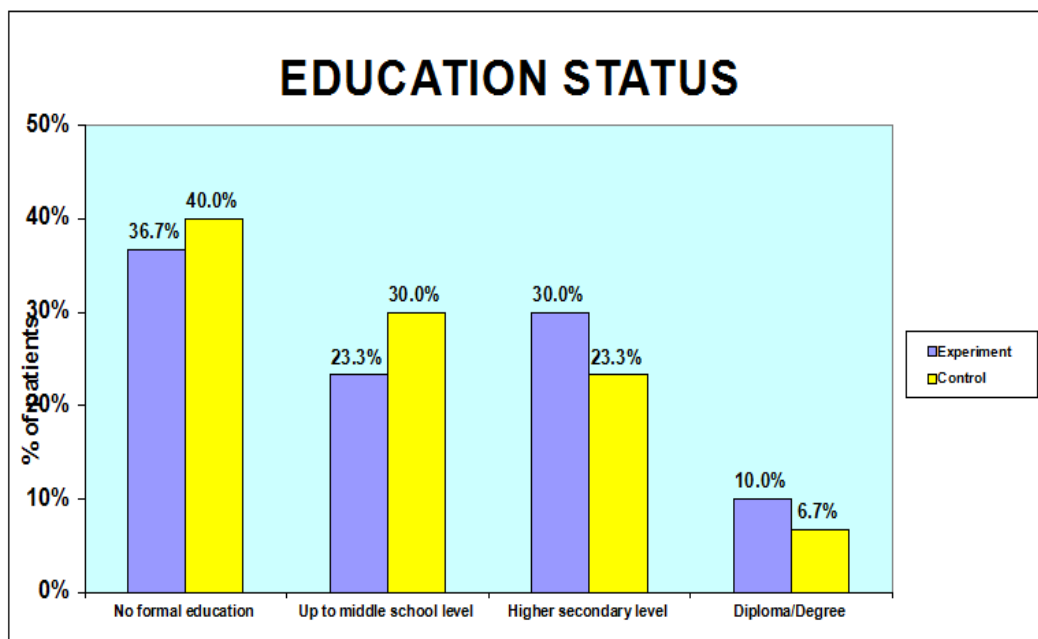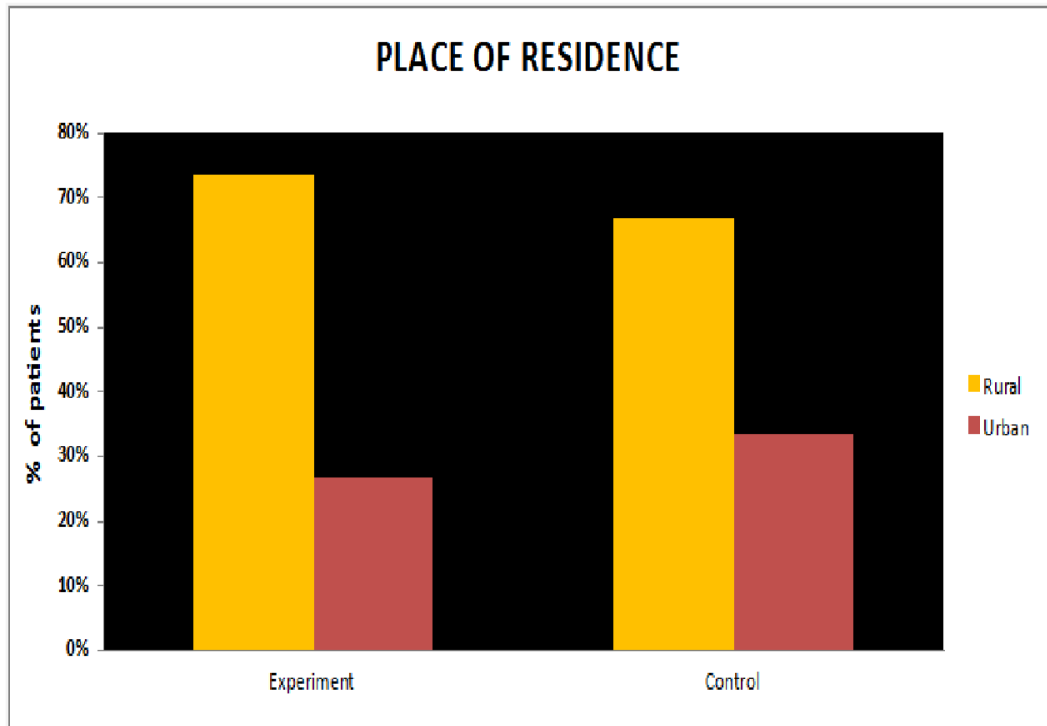
Fig. 11 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their place of residence.
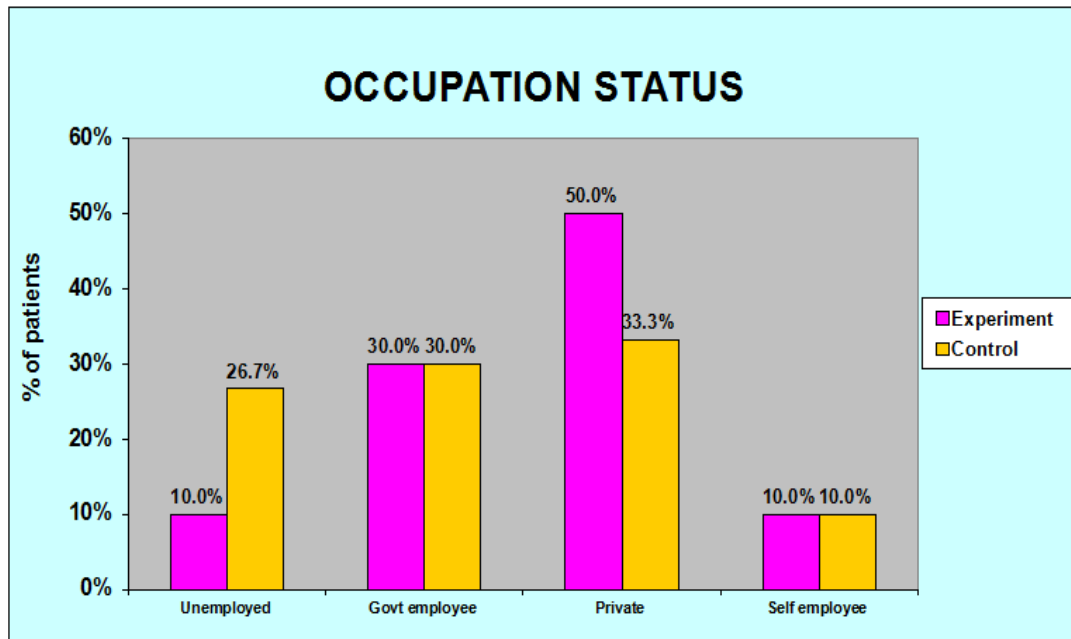
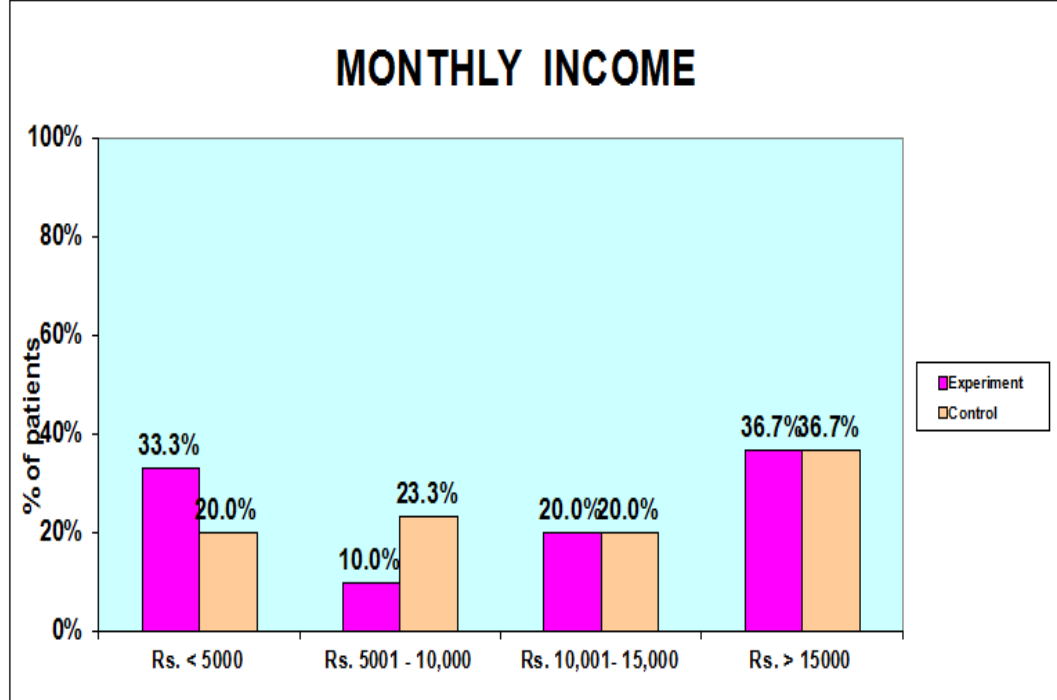In experimental group about 73.3%(22) of them were in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them were rural and about 33.3%(10) of them were belong to urban area.

Table – 2: Frequency and percentage distribution of clinical variables among patients with chronic renal failure

Clinical variables		Group			
		Experiment		Control	
		f	%	f	%
Duration of illness	1 - 2 years	13	43.3	12	40.0
	2 - 3 years	8	26.7	12	40.0
	3 - 4 years	5	16.7	4	13.3
	> 4 years	4	13.3	2	6.7
Duration of fatigue	Days	2	6.6	3	10.0
	Weeks	5	16.7	7	23.3
	Months	23	76.7	20	66.7
Dialysis cycle	Weekly once	9	30.0	9	30.0
	Weekly twice	6	20.0	5	16.7
	Weekly thrice	4	13.3	2	6.6
	No dialysis	11	36.7	14	46.7

In experimental group with regard to duration of illness, about 43.3%(13) of them with 1-2 years, 26.7%(8) of them are under 2-3 years, 16.7%(5) of them are in 3-4 years and 13.3%(4) of them are in above 4 years. In control group with regard to duration of illness, about 40%(12) of them with 1-2 years, 40%(12) of them are under 2-3 years, 13.3%(4) of them are in 3-4 years and 6.7%(2) of them are in above 4 years.

In experimental group with regard to duration of fatigue, about 6.6%(2) of them in days, 16.7%(5) of them in weeks and 76.7%(23) of them in months. In control group with regard to duration of fatigue, about 10%(3) of them in days, 23.3%(7) of them in weeks and 66.7%(20) of them in months.

