EFFECTIVENESS OF MCKENZIE THERAPY ON LOW BACK PAIN AMONG SCHOOL TEACHERS IN SELECTED SCHOOLS AT KANYA KUMARI DISTRICT

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2018

EFFECTIVENESS OF MCKENZIE THERAPY ON LOW BACK PAIN AMONG SCHOOL TEACHERS IN SELECTED SCHOOLS AT KANYA KUMARI DISTRICT

INTERNAL EXAMINER **EXTERNAL EXAMINER**

EFFECTIVENESS OF MCKENZIE THERAPY ON LOW BACK PAIN AMONG SCHOOL TEACHERS IN SELECTED SCHOOLS AT KANYA KUMARI DISTRICT

Approved by the Dissertation Committee on: ……..

RESEARCH GUIDE:

Prof. (Mrs). ReetaJebakumari Solomon. M.Sc(N)., Ph.D.,
Principal,
Thasiah College of Nursing, Marthandam,
K.K. District, Tamil Nadu.62915

SUBJECT GUIDE:

(Mrs). FabhagiftyM.Sc (N)
Head of the Department of medical surgical Nursing
Thasiah College of Nursing, Marthandam,
K.K. District, Tamil Nadu.629165

MEDICAL GUIDE:

Dr,P.Vinoth Kumar.MBBS .Dip in Ortho,
Railway Station Road
Marthandam.

CERTIFICATE

This is to certify that this is a bonafide work of Mrs.S .Macklin Mary II year M.Sc. Nursing, Thasiah College of Nursing, Marthandam, in Partial fulfillment of the requirement, for the Degree of Master of Science in Nursing.

Prof. (Mrs). ReetaJebakumari Solomon. M.Sc.(N)., Ph.D.,
Principal,
Thasiah College of Nursing, Marthandam,
K.K. District, Tamil Nadu.62915

Place: Marthandam

Date:

ACKNOWLEDGEMENT

I wish to acknowledge my heartfelt gratitude to the **Lord Almighty** for all the wisdom, knowledge, guidance, strength, protection, shield and support offered me throughout this Endeavour and given me courage to overcome the difficulties and thus complete this study successfully.

It is my honour to thank our beloved chairman **Mr. C. Thasiah (Germany),** for providing entire facility and encouragement for conducting this study.

I, consider myself to be privileged to express my honest and sincere gratitude to **Prof. (Mrs).Reeta Jebakumari Solomon. M.Sc.,(N)., Ph.D., Principal cum professor,**Thasiah college of Nursing, for her invaluable guidance, continuous support, promising criticisms, suggestions and concern during the entire course of this dissertation.

My heartfelt thanks to **Mrs. Ahitha., M.Sc.,(N)., Vice principal I/C** for her encouragement and support given during this work.

At this moment I convey my profound gratitude to **Mrs.Fabha Gifty. M.Sc., (N)., Head of the Department of Medical Surgical Nursing**, for her constant source of inspiration, timely correction of the manuscripts, sharing the suggestions and constructive criticism, which was a key for the successful completion of this study.

I express my thanks to entire teaching staff in **Thasiah College of Nursing, Marthandam,** for their co-operation and encouragement.

My sincere thanks and honour to **Mr. Antopaulinbrinto, M.Sc., Med., M.Phil., PG., DBM., Professor of Bio statistics** for extending his helping hands in the course of analysis and interpretation of the data collected.

I thank all the **non teaching staff** for their help in taking photocopies of study reviews

I would like to thank our librarian **Mrs.Kavitha** for extending help in refer research material for the study.

I express my deep sense of gratitude and heartfelt thanks to **experts** who have validated, edited my study, and devoted their valuable hours in solving my doubts .

I would like to express my thanks to the **Study Participants** for their co-operation and participation, without whom this study would have been impossible.

I am pleased to convey my profound thanks to **the Management of Infant Jesus Matriculation School, Mamootukadai,** for giving valuable suggestion, guidance for data collection and also for giving permission to conduct the study in their respective institution.

I express my heartfelt gratitude to my lovable **husband Mr..JabinJaya.J** and my **parents Mr.SelvaRaj.M and Mrs. RethinaBai. T** also my dear **sister Miss .Merlin .S** for their love, support, encouragement and prayer throughout my study.

A word of thanks to My colleagues for their help and support throughout the course of this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF ANNEXURES

ABSTRACT

Background of the study: Lower back pain (LBP) is one of the most common work-related health problems in economically developed countries and the most prevailing musculoskeletal condition that causes disability in the developing nations. School teachers are susceptible to low back pain due to the nature of their daily work routine which is physically demanding and include common activities. The aim of the study is to assess the effectiveness of Mckenzie therapy on low back pain among school teachers in selected schools at Kanya kumara District. **Mateiral and method :** The research design adopted for this study is quasi experimental pre- test and post- test control group design. The purposive sampling technique was used to select the samples. The conceptual frame selected for the study is Ernestine Widenbach's clinical theory. The tool used for data collection procedure was Oswestry low back pain questionnaire. After the pre test assessment of low back pain, the school teachers those who had moderate and severe level of low back pain were given Mckenzie therapy for 20 minutes twice a day for 5 days. **Result :**The study revealed that in pre test most of school teachers, 53.3% in the experimental had severe low back back pain and 46.7% had moderate low back pain and in control group 46.7 % had severe low back pain and other53.3 % had moderate low back pain . After Mckenzie therapy it was decreased that 56.7% had moderate low back pain and 43.3 %had mild low back pain in experimental group and 46.7% had severe low back pain 53.3 % had moderate low back pain control group. There was a significant reduction in mean post test low back pain (MD = 10.6) t=15.04 $p<0.001$) of the experimental group. The mean post test score in the experimental group was 18.5 lesser than the control group 27.7 (M D= 8.26 , t = 3.26,P <0.001) .**Conclusion:** The Mckenzie therapy has found to be cost effective ,non invasive , non pharmacological management used to reduce Mckenzie therapy on low back pain among school teachers.

CHAPTER - I

INTRODUCTION

“Remember that any exercise is better than no exercise “

-Health

Back ground of the study

The maintenance and promotion of health is achieved through different combination of physical, mental and social well being. Health is a positive quality of life which helps us to live life to in fullest and serve our fellowmen to the best of our ability. Health is an elusive word. Most people who consider themselves healthy are not. And many people, who are suffering from some known disease, may be relatively healthy. Health is a concept which does not merely related to absence of disease, of healthy working of organs, or having good thoughts. Health is a holistic concept. It relates to a person as a whole. The state of one's health is reflective of an individual's ability to meet life's challenges and maintain his or her capacity for optimal functioning. This requires the various aspects of one's makeup i.e. mental, physical and biochemical, to maintain a level of functioning that has a positive influence and support for one another.(WHO 2011)

Low back pain that lasts at least one day and limits activity is a common complaint. Globally, about 40% of people have LBP at some point in their lives, with estimates as high as 80% of people in the developed world. Approximately 9 to 12% of people (632 million) have LBP at any given point in time, and nearly 25% report having it at some point over any one-month period. Difficulty most often begins between 20 and 40 years of age. Low back pain is more common among people aged 40–80 years, with the overall number of individuals affected expected to increase as the population ages. Exercise appears to be useful for preventing low back pain. Exercise is also probably effective in preventing recurrences in those with pain.

It is not clear whether men or women have higher rates of low back pain. A 2012 review reported a rate of 9.6% among males and 8.7% among females. Another 2012 review found a higher rate in females than males, which the reviewers felt was possibly due to greater rates of pains due to osteoporosis, menstruation, and pregnancy among women, or possibly because women were more willing to report pain than men. An estimated 70% of women experiences back pain during pregnancy with the rate being higher the further along in pregnancy. Current smokers and especially those who are adolescents are more likely to have low back pain than former smokers, and former smokers are more likely to have low back pain than those who have never smoked.

Primarily, nervous system is divided into two parts, (1) central nervous system, peripheral nervous system. Central nervous system includes brain and spinal cord. The spinal cord is a complex cylinder of nervous that starts at the base of brain and runs down the vertebral canal to the back bone. It is part of the body's collection of nervous, called the central nervous system, along with the brain. In each of the spinal cords many segments lives a pair of roots that are made up of nerve fibres. These roots are referred to as the dorsal (which is towards the back) and the ventral (which is away from the back roots). We depend on the spinal column for the main support of our body. It allows us to stand upright, bend, and twist, while protecting the spinal cord from injury. If the spinal cord is injured it often causes permanent changes in the body's strength, sensation ant handful of other functions due to its connection to the brain. (Porter and Perry's, 2013)

Low back pain is a common cause of staff absence in school. There is a high risk of short term problems turning into long term absence. Productivity is reduced and children learning are also affected. Staff working in school particularly those working with younger children is most at risk, but every teacher can be affected. A teacher is a person who helps others to acquire knowledge, competences or values. Teachers face several occupational hazards in their line of work, including occupational stress, which can negatively impact teacher’s mental and physical health, and student’s performance. Teachers are also at high risk for low back pain, neck and shoulder pain, musculoskeletal disorders and cardiovascular problems.

Pain is an unpleasant sensory and emotional experience associated with actual and potential tissue damage. The pain experience is complex, involving physical, emotional and cognitive components. Pain is subjective and highly individualized. Its stimulus is physical and/or mental in nature. Pain uses a person's energy. It interferes with personal relationships and influences the meaning of life. Pain receptors are present everywhere in the body, especially the skin surfaces of the joints, periosteum (the specialized lining around the bone), walls of the arteries, and certain structures in the skull .Pain receptors are free nerve endings. There are three types of pain receptor stimuli: mechanical, chemical and thermal. Chemical pain receptors can be stimulated by chemical from the outside word (e.g. acids), but also by certain products present in the body and released as a result of trauma, inflammation or other painful stimuli. Examples of these substances are bradykinins, serotonin, potassium ions and acids (such as lactic acid) which cause muscle pain after heavy exercise. Mechanical means the source of the pain may be in the spinal joints, discs, vertebrae or soft tissues. Acute mechanical back pain may also be called acute low back pain, lumbago, idiopathic low back pain, lumbosacral strain or sprain, or lumbar syndrome: Red hair is the phenotype for mutations of the melanocortin-1 receptor. Results indicate that redheads are more sensitive to thermal pain and are resistant to the analgesic effects of subcutaneous lidocaine. Mutations of the melanocortin-1 receptor, or a consequence thereof, thus modulate pain sensitivity. (Brunner and Suddarths, 2009)

Pain is generally an unpleasant feeling in response to an event that either damages or can potentially damage the body's tissues. There are four main steps in the process of feeling pain: transduction, transmission, perception, and modulation. The nerve cells that detect pain have cell bodies located in the dorsal root ganglia and fibers that transmit these signals to the spinal cord.

The process of pain sensation starts when the pain-causing event triggers the endings of appropriate sensory nerve cells. This type of cell converts the event into an electrical signal by transduction. Several different types of nerve fibers carry out the transmission of the electrical signal from the transducing cell to the posterior horn of spinal cord, from there to the brain stem, and then from the brain stem to the various parts

of the brain such as the thalamus and the limbic system. In the brain, the pain signals are processed and given context in the process of pain perception. Through modulation, the brain can modify the sending of further nerve impulses by decreasing or increasing the release of neurotransmission. (Chaurasia, 2005)

Low back pain is "pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain". Low back pain is usually categorized in three sub types: acute, sub- acute and chronic back pain. This subdivision based on the duration of the back pain. Acute low back pain is an episode of low back pain for lesser than 6 weeks , sub -acute low back pain between 6 and 12 weeks and chronic low back pain for 12 weeks or more. (Lewis,2013)

Holistic health approaches include wellness education, rest attention to good hygiene practices and nutrition management of interpersonal relationship. When a person’s develops pain, client can offer non pharmacological strategies. Several nonpharmacological interventions are nurse initiated. A number of non pharmacological interventions lessen pain, which pharmacological interventions includes cognitive - behavioral and physical approaches. Cognitive - behavioral interventions of pain , alter pain behavior, and provide with a greater sense of control. Mckenzie therapy distraction prayer, relaxation, guided imagery, music, and bio feedback, range of motion exercise, strengthening exercise, aerobic exercise, spinal manipulation, mobilization techniques, acupressure, transcutaneous electrical nerve stimulation, yoga, lumbar support, traction are examples. Physical approaches aim to provide pain relief, correct physical dysfunction, after physiological responses, and focus on associated pain -related immobility. A central tent of the Mckenzie method is that self healing and self treatment for the patient's pain relief and rehabilitation. No passive modalities - such as heat, cold, ultra sound, medicine, or needless are used in treatment. The Mckenzie therapy method is grounded finding a cause and effect relationship between the positions the patient usually assumes while sitting, standing, or moving, and the generation of pain as result of those positions or activities. The therapeutic approach requires a patient to move through a series of activities and test movements to gauge the patient's pain response. The approach then uses that information to develop an exercise protocol designed to centralize or

alleviate the pain.

The body repairs or replaces damaged muscle fibers through a cellular process where it fuses muscle fibers together to form new muscle protein strands are myofibrils. These repaired myofibrils increasing thickness and number to create muscle growth. (Lewis 2013)

McKenzie therapy can provide significant function benefit and improvement in overall health and well being including increased bone, muscle tendon, and ligament strength and toughness, improved joint function, reduced potential for injury increased bone density, "increased metabolism, increased fitness, improved cardiac function, and improved lipoprotein lipid profiles, including elevated HDL (good) cholesterol. McKenzie therapy is typically association with the production of lactate, which is a limiting factor of exercise performance, regular endurance exercise lead to adaptation in skeletal muscle which can prevent lactate levels from rising during strength training. This is mediated via activation of PCG-1 alpha which alter the LDH (lactate dehydrogenase) isoenzyme complex composition and decrease the activity of the lactate generating enzyme LDHA, while increasing the activity of the lactate metabolizing enzyme LDHB. The benefits of McKenzie therapy include greater muscular strength, relieved low back pain, improved muscle tone muscle tone and appearance, increased endurance and enhanced bone density. (Brunner and Suddarths 2009)

Nurses play a very important role in relieving low back pain among adults.

Need for the study:

Pain in the soft tissue of the back is extremely common among adult. In the United States, the national arthritis data work group review national survey data showing that each year some 15% of adults report frequent back pain or pain lasting more than two weeks. Back pain is wide spread in many countries, and is associated with substantial financial costs and loss of quality of life. In Canada, Finland and United States, more people are disabled from working as a result of musculoskeletal disorders- especially back pain- than from any other group diseases.

Reviews of low back pain epidemiology have implicated an overlapping set of occupation exposures such as lifting, force full movements, awkward postures, whole body vibration and perhaps psychosocial stressors. However, such exposures are rarely assessed in surveillance activities on a large scale, and thus data are not available for risk assessment calculation at the global level. An alternative strategy was applied this assessment using occupation as a proxy for specific combination of physical and psychosocial stressors. The reference group comprised professional and administrative works. The other risk categories were defined as follows: low exposure: clerical and sale workers, moderate exposure: operators and service workers: high exposure: farmers, school teachers and staff nurses.

Low back pain is well documented as an extremely common health problem; it is the leading cause of activity limitation and work absence throughout much of the world and it causes an enormous economic burden on individuals, families, communities industry and government.

A woman is the nucleus of the family, especially in rural India. The daily work schedule of rural women is very arduous and demanding in nature. In addition to household and agriculture works, the other time spends as energy - demanding activity for rural women is care of life stock , which is not only strenuous , but also repetitive and makes them over burdened as well as leading them a continuous health risk. The non neutral posture of the trunk frequently adopted by women is risk for developing low back pain. Lack of facilities with their traditional techniques like drawing water from the wells, carrying heavy loads on their back may lead to back pain.

International surveys of low back pain reported that 1- month prevalence was 19 to 43% and point prevalence was 15 to 30%. The estimated worldwide life time prevalence of low back pain varies from 50% to 84% .Studies in developed countries have shown that the low back pain points prevalence was 6.8% in north America, 13.7% in Denmark , 12% in Sweden , 14% in the United Kingdom, 33% in Belgium and 28.4% in Canada . Similarly, Some studies in developing countries have revealed country much higher incidences of 72.4% in Nigeria, 64% in china, an 56.2% in Thailand. The

occurrence of low back pain in India also alarming with nearly 60% of the people, have suffered from low back pain at some time during their life span.