In experimental group with regard to dialysis cycle, about 30%(9) of them in with weekly once, 20%(6) of them in weekly twice, 13.3%(4) of them in weekly thrice, 36.7%(11) of them are in no dialysis. In control group with regard to dialysis cycle, about 30%(9) of them in with weekly once, 16.7%(5) of them in weekly twice, 6.6%(2) of them in weekly thrice, 46.7%(14) of them are in no dialysis.
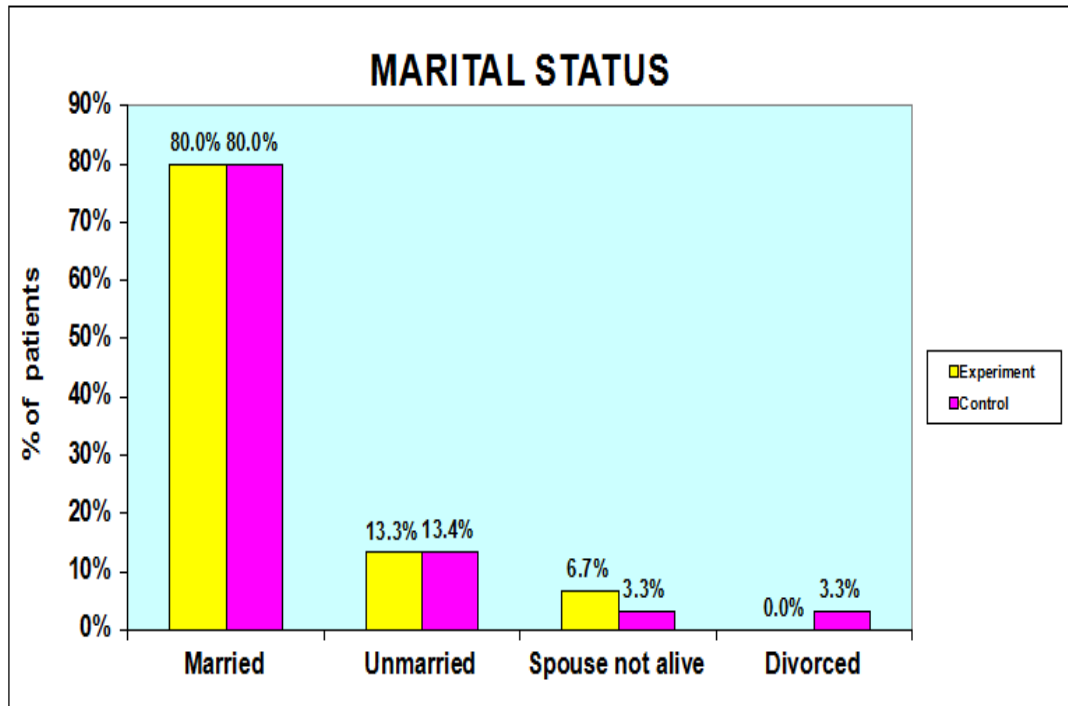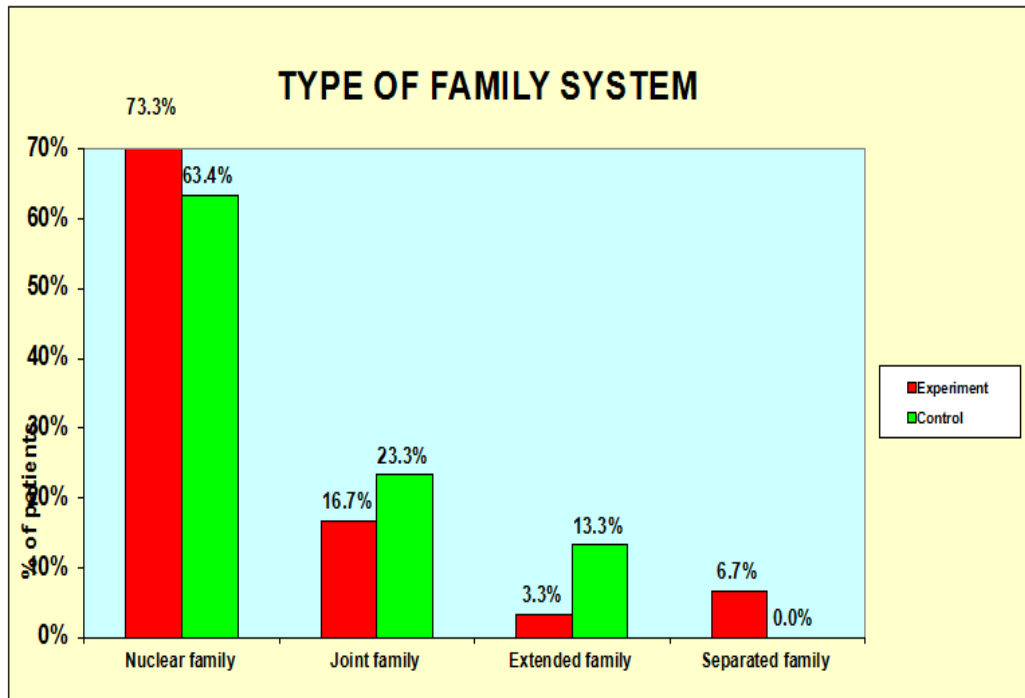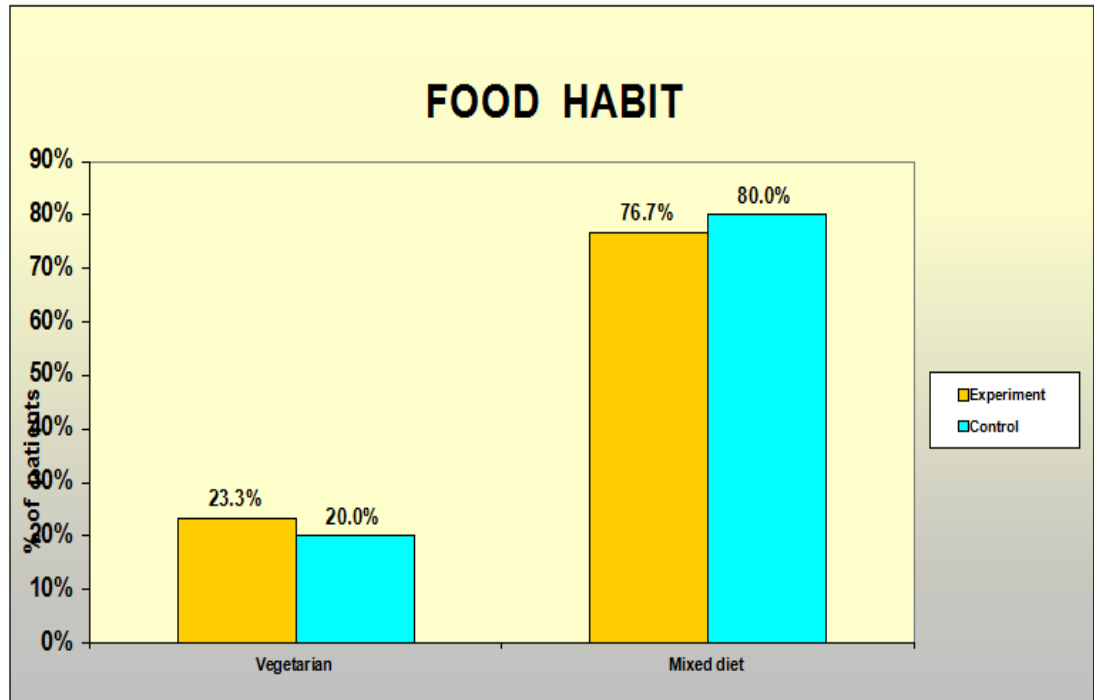
Fig.12 Multiple bar diagram shows percentage distribution of patients with chronic renal failure according to their duration of illness, duration of fatigue and dialysis cycle.

The above figure shows, in experimental group majority with regard to duration of illness, about 43.3%(13) of them with 1-2 years, and 13.3%(4) of them are in above 4 years were in minority. In control group with regard to duration of illness, about 40%(12) of them with 1-2 years, 40%(12) of them are under 2-3 years, were major and 6.7%(2) of them are in above 4 years were minor.

In experimental group with regard to duration of fatigue, about 6.6%(2) minimum of them were in days, and 76.7%(23) of them were in months who are maximum. In control group with regard to duration of fatigue, about 10%(3) of them in days were minimum, and 66.7%(20) of them in months were maximum.

In experimental group with regard to dialysis cycle, majority of them were about 36.7%(11) of them are in no dialysis and 13.3%(4) of them in weekly thrice were in minority, . In control group with regard to dialysis cycle, about 46.7%(14) of them are in no dialysis were majority and 6.6%(2) of them in weekly thrice, were minority.

The description of level of fatigue among patients with chronic renal failure

Table-3: Frequency and percentage distribution of pretest level of fatigue in experimental and control group.

Level of fatigue	Experiment		Control	
	No. of patients (f)	%	No. of patients (f)	%
Mild	0	0.0	0	0.0
Moderate	12	40.0	13	43.3
Severe	18	60.0	17	56.7
Total	30	100	30	100

The above table shows the pretest level of fatigue among patients with chronic renal failure. in Experiment group patients in pretest, none of the patients are having mild fatigue, 40.0%(12) of them are having moderate fatigue and 60%(18) of them are having severe fatigue.

In control group patients in pretest, none of the patients are having poor fatigue, 43.3%(13) of them are having moderate fatigue and 56.7%(17) of them are having severe fatigue.

PRETEST LEVEL OF FATIGUE SCORE
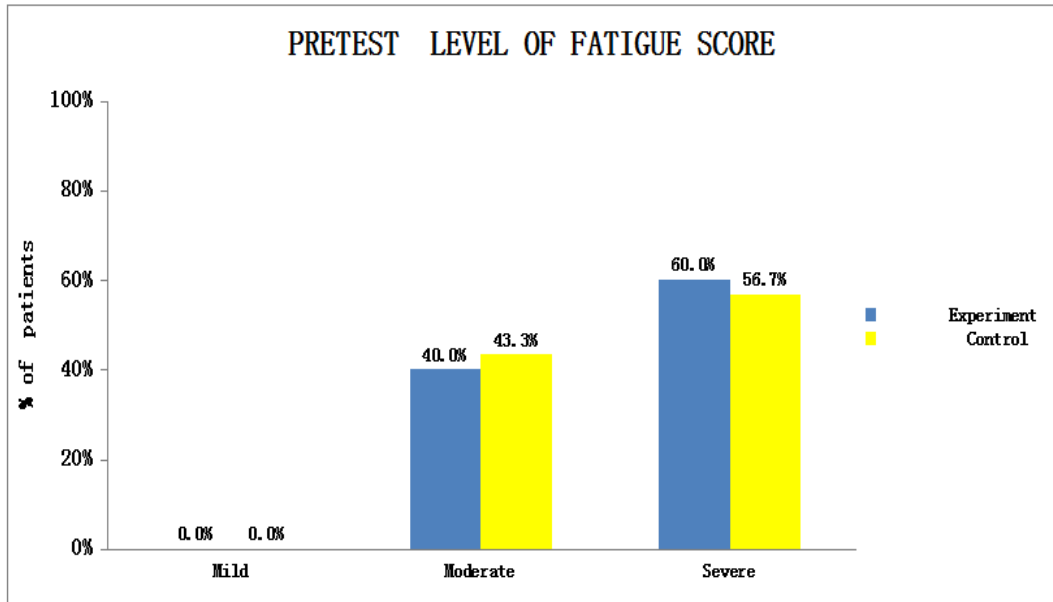
Fig.13 The above multiple bar diagram shows the pretest level of fatigue among patients with chronic renal failure

In Experiment group patients in pretest, none of the patients are having mild fatigue, 40.0%(12) of them are having moderate fatigue and 60%(18) of them are having severe fatigue .In control group patients in pretest, none of the patients are having poor fatigue, 43.3%(13) of them are having moderate fatigue and 56.7%(17) of them are having severe fatigue.

Table 4: Mean and SD pretest level of fatigue according to Brief Fatigue Inventory.

Fatigue	Maximum score	EXPERIMENT			CONTROL		
		Mean	SD	% of mean score	Mean	SD	% of mean score
Best describes fatigue right now	10	9.10	0.76	91.0	8.90	0.57	89.0
Best describes usual level of fatigue during past 24 hours	10	8.75	0.81	87.5	8.61	0.57	86.1
Best describes your worst level of fatigue during past 24 hours	10	8.73	0.76	87. 3	8.60	0.65	86.0
General activity	10	8.20	1.03	82.0	7.70	0.65	77.0
Mood	10	7.30	0.82	73.0	7.05	0.63	70.5
Walking ability	10	7.85	0.83	78.5	7.90	0.57	79.0
Normal work	10	8.00	0.71	80.0	8.02	0.76	80.2
Relation with other people	10	7.83	0.93	78.3	7.71	0.61	77.1
Enjoyment of life	10	7.57	0.98	75.7	7.41	0.62	74.1
OVERALL	**10**	**7.33**	**0.96**	**73.3**	**7.19**	**1.03**	**71.9**

The above table shows in pretest the domain wise fatigue percentage that overall mean score was 7.33, SD was 0.96 in experimental group and in control group the over all mean score was 7.19 and SD was 1.03.

Table 5: Frequency and percentage wise distribution of posttest level of fatigue among patients with chronic renal failure

Level of fatigue	Experiment		Control	
	No. of patients (f)	%	No. of patients	%
Mild	10	33.3	0	0.0
Moderate	20	66.7	12	40.0
Severe	0	0.0	18	60.0
Total	30	100	30	100

The above table shows the posttest level of fatigue of patients with chronic renal failure, in Experiment group patients in posttest, 33.3%(10) of the patients are having mild fatigue, 66.7%(20) of them are having moderate fatigue and none of them are having severe fatigue .

In control group patients in posttest, none of the patients are having poor fatigue, 40.0% (12) of them are having moderate fatigue and 60.0%(18) of them are having severe fatigue .
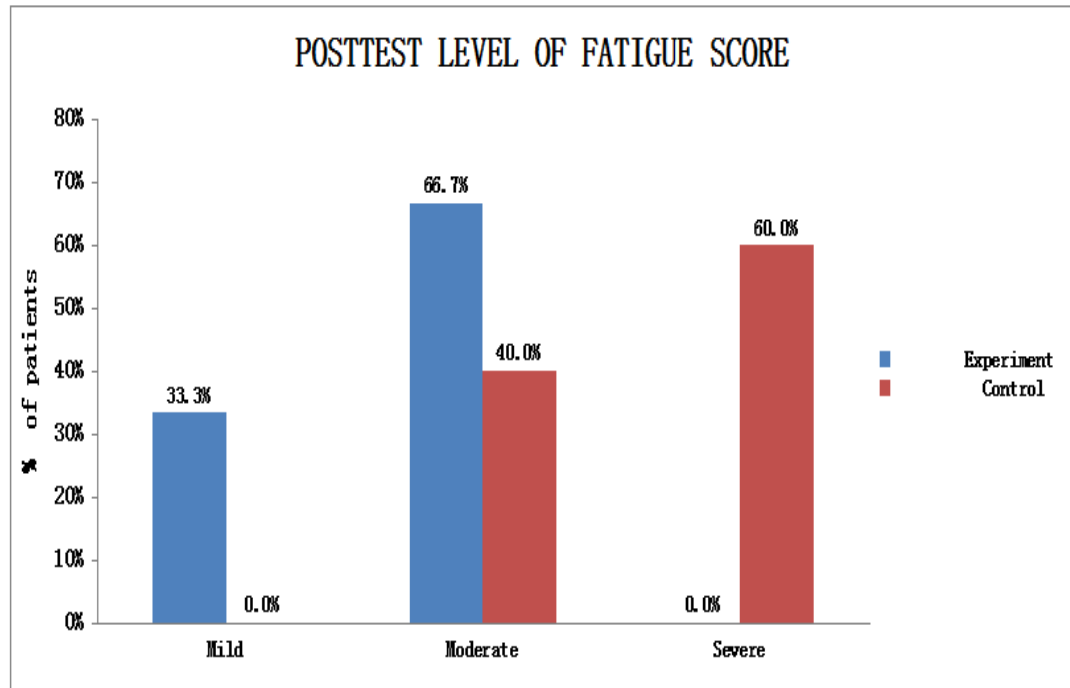
Fig.14 The above multiple bar diagram shows the posttest level of fatigue among patients with chronic renal failure

The above figure shows the posttest level of fatigue of patients with chronic renal failure, in Experiment group patients in posttest, 33.3%(10) of the patients are having mild fatigue, 66.7%(20) of them are having moderate fatigue and none of them are having severe fatigue .In control group patients in posttest, none of the patients are having poor fatigue, 40.0% (12) of them are having moderate fatigue and 60.0%(18) of them are having severe fatigue .

Table 6: Mean and SD postest level of fatigue according to Brief Fatigue Inventory.

Fatigue	Maximum score	EXPERIMENT			CONTROL		
		Mean	SD	% of mean score	Mean	SD	% of mean score
Best describes fatigue right now	10	5.85	0.76	58.5	9.19	0.61	91.9
Best describes usual level of fatigue during past 24 hours	10	5.56	0.81	55.6	8.95	0.55	89.5
Best describes your worst level of fatigue during past 24 hours	10	5.59	0.76	55. 9	8.85	0.66	88.5
General activity	10	5.01	1.03	50.1	7.85	0.67	78.5
Mood	10	4.04	0.82	40.4	7.35	0.68	73.5
Walking ability	10	4.29	0.83	42.9	7.92	0.56	79.2
Normal work	10	4.59	0.71	45.9	8.27	0.79	82.7
Relation with other people	10	4.5	0.93	45.0	7.94	0.72	79.4
Enjoyment of life	10	4.27	0.98	42.7	7.58	0.74	75.8
OVERALL	**10**	**4.37**	**1.24**	**43.7**	**7.39**	**1.32**	**73.9**

The above table shows in posttest the domain wise fatigue percentage that overall mean score was 4.37, SD was 1.24 in experimental group and in control group the over all mean score was 7.39 and SD was 1.32.

Effectiveness of Foot Reflexology on pretest and post test fatigue level score among patients with chronic renal failure.

Table 7: Comparison of pretest and posttest level of fatigue in experiment

Level of fatigue	Pretest		Posttest	
	No. of patients	%	No. of patients	%
Mild	0	0.0	10	33.3
Moderate	12	40.0	20	66.7
Severe	18	60.0	0	0.0
Total	30	100	30	100

The above table shows the level of fatigue of patients, in pretest none of the patients are having mild fatigue, 40.0% of them are having moderate fatigue and 60% of them are having severe fatigue.

In posttest 33.3% of the patients are having mild fatigue, 66.7% of them are having moderate fatigue and none of them are having severe fatigue.

Table 8: Effectiveness of foot reflexology

Group	Tests	Maximum score	Mean fatigue score	Mean difference with 95% Confidence interval	Proportion with 95% Confidence interval
Experiment	Pretest	10	7.33	↓2.96(2.47-3.45)	↓29.6%(24.7% -34.5%)
	Posttest	10	4.37		
Control	Pretest	10	7.19	↑-0.20(-0.05-0.32)	↑-2.0%(-0.5% -1.2%)
	Posttest	10	7.39		

The above table shows the effectiveness of foot reflexology, On an average, experiment group patients are gained 29.6% of fatigue score. This fatigue decrease shows the effectiveness of the study. Differences between pretest and posttest score was analyzed using mean difference with 95% CI and proportion with 95% confidence interval.

Table 9 : Comparison of pretest and posttest mean fatigue score

Group		Fatigue score		Mean difference	Student's Paired t-test	P- Value
Experiment	Pretest	7.33	0.96	2.96	**t=12.29**	**P=0.001*** significant**
	Posttest	4.37	1.24			
Control	Pretest	7.19	1.03	0.20	t=1.26	P=0.21not significant
	Posttest	7.39	1.29			

* significant at P≤0.05   ** highly significant at P≤0.01   *** very high significant at P≤0.001

The above table shows the pretest and posttest fatigue score among patients with chronic renal failure. In experiment group, in pretest, patients are having 7.33 fatigue score and in posttest they are having 4.37 score , so the difference is 2.96 score after foot reflexology. This difference is large and it is statistically significant difference. It was calculated using student's paired t-test.

In control group, in pretest, patients are having 7.19 fatigue score and in posttest they are having 7.39 score, so the difference is 0.20 score. This difference is small and it is not statistically significant difference. It was calculated using student's paired t-test.

Fig 15: Box plot compares the patients pretest and posttest mean fatigue score

The above figure shows the pretest and posttest fatigue score among patients with chronic renal failure, in experiment group, in pretest, patients are having 7.33 fatigue score and in posttest they are having 4.37 score , so the difference is 2.96 score after foot reflexology. This difference is large and it is statistically significant difference. It was calculated using student's paired t-test. In control group, in pretest, patients are having 7.19 fatigue score and in posttest they are having 7.39 score, so the difference is 0.20 score. This difference is small and it is not statistically significant difference. It was calculated using student's paired t-test.

Table 10: Comparison of Experiment and Control group Posttest mean fatigue score

Group	No. of patients	Fatigue score		Mean difference	Student's Independent t-test	P- Value
		Mean	SD			
Experiment	30	4.37	1.25	3.02	t=9.19	**P=0.001***
Control	30	7.39	1.29			significant**

* significant at P≤0.05   ** highly significant at P≤0.01   *** very high significant at   P≤0.001

The above table shows that the posttest and posttest fatigue score among patients. In experiment group patients are having 4.37 where as control group patients are having 7.39. So the difference is 3.02. This difference is large and it is statistically significant. It was confirmed using student independent t-test.

SECTION -IV

Association between the level of fatigue among chronic renal failure patients with selected demographic variables and clinical variables.

Table 11: Association between level of Fatigue reduction score and patients demographic variables (experiment)

Demographic variables		Level of Fatigue reduction score				Total	χ2 value	P- Value
		Below average (≤2.96)		Above average (.2.96)				
		f	%	f	%			
Age	21 - 35 yrs	7	77.8	2	22.2	9	**9.37** **df=3**	**p=0.05*** **significant**
	36 - 50 yrs	6	66.7	3	33.3	9		
	51 - 65 yrs	2	20.0	8	80.0	10		
	> 65 yrs	0	0.0	2	100.0	2		
Sex	Female	10	55.6	8	44.4	18	0.55 df=1	p=0.45 not significant
	Male	5	41.7	7	58.3	12		
Religion	Hindu	12	46.2	14	53.8	26	1.48 df=2	p=0.47 not significant
	Muslim	2	66.7	1	33.3	3		
	Christian	1	100.0	0	0.0	1		

Education al status	No formal education	9	81.8	2	18.2	11	**10.37 df=3**	**p=0.01** significant**
	Up to middle school level	4	57.1	3	42.9	7		
	Higher secondary level	2	22.2	7	77.8	9		
	Diploma/Degree	0	0.0	3	100.0	3		
Occupati onal status	Unemployed	3	100.0	0	0.0	3	4.06 df=3	p=0.25 not significant
	Govt employee	4	44.4	5	55.6	9		
	Private	6	40.0	9	60.0	15		
	Self employee	2	66.7	1	33.3	3		
Family income	Rs. < 5000	5	50.0	5	50.0	10	3.81 df=3	p=0.28 not significant
	Rs. 5001 - 10,000	3	100.0	0	0.0	3		
	Rs. 10,001- 15,000	3	50.0	3	50.0	6		
	Rs. > 15000	4	36.4	7	63.6	11		
Marital status	Married	10	41.7	14	58.3	24	366 df=2	p=0.16 not significant
	Unmarried	3	75.0	1	25.0	4		
	Spouse not alive	2	100.0	0	0.0	2		
Type of family	Nuclear family	8	36.4	14	63.6	22	6.43 df=3	p=0.09 not significant
	Joint family	4	80.0	1	20.0	5		
	Extended family	1	100.0	0	0.0	1		
	Separated family	2	100.0	0	0.0	2		

Food habit	Vegetarian	4	57.1	3	42.9%	7	0.18 df=1	p=0.69 not significant
	Mixed diet	11	47.8	12	52.2	23		
Locality	Rural	10	45.5	12	54.5	22	0.68 df=1	p=0.40 not significant
	Urban	5	62.5	3	37.5	8		
Duration of illness	1 - 2 years	4	30.8	9	69.2	13	**8.22 df=3**	**p=0.05* significant**
	2 - 3 years	3	37.5	5	62.5	8		
	3 - 4 years	4	80.0	1	20.0	5		
	> 4 years	4	100.0	0	0.0	4		
Duration of fatigue	Days	1	50.0	1	50.0	2	0.24 df=2	p=0.88 not significant
	Weeks	3	60.0	2	40.0	5		
	Months	11	47.8	12	52.2	23		
Dialysis cycle	Weekly once	40	44.4	5	55.6	9	1.86 df=3	p=0.60 not significant
	Weekly twice	4	66.7	2	33.3	6		
	Weekly thrice	1	25.0	3	75.0	4		
	No dialysis	6	54.5	5	45.5	11		

The above table shows the association between level of Fatigue reduction score and patients demographic variables. Elders, more educated and less duration of illness are reduced more fatigue than other after having foot reflexology. Statistical significance was calculated using chi square test.
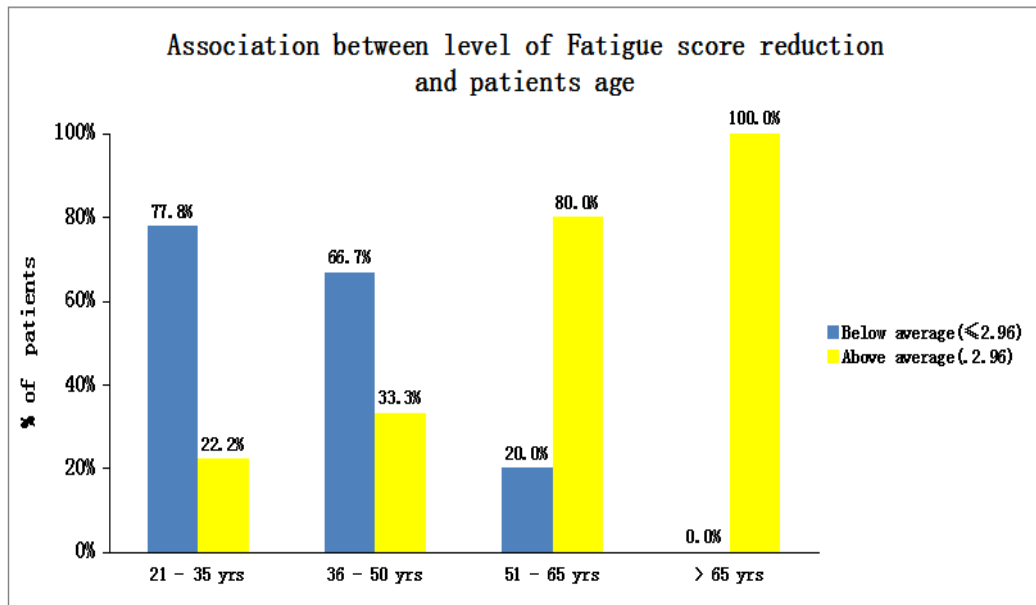
Fig.14 The above multiple bar diagram shows the association between level of fatigue score reduction and patients age

The above diagram shows the association between level of fatigue score reduction and patients age who were above 65 years of age. The statistical significance was calculated using chi square test.