Low back pain also restricts mobility, interferes with normal functioning and results in lifelong pain and permanent disability . In India, most of the low - income group of people are engaged in physically demanding jobs which may increase the risk of low back pain and disability. Low back pain also affects the quality of life of not only the women themselves, but their families as well.

In India, very few studies have been done with regard to this. With this back ground, a study was aimed to assess the prevalence of low back pain, and disability and quality of life among women with low back pain in rural Puducherry, India.Educators have the opportunity to make a huge impact on their students – however, they face many challenges, which may result in low back, neck and shoulder pain; tired feet, aching legs, headaches, insomnia and stress. Often, the number one concern for teachers is back pain when standing. .Mechanical low of many frustration back pain school teachers face, the lack of standardized or uniform treatment approach is high on the list. Especially for those school teachers with longer-lasting symptoms of sub acute pain or longer than twelve weeks, treatment approaches are very inconsistency.

Crese Damas Nilahi, (2014) conducted a study on work related lower back pain among primary school teachers in Dares salaam ,Tanzania Lower back pain (LBP) is one of the most common work-related health problems in economically developed countries and the most prevailing musculoskeletal condition that causes disability in the developing nations. School teachers are susceptible to low back pain due to the nature of their daily work routine which is physically demanding and include common activities such as long hours of sitting, standing and bending that have been identified as risk factors for LBP. The aim of the study was to determine the role of work-related activities in the prevalence of LBP amongst primary school teachers in the Dar-es-Salaam region of Tanzania. To achieve this goal, the study sought to meet the following three objectives: to determine the prevalence of LBP among primary school teachers; to determine the work-related physical activities contributing to LBP among primary school teachers, and to

determine and explore the application of kinetic handling principles in their daily work environment. The study was conducted in eighty randomly selected primary schools from the Temeke, Ilala and Kinondoni districts. A sequential explanatory mixed method approach was utilized. A cross-sectional descriptive design was employed. A self-administered questionnaire consisting of three sections (socio-demographic information; the Nordic Back Pain Questionnaire and the Oswestry Lower back pain Questionnaire) was completed by two hundred and eighty six primary school teachers with a mean age of 41.2 years (SD=9.9), 78.7% female and 21.3% male. Thirty primary school teachers participated in the participant observation of the application of kinetic handling principles in their daily work environment and focus group discussions. Results of the study found that 17.1% of the teachers had LBP during the past week while 82.9% experienced LBP during the past year. In addition, 30.8% of the teachers had referred pain, mostly to the thigh area (43.9%). Less than fifty percent (43.5%) of the participants had severe pain in sitting (76 – 100mm on the VAS scale) while iii 26.9% was not able to sit for more than an hour while teaching due to LBP. A significant relationship was found for severe functional disability and gender (p=0.032). The study demonstrated poor application of kinetic handling principles at work. Factors impeding teachers' efforts to implement best practices and back care techniques in their daily teaching activities were work environment (poor facilities and equipment; heavy workload and staff shortage) and uncertainty about desired practice. In order to address the higher prevalence of lower back pain the study recommended improvement of the work environment for teachers by providing proper office furniture, re-assessment of education standards such as students /class ratio, students/desk ratio and number of teachers for schools and lastly, the implementation of health education and health promotion strategies to prevent LBP amongst primary school teachers.

Tom Petersen, et al., (2011) conducted a study on The McKenzie method compared with manipulation when used adjunctive to information and advice in low back pain patients presenting with centralization or peripheralization randomized controlled trial. To compare the effects of the McKenzie method performed by certified therapists with spinal manipulation performed by chiropractors when used adjunctive to

information and advice. Recent guidelines recommend a structured exercise program tailored to the individual patient as well as manual therapy for the treatment of persistent low back pain. There is presently insufficient evidence to recommend the use of specific decision methods tailoring specific therapies to clinical subgroups of patients in primary care. A total of 350 patients suffering from low back pain with duration of more than 6 weeks who presented with centralization or peripheralization of symptoms with or without signs of nerve root involvement, were enrolled in the trial. In conclusion patients with low back pain for more than 6 weeks presenting with centralization or peri pheralization of symptoms, we found the McKenzie method to be slightly more effective than manipulation when used adjunctive to information and advice.

Many reviews provided empirical evidence related to intervention for McKenzie therapy, pharmacological interventions, back strengthening exercise, and other techniques are evaluated.

During the investigator's clinical practice in the field of nursing the investigator found that many school teachers attending physiotherapy, has the difficulties of low back pain. The clients expressed that they need an intervention to relieve from back pain and to improve mobility and health status. Based on the review of literature, McKenzie therapy can reduce low back pain and improve the mobility and health status. So, the investigator focused conducting a study on effectiveness of McKenzie therapy on low back pain among school teachers.

Statement of the Problem

A study to assess the effectiveness of McKenzie therapy on low back pain among school teachers in selected school at Kanyakumari District.

Objectives

- To assess the level of low back pain among school teachers in both experimental and control group.
- To evaluate the effectiveness of McKenzie therapy on level of low back pain

among school teachers in experimental group.

- To find out the association between the post test level of low back pain among school teachers with their selected demographic variables and clinical variables.

Hypotheses

- H_1: The mean post test score of low back pain will be significantly lower than the mean pre test level of back pain in experimental group who had low back pain .
- H_2: The mean post test score of low back pain among school teachers in experimental group will be lower than the mean post test level of back pain in experimental group.
- H_3: There will be a significant association between the post test score of low back pain among school teachers and their selected demographic variables and clinical variables.

Operational definitions

Effectiveness:

The degree to which objectives are achieved and the extent to which targeted problems are solved.(Oxford dictionary)

In this study it refers to the significant difference in level of low back pain before and after therapy as measured by using Oswestry low back pain scale.

Mckenzie therapy:

In this study Mckenzie therapy is a method of assessing and reducing low back pain most commonly through the use of specific repeated movements.(Mckenzie institute international 2014)

It is a series of activities low back which includes sitting , standing, lying prone, progress to elbow, full press up , lying supine, knees bent, knees to chest, flex with hand

behind seat, flex to floor for each two seconds totally will be done for 20 minutes, twice a day for 5 days.

Low back pain

Low back pain is common disorder involving the muscles, nerves, and bones of the back.(Louw et al., 2007)

In this study it refers to the pain which the school teachers have that is limited to the region between the lower margins of the last rib and the gluteal folds, regardless of the presence or absence of the leg pain.

School teachers.

In this study school teachers is a person ,who help others to acquire knowledge, competences or values.(Wikipedia**)**

In this study refers to female teachers of age group above 30years .Who work in selected schools in Kanya Kumari District

Assumptions

- School teachers experience moderate and sever low back pain.
- McKenzie therapy is one of the effective methods of treatment for reducing low back pain neck and shoulder pain, improving joint function, reduced potential for injury, increased bone density, increased metabolism.
- McKenzie therapy has no side effects.

Delimitations

The study was delimited to .

- The sample size of 60 school teachers who had low back pain
- Limited to only female school teachers.
- Data collection period for only one month.

Conceptual frame work:

A conceptual framework is group of concept and a set of propositions that spells out the relationship between them. Conceptual framework plays several inter related rolls in progress of science. The overall purpose is to make scientific findings meaningful and generalizable.

The conceptual framework selected for the study was based on **"Wiedenbach's prescriptive"** which was described as a system of concept invented for a purpose. Prescriptive theory may also be described as one that conceptualizes both the desired situation and the perception by which it is to be brought about as an outcome.

The study is based on the concept that intervention of McKenzie therapy helps to reduce low back pain. The investigator has adapted the Wiedenbach's helping art clinical nursing theory as a base of developing the conceptual frame work. This is a prescriptive theory, which action towards an expected goal. The conceptual model of nursing practice according to this theory consists of 3 steps as follows:

Step 1: Identifying the need for help.

Step 2: Ministering to need.

Step 3: Validating the met need.

Step 1: Identifying the need for help

The first step is to identify the need to plan further action to meet them. The need identify among the sample is to reduce low back pain. The process began with sample selection basis of inclusion criteria followed by the pretesting level of low back pain by Oswestry low back pain scale.

Step 2: Ministering to need

The second step refers to the provision of required help to fulfill the identified need. It has 2 components

- Prescription: It mean fulfillment of central purpose in order to reduce low back pain.
- Realities: It includes agent, reception, goal, means, and framework.
  The various aspect which constitute reality are as follows:

Agent : The investigator is the agent who prepared and provides McKenzie therapy.

Recipient : The School teachers who are having moderate to severe low back pain.

Goal : In the study, it refers to the reduction of low back pain.

Means and activities

A pre-test was carried out to assess the level of low back pain followed by which McKenzie therapy provided two times a day and is monitor by Oswestry low back pain scale.

Step 3: Validating the met need

The final step is validate the met need in the study of the need was done by conducting a post-test on 5^{th} day. Finding revealed that the mean post-test score significantly higher than their mean pre-test score, showing the effectiveness of McKenzie therapy reducing low back pain.

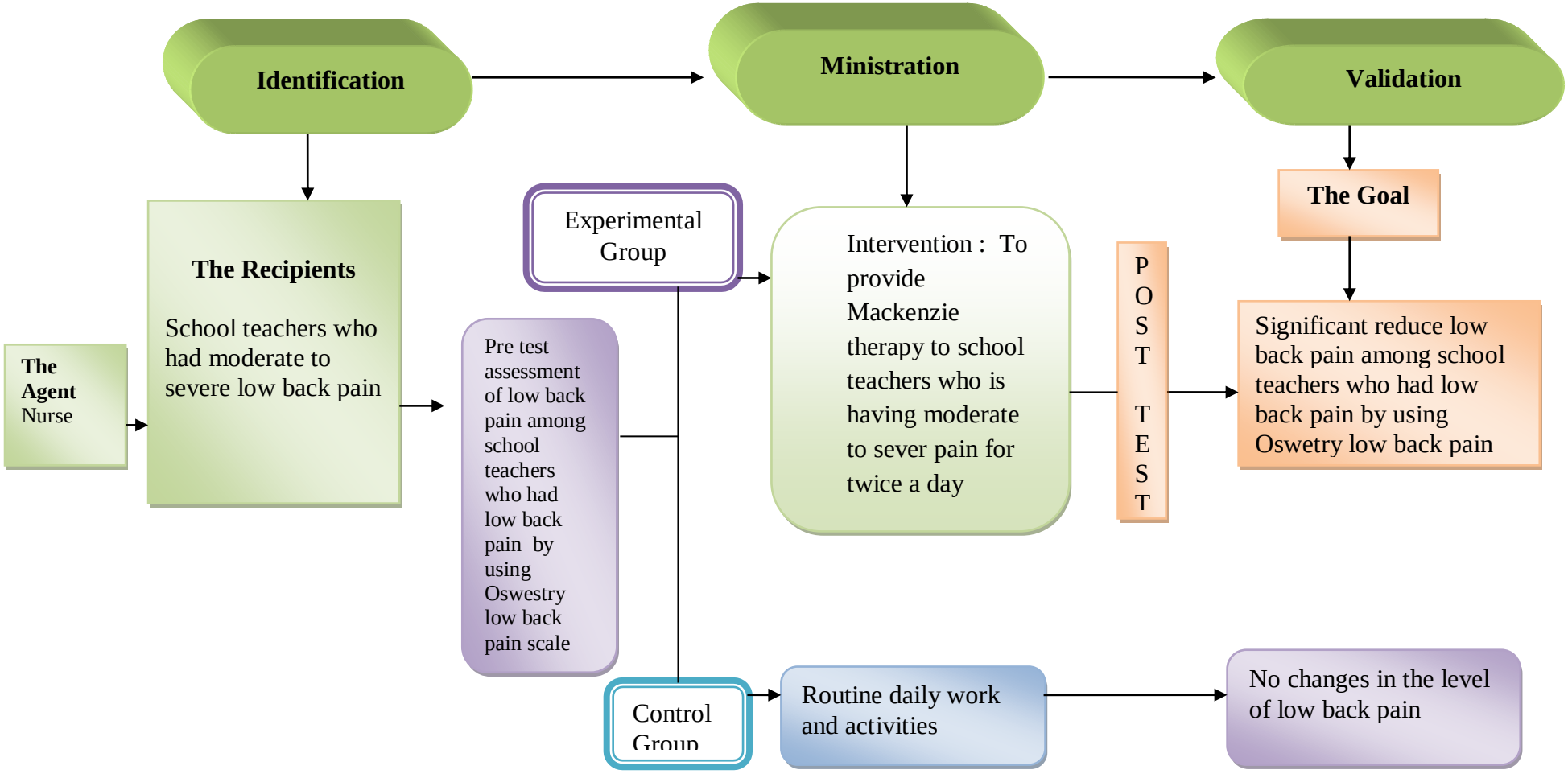


Fig . 1 : Conceptual framework based on Ernestine Wiedenbach's "The helping art of clinical nursing theory" (1964)

CHAPTER - II

REVIEW OF LITERATURE

Review of literature is an essential component of the research process. It aids the researcher in the formulation of the research plan or proposal and condition of the study. It aids in relating the outcomes of the study to the finding of other investigations. Review of literature is defined as a "Critical summary of research on a topic of interest, offer prepared to but a research problem in contest. (Polit and Beck, 2006)

This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the researcher to develop and insight into the problem area, and in building the foundation of the study.

The review of literature of this chapter is presented under the following headings.

Section I : General information related to low back pain

Section II : General information related to Mckenzie therapy

Section III : Studies related to back pain

Section IV : Studies related to Mckenzie therapy

Section V : Studies related to low back pain among school teachers.

Section VI : Studies related to effectiveness of Mckenzie therapy on low back pain.

SECTION I : GENERAL INFORMATION RELATED TO LOW BACK PAIN

Introduction:

Low back pain is most often due to musculoskeletal problem. It affect s almost all of as at some time in our lives and frequently lead to pain, distress and time away from work.

Incidence of low back pain

Low back pain (LBP) is a major health and socioeconomic problem in modern society. There is little information about LBP in general or working population in developing and low income countries. This review aims at describing the epidemiology of LBP on the basis of studies in Indian population. LBP prevalence has been found to range from 6.2% to 92% with increase of prevalence with age and female preponderance. Low socioeconomic status, poor education, previous history of LBP, physical factors such as lifting heavy loads, repetitive job, prolonged static posture and awkward posture, psychosocial factors such as anxiety, depression, job dissatisfaction, lack of job control and mental stress, working hours and obesity have been found to be associated with LBP

The estimated worldwide lifetime prevalence of low back pain varies from 50% to 84%. In India, most of the low-income group people are engaged in physically demanding jobs which may increase the risk of low back pain and disability.

Definition

Low back pain (LBP) is a common disorder involving the muscles, nerves, and bones of the back. Pain can vary from a dull constant ache to a sudden sharp feeling. Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks).

Signs and Symptoms

In the common presentation of acute low back pain, pain develops after movements that involve lifting, twisting, or forward-bending. The symptoms may start soon after the movements or upon waking up the following morning. The description of the symptoms may range from tenderness at a particular point to diffuse pain. It may or may not worsen with certain movements, such as raising a leg, or positions, such as sitting or standing. Pain radiating down the legs (known as sciatica) may be present. The first experience of acute low back pain is typically between the ages of 20 and 40. This is often a person's first reason to see a medical professional as an adult. Recurrent episodes occur in more than half of people with the repeated episodes being generally more painful than the first.

Other problems may occur along with low back pain. Chronic low back pain is associated with sleep problems, including a greater amount of time needed to fall asleep, disturbances during sleep, a shorter duration of sleep, and less satisfaction with sleep. In addition, a majority of those with chronic low back pain show symptoms of depression or anxiety.

Causes

Low back pain is not a specific disease but rather a complaint that may be caused by a large number of underlying problems of varying levels of seriousness. The majority of LBP does not have a clear cause but is believed to be the result of non-serious muscle or skeletal issues such as sprains or strains. Obesity, smoking, weight gain during pregnancy, stress, poor physical condition, poor posture and poor sleeping position may also contribute to low back pain. A full list of possible causes includes many less common conditions. Physical causes may include osteoarthritis, degeneration of the discs between the vertebrae or a spinal disc herniation, broken vertebra(e) (such as from osteoporosis) or, rarely, an infection or tumour of the spine.

Women may have acute low back pain from medical conditions affecting the female reproductive system, including endometriosis, ovarian cysts, ovarian cancer, or uterine fibroids. Nearly half of all pregnant women report pain in the lower back or sacral area during pregnancy, due to changes in their posture and centre of gravity causing muscle and ligament strain.