Association between level Fatigue score reduction and Duration of illness

Legend:
- Below average (≤2.96)
- Above average (.2.96)
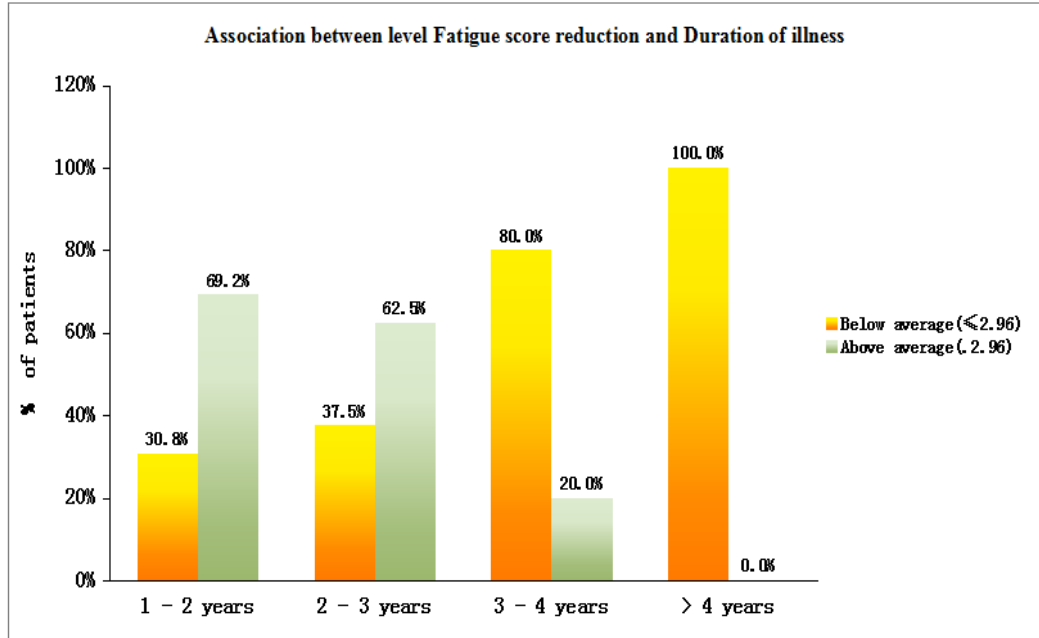
Fig.15 The above multiple bar diagram shows the association between level of fatigue score reduction and duration of illness

The above diagram shows the association between level of fatigue score reduction and duration of illness who were having less duration of illness. The statistical significance was calculated using chi square test.

Discussion

CHAPTER - V

DISCUSSION

This chapter deals with the discussion of the study with appropriate literature review, statistical analysis and findings of the study based on objectives of the study.

The aim of the study to was to evaluate the effectiveness of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai. A Quasi experimental 2 group equivalent pretest, post-test design was used to assess the effectiveness of foot reflexology on fatigue among patients with chronic renal failure.

Total 60 chronic renal failure patients were selected from the ward. The samples were selected by non probability purposive sampling method. A pre-test was conducted with brief fatigue inventory for the patients with chronic renal failure and the patients with fatigue score more than the 3 were selected for the study.

Discussion of socio demographic variables

With regard to the age in experimental group about maximum of them were in about 33.3%(10) of them falls between the age group of 51-65 and minimum of them that was 6.7%(2) of them falls between 65 years and above . In control group, about 40% (12) of them falls between the age group of 36 –50 yrs, and 10%(3) of them falls between 65 years and above.

Similarly, with regard to gender in experimental group about 60%(18) of them are male while 40%(12) of them are female. In control group about 56.7%(17) of them are male while 43.3%(13) of them are female.

With regard to religion in experimental group about 86.7%(26) are Hindu, 10%(3) of them are Muslim and 3.3%(1) is Christian. While in control group, about 80%(24) are Hindu, 13.3%(4) are Muslim, and 6.7%(2) are Christian.

With regard to educational status The above figure shows with regard to educational status maximum were about 36.7%(11) of them were not having formal education, 10%(3) minority were having diploma/degree level education in experimental group. While in control group, maximum about 40%(12) of them were not having formal education, 6.7%(2) of them were having diploma/degree level education were in minority.

With regard to occupational status in experimental group majority of them were 50%(15) private and 10%(3) minority were un employee and self employee. In control group the occupational status about 33.3%(10) majority were private and 10%(3) minority were self employee.

With regard to family income in experimental group about 36.7%(11) maximum were between the income of above 15,000 and 10%(3) minimum of them were between the income of Rs. 5001- 10,000. In control group, about 36.7%(11)

maximum of them falls above the income of 15,000, about 20%(6) minimum of them

falls between the income of 10,000-15,000 and below Rs.5000.

This distribution of marital status in experimental group consists of about

80%(24) were married, 6.7%(2) were spouse not alive. In control group about 80%(24)

were married, 3.3%(1) were spouse not alive and 3.3%(1) got divorce.

in experimental group, about 73.3%(22) of them belong to nuclear family,

3.3%(1) belongs to extended family. In control group, about 63.4%(19) of them belong

to nuclear family, 13.3%(4) belongs to extended family.

In experimental group about 23.3%(7) of them are vegetarian and about

76.7%(24) of them belong to mixed diet. In control group about 20%(6) of them are

vegetarian and about 33.3%(10) of them belong to mixed diet.

In experimental group about 73.3%(22) of them are in rural and about 26.7%(8)

of them belong to urban. In control group about 66.7%(20) of them are rural and about

33.3%(10) of them are belong to urban area.

Discussion of clinical variables

In experimental group majority with regard to duration of illness, about

43.3%(13) of them with 1-2 years, and 13.3%(4) of them are in above 4 years were in

minority. In control group with regard to duration of illness, about 40%(12) of them

with 1-2 years, 40%(12) of them are under 2-3 years, were major and 6.7%(2) of them are in above 4 years were minor.

In experimental group with regard to duration of fatigue, about 6.6%(2) minimum of them were in days, and 76.7%(23) of them were in months who are maximum. In control group with regard to duration of fatigue, about 10%(3) of them in days were minimum, and 66.7%(20) of them in months were maximum.

In experimental group with regard to dialysis cycle, majority of them were about 36.7%(11) of them are in no dialysis and 13.3%(4) of them in weekly thrice were in minority, . In control group with regard to dialysis cycle, about 46.7%(14) of them are in no dialysis were majority and 6.6%(2) of them in weekly thrice, were minority.

Findings based on the objectives

➢ **The first objective is to assess the level of fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.**

In Experiment group patients in pretest none of the patients are having mild fatigue, 40.0%(12) of them are having moderate fatigue and 60%(18) of them are having severe fatigue .In control group patients in posttest none of the patients are having mild fatigue, 36.7% (13)of them are having moderate fatigue and 63.3%(17) of them are having severe fatigue .

The present study is consistent with the study of **Jeong, IS.(2006)** conducted a true experimental study to know the effect of Self-Foot Reflexology on Peripheral Blood Circulation and Peripheral Neuropathy in patients with Diabetes Mellitus. The study of 80 subjects (40 control and 40 experimental). The reflexology was given for about 30 minutes each. Findings shown that there is a significantly greater decrease in symptoms of fatigue, fatigue, depression and physiologic measures of stress for reflexology treatment group than for those in the control group. These clinical findings support the use of reflexology in peripheral blood circulation and peripheral neuropathy patients. Data were analyzed by using descriptive statistics and t-test and pre-test (x = 7.230) i.e. 72.3% on the average. hence the study shows that chronic renal failure patient have fatigue.

➢ **The second objective to evaluate the effectiveness of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.**

The mean fatigue score among patients before foot reflexology and mean fatigue score after intervention in both experimental and control group. In experiment group, in pretest, patients are having 7.33 fatigue score and in posttest they are having 4.37 score, so the difference is 2.96 score after **foot reflexology**. This difference is large and it is statistically significant difference. It was calculated using student's paired t-test. In control group, in pretest, patients are having 7.19 fatigue score and in posttest they are having 7.39 score, so the difference is 0.20 score. This

difference is small and it is not statistically significant difference. It was calculated using student's paired t-test After the completion of foot reflexology some patient felt the sensation to urinate and they are allowed, which Indicates that the body wastes are eliminated through voiding and then the patient feels comfortable.

The present study is consistent with the study of **Kim JH (2002)** who had conducted an experimental study in a University Hospital in Seoul Korea on 40 patients Findings of the study showed that the severity of fatigue decreased significantly in the experimental group as compared to the control group following foot massage (t=-3.37, P=0.002). The PR(pulse rate) in the experimental group was lower than that in the control group following foot massage (F=7.73,P=0.008). The SBP (systolic blood pressure) in the experimental group was lower than that in control group following foot massage (F=25.75, P=0.000).

One more study is consistent with the present study, **Wyatt G,et al, (2007)** conducted a quasi-experimental study in The College of Nursing, Michigan State University, USA to know the feasibility of a reflexology and guided imagery during dialysis for achieving high level of patient satisfaction . The subjects (n = 50) were selected and intervention were given for 5 times/week. Findings shown the higher level of satisfaction with 100% of patients preferred to continue the reflexology. It is planned to develop the complementary therapies and expand the program in offering services to dialysis patients as well as hospice care for End Stage Renal Disease patients. Hence hypothesis - H_1 :The post test level of fatigue will be significantly reduced than the

pre-test level in experimental group among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,. Is proved.

In this study in Experiment group patients in posttest, 33.3%(10) of the patients are having mild fatigue, 66.7%(20) of them are having moderate fatigue and none of them are having severe fatigue. In control group patients in posttest, none of the patients are having poor fatigue, 40.0% (12)of them are having moderate fatigue and 60.0%(18) of them are having severe fatigue,. Hence the study shows that the post test level of fatigue in experimental group is statistically high when compared to the level of fatigue in control group.

The present study is consistent with **Yang, JH.(2005**) conducted a quasi-experimental study using a non-equivalent pre-post design in Korea to know the effects of foot reflexology on nausea, vomiting and fatigue in kidney disease patients undergoing hemodialysis .The subjects consisted of 34 patients with 18 in the experimental group and 16 in control group. For the experimental group, foot reflexology was given for about 40 minutes. Findings shown that there is a statistically significant decrease in nausea, and vomiting in the experimental group when compared to the control group over two different times. In addition, there was a statistically significant decrease in fatigue in the experimental group when compared to the control group over two different times. Hence, it is concluded that the Foot reflexology was effective on nausea, vomiting and fatigue in kidney disease patients undergoing hemodialysis.

One more study is consistent with the present study,, **Song, RH., Kim, H. (2006)** conducted a quasi-experimental one group pretest-posttest study in Department of Nursing, Daejeon Health Science College to examine the effects of foot reflexion massage on sleep disturbance, fatigue, depression disorder, and the physiological index of the elderly. The subjects were 50 elderly people and they were assigned to experimental group (25patients) and a control group (25subjects) respectively. Intervention was provided for 12 sessions, 30 minutes per session. Findings shown that the experimental group improved sleep quality more than the control group. The experimental group had less depression disorder than the control group. The experimental group had higher serotonin levels than the control group. Hence, it is concluded that the foot reflexion massage as a successful nursing intervention to elderly who suffer from fatigue, depression disorder due to a deterioration in sleep. Hence the hypothesis - H_2: The post test level of fatigue will be significantly reduced in experimental group than the post test level of fatigue in control group is accepted.

The third objective is to associate the level of fatigue among patients with chronic renal failure with their selected socio demographic and clinical variables admitted in nephrology ward at Government Rajaji Hospital, Madurai.

In this study , only the age, educational status and duration of illness is associated with the post test level of fatigue in experimental study . Similarly, in control group none of the variable are associated with the post test level of fatigue.

The present sudy is consistent with the study of **Dr. Shweta Choudhary PhD.** (**2006**). conducted a true experimental study in All-India Institute of Medical Science, New Delhi, India on hemodialysis in reducing, pain fatigue and anxiety by selecting sixty patients of ESRD who were randomly assigned to a reflexology group and control group .Intervention involved the administration of standard drugs such as NSAID (Diclofenac and Opioids (Pethidine and Fentanyl) to both experimental and control groups. In addition, the experimental group received Fifteen to twenty minutes of foot reflexology. This study show a decrease of the quantity of pain killers in Group I (foot reflexology) to less than 50% in comparison with Group II (control).

An other study is consistent with the present study, **Kevin Kunz**. (**2012**) conducted a non-equivalent control group quasi-experimental design to know the effect of foot reflexology on vital signs, general fatigue, foot fatigue, and mood and blood glucose levels in noninsulin dependent patients. 18 patients (40-70 years)were assigned to the experimental group and 24 patients to the control group. Experimental groups received foot reflex massage for 30minutes three times/week and Control groups did not received foot reflex massage. Findings shown that there is a significant difference in the pulse rate, general fatigue and foot reflexology can improve pulse rate, general and foot fatigue and mood status in diabetic patients , but extensive studies are needed to show the effects of decreasing the blood sugar levels. Hence H_3: There will be a significant association between post test level of fatigue with their selected socio demographic and clinical variables admitted in nephrology ward at Government Rajaji Hospital, Madurai.. Hence this hypothesis is accepted.

Summary, Conclusion, Implications & Recommendations

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND

RECOMMENDATIONS

This chapter represents summary, findings, and conclusion. It also clarifies the limitations of the study, the implications for different areas like nursing education, administration, nursing practice, nursing research and recommendations which create a base for evidence based practice.

6.1 Summary

The study was conducted in Government Rajaji Hospital, Madurai. The populations of the study were selected from nephrology ward 165. Purposive sampling technique was used to select the patient. There were 60 patients selected for the study with the predetermined criteria for inclusion. The present study was aimed at evaluating the effectiveness of foot reflexology on fatigue among patients with chronic renal failure.

Objectives of the study were

➢ To assess the level of fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,.

➢ To evaluate the effectiveness of foot reflexology on fatigue among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai.

➢ To associate the level of fatigue among patients with chronic renal failure with their selected socio demographic and clinical variables admitted in nephrology ward at Government Rajaji Hospital, Madurai.

The following hypotheses were tested at 0.001 level

H₁ : There is a significant difference between the mean pre-test and post test level of fatigue in experimental group among patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai,.

H₂ : There is a significant difference between post test level of fatigue in experimental and control group patients with chronic renal failure admitted in nephrology ward at Government Rajaji Hospital, Madurai with their selected demographic variables.

H₃ : There is a significant association between level of fatigue among patients with chronic renal failure with their selected socio demographic and clinical variables admitted in nephrology ward at Government Rajaji Hospital, Madurai.

The assumption of the study were

1. Patient with chronic renal failure may have varying level of fatigue.

2. Fatigue may interferes with the activity of daily living.

   The conceptual framework for this study was based on Daniel L. Stuffle Beam's Evaluation theory. The focus of the theory is evaluation of the individual to various

stimuli both from the environment and from within the individual. A true experimental study was used in the study. The independent variable was foot reflexology and dependent variable was fatigue. This study was conducted at the nephrology ward at Government Rajaji Hospital, Madurai-625020.The accessible chronic renal failure patients admitted in nephrology ward at Government Rajaji Hospital.

The study subjects were selected using the purposive sampling technique and were assigned to experiment group and control group (30 in each group). The data collection tools used were

1. Socio demographic variable,

2. Clinical Variable

3. Brief fatigue Inventory.

The content validity of the tool was established with the help of 5 experts. Pilot study was conducted on 10 subjects to find out the feasibility of the study and it did not show any major flaw in the design of the study. After pilot study, reliability of the tool of the Numerical pain intensity rating scale was assessed by using split half method. Correlation coefficients are 0.81 and 0.85. These coefficients are very high and it is good tool for assessing the effectiveness of foot Reflexology among the chronic renal failure patient. The brief fatigue inventory is already standardized tool.

The main study was conducted between 03.08.2015 to 13.09. 2015. The data obtained were analyzed using both descriptive and inferential statistics.

The findings of the study showed that there was a very high significant difference between the post test score of fatigue in foot reflexology treated group and non treated group. The significant difference of fatigue level between the experimental and control group. (t = 4.34, P < 0.001 which is very high).

6.2 Major findings of the study

This study attempted to find out the impact of foot reflexology on the level of fatigue among the chronic renal failure patients.

With regard to the age in experimental group about 30%(9) of them falls within the age group of 21-35, about 30%(9)of them falls between the age group of 36 –50, about 33.3%(10) of them falls between the age group of 51-65 and 6.7%(2) of them falls between 65 and above . In control group, about 26.7%(8) of them falls between the age group of 21-35 years, 40% (12) of them falls between the age group of 36 –50 years, 23.3%(7) of them falls between the age group of 51-65 years and 10%(3) of them falls between 65 and above.

Similarly, with regard to gender in experimental group about 60%(18) of them are male while 40%(12) of them are female. In control group about 56.7%(17) of them are male while 43.3%(13) of them are female.

With regard to religion in experimental group about 86.7%(26) are Hindu, 10%(3) of them are Muslim and 3.3%(1) is Christian. While in control group, about 80%(24) are Hindu, 13.3%(4) are Muslim, and 6.7%(2) are Christian.

With regard to educational status about 36.7%(11) of them are not having formal education, 23.3%(7) of them are having up to middle school level education, 30.3%(9) of them are having higher secondary level education, 10%(3) of them are having diploma/degree level education in experimental group. While in control group, about 40%(12) of them are not having formal education, 30%(9) of them are having up to middle school level education, 23.3%(7) of them are having higher secondary level education, 6.7%(2) of them are having diploma/degree level education.

With regard to occupational status in experimental group about 10%(3) are unemployed, 30%(9), are government employee, 50%(15) are private and 10%(3) are self employee. In control group the occupational status about 26.7%(8) are unemployed, 30%(9), are government employee, 33.3%(10) are private and 10%(3) are self employee.

With regard to family income in experimental group about 33.3%(10) are falling under the income of below 5000, about 10%(3) of them are falling between the income of 5001-10,000, 20%(6) between the income of 10,000-15,000 and about 36.7%(11) between the income of above 15,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of 5,001-10,000, about 20%(6) of them falls between 10,000-15,000 and 0nly 36.7%(11) of them all above the income of 15,000.

This distribution of marital status in experimental group consists of about 80%(24) are married, 13.4%(4) are unmarried, 6.7%(2) are spouse not alive and nobody got divorce. In control group about 80%(24) are married, 13.4%(4) are unmarried, 3.3%(1) are spouse not alive and 3.3%(1) got divorce.

In experimental group, about 73.3%(22) of them belong to nuclear family, 16.7%(5) of them belong to joint family, 3.3%(1) belongs to extended family and 6.7%(2) belongs to separated family. In control group, about 63.4%(19) of them belong to nuclear family, 23.3%(7) of them belong to joint family, 13.3%(4) belongs to extended family and none of them belongs to separated family.

In experimental group about 23.3%(7) of them are vegetarian and about 76.7%(24) of them belong to mixed diet. In control group about 20%(6) of them are vegetarian and about 33.3%(10) of them belong to mixed diet.

In experimental group about 73.3%(22) of them are in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them are rural and about 33.3%(10) of them are belong to urban area.

In experimental group with regard to duration of illness, about 43.3%(13) of them with 1-2 years, 26.7%(8) of them are under 2-3 years, 16.7%(5) of them are in 3-4 years and 13.3%(4) of them are in above 4 years. In control group with regard to duration of illness, about 40%(12) of them with 1-2 years, 40%(12) of them are under 2-3 years, 13.3%(4) of them are in 3-4 years and 6.7%(2) of them are in above 4 years.

In experimental group with regard to duration of fatigue, about 6.6%(2) of them in days, 16.7%(5) of them in weeks and 76.7%(23) of them in months. In control group with regard to duration of fatigue, about 10%(3) of them in days, 23.3%(7) of them in weeks and 66.7%(20) of them in months.

In experimental group with regard to dialysis cycle, about 30%(9) of them in with weekly once, 20%(6) of them in weekly twice, 13.3%(4) of them in weekly thrice, 36.7%(11) of them are in no dialysis. In control group with regard to dialysis cycle, about 30%(9) of them in with weekly once, 16.7%(5) of them in weekly twice, 6.6%(2) of them in weekly thrice, 46.7%(14) of them are in no dialysis.

In Experiment group patients in pretest none of the patients are having mild fatigue, 40.0%(12) of them are having moderate fatigue and 60%(18) of them are having severe fatigue .In control group patients in posttest none of the patients are having mild fatigue, 36.7% (13)of them are having moderate fatigue and 63.3%(17) of them are having severe fatigue. Pre foot reflexology fatigue score is significantly higher than the post test value of the experimental group. There was a significance difference between the experimental and control group post-test value.

The mean and SD table shows the comparison of Experimental group and control group the mean fatigue score among patients before foot reflexology and mean fatigue score after intervention in both experimental and control group. In experiment

group, in pretest, patients are having 7.33 fatigue score and in posttest they are having 4.37 score, so the difference is 2.96 score after foot reflexology. This difference is large and it is statistically significant difference. It was calculated using student's paired t-test.In control group, in pretest, patients are having 7.19 fatigue score and in posttest they are having 7.39 score, so the difference is 0.20 score. This difference is small and it is not statistically significant difference. It was calculated using student's paired t-test.

In this study, only the age, educational status and duration of illness is associated with the post test level of fatigue in experimental study. Similarly, in control group none of the variable are associated with the post test level of fatigue.

6.3 Conclusion

The statistical evidence proved that the foot reflexology had reduced the level of fatigue among patients with chronic renal failure who were admitted in nephrology ward when compared with the control group. Hence the researcher concluded that foot reflexology is effective intervention to reduce the level of fatigue among patients with chronic renal failure in other settings.

6.4 Nursing Implication

The Study findings shows the value of nurse's role in decreasing the fatigue among the chronic renal failure patients using a cost effective, harmless, non-invasive, non pharmacological treatment that is foot reflexology. It also signifies the significance

of formulation of strategy and implementation of foot reflexology particularly at nephrology wards where literature shows lack of therapeutic environment. This study has brought out certain implications in the area of nursing practice, nursing education, nursing administration and in research also.

Implications in Nursing Practice

The above study has following implications on nursing practice

➢ The findings of the study help to eliminate the unwanted use of costly medication and provision of care with the limited cost especially for fatigue.

➢ It encourages the nursing personal to learn reflexology or any alternative therapy, to be certified to practice the same in clinical settings.

➢ Foot reflexology can be taught to family care givers of chronic renal failure patients; this may provide them with the means of providing tangible evidence of care and support of the dependent renal failure patients.

➢ It takes only brief time, and it requires only minimal supplies.