Low back pain can be broadly classified into four main categories:

- Musculoskeletal – mechanical (including muscle strain, muscle spasm, or osteoarthritis); herniated nucleus pulpous, herniated disk; spinal stenosis; or compression fracture
- Inflammatory – Certain autoimmune and immune mediated disease associated arthritis including an kylosing spondylitis, reactive arthritis, psoriatic arthritis, and inflammatory bowel disease
- Malignancy – bone metastasis from lung, breast, prostate, thyroid, among others

- Infectious – osteomyelitis; abscess

Pathophysiology

Pain is generally an unpleasant feeling in response to an event that either damages or can potentially damage the body's tissues. There are four main steps in the process of feeling pain: transduction, transmission, perception, and modulation. The nerve cells that detect pain have cell bodies located in the dorsal root ganglia and fibres that transmit these signals to the spinal cord. The process of pain sensation starts when the pain-causing event triggers the endings of appropriate sensory nerve cells. This type of cell converts the event into an electrical signal by transduction. Several different types of nerve fibres' carry out the transmission of the electrical signal from the transducing cell to the posterior horn of spinal cord, from there to the brain stem, and then from the brain stem to the various parts of the brain such as the thalamus and the limbic system. In the brain, the pain signals are processed and given context in the process of pain perception. Through modulation, the brain can modify the sending of further nerve impulses by decreasing or increasing the release of neurotransmitters.

SECTION II: GENERAL INFORMATION REVEALED TO MCKENZIE THERAPY

Definition

The McKenzie Method is grounded in finding a cause and effect relationship between the positions the patient usually assumes while sitting, standing, or moving, and the generation of pain as a result of those positions or activities. The therapeutic approach requires a patient to move through a series of activities and test movements to gauge the patient's pain response. The approach then uses that information to develop an exercise protocol designed to centralize or alleviate the pain.

Purposes

- ❖ McKenzie exercises minimize or abolish their localized pain which can be acute or chronic.
- ❖ Achieve centralization over the course of daily prescribed McKenzie Exercise.

Mechanism of action

This is hypothesized to enhance / promote the reabsorption or redistribution of the disc fluid (nucleus pulpous) within the disc. This effect could improve the internal stability (pressure against the annular fibers) and local chemical composition of the disc, potentially reducing pain symptoms.

SECTION III : STUDIES RELATED TO BACK PAIN

Leah J. Jeffries et al., (2012) conducted an exploratory study to identify the available research literature and to provide an up-to-date synthesis of the epidemiology of idiopathic adolescent spinal pain. A systematic meta-synthesis approach was used to identify secondary review articles and primary epidemiological studies regarding idiopathic adolescent spinal pain. A total of 56 primary cross sectional studies were identified. The study report revealed that spinal or back pain was the most commonly reported measure with the life time prevalence13figures ranged from 4.7% to 74.4% and the life time prevalence of low back pain ranged from 7% to 72%. Study concluded that life time prevalence rates increase steadily with age and approximate adult levels by around the age of18 years.

Rachael.E. Docking et al., **(**2011) conducted a prospective cohort study in Cambridge city to determine the prevalence of disabling and non disabling back pain across age in older adults and to identify the risk factors. Participants aged more than or equal to 75 years were interviewed. Relative risks (RRs) and 95% CIs were estimated using Poisson regression. The study revealed that prevalence of disabling and non-disabling back pain was 6 and23% respectively. The study also pointed that the prevalence of non-disabling back pain did not vary significantly across age (0.90P=0.34) and the prevalence of disabling back pain increased with age (4.02;*P*=0.04).New-onset disabling and non-disabling back pain at follow-up was 15 and 5%,respectively. Risk factors found to predict back pain onset at follow-up were: poor self-rated health (RR 3.8; 95% CI 1.8, 8.0); depressive symptoms (RR2.2; 95% CI 1.3, 3.7); use of health or social services (RR 1.7; 95% CI 1.1, 2.7); and previous back pain (RR 2.1; 95% CI 1.2–3.5). The study concluded that older adults with poor self-rated health, depressive symptoms, increased use of health and social services and a previous episode of back pain are at greater risk of reporting future back pain onset.

Wong.W.S., Fielding.R.C., (2011) conducted a study to determine the prevalence of chronic back pain in the general population of Hong Kong and to evaluate the relationship of chronic pain with socio-demographic and lifestyle factors and describe the pain characteristics among chronic pain sufferers. A total of 5,001 adults aged ≥ 18 years (response rate 58%) drawn from the general population of Hong Kong. Chronic Pain Grade (CPG) questionnaire was provided and socio- demographic status using telephone interviews. The study revealed that 34.9% reported pain lasting more than 3months (chronic pain), having an average of 1.5 pain sites; 35.2%experienced multiple pain sites, most commonly of the legs, back, and head with leg and back being rated as the most significant pain areas among those with multiple pain problems. The Chronic Pain Grade criteria classified 21.5% of those with chronic pain symptoms as Grade III or above. Fully adjusted stepwise regression analyses identified being female, older age, having part-time employment; existing long-term health problems, higher anxiety scores, and low self-perceived health are significantly associated with chronic pain. The study concluded that chronic back pain is common in the general population of Hong Kong, and the prevalence is highest among women and middle-aged adults.

Jacob. T. (2006) conducted a community based longitudinal study in Israel on low back pain incident episodes. A randomized sample of individuals, free of low back pain at a previous cross-sectional survey was selected for the study. Baseline data included in the study were back pain history, perception of general health, physical activity, smoking, work satisfaction and demographic variables. The study results pointed out that annual incident episodes of low back pain were 18.4% and those who experienced low back pain during the past year had a lower baseline16perception of general health and were less involved in sporting activities than those free of pain. The study concluded that incident episodes of low back pain are relatively high and relate indirectly to baseline perception of general health and to level of sporting activities.

David Cassidy et al., (2005) conducted a study to estimate the incidence and course of severity graded low back pain episodes in the adult population. Population based, prospective cohort study design was used. An incidence cohort of 318subjects free of low back pain and a course cohort of 792 prevalent cases were formed from respondents to a mailed survey. Incident, recurrent, persistent, aggravated, improved, and resolved episodes were defined by the Chronic Pain Questionnaire. The follow-up at 6

and 12 months was 74% and62%, respectfully. Annual estimates age and sex were standardized. The study revealed that the cumulative incidence was 18.6% (95% confidence interval CI, 14.2%-23.0%) and most low back pain episodes were mild. Only1.0% (95% CI, 0.0%-2.2%) developed intense and 0.4% (95% CI, 0.0%-1.0%)developed disabling low back pain. Resolution occurred in 26.8% (95% CI,23.7%-30.0%), and 40.2% (95% CI, 36.7%-43.8%) of episodes persisted. The study also reported the severity of low back pain increased for 14.2% (95%CI, 11.5%-16.8%) and improved for 36.1% (95% CI, 29.7%-42.2%). Of those that recovered, 28.7% (95% CI, 21.2%-36.2%) had a recurrence within 6months and 82.4% of it was mild low back pain. Younger subjects were less likely to had persistent low back pain (incidence rate ratio, 0.88; 95% CI, 0.80-0.97) and more likely to have resolution (incidence rate ratio, 1.26; 95% CI, 171.02-1.56). The study concluded that low back pain episodes are more recurrent and persistent in older adult.

Leboueuf – Ydeeetal, (1999) conducted to identify the relationship between smoking and incidence and prevalence of low back pain. Forty one original research reports reporting 47 studies published between1947 and 1966 were systematically reviewed for strength of association. The result pointed out that there was no consistency of statistically significant positive associations between smoking and back pain.

M. Laslett, et al., (1991) conducted a study to identify the frequency and incidence of low back pain in an Urban New Zealander population. Three hundred and fourteen subjects were assessed by random telephone survey. Relationships between the severity and frequency of low back pain and referred lower extremity pain and other variables such as occupation, recreation, age, sex and predominant working posture was analysed. The study pointed out that point incidence was17.5%, weekly incidence 33.4%, yearly incidence 63.7% and total incidence79%. Some 28.3% get frequent minor episodes and 6.4% get frequent severe episodes of low back pain. Study also estimated that 50% suffer the initial episode before the age of 30 years and those suffering low back pain within the last seven days, 14.3% experience reference below the knee and the total incidence of below knee pain was 13.7%. Over half (51.6%) had pain that had lasted seven days or less, but a third had pain for longer than seven weeks. The study concluded that no correlation between the incidence of low back pain and referred pain and occupational posture.

SECTION IV : STUDIES RELATED TO MCKENZIE THERAPY

Isadora Orlando de Oliveira, Luísa Lang Silva Pinto**,** (2016) conducted a study on effectiveness McKenzie method for low back pain at Brazil . Low back pain is a disorder affecting people of all ages, being among major diseases leading individuals to look for health professionals' help. Clinicians agree that back pain is a heterogeneous condition, however there is no uniformity in the choice of most effective methods to manage pain. This study aimed at evaluating the contribution of the McKenzie method to manage low back pain, in addition to checking whether there is comparison of McKenzie with other treatment modalities. Our review has shown that Mckenzie therapy is beneficial and should be considered alternative to manage low back pain patients, since patients submitted to this intervention after physiotherapeutic evaluation have improved dysfunction, quality of life and daily life activities.

RoozbehSanadgol, Ahmad EbrahimiAtri, Seyd Ali Akbar HashemiJavaheri, (2015) conducted The evaluating of efficacy of McKenzie exercises, Massage and foot Reflexology on pain and disability of men with mechanical chronic low back pain. Chronic low-back pain (CLBP) affects most people at some point in their lives. The aim of this study was to evaluate the efficiency of 3 methods which are popular and known as non-invasive way in rehabilitation of CLBP. 60 men in age of group 25-45 with CLBP were randomly divided into four groups (McKenzie, massage, reflexology and control) and instructed to perform McKenzie exercise for 8 week, massage and foot reflexology for 10 days. Patient were assessed by McGill pain questioner (MPQ) and Oswestry Disability Index (ODI), based on pain feeling and the ability to do routine activity of life before starting the study (Pre-test Data) and at the end of study procedure (post-test Data). Results were analyzed by Paired T test, one way ANOVA and Tukey post hock. There was no significantly difference in Pre-treatment session between the 4 groups. MPQ and ODI were significantly lower in post-treatment sessions as compared to pre-treatment values in experimental groups (McKenzie, massage and foot reflexology). Significant decrease in MPQ and ODI values were found in all experimental groups, but no difference in efficacy were found between these groups. However the result that reach from comparison between each of experimental group and control group, showed that the experimental groups were significantly effective. McKenzie exercise, massage and foot

reflexology in men with mechanical chronic low-back pain reduce pain and improved disability. Researchers were not found any differences between these 3 methods as compare with each other. Due to the results, Authors suggest that may be using massage therapy or foot reflexology, for patients with CLBP, is better and more effective if therapists are looking for treating in shortest possible duration.

Saima Aziz, et al., (2013) conducted a study on effectiveness of mc kenzie exercises in reducing neck and back pain among madrassa students In this advanced back pain has become a common musculoskeletal problem. These symptoms have a high prevalence in the community and now they are affecting even our adolescents leaving a major impact on youth's functional and educational activities. Nevertheless, the burden of these musculoskeletal pains, which relates not only to its prevalence but also to increase in physiological and psychological stress among them, distressing their creativity. Madrassa students have a daily exposure to back pain due to poor posture. The McKenzie method is a popular treatment for back and neck pain among physical therapists. So, the intention of this study is to test the effectiveness of McKenzie exercises in neck and back pain, because hardly any data is available on McKenzie technique and its outcome in Pakistan. The objective of the study is to determine the effectiveness of McKenzie exercises in reducing back pain among madrassa students. Findings of this study revealed that madrassa students were more prone to develop back pain. This might be either because of strict enforcement by teachers or usual poor sitting habit. Most of the time, it is difficult for students to come regularly for therapy sessions. It is concluded that McKenzie exercises had significantly reduced back pain among madrassa students.

Luciana AC Machado, Chris G Maher**,** (2005) conducted a study to assess McKenzie method for the management of acute non-specific low back pain: design of a randomised controlled trial Low back pain (LBP) is a major health problem. Effective treatment of acute Low Back Pain is important because it prevents patients from developing chronic LBP, the stage of Low Back Pain that requires costly and more complex treatment. Physiotherapists commonly use a system of diagnosis and exercise prescription called the McKenzie Method to manage patients with Low back pain. However, there is insufficient evidence to support the use of the McKenzie Method for these patients. The study designed a randomized controlled trial to evaluate whether the addition of the McKenzie Method to general practitioner care results in better outcomes

than general practitioner care alone for patients with acute Low Back Pain.

SECTION V : STUDY RELATED TO LOW BACK PAIN AMONG SCHOOL TEACHERS

Pedro L. Rodriguez-Garcia, Pedro A. Lopez-Minarro**,** (2013) conducted the effect of school physical education programmes on low back pain in school teachers, University of Murcia. Spain to evaluate the efficacy of a 32-week school physical education programme on low-back pain. Forty-one school teachers were assigned to the control (n = 40) or intervention group (n = 44). The intervention subjects were involved in an organized physical education programme including hamstrings stretching, endurance strength of the abdominal and lumbar muscles, and pelvic tilt during the two-weekly school physical education classes over 32 weeks. The control group was not subjected to the organized programme. Low back pain was registered and pain intensity was recorded using the Visual Analogue Scale. The experimental group showed a statistically significant decrease of low back pain frequency while the control group evidenced an increase. For pain intensity no significant differences were found. The study conclusion the school teachers who were subjected to the school physical education programme showed a reduction of low back pain frequency, while a tendency toward the rising frequency of low back pain was detected for the control subjects.

AndrzejKnapik, Edward Saulicz, (2011) conducted a study back and neck pain among school teachers in Poland and its correlations with physical activity. Back pain represents one of the most common diseases across various populations of workers worldwide. This study analyzes the prevalence and severity of back pain, based on selected demographic variables, and the relationship with physical activity among school teachers. The study included 998 professionally active teachers (840 females and 158 males) from the southern part of Poland. Validated psychometric tools, namely: 1) for evaluation of disability due to back pain – a Polish version of the Oswestry Disability Index (ODI) and Neck Disability Index (NDI), 2) for physical activity assessment – the Subjective Experience of Work Load (SEWL) as well as the authors' supplementary questionnaire, addressing demographic and anthropometric variables were used .In this study findings confirm that back pain represents a serious concern among teachers. Age appears to be a prognostic factor, while no association between the BMI and LBP has been revealed. The limitation of physical activity leads to more frequent back pain.