➢ Moreover, it is inexpensive and cost effective intervention.

Implications in Nursing Education:

The above study has following implications on nursing education

➢ There is an extensive and compelling body of research that proves the efficacy of therapeutic reflexology in promoting general physical well-being, and that it is of particular benefit in renal disorder patients as evidenced by this study finding. Hence, this has to be included in the nursing curriculum.

➢ The nursing students must be taught the simple techniques of reflexology to enhance their skill and practice and benefit the needy patients like chronic renal failure patients.

➢ Nursing students should be trained in practicing foot reflexology.

➢ The study alert the nurse educator to include the reflexology and alternative medicine in nursing education process and also it encourage the inclusion of practical session of reflex therapy in the field of nursing.

Implications in Nursing Administration

The above study has following implications on nursing administration

● In the recent years, there has been an increased acceptance of the complementary therapies in the health care system. Therapeutic reflexology is one among the complementary therapy which thrives as a therapy over the centuries.

● It facilitates the therapeutic relationships between nurse and patient through the development of trust and enhanced communication.

● Since this study supports the foot reflexology, the nursing administrator must enforce the nurses to practice foot reflexology for the renal failure patients in the clinical settings.

● It provided an indication for the administrator that they can arrange for many in-service program for their staff and they can also undergo the training program for foot reflexology.

Implications in Nursing Research

The above study has following implications on nursing research

- This study provides scope for future research and utilization of findings.

- The study will be a valuable reference for future researcher

- Foot reflex therapy can be studied more scientifically and used for specific nursing intervention.

- Further studies can be encouraged to assess the extent to which foot reflexology can control fatigue when the intervention is given by family members of chronic renal failure patients.

6.5 Recommendations

The investigator recommends the following studies to strengthen the nursing care

- The study can be replicated on larger sample.

- This study can be conducted on other areas of diseases like orthopaedic problems, cardiac problems, and other medical area.

- This study can be conducted by using different research design like true experimental study.

- A comparative study can be conducted with different group of population and different mode of non pharmacological therapy.

- Similar study can be conducted with increasing the duration of intervention, and along with other complementary therapy.

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Appendices

APPENDIX - I

LETTER SEEKING PERMISSION TO CONDUCT STUDY IN GOVERNMENT RAJAJI HOSPITAL, MADURAI.

From

Ms. Yamini Devi.V,

1st year M.Sc (Nursing),

College Of Nursing,

Madurai Medical College,

Madurai – 20.

To

The Professor and Head Of The Department,

Department Of Nephrology,

Government Rajaji Hospital,

Madurai – 20.

Through proper channel,

Respected Sir,

SUB: Requesting permission to conduct a dissertation study at Dialysis unit -Regarding

As per the curriculum recommended by the INC and the Tamil Nadu Dr. M.G.R Medical University, all the M.Sc (nursing) students are required to conduct a dissertation study for the partial fulfillment of the course.

I have selected a study topic "A study to evaluate the effectiveness of foot reflexology on fatigue among patients with haemodialysis admitted in dialysis unit at Government Rajaji Hospital, Madurai" for my dissertation.

So, kindly I request you to consider, guide and allow me conduct the study in your esteemed department.

Thanking You,

Madurai – 20,

Yours Sincerely,
Yamini Devi.V

(V. Yamini Devi)

This study will not interfere with the Treatment Permitted to do in nephr Depm

Dr. M. SHANMUGAPERUMAL, M.D.D.M., (Nephro),
PROFESSOR OF NEPHROLOGY & CIVIL SURGEON
Govt. Rajaji Hospital
MADURAI - 625 020

Forwarded
S. P
Principal
COLLEGE OF NURSING
Madurai Medical College
Madurai-20.

Forwarded
Dr. M. SHANMUGAPERUMAL, M.D.D.M., (Nephro),
PROFESSOR OF NEPHROLOGY & CIVIL SURGEON
Govt. Rajaji Hospital
MADURAI - 625 020

APPENDIX - II

ETHICAL COMMITTEE APPROVAL LETTER

Ref.No.10189/E1/5/2014   Madurai Medical College,
                                          Maduai -20.   Dated: 10.2014.

Institutional Review Board/Independent Ethics Committee
Capt.Dr.B.Santhakumar,MD (FM).   deanmdu@gmail.com
Dean, Madurai Medical College &
Government Rajaji Hospital, Madurai 625 020 .   Convenor

Sub: Establishment – Madurai Medical College, Madurai-20 –
       Ethics Committee Meeting – Meeting Minutes - for October 2014 –
       Approved list – reg.

The Ethics Committee meeting of the Madurai Medical College, Madurai was held on October 15th 2014 at 10.00 Am to 12.00 Noon at Anaesthesia Seminar Hall at Govt. Rajaji Hospital, Madurai . The following members of the Ethics Committee have attended the meeting.

1.Dr.V.Nagarajan,M.D.,D.M(Neuro) Ph: 0452-2629629 Cell No.9843052029 nag9999@gmail.com.	Professor of Neurology (Retired) D.No.72, Vakkil New Street, Simmakkal, Madurai -1	Chairman
2.Dr.Mohan Prasad, MS.M.Ch. Cell.No.9843050822 (Oncology) drbkcmp@gmail.com	Professor & H.O.D of Surgical Oncology (Retired) D.No.32, West Avani Moola Street, Madurai.-1	Member Secretary
3. Dr.L.Santhanalakshmi, MD (Physiology) Cell No.9842593412 dr.l.santhanalakshmi@gmail.com.	Vice Principal, Prof. & H.O.D. Institute of Physiology Madurai Medical College	Member
4.Dr.K.Parameswari, MD(Pharmacology) Cell No.9994026056 drparameswari@yahoo.com.	Director of Pharmacology Madurai Medical College.	Member
5.Dr.S.Vadivel Murugan, MD., (Gen.Medicine) Cell No.9566543048 svadivelmurugan_2007@rediffmail.com.	Professor & H.O.D of Medicine Madurai Medical College	Member
6.Dr.A.Sankaramahalingam, MS., (Gen. Surgery) Cell.No.9443367312 chandrahospitalmdu@gmail.com	Professor & H.O.D. Surgery Madurai Medical College.	Member
7.Mrs.Mercy Immaculate Rubalatha, M.A., Med., Cell.No.9367792650 lathadevadoss86@gmail.com	50/5, Corporation Officer's Quarters, Gandhi Museum Road, Thamukam, Madurai-20.	Member
8.Thiru.Pala.Ramasamy, B.A.,B.L., Cell.No.9842165127 palaramasamy2011@gmail.com	Advocate, D.No.72,Palam Station Road, Sellur, Madurai-20.	Member
9.Thiru.P.K.M.Chelliah, B.A., Cell No.9894349599 pkmandco@gmail.com	Businessman, 21 Jawahar Street, Gandhi Nagar, Madurai-20.	Member
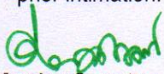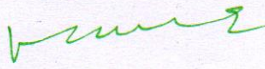
The following Project was approved by the Ethical Committee
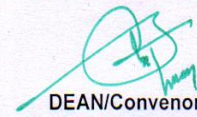
Name of P.G.	Course	Name of the Project	Remarks
V.Yamini Devi.V. vyaminidevi@gmail.com	M.Sc (Nursing) 1st year Medical Surgical Nursing, Madurai Medical College, Madurai	"A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic Renal Failure Admitted in Nephrology Ward at GRH, Madurai.	Approved

Please note that the investigator should adhere the following: She/He should get a detailed informed consent from the patients/participants and maintain it Confidentially.

1. She/He should carry out the work without detrimental to regular activities as well as without extra expenditure to the institution or to Government.
2. She/He should inform the institution Ethical Committee, in case of any change of study procedure, site and investigation or guide.
3. She/He should not deviate the area of the work for which applied for Ethical clearance. She/He should inform the IEC immediately, in case of any adverse events or Serious adverse reactions.
4. She/He should abide to the rules and regulations of the institution.
5. She/He should complete the work within the specific period and if any Extension of time is required He/She should apply for permission again and do the work.
6. She/He should submit the summary of the work to the Ethical Committee on Completion of the work.
7. She/He should not claim any funds from the institution while doing the work or on completion.
8. She/He should understand that the members of IEC have the right to monitor the work with prior intimation.

Member Secretary
Ethical Committee

Chairman
Ethical Committee

DEAN/Convenor
Madurai Medical College &
Govt. Rajaji Hospital, Madurai.

To
The above Applicant
-thro. Head of the Department concerned

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APPENDIX - III

TRAINING CERTIFICATE FOR FOOT REFLEXOLOGY

THE VALLIAMMAL INSTITUTION (TVI)

2/18A Upstairs, B.B. Road 2nd St., Pankajam Colony , Madurai-625 009.

☎ 98942 49630; 98430 40226 email: ananthibetsy@rediffmail.com

Reg. No. PCC/50/Aug.15/307

Date: 29/05/15

Certificate Course in Basic Counselling Skills and Foot Reflexology

This is to certify that .... V., YAMINI DEVI .... has completed our

CERTIFICATE COURSE IN BASIC COUNSELLING SKILLS AND FOOT REFLEXOLOGY (24 hrs Part-time Education Programme designed and offered by experts) by effectively participating in theory & practical classes and successfully completing all the exercises. She has been placed in **First Class**
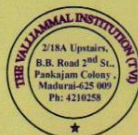
Prof. Dr. S. Jeyapragasam M.Sc.,M.A.,M.A.,Ph.D.,
Director
Rajarajan Institute of Science (RISE)

Dr. B. Ananthavalli M.Sc.,M.A.,M.Phil.,Ph.D.,
Director & Secretary
The Valliammal Institution (TVI)

APPENDIX - IV

CERTIFICATE FOR CONTENT VALIDITY

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool

SECTION A- Demographic Data

SECTION B- Brief fatigue inventory

Prepared for data collection by Ms.Yamini Devi.V., II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled "A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic Renal Failure Admitted in Nephrology Ward at Govt Rajaji Hospital, Madurai"has been validated by me.

B. Priya   28/5/15

SIGNATURE OF THE EXPERT

NAME: B. Priyadharsini,

DESIGNATION: Asst. Professor.

ADDRESS: KG College of Nursing, KG Hospital Coimbatore.

DATE: 28/5/15

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool

SECTION A-   Demographic Data

SECTION B-   Brief fatigue inventory

Prepared for data collection by Ms.Yamini Devi.V., II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled "A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic Renal Failure Admitted in Nephrology Ward at Govt Rajaji Hospital, Madurai"has been validated by me.

SIGNATURE OF THE EXPERT

NAME: Dr. S. Chandrakala

DESIGNATION: Vice Principal,

ADDRESS: Sacred Heart Nursing College, Ultra Trust, 4/235 - College Road, Thasildhar Nagar, Madurai- 20

DATE: 16/7/15
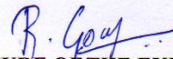
CONTENT VALIDITY CERTIFICATE

This is to certify that the tool

SECTION A-   Demographic Data

SECTION B-   Brief fatigue inventory

   Prepared for data collection by Ms.Yamini Devi.V., II year M.Sc (N) student, College of
Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled
"A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic
Renal Failure Admitted in Nephrology Ward at Govt Rajaji Hospital, Madurai" has been validated by me.

SIGNATURE OF THE EXPERT

NAME: Gowri. R.

DESIGNATION: Asst. Professor

ADDRESS: ANBU College of Nursing
            Komara palayam.

DATE: 24/8/2015.

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool

SECTION A-   Demographic Data

SECTION B-   Brief fatigue inventory

Prepared for data collection by Ms.Yamini Devi.V., II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled "A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic Renal Failure Admitted in Nephrology Ward at Govt Rajaji Hospital, Madurai"has been validated by me.

SIGNATURE OF THE EXPERT

NAME: DR.S.SRIDEVY

DESIGNATION: Assistant Professor

ADDRESS: College of Nursing, Mother Theresa PG&RIHS., Puducherry -6

DATE: 8/8/15

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool

SECTION A-   Demographic Data

SECTION B-   Brief fatigue inventory

Prepared for data collection by Ms.Yamini Devi.V., II year M.Sc (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled "A Study to Evaluate the Effectiveness of Foot Reflexology on Fatigue Among Patients with Chronic Renal Failure Admitted in Nephrology Ward at Govt Rajaji Hospital, Madurai"has been validated by me.