Mohammad A. MohseniBandpei, (2011) conducted a study on occupational low back pain in primary and high school teachers, a prevalence and associated. This study found that high school teachers appear to be more prone to Low Back Pain than primary school teachers. The purposes of this study were to investigate the prevalence of and risk factors for low back pain (LBP) in teachers and to evaluate the association of individual and occupational characteristics with the prevalence of Low back pain. Methods: In this cross-sectional study, 586 asymptomatic teachers were randomly selected from 22 primary and high schools in Semnan city of Iran. Data on the personal, occupational characteristics, pain intensity, and functional disability as well as the prevalence and risk factors of LBP were collected using different questionnaires. Point, last month, last 6 months, annual, and lifetime prevalence rates of low back pain were 21.8%, 26.3%, 29.6%, 31.1%, and 36.5%, respectively. The highest prevalence was obtained for the high school teachers. The prevalence of LBP was significantly associated with age, body mass index, job satisfaction, and length of employment (P b .05 in all instances). Prolonged sitting and standing, working hours with computer, and correcting examination papers were the most aggravating factors, respectively. Rest and participation in physical activity were found to be the most relieving factors. The findings revealed prevalence of LBP in teachers appears to be high. High school teachers were more likely to experience LBP than primary school teachers. Factors such as age, body mass index, length of employment, job satisfaction, and work-related activities were significant factors associated with LBP in this teacher population

NurulIzzah Abdul Samed, Abdulla Haslind (2010) conducted a study on Prevalence of Low Back Pain and its Risk Factors among School Teachers Problem statement: The objective of this study was to determine the prevalence of low back pain and the associated risk factors among primary school teachers in the Klang Valley, Malaysia. A cross sectional study was conducted in nine primary schools in the Klang Valley. The schools were selected randomly from a list obtained from the Ministry of Education. Two hundred and seventy two respondents who fulfilled the study criteria volunteered to participate in the study. A questionnaire was used to determine the demographic and occupational information. Information on low back pain was assessed using a Nordic Questionnaire, while the General Health Questionnaire was used to determine the mental health status. The findings of study, prevalence of low back pain were 40.4% among respondents. Lifting load (28.0%) was ranked as the main factor

which contributed to low back pain, followed by prolonged sitting (25.2%). Poor mental health (OR 1.11, 95% CI 1.06-1.15) was the risk factor to low back pain. Conclusion: The prevalence of low back pain was 40.4% among primary school teachers in Klang Valley. Teachers with poor mental health status had higher risk of developing low back pain

Alia Alghwiri, Gregory Marchetti, (2010) conducted a study on occupational back pain among school teachers in Jordan: estimated prevalence and factors associated with self-reported pain and work limitations to investigate the point prevalence of upper back pain and lower back pain in Jordanian schoolteachers and to estimate the work-related reported disability. A cross-sectional survey was used to assess back pain in a convenience sample of teachers in Jordan. Crude and weighted prevalence estimates of self-reported spinal pain and limited productivity were described. Demographic and occupational factors associated with self-reported pain and limited productivity were identified by multinomial/logistic regression. Crude rates differed by gender, geographic location, school funding and grade levels of teaching. Weighted estimates for self-reported pain were 46% for females and 36% for males. Pain with limitation was 55% for males and 49% for females. Pain without limitation was associated with female gender (odds ratio [*OR*]=5.26). Pain with limitations was associated with female gender (*OR*=2.92), teaching in public school (*OR*=2.06) and body mass index (*OR*=1.1). Among subjects with pain, limitations were associated with male gender (*OR*=2.34), teaching in public school (*OR*=3.18) and pain in both upper and lower back (*OR*=4.64). Pain and occupational limitations are highly prevalent in schoolteachers in Jordan.

Patience N Erick and Derek R Smith, (2009) conducted a study on Low back pain among school teachers in Botswana, prevalence and risk factors though low back pain (LBP) represents a common occupational problem, few epidemiological studies have investigated the prevalence and risk factors for LBP among school teachers, particularly in Africa. School teachers are known to represent an occupational group among which there appears to be a high prevalence of low back pain . The objective of this study was, therefore, to conduct one of the first epidemiological investigations of low back pain among teacher. A total of 1747teachers returned completed questionnaires, yielding a response rate of 56.3%. The 12-month prevalence of low back pain was 55.7%, with 67.1% of them reporting minimal disability. The results of logistic regression analysis revealed that female gender [OR: 1.51, 95% CI: 1.14-2.00] and previous back injury [OR:

9.67, 95% CI: 4.94-18.93] were positively correlated to LBP. Regular physical exercise was negatively associated with LBP [OR: 0.63, 95% CI: 0.43-0.93]. Female gender [OR: 2.67, 95% CI: 1.52-3.99] and previous back injury [OR: 3.01, 95% CI: 1.92-4.74] were also positively associated with LBP disability.

SECTION VI : STUDY RELATED TO MCKENZIE THERAPY

Alessandra NarcisoGarcia et al., (2014) conducted efficacy of the McKenzie Method in Patients with Chronic Nonspecific Low Back Pain**.** The McKenzie method is widely used as an active intervention in the treatment of patients with non-specific low back pain. Although the McKenzie method has been compared to several other interventions, it is not yet known whether this method is superior to placebo in patients with chronic low back pain .To assess the efficacy of the McKenzie method in patients with chronic nonspecific low back pain. This study will be conducted in physical therapy clinics in São Paulo/Brazil. One hundred and forty-eight patients seeking care for chronic non-specific low back pain. Patients are randomly allocated to two treatment groups.The first trial to compare McKenzie to placebo in patients with chronic non-specific low back pain. The results of this study contributed to better management of this population

Saud M. Al-Obaidi, Jarsolaw Hoffman, (2013) conducted effectiveness of Mckenzie intervention in chronic low back pain. The McKenzie intervention approach is a comprehensive method of care for low back pain used by physical therapist that emphasize self-treatment, and enhance self-awareness of pain in relation to posture and spinal movement . Numerous studies have reported the value of the phenomenon of centralization of pain (CP), which occurs during the initial McKenzie assessment and is associated with a desirable response and dramatic change in the pain intensity and location [18-24]. Pain and symptom modification by the CP help guide clinicians to select appropriate exercises and other manual techniques

Anetta Cubała1, Jarosław Hoffman, (2012) found that Lumbar spine discopathy is a serious social and economical problem in both our country and around the world. The severity of pain significantly impairs the performance of basic activities such as: dressing, walking, sitting, sleeping, traveling, social and sexual life that conducted effect of McKenzie method on the severity and location of pain in patient with lumbo – sacral dicopathy make up the quality of life. The aim of the study is to investigate the effect of

rehabilitation conducted by McKenzie method on the value and localization of pain ailments. The study included 45 patients treated for pain ailments accompanying lumbar discopathy, in whom the analogue VAS scale was used to assess pain. There was no effect of gender, age and number of episodes of pain on the location of the pain. Pain ailments increased during bending (95.6%, N = 43), standing up (88.9%, N = 40) and standing (48.9%, N = 22), and decreased during lying down (77.8%, N = 35) and walking (73.3%, N = 33). McKenzie method treatment significantly influenced the location of the pain, because prior to treatment, patients experienced pain: within the leg and foot (40%, N = 18), thighs (36%, N = 16) and sacrum (24%, N = 11) and after therapy, these proportions were : 0%: 4%: 29 and 67% , respectively experienced no pain. Pain rated on a VAS scale decreased significantly from 6.58 ± 1.6 to 0.76 ± 0.86. Number of patients taking painkillers directly (66.7%, N = 30) and consistently (22.2%, N = 10) after the treatment was limited to only 1 patient receiving medications directly (2.22%, N = 1).McKenzie therapy significantly reduces the severity of pain ailments associated with lumbar discopathy, and also limits their range.

ArbnoreIbrahima, SamireDeliu, Sylejman Miftari, (2009) conducted a study to effectiveness of McKenzie method in the treatment of low back pain in sub acute and chronic stage General Hospital ‘Rezonanca. Low back pain is a highly prevalent condition worldwide. Physiotherapists commonly use a system of diagnosis and exercise prescription called the McKenzie Method to manage patients with low back pain. The main aim of this study was to evaluate the effectiveness of the Mckenzie method treatment, in sub-acute and chronic low back pain. The total number of patients enrolled in the study was 100 with low back pain, 43 or 43% of them where in sub-acute stage and 57 or 57% where in chronic stage Higher frequency of age belonged to the age group 30-39 years 31%.Regarding gender, the large number of female patients at greater frequency belonged to the age group30-39 years, in contrast to the male patients who were slightly older, 30 -49 years. Short-term treatment of patients with low back pain in sub-acute and chronic stage with the McKenzie method is more effective in reducing pain, and is more effective in sub-acute stage, increasing mobility and reducing pain.

Luciana AC Machado, Chris G Maher, (2008) conducted a study on effectiveness of the McKenzie method in addition to first-line care for acute low back pain: a randomized controlled trial Low back pain is a highly prevalent and disabling

condition worldwide. Clinical guidelines for the management of patients with acute low back pain recommend first-line treatment consisting of advice, reassurance and simple analgesics. Exercise is also commonly prescribed to these patients. The primary aim of this study was to evaluate the short-term effect of adding the McKenzie method to the first-line care of patients with acute low back pain. One hundred and forty-eight participants were randomized into study groups, of whom 138 (93%) completed the last follow-up. The addition of the McKenzie method to first-line care produced statistically significant but small reductions in pain when compared to first-line care alone: mean of -0.4 points (95%confidence interval, -0.8 to -0.1) at 1 week, -0.7 points (95% confidence interval, -1.2 to -0.1) at 3 weeks, and -0.3points (95% confidence interval, -0.5 to -0.0) over the first 7 days. Patients receiving the McKenzie method did not show additional effects on global perceived effect, disability, function or on the risk of persistent symptoms. These patients sought less additional health care than those receiving only first-line care (P = 0.002).

Clare HA, Adams R, (2002) conducted a study on McKenzie Therapy which Improve Outcomes for Back Pain. The study was a randomized or quasi-randomized controlled trial, The subjects' primary complaint was nonspecific low back pain or neck pain with or without radiation to the extremities, The authors investigated the efficacy of the McKenzie method/McKenzie treatment in comparison with no treatment, sham treatment, or another treatment, Individualized patient treatment and treatment were specified according to McKenzie principles, and The authors reported at least one of the outcome measures of pain, disability, quality of life, work status, global perceived effect, medication use, medical visits, or recurrence.

Helen A Clare, (2004) conducted a systematic review of efficacy of McKenzie therapy for spinal pain. Only randomized or quasi-randomized controlled trials were accepted. There were no language restrictions. Subjects of all age groups and of either gender were included. Studies were included if the subject’s primary complaint was non-specific low back pain or neck pain with or without radiation to the extremities. Trials that recruited patients with the following specific spinal pathologies were excluded: caudaequina syndrome, cord compression, infection, fracture, neoplasm, inflammatory disease, pregnancy, any form of headache, whiplash associated disorders, vertigo/dizziness, and vertebro-basilar insufficiency. Any duration of symptoms was

allowed.

Arbnore Ibrahimaj, (2010) conducted a study on effectiveness of the McKenzie method in the treatment of low back pain in sub acute and chronic stage. : Low back pain is a highly prevalent condition worldwide. Physiotherapists commonly use a system of diagnosis and exercise prescription called the McKenzie Method to manage patients with low back pain. The main aim of this study was to evaluate the effectiveness of the Mckenzie method treatment, in sub-acute and chronic low back pain. This study was conducted between years 2009-2010, in General Hospital "Rezonanca", in physical therapy care. A short-term, prospective study in duration of 15 days. The total number of patients enrolled in the study was 100, age above 23 years, of both sexes. Patients were treated with McKenzie Method; the assessment was done before and after the treatment. The Numeric Rating Scale was used to assess the pain, and Modified Schober's test for mobility. The findings revealed that McKenzie method increases the mobility and reduces the pain in the lumbar region more on sub-acute stage. Short-term treatment of patients, (on sub acute and chronic stage) with the McKenzie method is more effective in reducing pain. McKenzie method is most effective in patients in sub-acute stage.

CHAPTER -III

RESEARCH METHODOLOGY

Research methodology is defined as a design or a plan or a strategy of a research study that gives guidelines, which direct the research steps, the research study process and enables in systematic data collection, logical data organization and accurate data analysis and data interpretation. (Sunanda S .Roy, Chowdhury, 2010)

This chapter deals with research approach design, variables, settings, population, sample, sample size, and criteria for sample selection, sampling technique, description of the tool and data collection procedure, plan for data analysis and Protection of human rights and data collection schedule.

Research approach

It is the plan for research of the study. This study may be qualitative or quantitative. This shows the presence or absence of manipulation and control. A comparison of group also can be seen from the approach.(Dr . R. Bincy, 2012)

The researcher adopted quantitative research approach.

Research design:

Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research question and to control variance.(Kerlinger)

Quasi-experimental with pre-test post-test control group design was adopted in this study.

Group	Pre-test	Intervention	Post-test
Experimental Group	O_1	X	O_2
Control Group	O_1	-	O_2

O_1 – Pre-test measurement of low back pain.

X – Intervention (Mckenzie therapy)

O_2 – Post –test measurement of low back pain

Variables

Variables are often inherent characteristics of the research subjects. The presumed cause of the independent variables; the presumed effect of the dependent variable. (Denise F.Polit, 2011)

Independent variables -Mckenzie therapy

Dependent variables - Low back pain

Demographic variables - Age, education, marital status, type of family, dietary pattern, habit of doing exercise, work experience.

Clinical variables - BMI, associated disease, duration of low back pain.

Setting of the study

Setting of the study is the physical location and condition in which data collection takes place in the study. (Denise F.Polit, 2011)

The study was conducted in Munchri Punitha ArockiyaMatha Matriculation School, at Puthukkadai which consists of 60 teachers. This school comprises LKG to 12^{th} standard. It is located 8 Km away from the Thasiah College of Nursing , Marthandam.

The control group of this study has from Infant Jesus Matriculation School at Mamootukadai which consists of 43 teachers . It is located 4 Km away from Thasiah College of Nursing, Marthandam. The investigator selected this school because proximity to the college and adequate availability of the samples.

Population

A population is the entire aggregation of cases in which a researcher is interested. **(** D. Elakkuvana Bhaskara Raj 2010)

The target population for the present study was school teacher above of 30 years with low back pain in Punitha Arockiya Matha Matriculation School and Infant Jesus Matriculation School.

Sample

Group of individual chosen from that population is a sample.(K. Thanuja)

In this study, the sample is school teacher who had back pain.

Sample size

Sample size is the total number of sample participating in a study.(Denise F.Polit 2011)

The sample consists of 60 selected school teachers with low back pain 30 for experimental group from Punitha ArokiyaMatha Matriculation School and the control group from Infant Jesus Matriculation School.

Sampling technique

It is the process of selecting a portion of the population to represent the entire population. (Denis F.Polit 2011)

Purposive sampling technique was used to select the sample for the study.

Criteria for sample selection

Samples were selected based on the following criterion.

Inclusion criteria

School teachers who are

- ✓ Age group of above 30 years.
- ✓ Hemodynamic stable.
- ✓ With moderate to severe low back pain.
- ✓ Available at the time of data collection
- ✓ Female teachers

Exclusion criteria

School teachers who are

- ✓ Not willing to participate.
- ✓ Physically challenged.
- ✓ Pregnant**.**

Research tool

Description of tool:

The tool used in the study consists of two parts.

Section-A: Demographic variables:

This section deals with demographic variables are age, education, marital status, associated disease, family type, dietary pattern, exercise habit, work experience **.**

Section-B clinical variable: BMI, associated disease, ,duration of low back pain

Section –C : Oswestry low back pain questionnaire

It involves the scoring level low back pain.

Interpretation:

0-10 - mild low back pain

11-30 - moderate back pain

31-50 - severe back pain

Description of Intervention:

Pre-test was done in experimental group and control group by Oswestry low back pain questionnaire. Mckenzie therapy was given in school teachers who had moderate to severe low back pain. Duration of therapy 20 minutes twice a day for 5 days.

The post-test was conducted on 5th day of intervention by checking the level of low back pain with Oswestry low back pain questionnaire.

Content validity

The content validity of the tool was established on the basis of the opinion of 5 experts. 2 consultants from medical surgical department and 2 professors from Medical surgical nursing department and 1 physiotherapist. Necessary suggestions and modifications were incorporated in the final preparation of tool.

Reliability

The reliability was done by the test retest method. The reliability of the tool is with the score of 0.9. Hence, the tool was considered reliable for preceding the study.

Pilot study

Pilot study is a small – scale version of the main research study, which is conducted as a trail run in preparation of the main or major research study. (Susan K.Grove).

The pilot study was done after obtaining formal permission from the Principal and ethical commiter of Thasiah College of Nursing, The Pilot study was conducted at

Hindu Vidyalaya Matriculation School, Marthandam and HariSree Matriculation School Thiruvattar after obtaining formal permission from the Principal. The pilot study was conducted in the month of 1-2-2018 to 6-2-2018 for a period of 1 week. The researcher introduced herself to the study subjects and established good rapport. Then researcher given short introduction about the study. The samples were selected using purposive sampling technique. Based on inclusion criteria, 6 samples were selected. 3 samples from Hindu Vidyalaya Matriculation School, Marthandam as experimental group and 3 samples from HariSree Matriculation School Thiruvattar as control group Mckenzie therapy was given for school teachers who had low back pain for 20 minutes twice a day for 5 days. The post-test level of low back pain was evaluated on the 5rd day for both groups using Oswestry low back pain questionnaire. The researcher showed tool for reliable. The researcher had not found any practical difficulty during the time of study. It revealed that the study was feasible

Development of intervention

The intervention package was developed by the investigator after reviewing the literature and by obtaining the experts opinion. Mckenzie therapy includes the following.