SIGNATURE OF THE EXPERT

NAME:

DESIGNATION: Senior Asst Professor, Nephrology

ADDRESS: GRH, Madurai.

DATE: 29/5/15

Jt, b. BALAMURUGAN, MD D
Reg No: 63693
SR/AP. Department of Nephrology
GOVT. RAJAJI HOSPITAL
MADURAI

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ஒப்புதல் அறிக்கை

பெயர்:   **தேதி:**

       எனக்கு இந்த ஆய்வைப்பற்றிய முழு விவரம் விளக்கமாக எடுத்துரைக்கப்பட்டது. இந்த ஆய்வில் பங்கு பெறுவதில் உள்ள நன்மைகள் மற்றும் தீமைகள் பற்றி நான் புரிந்து கொண்டேன். நான் இந்த ஆய்வில் தானாகவே முன்வந்து பங்கு பெறுகிறேன். மேலும் எனக்கு இந்த ஆய்வில் இருந்து எந்த நேரமும் விலகிக் கொள்ள முழு அனுமதி வழங்கப்பட்டுள்ளது. என்னுடைய சிகிச்சை ஆவணங்களைப் பார்வையிட்டு அதில் உள்ள விவரங்களை ஆய்வில் பயன்படுத்திக் கொள்ள அனுமதி அளிக்கின்றேன். என்னுடைய பெயர் மற்றும் அடையாளங்கள் ரகசியமாக வைத்துக் கொள்ளப்படும் என்றும் எனக்கு உறுதியளிக்கப்பட்டுள்ளது.

                                               கையொப்பம்

APPENDIX - VI

RESEARCH TOOL

SECTION-A

DEMOGRAPHIC DATA Circle the relevant data about you in the following statements.

1. Age in years   (   )

    a. 21 to35

    b. 36 to 50

    c. 51 to   65

    d. > 65years

2. Sex   (   )

    a. Female

    b. Male

3. Religion   (   )

    a. Hindu

    b. Muslim

    c. Christian

    d. Others

4. Educational qualification   (   )

    a. No formal education

    b. Up to middle school level

    e. Higher secondary level

    f. Diploma/Degree

    g. Post graduate and above

5. Occupation   (   )

    a. Unemployed

    b. Govt employee

    c. Private

    d. Self employee

    e. Cooly

6. Total income of the family (per month) (   )

    a. Rs. < 5000

    b. Rs. 5001 - 10,000

    c. Rs. 10,001- 15,000

    d. Rs. > 15000

7. Marital status (   )

    a. Married

    b. Unmarried.

    c. Spouse not alive

    d. Divorced

8. Type of the family (   )

    a. Nuclear family

    b. Joint family

    c. Extended family

    d. Separated family

9. Food habits (   )

    a. Vegetarian

    b. Mixed type

10. Locality (   )

    a. Rural

    b. Urban

CLINICAL VARIABLE:

11.Duration of illness   (   )

    a. 1 - 2 years

    b. 2 – 3 years

    c. 3 - 4years

    d. 4 years and above

12.How long have you been feeling fatigue?   (   )

    a. Not feeling fatigue

    b. Minutes

    c. Hours

    d. Days

    e. Weeks

    f. Months

13. How many dialysis cycle you undergo?   (   )

    a. Weekly once

    b. Weekly twice

    c. Weekly thrice

Brief Fatigue Inventory

STUDY ID#_____   HOSPITAL #_____

Date:_____/_____/_____   Time:_____
Name:_____ _____ _____
        Last   First   Middle Initial

Throughout our lives, most of us have times when we feel very tired or fatigued. Have you felt unusually tired or fatigued in the last week? Yes ▢   No ▢

1. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your fatigue right NOW.

0	1	2	3	4	5	6	7	8	9	10
No Fatigue										As bad as you can imagine

2. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your USUAL level of fatigue during past 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No Fatigue										As bad as you can imagine

3. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your WORST level of fatigue during past 24 hours.

0	1	2	3	4	5	6	7	8	9	10
No Fatigue										As bad as you can imagine

4. Circle the one number that describes how, during the past 24 hours, fatigue has interfered with your:

A. General activity

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

B. Mood

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

C. Walking ability

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

D. Normal work (includes both work outside the home and daily chores)

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

E. Relations with other people

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

F. Enjoyment of life

0	1	2	3	4	5	6	7	8	9	10
Does not interfere										Completely interferes

<u>தன்னிலை விபரக்குறிப்பு</u>

1. வயது

    அ. 21 - 35வயது   ·

    ஆ. 36- 50வயது   ·

    இ. 51 - 65வயது   ·

    ஈ. 65 வயதுக்கு மேல்

                        ·

2. பாலினம்

    அ. ஆண்   ·

    ஆ. பெண்

                  ·

3. மதம்

    அ. இந்து   ·

    ஆ. கிறிஸ்தவர்   ·

    இ. முஸ்லீம்   ·

    ஈ. பிற மதத்தவர்

                ·

4. கல்வித்தகுதி

    அ. படிப்பறிவில்லாதவர்   ·

    ஆ. தொடக்க கல்வி   ·

    இ. மேல்நிலைக்கல்வி   ·

    ஈ. பட்டப்படிப்பு

                ·

5. பணியின் தன்மை

    அ. விவசாயவேலை   ·

    ஆ. சுயதொழில்   ·

    இ. வேலைக்கு செல்லாதவர்   ·

    ஈ. அரசு பணியாளர்   ·

6. குடும்ப மாத வருமானம்

    அ. ரூ.2000 - 3000   ·

    ஆ. ரூ.3001 - 4000   ·

    இ. ரூ.4001 - 5000   ·

    ஈ. ரூ.5001க்கும் மேல்

                        ·

7. திருமண நிலை

    அ. திருமணமானவர்   ·

    ஆ. திருமணமாகாதவர்   ·

    இ. விவாகரத்தானவர்   ·

    ஈ. தனியாக வாழ்பவர்

                        ·

8.குடும்பவகைகள்

    அ..தனிக்குடும்பம்   ·

      ஆ.கூட்டுக்குடும்பம்   ·

      இ.விரிவானகுடும்பம   ◌ ·

      ஈ பிரிந்த குடும்பம்

                        ·

9.உண்வு பழக்க வழக்கம்

    அ. சைவம்   ·

    ஆ.அசைவம்   ·

    இ.முட்டை மட்டும் சாப்பிடுபவர்   ·

10. இருப்பிடம்

    அ கிராமம்   ·

    ஆ நகரம்

11. நோயின் காலங்கள

அ 1 - 2 வருடங்களாக

ஆ 3 - 4 வருடங்களாக

இ 5 வருடங்களுக்கு மேல்

12. எப்பொழுதில் இருந்து தாங்கள் களைப்பை உணர்கிறிர்கள்

அ களைப்பைஉணரவில்லலை

ஆ வினாடிகள் மட்டும்

இ மணிநேரங்கள் மட்டும்

ஈ நாட்களாக

உ வரங்களாக

ஊ மாதங்களாக

13. ஒருவாரத்துக்கு எத்தனை முறை தாங்கள் இரத்தசுத்திகரிப்பு செய்து வருகிறீர்கள்

அ வாரம் ஒரு முறை

ஆ வாரம் இரு முறை

இ வாரம் மூன்று முறை

<u>சுருக்கமான களைப்பு பற்றிய பட்டியல்</u>

நமது வாழ்நாள் முழுவதும் நாம் களைப்பை உணர்கின்ற நேரங்கள் வருவதுண்டு. சென்ற வாரம் வழக்கத்துக்கு மாறாக களைப்பை உணர்ந்திருக்கிறீர்களா? (ஆம் ∴ இல்லை)

1. **இப்பொழுது** உங்கள் களைப்பின் அளவை கீழே உள்ள ஏதேனும் ஒரு எண்ணை வட்டமிடுக.

   0   1   2   3   4   5   6   7   8   9   10
   களைப்பு இல்லை   மோசமான களைப்பு

2. கடந்த 24 மணி நேரங்களில் உங்கள் **வழக்கமான** களைப்பை நீங்கள் உணர்ந்ததின் அளவை குறிக்க கீழே உள்ள ஏதேனும் ஒரு எண்ணை வட்டமிடுக.

   0   1   2   3   4   5   6   7   8   9   10
   களைப்பு இல்லை   மோசமான களைப்பு

3. கடந்த 24 மணி நேரங்களில் மிகவும் **மோசமாக** களைப்பை நீங்கள் உணர்ந்ததின் அளவைக்குறிக்க கீழே உள்ள ஏதேனும ஒரு எண்ணை வட்டமிடுக.

   0   1   2   3   4   5   6   7   8   9   10
   களைப்பு இல்லை   மோசமான களைப்பு

4. கடந்த 24 மணி நேரங்களில் எப்படியெல்லாம் உங்கள் அன்றாட செயற்பாடுகளில் களைப்பு தலையிட்டு இருக்கிறது.

   அ. பொதுவான செயற்பாடுகள்

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

   ஆ. மனநிலை

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

   இ. நடக்கும் ஆற்றல்

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

   ஈ. இயல்பான வேலை

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

   உ. பிறமக்களோடு உள்ள உறவுகளில்

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

   ஊ. வாழ்வைச் சுவைக்கும் பொழுதில்

   0   1   2   3   4   5   6   7   8   9   10
   குறுக்கீடு இல்லை   முழுமையான குறுக்கீடு

CERTIFICATE OF ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation by Ms.YAMINI DEVI.V., II year M.Sc(N) student, College of nursing, Madurai Medical college, Madurai, who has undertaken the study field on dissertation entitled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF FOOT REFLEXOLOGY ON FATIGUE AMONG PATIENTS WITH CHRONIC RENAL FAILURE ADMITTED IN NEPHROLOGY WARD AT GOVERNMENT RAJAJI HOSPITAL, MADURAI"**. Has been edited for English language appropriateness.

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APPENDIX - IX

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FOOT REFLEXOLOGY PROCEDURE

INTRODUCTION

"Disease is not an entity, but a fluctuating condition of the patient's body, a battle between the substance of disease and the natural self-healing tendency of the body.

-Hippocrates.

Reflexology was introduced to the United States in 1913 by William H. Fitzgerald, M.D. (1872–1942), an ear, nose, and throat specialist. Fitzgerald claimed that applying pressure had an anaesthetic effect on other areas of the body. Reflexology is a healing art of ancient origin. Although its origins are not well documented, there are reliefs on the walls of a Sixth Dynasty Egyptian tomb (c. 2450 B.C.) that depict two seated men receiving massage on their hands and feet. Also it is documented in the book De Medicina (On Medicine) by A. Cornelius Celsus and it was written as "one will read much more often, however, some other part is to be rubbed than that which is the seat of the pain; and especially when we want to withdraw material from the head or trunk, and therefore rub the arms and legs.". Reflexology was modified in the 1930s and 1940s by Eunice D. Ingham (1889–1974), a nurse and physiotherapist. Ingham claimed that the feet and hands were especially sensitive, and mapped the entire body into "reflexes" on the feet renaming "zone therapy" to reflexology.

DEFINITION

Reflexology is performed by physically applying pressure to the feet, hands and ears (reflex areas), which is designed to increase the flow of vital energy to various

parts of the body. It does not include the use of oils or lotion but it induces a positive outcome and physical change to the body

BENEFITS OF FOOT REFLEXOLOGY

In general, human problems are due to the ill health which creates stress and tension that can cause many complaints. In fact medical research shows that more than 75% of all health problems can be linked directly to stress.

The following benefits of foot reflexology are

- **Release stress and tension**

- **Improve blood circulation** and activates lymph drainage

- Assist in **elimination of toxins**

- **Strengthen** the **immune system** and harmonises vital functions

- Enable a **deep state of relaxation** and well being

 Ease pregnancy, labor and delivery.

DIFFERENCE BETWEEN FOOT REFLEXOLOGY AND MASSAGE

Reflexology + foot massage = well being

Reflexology is an ancient therapy known to promote the body's own healing powers. It is suitable for any age groups, from babies to seniors. Reflexology is not dd the same as **a foot massage**; it's a **natural healing therapy** which is highly effective in dealing with many health complaints. A foot massage can promote **relaxation** but does not have long term effects; however foot reflexology promotes equilibrium and well being with long lasting impact.