- General instruction
- Preparation
- Mckenzie therapy
- After care

Step 1 – General instruction

- Established and maintain a trustworthy relationship
- Self introduction about the importance of reducing low back pain and benefits of Mckenzie therapy

Step 2 – Preparation

- Explain the procedure to the school teacher
- Provide comfortable place for doing exercise

Step 3 – sequence of Mckenzie therapy

Mckenzie therapy include seating , standing, lying prone progress to elbow full press up, lying supine knee bent, knee to chest, flex with hand behind seat ,flex to floor for each two minutes.

Step 4 – After care

- Observe general condition.
- Provide comfortable position.

Data collection procedure

The researcher obtained formal permission from the school and informed consent from study group authorities for conducting the study. The investigator was given proper information regarding the study. The researcher selected 60 samples. Among them 30 as experimental group for Punitha ArokiyaMatha Metric Higher Secondary School, Puthukadai and 30 as control group from in Infant Jesus Matriculation Higher Secondary School, Mammotukadai.

Pre-test was conducted for both groups by using Oswestry low back pain questionnaire scale. Information about procedure was given to the samples of experimental group. Mckenzie therapy was given 20 minutes twice a day for 5 days. On the 5^{th} day post-test was conducted on the same people in control group and experimental group for checking the effectiveness of mckenzie therapy by using Oswestry low back pain questionnaire scale. All samples were cooperative during the data collection procedure.

Plan of data analysis

Data collected was analyzed using both descriptive and inferential statistics suggests means, standard deviation, chi square, paired “t” test and independent “t” test.

Descriptive Statistics

- Frequency and percentage description of sample according to demographic variables of school teachers who had moderate to severe low back pain.

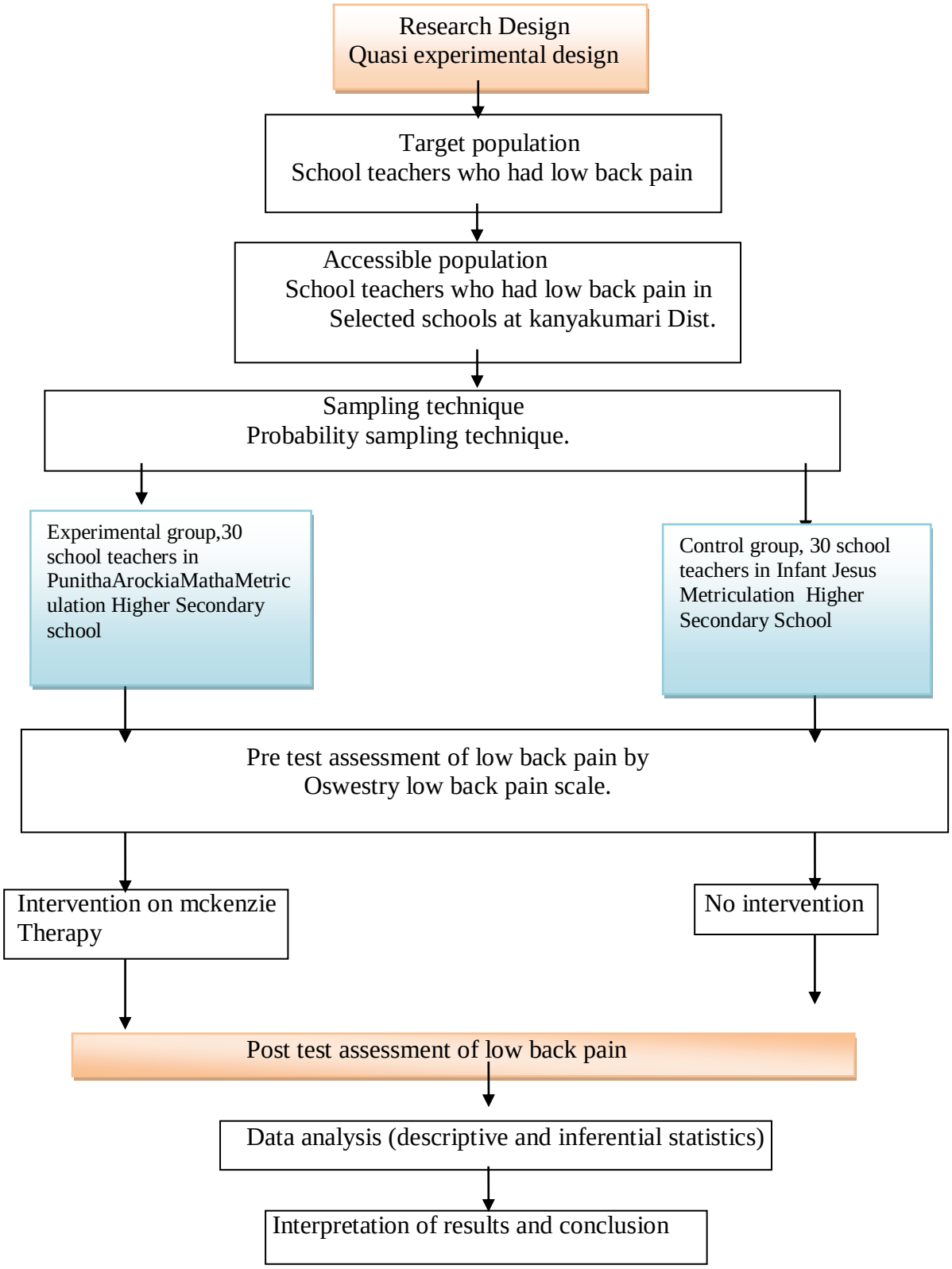
- Frequency and Percentage description were used to assess the level of low back pain among school teachers.
- Mean and standard deviation were used to assess the effectiveness of McKenzie therapy on low back pain among school teachers.

Inferential Statistics

- Paired “t” test was used to compare pre-test and post-test level of McKenzie therapy on low back pain among school teachers.
- Independent test was used to compare post-test of both control and experimental group.
- Chi square test was used to find out association of post-test level of low back pain among school teachers with their demographic variable.

Ethical consideration

The study was conducted after the approval of the dissertation committee of Thaisiah college of Nursing, Kanyakumari, Tamil Nadu District. The permission is obtained from the selected schools in kanyakumari District. Assurance is obtained to each participant regarding the confidentiality of the data collected.


Research Design
Quasi experimental design
Target population
School teachers who had low back pain
Accessible population
School teachers who had low back pain in
Selected schools at kanyakumari Dist.
Sampling technique
Probability sampling technique.
Experimental group,30 school teachers in PunithaArockiaMathaMetriculation Higher Secondary school
Control group, 30 school teachers in Infant Jesus Metriculation Higher Secondary School
Pre test assessment of low back pain by
Oswestry low back pain scale.
Intervention on mckenzie Therapy
No intervention
Post test assessment of low back pain
Data analysis (descriptive and inferential statistics)
Interpretation of results and conclusion

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

The analysis is defined as the method of organizing data in such a way that the research question can be answered. (Pollit and Beck. 2004)

This chapter deals with the analysis and interpretation of data collected among school teachers who had low back pain. The interpretation of tabulated data can bring to light the real meaning of findings of the study. In this study data was analyzed based on the objectives and hypothesis of the study using descriptive and inferential statistics.

Presentation of data

Section - I : Frequency and percentage distribution of the level of low back pain among school teachers according to the demographic variables in experimental group and control group.

Frequency and percentage distribution of the level of low back pain among school teachers according to the Clinical variables in experimental group and control group.

Section –II : Distribution of pre test and post test level of low back pain among school teachers in experimental group and control group.

Section- III : Comparison of pre test and post test level of low back pain score among school teachers in experimental group and control group.

Comparison of post test level of low back pain score among school teachers in experimental and control group.

Section -I V : Association between the post test level of low back pain among school teachers in experimental group and control group with their selected demographic variables and clinical variables.

Section –I

Table: 1

Frequency and percentage distribution the level of low back pain among school teachers according to demographic variables in experimental and control group.

(n=60)

Demographic variables	Experimental group n=30		Control group n=30	
	F	%	f	%
Age in Years				
31-40	9	30	9	30
41-50	14	46.7	14	46.7
51-60	7	23.3	7	23.3
Education				
B.A, B.Sc	6	20	5	16.7
B.Sc.B.Ed	14	46.7	12	40
M.Sc, B.Ed	10	33.3	13	43.3
Marital status				
Married	22	73.3	22	73.3
Unmarried	8	26.7	8	26.7
Type of family				
Nuclear family	16	53.3	18	60
Joint family	14	46.7	12	40
Dietary pattern				
Vegetarian	6	20	7	23.3
Non vegetarian	24	80	23	76.7
Work experience				
< 5years	7	23.3	9	30
5 -10 years	12	40	13	43.3
> 10 years	11	36.7	8	26.7
Habit of doing exercise				
Mild	8	26.7	8	26.7
Moderate	7	23.3	7	23.3
Heavy	3	10	4	13.3
None	12	40	11	36.7

Table 1: Predicts that with regard to age majority of them 14 (46.7%) in the experimental group and control group belong to the age group 41 – 50 years. Interestingly 9 (30%) belong to the age group 31 – 40 years in both the groups .

Regarding education majority 14(46.7%) of them were holding B.Sc,B.Ed degree in experimental group whereas in the control group majority 13(43.3%) of them were holding M..Sc ,B.Ed degree. Marital status shows that 22 (73.3%) of them were married in both the groups. Considering the type of family majority 16 (53.3%) in experimental group and 18 (60%) in control group were from nuclear family .

Dietary pattern shows that majority of them 24 (80 %) in experimental group and 23(6.7%) of them in control group were non vegetarian .

With regard to work experience majority 12 (40%) in experimental group and 13 (43.33%) of them in control group have5 – 10 years of experience.

Regarding habit of doing exercise in both groups 8 (26.7 %) of them were doing mild exercise and 7 (23.3) of them were doing moderate exercise only . But 12 (40 %) teacher in experimental group and 11 (36.7 %) teacher in control group do not do any exercise.

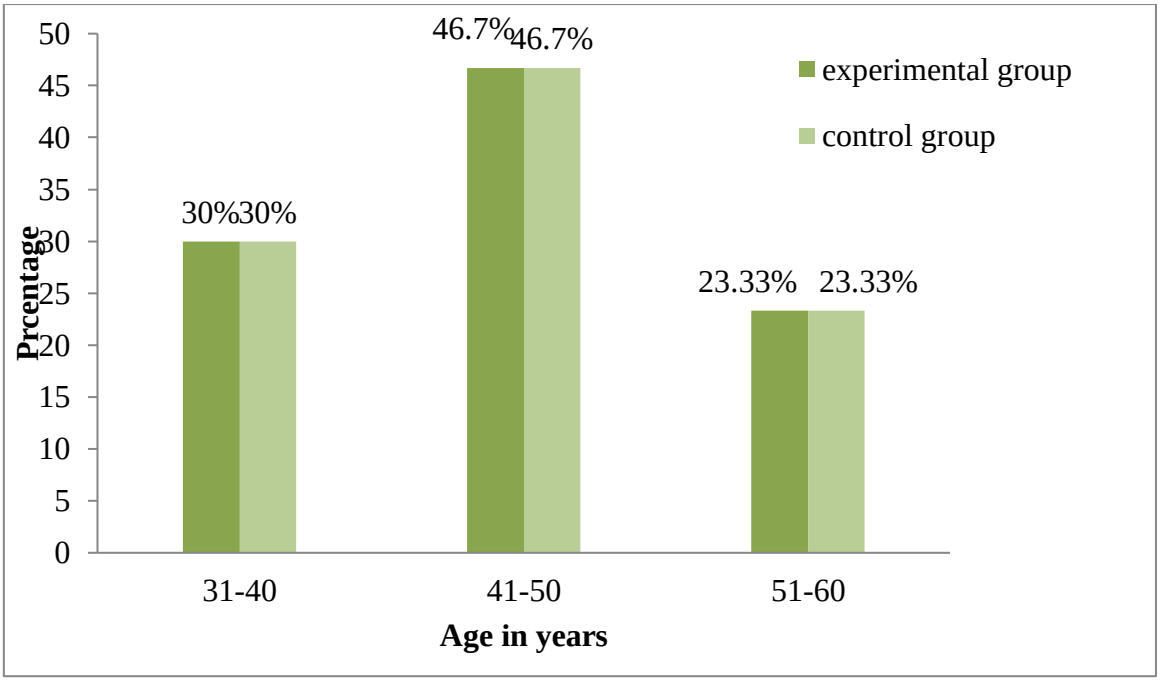


Figure 1 : Percentage distribution of level of low back pain among school teachers according to their age

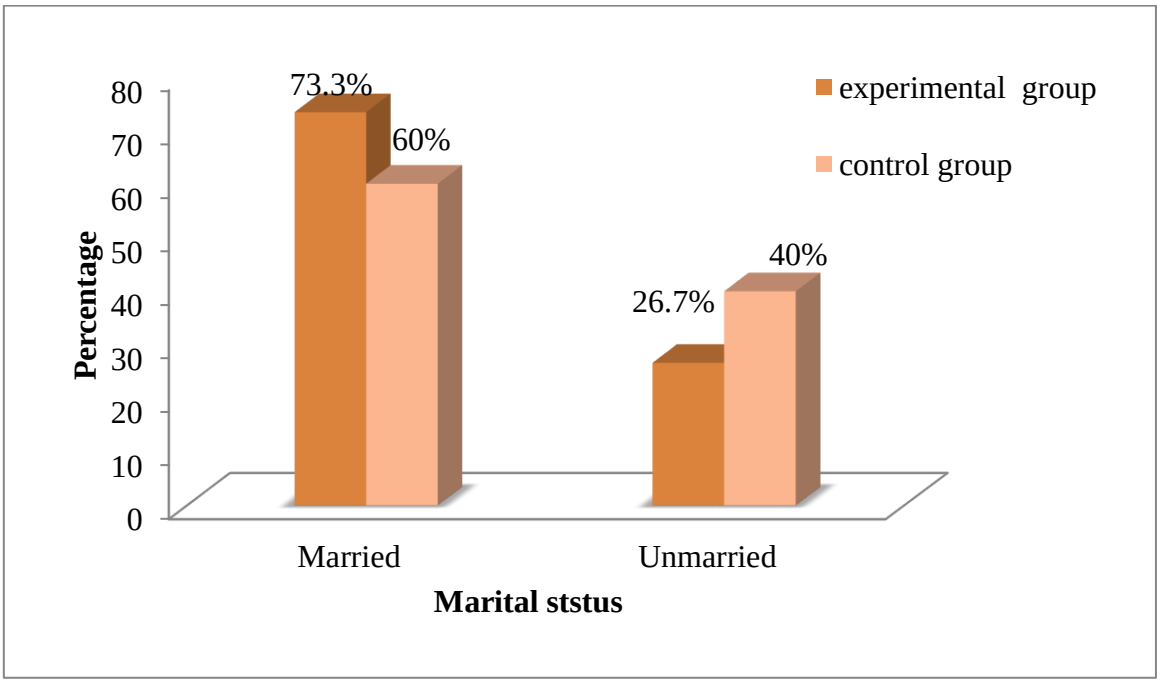


Figure 3: Percentage distribution of level of low back pain among school teachers according to their marital status

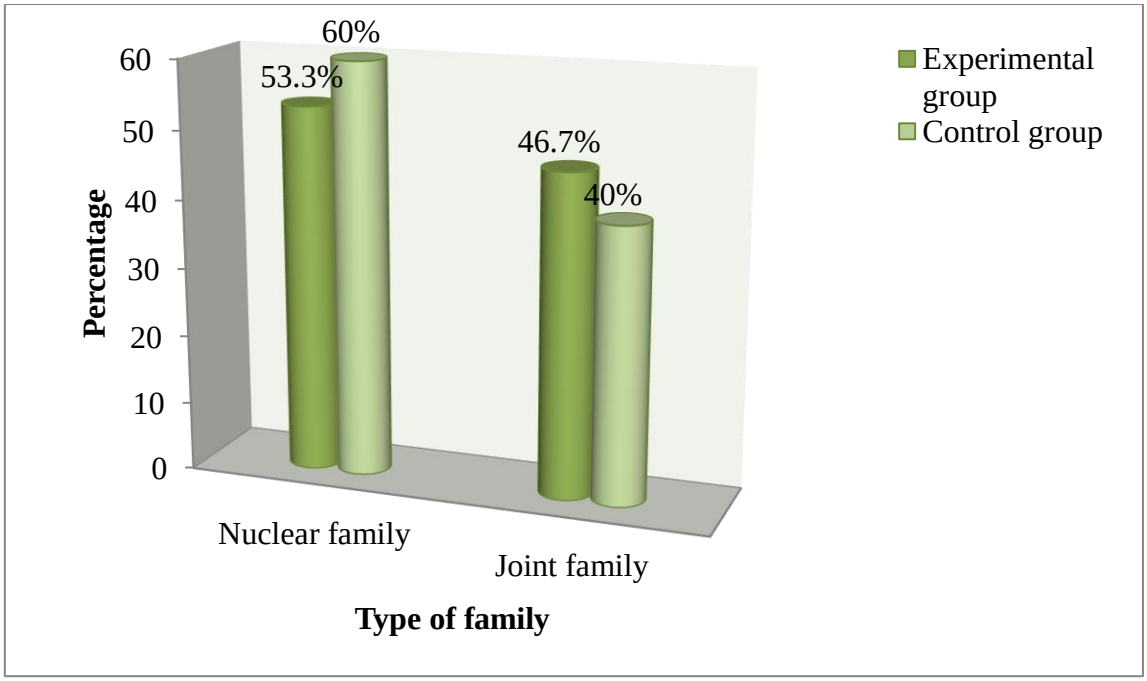


Figure 4 : Percentage distribution of level of low back pain among school teachers according to their type of family

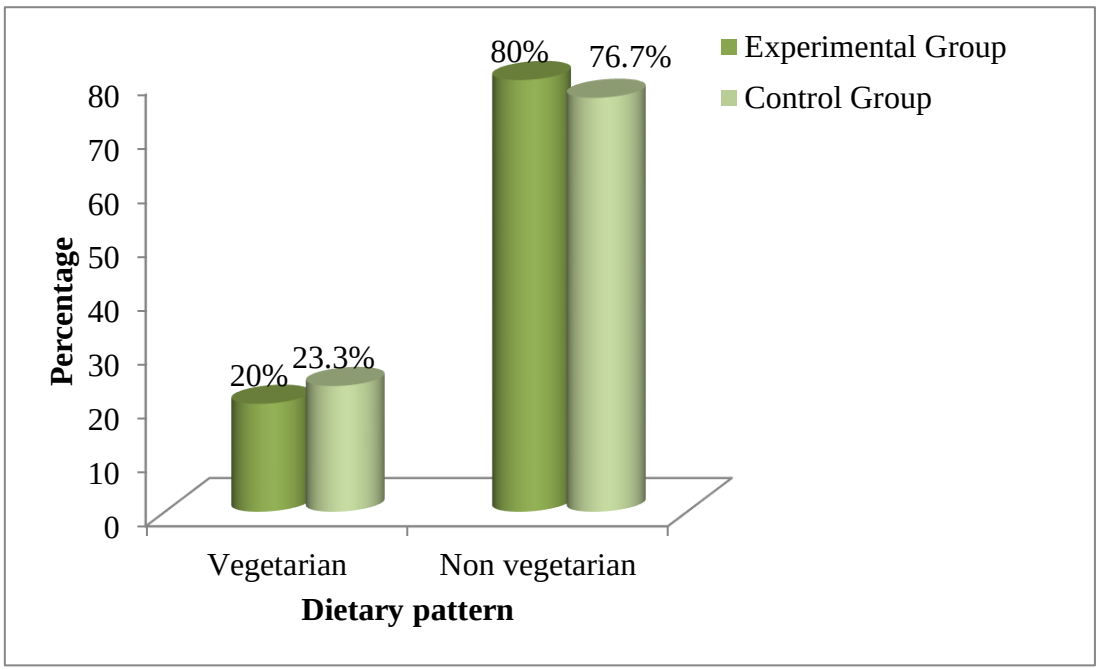


Figure 5 :Percentage distribution of level of low back pain among school teachers according to their dietary pattern

Table -2

Frequency and percentage distribution of the level of low back pain among school teachers according to clinical variables in experimental and control group.

n=60

Clinical variables	Experimental group n=30		Control group n=30	
	f	%	f	%
BMI				
15.5 -18.5	11	36.6	13	43.3
18.5-24.9	14	46.7	12	40
24.9- 30.4	5	16.7	5	16.7
Associated disease				
Pelvic inflammatory disease	8	26.7	9	30
Osteoarthritis	7	23.3	6	20
Kidney disease	7	23.3	7	23.3
Others	8	26.7	8	26.7
Duration of low back pain				
1 - 2 years	10	33.3	9	30
2 – 3 years	14	46.7	12	40
3 – 4 years	3	10	4	13.3
More than 5 years	3	10	5	16.7

Table 2: Predicts that with regarding BMI in experimental group14 (46.7%) of them had 18.5- 24.9 where as in control group 13 (43.3) have the BMI between 15.5 – 18.5

Regarding associated diseases in experimental group majority 8 (26.7 %) of them having pelvic inflammatory disease and other associated diseases. In control group majority 9(30 %) were having pelvic inflammatory disease and 8 (26.7%) were having others associated diseases. Nearly half of them 14 (46.7 %) in experimental group and 12 (40%) in control group have the low back pain for 2 – 3 years.

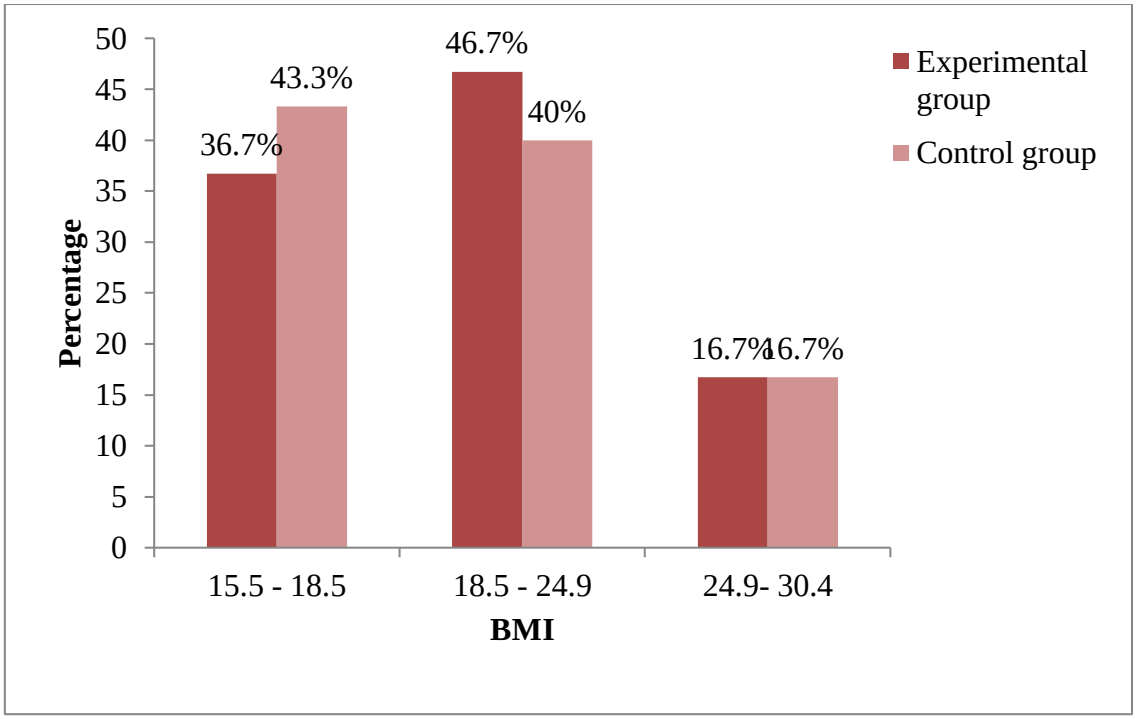


Figure 8 : Percentage distribution of level of low back pain among school teachers according their BMI

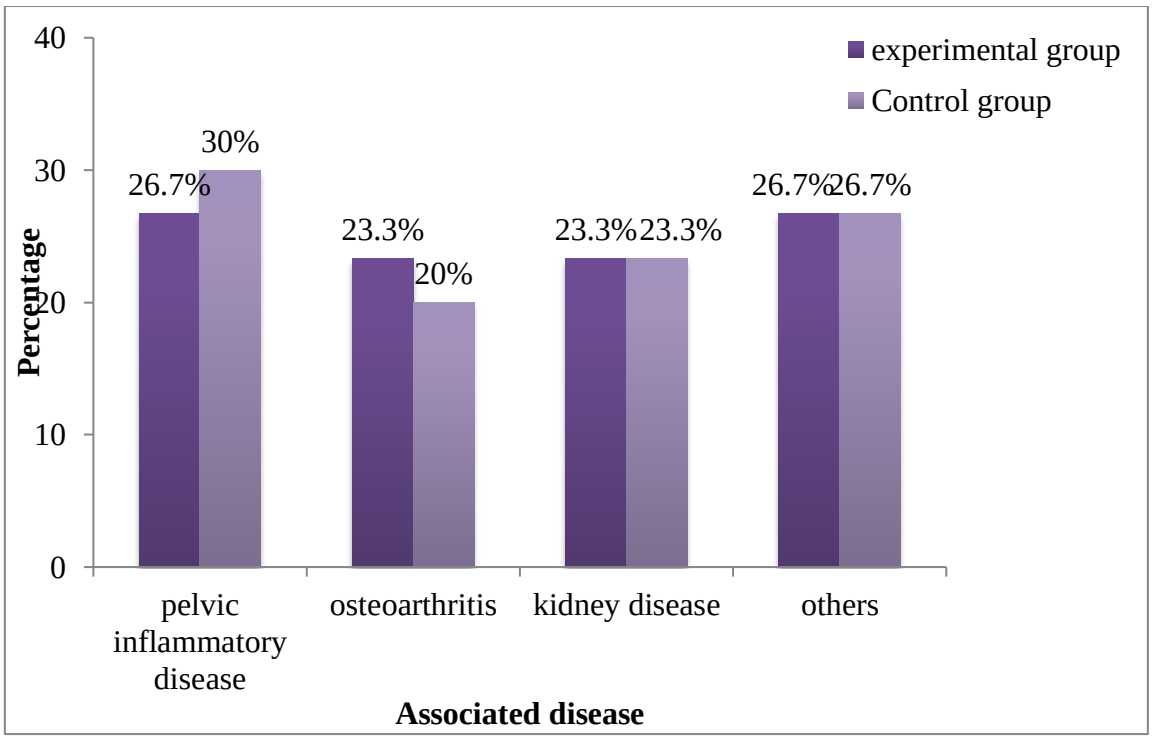


Figure 9: percentage distribution of level of low back pain among school teachers according to their associated disease

Section II

Table - 3

Distribution of pre test and post test level of low back pain score among school teachers in experimental group and control group

N=60

Test	level of low back pain	experimental group		control group	
		f	%	F	%
Pre test	Mild	0	0	0	0
	Moderate	14	46.7	16	53.3
	Sever	16	53.3	14	46.7
Post test	Mild	13	43.3	0	0
	Moderate	17	56.7	16	53.3
	Sever	0	0	14	46.7

Table 3 describes that before the intervention of Mckenzie therapy in experimental group 14 (46.7%) of school teachers had moderate low back pain and 16(53.3%) had sever low back pain. After the Mckenzie therapy ,only 13(43.3%) of school teachers had mild low back pain and 17 (56.7%) school teachers had moderate low back pain and none of them had severe low back pain.

In the control group 16 (53.3%) school teachers had severe low back pain ,14 (46.7%)had moderate low back pain in pre test and there was no change in post test.

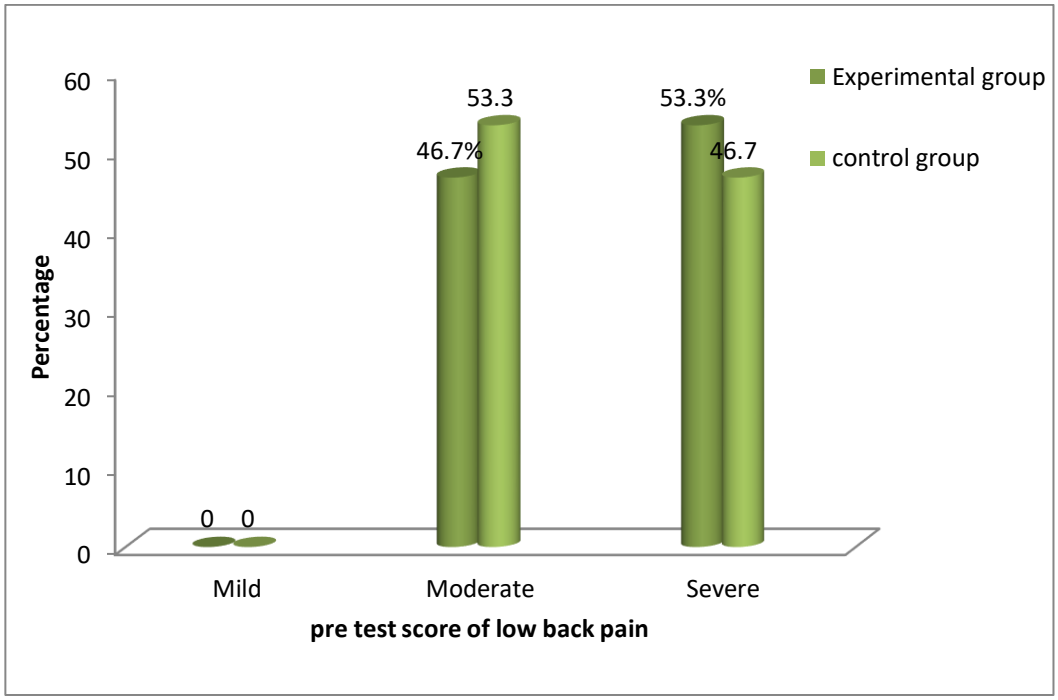


Figure11: percentage distribution of pre test level of low back pain among school teachers in experimental group and control group.

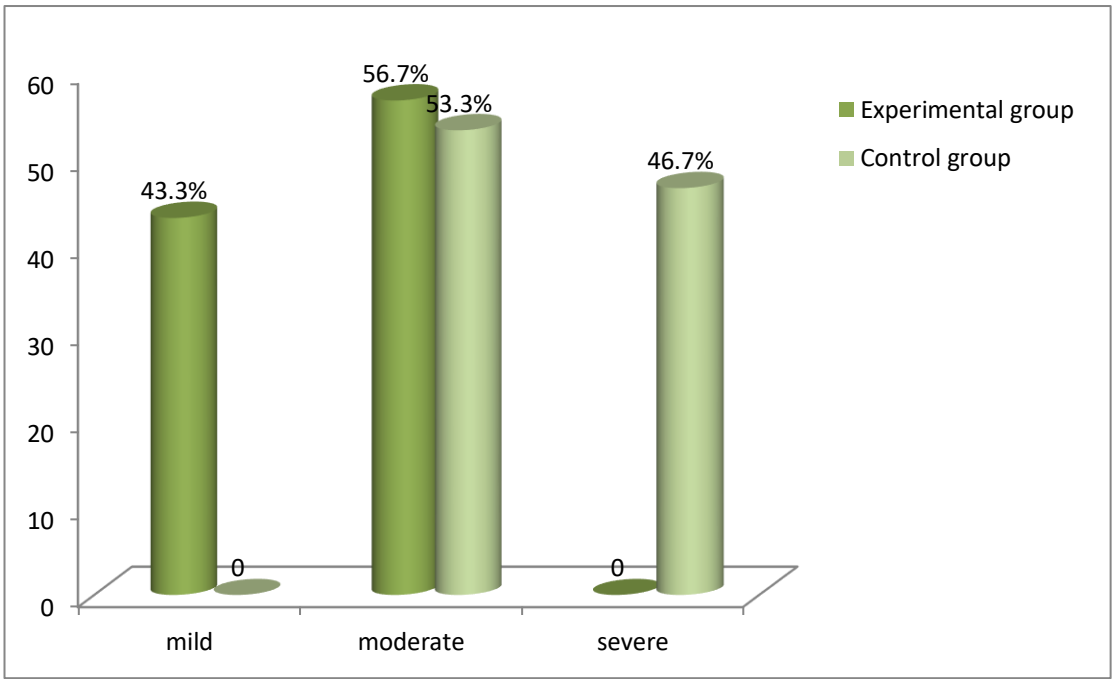


Figure 12 : percentage distribution of post test level of low back pain among school teachers in experimental group and control group.