Reflexology therapy provides longer term wellness by removing the cause of the ailment and working in an holistic manner. Foot reflexology is based on the principle that the foot is like a chart of the body divided into **ten reflex zones**, it is a mirror image of the body. The reflexology chart depicts that each reflex zone corresponds to a part of the body. Specific manipulation and pressure of reflex points reduces and eliminates blockages in the corresponding glands or organs, and therefore restores a healthy balance.

FOOT REFLEXOLOGY PROCEDURE:

PREPARATION OF THE PATIENT:

1. Explained the procedure and got the consent form from the patients.

2. Informed the patient about the duration of the procedure which was 20 minutes.

3. Instructed the patient to wash the feet and clean with the dry towel.

4. Provided privacy to the patient and positioned the patient in a supine position.

5. Advice the patient to drink the water (500ml) unless contraindicated.

PROCEDURE:

➢ Explained the patients about the foot reflexology

➢ Wash the hands and warm up the fingers by rubbing together in order to improve the energy field of the researcher, thereby the better foot reflexology given to the patient.

REFLEXOLOGY TECHNIQUES

Reflexology is a complementary therapy that can be used in conjunction with medical treatment to provide relief from certain ailments. It is based on the belief that certain zones on your feet, hands, lower legs, face and ears correspond to different areas and organs throughout your body. According to the Association of Reflexologists, pressing on these reflexology points can stimulate the organs and help ease certain conditions by promoting circulation and muscle relaxation.

Reflexology is no substitute for medical advice or treatment, but a trained reflexologist manipulates the correct reflex points in order to help alleviate symptoms and assist with pain management. Most reflexology techniques are based on the idea of applying pressure to each reflexology point and you could feel pressure and possibly a tingling sensation, but if you feel pain you're pressing too hard and a qualified reflexologist is considered to be the best person to administer this therapy, you can also perform therapeutic techniques on yourself at home.

EFFLEURAGE

Effleurage involves gently stroking the target body part -- usually the feet or hands -- with fluttering movements. The practitioner may use oils to further aid relaxation, although they are not standard to reflexology. They may also revert back to this technique throughout the session to relieve tension in the targeted reflexology zone and corresponding body part.

CREEPING

Creeping is also known as thumb walking – press down with the fat pad of your thumb and slowly move forward across your hand or foot. It is suggested to use the creeping technique to move up and down each toe on both feet to help relieve sinus-related congestion.

ROTATION

This technique is often used when manipulating the web between your thumb and first finger, which corresponds to your kidneys and adrenals glands. Use the technique halfway up your first and middle fingers to access your eye and ear reflexes, respectively. Press on the reflex point with the fleshy part of your thumb and firmly rotate the finger in towards your body. Apply pressure for a few seconds while in the rotated position then relax. Practitioners claim that reflexology can relieve tension, improve blood and lymph circulation, promote healing by activating the body's immune response, soothe inflammation, reduce stress and improve existing chronic ailments..

FINGER WALKING TECHNIQUE

Use the finger walking reflexology technique by locating the point on the foot which corresponds to the organ which has to be to treated. Then apply pressure with your finger to that point while you bend and straighten your finger. Move your finger slightly with each movement so you gradually cover the designated point. Make very tiny movements so the entire point has pressure applied to it.

THUMB WALKING TECHNIQUE

The most common technique in foot reflexology is thumbed walking. This is also known as caterpillar walking because the movement of your thumb resembles the movement of a caterpillar. First, locate the point on the foot to be treated. Place your thumb upon it and apply pressure. Move your thumb like a caterpillar as you straighten and bend your thumb applying pressure the whole time. Move your thumb over the entire point area while making very tiny movements.

TOE ROTATION

Work all of the points on the toes by using the toe rotation technique. Use your fingers and thumb to grasp each individual toe on the foot one by one. While holding onto a toe gently and slowly rotate it in full circles three times in each direction.

SLIDE AND PRESS

Place both of your hands on the heel of the foot. Slide your thumbs along the bottom of the foot from the center to the outside, working up from the bottom of the foot to the toes. This technique works a large area of the bottom of the foot and helps to release tension.

HOOKING

Work on a small reflex point by using the hook technique. To do this, hold onto the foot with one hand. If you are right handed, use your left hand to hold the foot and your right hand to perform the hook. Place your thumb on the reflex point, press in sharply and quickly withdraw using a hooking motion. This is useful for applying pressure to tiny points and for working through thick skin.

REFLEXOLOGY TECHNIQUES

EFFLEURAGE

CREEPING OR THUMB WALKING

TOE ROTATION

ANKLE ROTATION

FINGER WALKING

HOOKING

REFLEXOLOGY TECHNIQUES

ANKLE FREEING

STRETCHING

WRINGLING

KNEADING

POINT PRESSURE

REMINDERS BEFORE USING REFLEXOLOGY

1. Avoid reflexology for one hour after meals.

2. Within 30 minutes after massage, you should drink 500 ml of warm water.

3. In case of kidney or heart disease, you should drink not more than 150 ml of water.

4. Do not apply pressure to bones.

5. Do not feel alarmed if an ailment seems to worsen or the mouth feels dry, after a session of reflexology .This is normal, especially in the case of inflammation or rheumatism and will pass shortly.

STEPS OF FOOT REFLEXOLOGY

Start the exercise with the left foot and then repeat on the right foot.

Step 1: Rest in a comfortable chair or in a comfortable position on the floor or exercise mat. Bring your foot up and rest it over the opposite knee. Lace your fingers with your toes and rotate your foot at the ankle in a clockwise motion for a ten second count. Rotate at the ankle in a counter-clockwise motion for the same count.

Step 2: Gently stretch your Achilles tendon by pulling your foot upwards and backwards. Keep your fingers interlaced with your toes as you do this. Move slowly and stop pulling if you feel pain. Hold for a count of five, and slowly release your foot.

Step 3: Place the ball of your foot, or your heel, between both your hands, grasping it from both sides. Move your foot backwards and forwards.

Step 4: Beginning at your toes, place one hand on top of your foot and the other beneath.

Then, use your thumb on the underside of your foot to slowly caress and apply steady pressure to each of your toes, the line of your foot beneath your toes and the inner edge of your heel.

Step 5: Keeping your hands on top and bottom, knead your foot between your hands.

Step 6: Make a fist with the hand beneath your foot. Press the fist against your foot, lining your knuckles up with the base of your toes. Push your hands together, sandwiching your foot between them. Hold for a count of ten. Rotate your fist so that it rests on the inner curve, or arch, of your foot. Press, and hold for a count of ten. Repeat on the outer edge of your foot and then again on your heel, holding the back of your ankle from the top for pressure.

Step 7: Finish your session by massaging lotion onto your feet. The action will cause heat to warm and release any stress in your feet, and the massage will help you pinpoint areas that may have been missed.

Try experimenting with this exercise by using a golf ball instead of your hands. Even when you're at work, you can slip your shoes off and treat stress by performing the exercise with one of these tools.

EFFECTS OF FOOT REFLEXOLOGY IN PATIENTS

1. Tiredness, Nauseous, Cold like symptoms,

2. A need to urinate more than usual,

3. More emotional than usual,

4. More lethargic than usual.

5. Most people experience a sense of well being and relaxation, others find it uplifting and energising. For some, symptoms may worsen before they improve. This is called the 'healing crisis'. It indicates that the body is beginning to eliminate toxins and starting to heal itself.

6. Massage relaxes the mind and nervous system and stimulates the circulatory and lymphtic systems, improving the supply of nutrients to the body tissues and aiding in the removal of the toxins and waste products from them.

AFTER CARE ADVICE

In order to ensure the full benefits of a treatment clients are usually asked to carry out the following advice for 24 hours following treatment:

1. Drink lots of water as this will help hydrate the body, flush out toxins and improve energy levels.

2. Try to rest for the rest of the day as this will help the treatment work to it's full potential and will allow your body to focus on healing and avoid tea, coffee and alcohol as these are stimulants and will reduce the effectiveness of the treatment.

3. Eat a light and healthy diet to allow your body to put its energy into healing. Reposition the patient and provide the psychological support

FOOT MAP
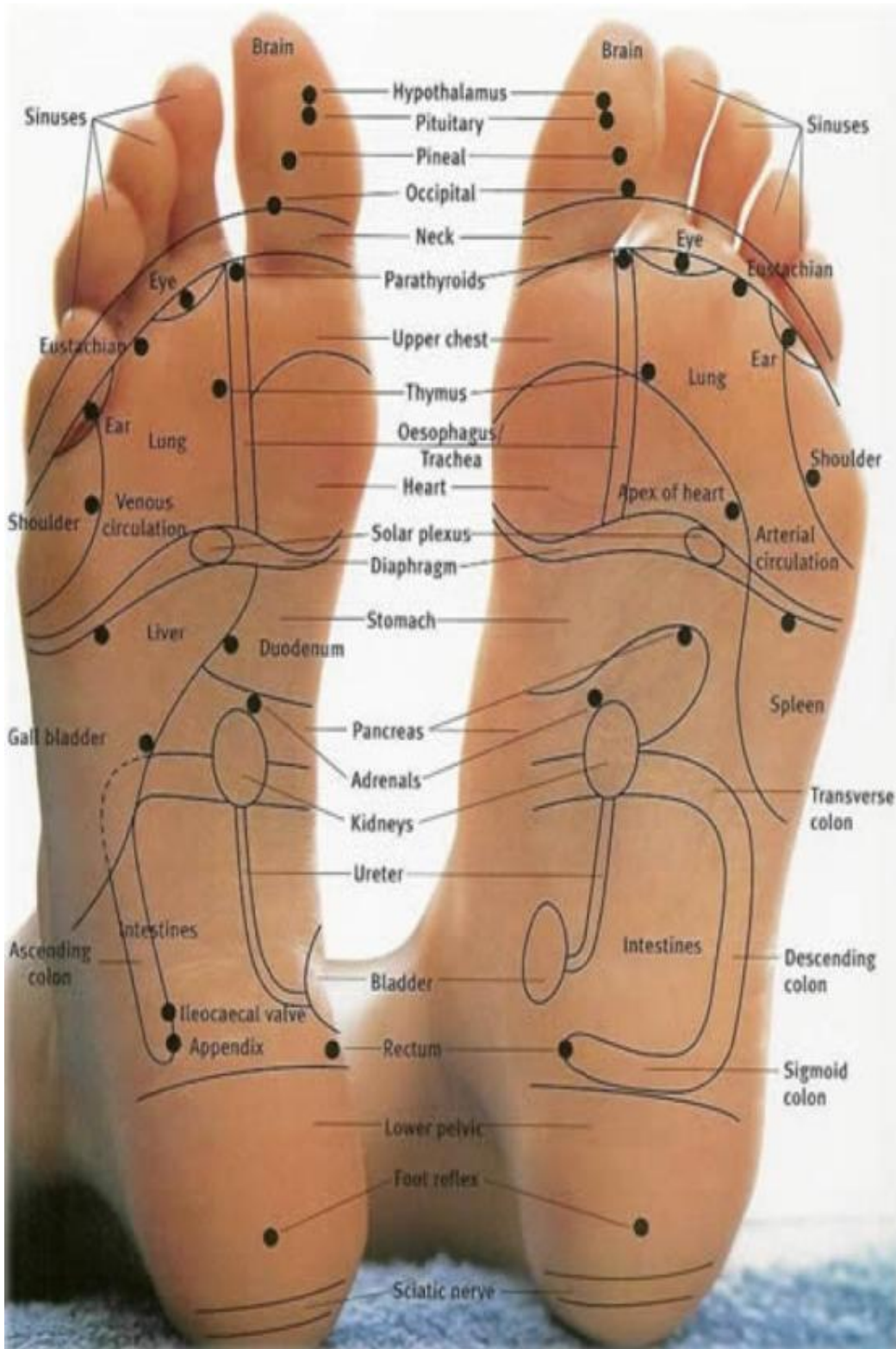
APPENDIX – XI

PHOTOGRAPHS

RESEARCHER IS PERFORMING EFFLURAGE

RESEARCHER IS PERFORMING MASSAGE

RESEARCHER IS PERFORMING THUMB WAKING

RESEARCHER IS PERFORMING KNEEDING