Section III

Table 4 :

Comparison of pre test and post test level of low back pain score among school teachers in experimental group and control group.

(N= 60)

Groups	Tests	Mean	SD	MD	Paired 't' test	Level of significant
Experimental group	Pre test	29.03	9.6	10.6	15.04	0.001*
	Post test	18.5	9.2			
Control group	Pre test	28.1	10.1	0.4	1.18	0.857#
	Post test	27.7	10.6			

*significant at 0.001 level

not significant

To compare the mean pre test and post test score of low back pain school teachers in experimental and control group, the null hypothesis was stated as follows:

H_{01} - The mean post test level of low back pain will not be significantly lower than the mean pre test level of back pain in experimental group who had low back pain

The hypothesis was tested using paired 't' test method.

The table 4 summarizes that mean post test score in experimental group was 18.5 which was less than the mean pre test low back pain score 29.03 . The obtained paired 't' value is 15.04 was statistically significant at 0.001 level. This indicates the mean difference of 10.6 was true difference and has not occurred by chance.

The above the finding fail to support the null hypothesis . Hence the research reject to null hypothesis and accept the research hypothesis. This proves that due to the effect of Mckenzie therapy. The mean post test low back pain score in school teachers who had low back pain in experimental group had marked reduced.

In pre test low back pain score in control group 28.1 and the post test score is 27.7. The obtained t value 0.4 and statistically not significant at P 0.001 level.

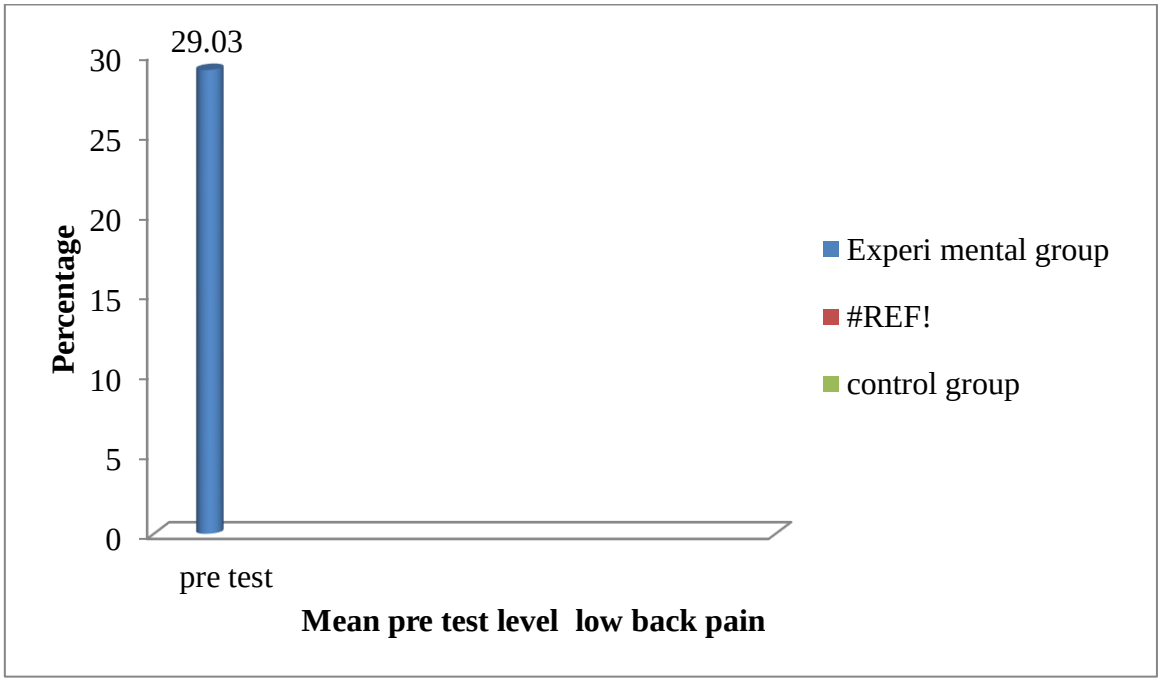


Figure 13 : Percentage distribution of mean pre test score among school teachers in experimental group and control group.

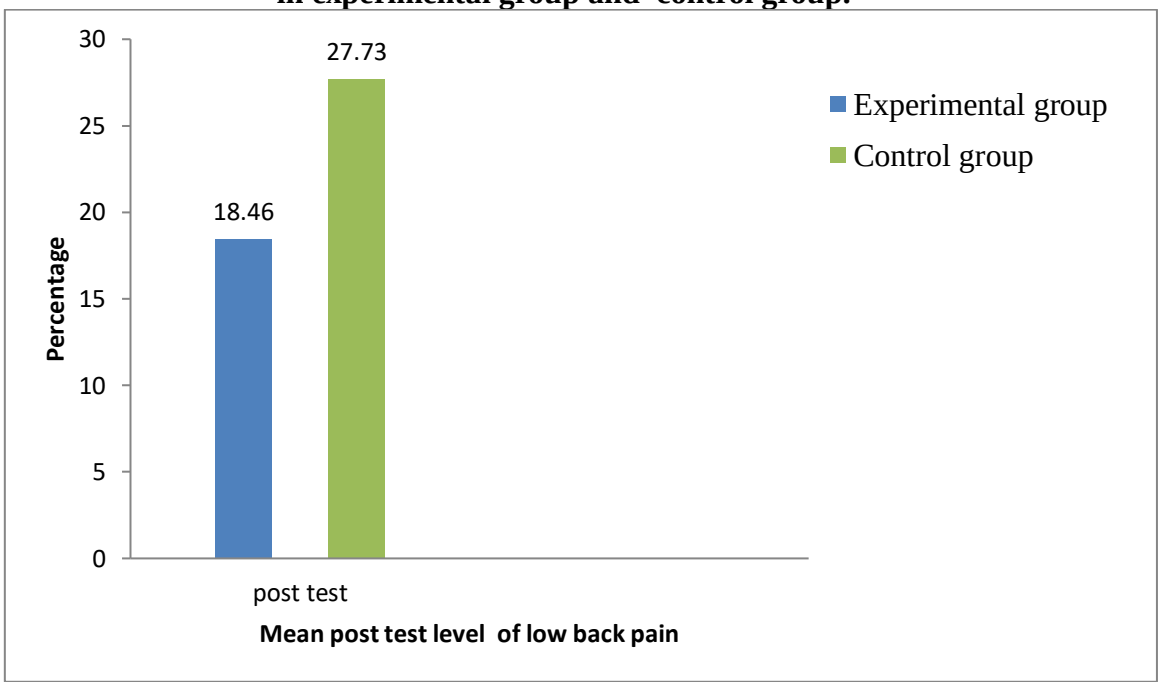


Figure 14: Percentage distribution of mean post test score among school teachers in experimental group and control group.

TABLE 5:

Comparison of post test low back pain score among school teachers in experimental group and control group.

(N =60)

Group	Mean	S D	Mean Difference	'T' Test	Level Of Significance
Experimental group	18.46	9.22	8.26	3.64	0.001*
Control group	27.73	10.58			

*significant at 0.001 level

To compare the mean post test score of low back pain among school teachers in experimental and control group, the null hypothesis was stated as follows:

H_{02} - The mean post test level of low back pain among school teachers in experimental group will not be lower than the mean post test level of back pain in experimental group

The hypothesis was tested using 't' test method.

Table 4 depicts that in the experimental group the mean post test low back pain score 18.46 were lesser than the post test pain score of the control group on 27.73. The obtained ' t' value 3.64 was statistically significant at p >0.001 level . This in dicates the mean difference of 8.26 was true difference and has not occurred by chance. The above findings fail to support the null hypothesis .Hence the researcher rejects the null hypothesis and accepts the research hypothesis

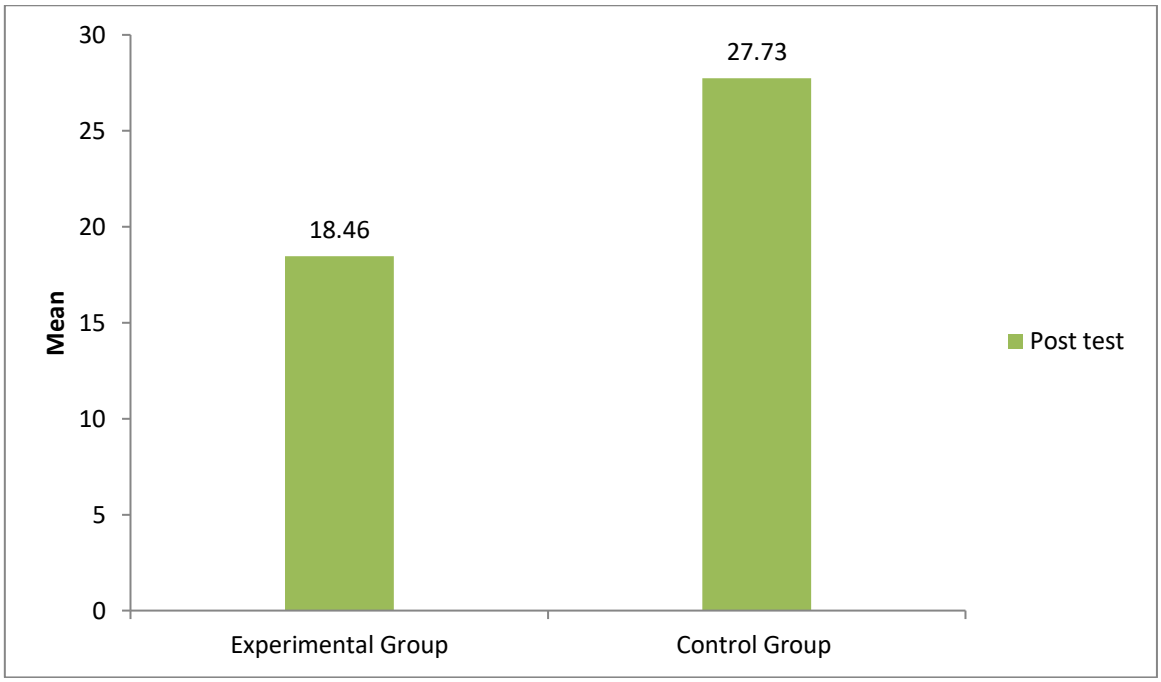


Figure : 15 Comparison of post test level of low back pain score among school teachers in experimental group and control group.

Section -V

Table 6:

Association between the post test level of low back pain among school teachers in experimental; group and control group with their selected demographic variables and clinical variables .

(n=60)

Demographic variables	Experimental group n=30 Level of pain				Control group n=30 Level of pain			
	Mild	Moderate	$\chi 2$	df	Moderate	Severe	$\chi 2$	df
Age in Year								
31-40 years	7	2			8	2		
41-50years	5	9	9.99*	2	7	7	7.38*	2
51-60 years	1	6			1	5		
Education								
B.A, B.SC	4	2			4	1		
B.Sc.B.Ed	6	8	2.07#	2	7	5	2.83#	2
M.Sc, B.Ed	3	7			5	8		
Marital status								
Married	7	15			12	12		1
Unmarried	6	2	4.54*	1	4	2	0.54#	
BMI								
15.5 -18.5	8	3			9	4		
18.5-24.9	4	10	6.25*	2	6	6	3.70#	2
24.9- 30.4	1	4			1	4		
Associated disease								
Pelvic inflammatory disease	2	6			5	4		
Osteoarthritis								
Kidney disease	3	4	2.38#	3	3	3	3.61#	3
Others	3	4			2	5		
	5				6			

(Table 6 continue)

Demographic variables	Experimental group n=30 Level of pain				Control group n=30 Level of pain			
	Mild	Moderate	$\chi 2$	df	Moderate	Severe	$\chi 2$	df
Type of family								
Nuclear family	5	11	0.135#	1	8	10	1.43#	1
Joint family	8	6			8	4		
Dietary pattern								
Vegetarian	4	2			5	2		
Non vegetarian	8	6	1.66#	1	11	12	1.3#	1
Habit of doing exercise								
Mild	3	5			5	3		
Moderate	4	3	1.8#	3	4	3	3.12#	3
Heavy	2	1			3	1		
None	4	8			4	7		
Duration of low back pain								
1 - 2 years	4	6			6	3		
2 – 3 years	8	6			8	4		
3 – 4 years	1	2	3.5#	3	1	3	5.11#	3
More than 5 years	0	3			1	4		
Work experience								
< 5years	6	1			3	6		
5 -10 years	5	7	7.9*		11	2	10.2*	2
> 10 years	2	9		2	2	6		

*significant at <0.05 level
#not significant >0.05 level

To find out if there is any association between post test level of low back pain and their selected demographic variables like age, education, marital status , BMI, associated disease , type of family, dietary pattern , habit of doing exercise, duration of low back pain , work experience, the null hypothesis was stated as follows:

Ho_3 : There will not be significant association between the post test score of low back pain among school teachers and selected demographic variables and clinical variables .

The above table predict that the demographic variable such as age (χ^2 value 9.99 df 2) work experience (χ^2 value 10.2 df 2)which is significant at $p < 0.05$ level where as other demographic variables are not significant at $p < 0.05$ level.

The above the findings partially support the null hypothesis. Therefore the research partially rejects the null hypothesis and accepts the research hypothesis for accepts age and work experience.

CHAPTER V

RESULTS AND DISCUSSIONS

The main aim of the study was to assess the effectiveness of mckenzie therapy on low back pain among school teachers in schools at kanyakumari district. The study was conducted by using quasi experimental pre test post test control group design. The probability sampling technique was used for this study. The total sample size was 60 , among them 30 were in the experimental group and 30 were in the control group. The discussion of the study is based on the finding obtained from the statistical analysis.

Distribution of school teachers who had low back pain according to their demographic variables :

Distribution of sample according age majority of them 14 (46.7%) in the experimental group and control group belong to the age group 41 – 50 years. Interestingly 9 (30%) belong to the age group 31 – 40 years in both the groups .

Regarding education majority 14(46.7%) of them were holding B.Sc,B.Ed degree in experimental group whereas in the control group majority 13(43.3%) of them were holding M..Sc ,B.Ed degree. Marital status shows that 22 (73.3%) of them were married in both the groups. Considering the type of family majority 16 (53.3%) in experimental group and 18 (60%) in control group were from nuclear family .

Dietary pattern shows that majority 24 (80 %) in experimental group and 23(6.7%) of them in control group were non vegetarian .

With regard to work experience majority 12 (40%) in experimental group and 13 (43.33%) of them in control group have5 – 10 years of experience.

Regarding habit of doing exercise in both groups 8 (26.7 %) of them doing mild exercise and 7 (23.3) of them doing moderate exercise only . But 12 (40 %) in experimental group and 11 (36.7 %) in control group do not do any exercise.

Distribution of school teachers who had low back pain according to their clinical variables :

Considering BMI in experimental group14 (46.7%) of them had 18.5- 24.9 where as in control group 13 (43.3) have the BMI between 15.5 – 18.5

Regarding associated diseases in experimental group majority 8 (26.7 %) of them having pelvic inflammatory disease and other associated diseases. In control group majority 9(30 %) were having pelvic inflammatory disease and 8 (26.7%) were having others associated diseases. Nearly half of them 14 (46.7 %) in experimental group and 12 (40%) in control group have the low back pain for 2 – 3 years

The first objective of the study to assess the level of low back pain among school teachers in both experimental and control group

Distribution pre test and post test level of low back pain among school teachers who had low back pain in experimental group

The study predicts that before the intervention of Mckenzie therapy in experimental group 14 (46.7%) of school teachers had moderate low back pain and 16(53.3%) had sever low back pain. After the Mckenzie therapy, only 13(43.3%) of school teachers had mild low back pain and 17 (56.7%) school teachers had moderate low back pain and none of them had severe low back pain. The decreased level of low back pain shows that effectiveness of Mckenzie therapy

The study that there is significant reduction in low back pain. .Alessandra NarcisoGarcia et al., (2014)conducted efficacy of the Mckenzie method in patients with chronic nonspecific low back pain at Brazil **.** The Mckenzie method is widely used as an active intervention in the treatment of patients with non-specific low back pain. McKenzie method is more effective in reducing pain, and is more effective in sub-acute stage, increasing mobility and reducing pain.

Distribution of per test and post test level of low back pain among school teachers the control group

The study shows control group 16 (53.3%) school teachers had severe low back pain, 14 (46.7%)had moderate low back pain in pre test and there was no change in post test.

The second objective of the study was to evaluate the effectiveness of McKenzie therapy on level of low back pain among school teachers in experimental group .

Comparison of mean pre test and post test of level of low back among school teachers in experimental and control group.

The mean post test score in experimental group was 18.5 which was less than the mean pre test low back pain score 29.03. The obtained paired 't' value is 15.04 .The mean difference 10.6 was highly significant at 0.001.

The above the finding fail to support the null hypothesis. Hence the research reject to null hypothesis and accept the research hypothesis. This proves that due to the effect of Mckenzie therapy. The mean post test low back pain score in school teachers who had low back pain in experimental group had marked reduced.

In post test low back pain score in control group 27.7 and the post test score is 28.1. the mean difference 0.4 low and statistically not significant at p0.05. this illustrate the mean difference of low back pain score 0.4 were true difference and has not occurred by chance

The present study was supported by Anetta Cubała1, Jarosław Hoffman (2012) Lumbar spine discopathy is a serious social and economical problem in both our country and around the world. The severity of pain significantly impairs the performance of basic activities such as: dressing, walking ,sitting, sleeping, traveling, social and sexual life that conducted effect of Mckenzie method on the severity and location of pain in patient with lumbo – sacral dicopathy make up the quality of life. McKenzie therapy significantly reduces the severity of pain ailments associated with lumbar discopathy, and also limits their range.

The third objective was find out the association between the post test level of low back pain and their selected demographic variables and clinical variables such as age, education , marital status ,BMI, associated disease , type of family ,dietary pattern , exercise , duration of low back pain , work experience.

The demographic variable such as age (χ^2 value 9.99 df 2) work experience (χ^2 value 10.2 df 2)which is significant at p <0.05 level where as other demographic variables are not significant at p <0.05 level.

The researcher partially rejects the null hypothesis and accepts the research hypothesis for accepts age and work experience

Summay

This chapter dealt with the achievement of objective and testing hypothesis formulated for the study. By using selected intervention strategies on low back pain , it helps to reduce low back pain. So the selected intervention (mckenzie therapy) was effective nursing intervention for low back pain among school teachers**.**

CHAPTER VI

SUMMARY , NURSING IMPLICATION AND RECOMMENDATIONS

This chapter deals with the summary, conclusion , nursing implications, limitations and recommendations for further study.

The study was experimental study to find out the effectiveness of Mckenzie therapy on low back pain on school in selected schools at kanyakumari district.

The following objectives were set for the study :

- To assess the level of low back pain among school teachers in both experimental and control group.
- To evaluate the effectiveness of McKenzie therapy on level of low back pain among school teachers in experimental group.
- To find out the association between the post test level of low back pain among school teachers with their selected demographic variables and clinical variables.

The following Hypothesis were set to the study and tested at p <0.05 level of significance

- H_1: The mean post test score of low back pain will be significantly lower than the mean pre test level of back pain in experimental group who had low back pain .
- H_2: The mean post test score of low back pain among school teachers in experimental group will be lower than the mean post test level of back pain in experimental group.
- H_3: There will be a significant association between the post test score of low back pain among school teachers and their selected demographic variables and clinical variables.

Summary

Mckenzie method exercises are meant to directly diminish or even reduce the low back pain. The Mckenzie method educates school teachers regarding movement and position strategy can reduce low back pain.

The study was conducted in Punitha ArokiyaMatha Matriculation School, at Puthukadai and Infant Jesus Matriculation School at Mamootukadai . The population of the study were those who had low back pain among school teachers who met the inclusion criteria. Purpusive sampling technique was used to select the study participants for this study. The total number of participants were 60 (i.e,) 30 in each group. The data collection tool was Oswestry low back pain scale . The tool was given to the experts for content validity and was validated by five experts . Reliability was tested by test re test method.

Pilot study was conducted on 3 participants to find out the feasibility of conducting the study . In main study , to assess the effectiveness of Mckenzie therapy on low back pain among school teachers pre test was done. After the pre test, selected intervention Mckenzie therapy was given20 minutes, twice a day for 5 days. Post test assessment of low back pain was done by using oswestry low back pain scale. The data were collected and analysed using descriptive and inferential statistics. To test the hypothesis, 't ' test which the level of significant assessed by p at 0.001.The chisquare test was used. The level of significance was assessed by $p<0.05$ to test the hypothesis.

Major findings of the study

Distribution of the school teachers according to the demographic and clinical variables

According age majority of them 14 (46.7%) in the experimental group and control group belong to the age group 41 – 50 years. Interestingly 9 (30%) belong to the age group 31 – 40 years in both the groups .

Regarding education majority 14(46.7%) of them were holding B.Sc,B.Ed degree in experimental group whereas in the control group majority 13(43.3%) of them

were holding M..Sc ,B.Ed degree. Marital status shows that 22 (73.3%) of them were married in both the groups. Considering the type of family majority 16 (53.3%) in experimental group and 18 (60%) in control group were from nuclear family .

Dietary pattern shows that majority 24 (80 %) in experimental group and 23(6.7%) of them in control group were non vegetarian .

With regard to work experience majority 12 (40%) in experimental group and 13 (43.33%) of them in control group have5 – 10 years of experience.

Regarding habit of doing exercise in both groups 8 (26.7 %) of them doing mild exercise and 7 (23.3) of them doing moderate exercise only . But 12 (40 %) in experimental group and 11 (36.7 %) in control group do not do any exercise.

Considering BMI in experimental group14 (46.7%) of them had 18.5- 24.9 where as in control group 13 (43.3) have the BMI between 15.5 – 18.5

Regarding associated diseases in experimental group majority 8 (26.7 %) of them having pelvic inflammatory disease and other associated diseases. In control group majority 9(30 %) were having pelvic inflammatory disease and 8 (26.7%) were having others associated diseases. Nearly half of them 14 (46.7 %) in experimental group and 12 (40%) in control group have the low back pain for 2 – 3 years.

Distribution of pre test and post test level of low back pain among school teachers in experimental group

The study revealed that before the intervention of Mckenzie therapy in experimental group 14 (46.7%) of school teachers had moderate low back pain and 16(53.3%) had sever low back pain. After the Mckenzie therapy ,only 13(43.3%) of school teachers had mild low back pain and 17 (56.7%) school teachers had moderate low back pain and none of them had severe low back pain. The decreased level of low back pain shows that effectiveness of Mckenzie therapy.

Comparison of post test low back pain among school teachers in experimental group and control group

The compare that the experimental group the mean post test low back pain score 18.46 were lesser than the post test pain score of the control group on 27.73. The obtained ‘ t’ value 3.64 was statistically significant at p >0.001 level . This in dicates the mean difference of 8.26 was true difference and has not occurred by chance. The above findings fail to support the null hypothesis .Hence the researcher rejects the null hypothesis and accepts the research hypothesis

Association between the post test low back pain score and their demographic and clinical variables

The demographic variable such as age (χ^2 value 9.99 df 2) work experience (χ^2 value 10.2 df 2)which is significant at p <0.05 level where as other demographic variables are not significant at p <0.05 level.

The above the findings partially support the null hypothesis. Therefore the research partially rejects the null hypothesis and accepts the research hypothesis for accepts age and work experience.

Conclusion

The following conclusion were drawn from the study

1. The low back pain among school teachers in experimental group was significantly reduced after Mckenzie therapy.
2. The study proved that Mckenzie therapy was very effective in reducing the low back pain.
3. Low back pain score among schoolteachers in control group was no changes in post test .
4. There was association between pain score and selected demographic variables among school teachers.

Nursing implications

The researcher has derived the following implications from the study result. Low back pain is one of the most disturbing symptoms in all aged group. Now a days, so many conventional management modalities are available. Use of NSAIDS, drugs and surgeries can lead to many side effects. All these modalities provide only some short term relief. Repeated hospital stay, side effects of drugs and disturbance of day today activities all can affect the psychological status people of patients adversely. This often requires a nursing intervention which has no side effects.

Nursing practice

- The study helps to assess the nurses knowledge regarding complementary and alternative therapies.
- The result of the study encourages the nurse to conduct in service education programs on various types of exercises in reducing low back pain.
- Nurse can prepare the protocol regarding each exercise sessions in Mckenzie therapy.
- Helps the nurse to develop and provide an effective non pharmacological measure for relieving low back pain.
- Nurse can create awareness that Mckenzie therapy is a very good cost – effective nursing intervention to relieve low back pain.

Nursing education

- Nurse educator can train and encourage the student nurses to implement Mckenzie therapy as a complementary and alternative therapy.
- The study can motivate student nurses to explore new strategies for
- effective relief of low back pain.
- The research report can be kept in library for reference of nursing personnel and other health care professionals.
- The nurse educator can take independent decision based on principle of healthcare.
- The nursing curriculum can update with the inclusion of Mckenzie therapy on complementary therapies which can be more relevant to obstetrics in the curriculum of under graduate.

Nursing administration

- The study helps the nurse administrator to assess the knowledge of nurses regarding complementary and alternative therapies.
- The result of the study encourages the nurse administrator to conduct in service education programs on various types of Mckenzie therapy in reducing low back pain
- Nurse administrator can prepare the protocol regarding each Mckenzie therapy sessions .
- This helps the nurse administrator to develop and provide an effective non pharmacological measure for relieving low back pain.
- Nurse administrators can create awareness among nurses that Mckenzie therapy is a very good cost – effective nursing intervention to relieve low back pain.
- This study is cheap, raises the reputation and popularity of the hospital and patient satisfaction.

Nursing research

- A comparative study can be done to determine the effectiveness of Mckenzie therapy with other conventional therapies.
- Strengthens nursing research pertaining in clinical nursing.
- Nurse researcher can do studies related to other beneficial effects of Mckenzie therapy .

Limitations

- The study participants size was 60 hence generalization is not possible for the large population.
- The data collection period was only one month
- This study was conducted among samples only from two schools

Recommendation

- A similar study can be conducted in large setting.
- A similar study can be conducted to assess the effectiveness of Mckenzie therapy on low back pain among nurses .
- A similar study can be replicated to other schools.

REFERENCES

Books reference

Ann MarrinerTomy ,(2006).Nursing Theorists And Their Work .Missouri: Mosby Publication.

Basavanthappa, B.T., (2007). Nursing Research. : New Delhi :Jaypee Brothers Medical Publishers (P) Ltd.

K. Sembuligam , PremaSembulingam, (2012) Essentials of Medical Physiology : Jeypee Brothers Medical Publishers ,New Delhi.

Bare,G.Brender, (2005).Brunner and Suddarths Text book of medical Surgical Nursing, Philadelphia :Lippincot publication

Christensen.,Kockrow., (2006). Adult Health Nursing. (5th ed.) Missourie: Mosby Elsevier.

David, J .Dandy.,Dennis,J.Edwards.,(1998). Essential Orthopaedics and Trauma. (3rd ed.) New York: Churchchill Livingstone Publishers.

Denise, F. Polit., Bernadette, P. Hungler., (1997). Essentials of Nursing Research, Methods, Appraisal and Utilisation. (4th ed.) Philadelphia: Lippincott. 149

Donna, D. Ignatavicius., Linda Workman. M., (1995). Medical Surgical Nursing a Nursing Process Approach. (2nd ed.) Philadelphia: W.B. Saunder's Company. 2052-2066

Francis Donovan Monahan., (2009). Phipp's Medical Surgical Nursing Health and Illness Perspectives, (8th ed.) Missourie: Mosby.

Frank, C. Wilson., Dauglas, R. Dirschl.,(2001). Self assessment and Review Orthopaedics. (1st ed.) San Francisco :McGraw – Hill Publishers.

George, B.J., (1990). Nursing Theories, The Base For Professional Nursing Practice. (4th ed.) New Jersy: Appleton AndLonge.

Geri Lobiando Wood., Judith Haber., (2006). Nursing Research, Methods and Critical Appraisal For Evidenced Base Practice. (6th ed.) St.Louis: Mosby Elsevier Publications.

James, A. Fain., (1999). Reading, Applying And Understanding Nursing Research. (2nd ed.) Phladelphia: F. A Davis Company. 87

Laura, A. Talbot., (1995). Principles and Practice of Nursing Research. (1st Ed.) St Louis: Mosby.

Leonine, Burke., (2000). Medical and Surgical Nursing, Critical Thinking in Client Care. (2nd ed.) Boston: Pearson Custom Publishing.

Lynn, S. Lippert.(2000) . Clinical Kinesiology for Physical Therapist Assistants. (3rd ed.) New Delhi : Medical publishers. 101

Mahajan, B. K., (2010). Methods in Biostatistics for Medical Students and Research Workers. (7th ed.) USA: Jaypee Brothers and Medical Publishers.

Marilynn, J. Wood., (20011). Basic Steps in Planning Nursing Research. (1st ed.) Massachusetts: Jones And Bartlett Publishers. 247

Midre,A. Mason., Grace Fleet Bates., (1992). Basic Medical Surgical Nursing. (5th ed.) New York: McGraw Hill Jn, Health Professions Division.

Prabhakara, G. N., (2006). Biostatistics. (1st ed.) New Delhi: Jaypee Brothers Medical Publishers.

Rose Marie Nieswiadomy., (1993). Foundations of Nursing Research. (2nd ed.) Norwalk: Appleton Longe.

Sandy Fritz., (1999). Mosby's basic Science for soft tissues and

Movement therapies. (3rd ed.) Philadelphia. 291-292 Sharon Mantik Lewis., (1996). Medical Surgical Nursing- Assessment and Management of Clinical Problems. (4th ed.) St Louis: Mosby.

Spring House., (1998). Mastering Medical Surgical Nursing. (1st ed.) Pennsylvania: Spring House Corporation.

Suresh Sharma, K., (2011). Nursing Research and Statistics. (I ed.) New Delhi: Elseveir.

Electronic version

Olivier T. Lam (2018) ,Journal of Orthopaedic and Sports Physical Therapy , Effectiveness of the McKenzie Method of Mechanical Diagnosis and Therapy for Treating Low Back Pain., Volume 48(6) . Retrieved from : https://www.jospt.org/doi/abs/10.2519/jospt.2018.7562

Alessandra Narciso Garcia, et. al (2014) Efficacy of the McKenzie Method in Patients With Chronic Nonspecific Low Back Pain: A Protocol of Randomized Placebo-Controlled Trial Physical therapy, 95 (2), 267–273. Retrieved from : www.bv.fapesp.br/en/pesquisador/92826/alessandra-narciso-garcia/

Helen A Clare, (2004) A systematic review of efficacy of McKenzie therapy for spinal pain, journal of physiotherapy , 50(4), 209–216. Retrieved from : www.mckenzieinstitute.org/about-us/governance-and-management/helen-clare

RK Arya, (2014) Low back pain – Signs, symptoms, and management , Indian Academy of Clinical Medicine, 15(1), 30-41. . Retrieved from : medind.nic.in/jac/t14/i1/jact14i1p30.pdf

Mohammad A. Mohseni Bandpei et al ,(2014) ,Occupational Low Back Pain in Primary and High School Teachers: Prevalence and Associated Factors, journal of manipulation and physiological therapeutics,37 (9), 702–708 Retrieved from : chiro.org/.../2014/11/occupational-low-back-pain-in-primary-and-high-school-teache.

Alia Alghwiri **,**Gregory Marchetti **, (2016)** Occupational back pain among schoolteachers in Jordan: estimated prevalence and factors associated with self-reported pain and work limitations, International Journal of Occupational Safety and Ergonomics, 24 (3) 341-346 . Retrieved from : https://www.ncbi.nlm.nih.gov/pubmed/27753293

Teresa Kisi Beyen (2013) Low Back Pain and Associated Factors among Teachers in Gondar Town, North Gondar, Amhara Region, Ethiopia, Occupational Medicine & Health Affairs,30(6) ,219 -224. Retrieved from : https://www.omicsonline.org/.../low-back-pain-and-associated-factors-among-teachers

Hafsa Zahid ,et ,al (2017) Frequency Of Low Back Pain Among School Teachers Of Lahore, International Journal of Scientific & Engineering Research, 8(12) ,1776 – 1786. Retrieved from : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4724747/

Nurul Izzah Abdul Samad et al, (2010) Prevalence of Low Back Pain and its Risk Factors among School Teachers ,American Journal of Applied Sciences 7 (5): 634-639 Retrieved from : https://www.researchgate.net/.../46168568_Prevalence_of_Low_Back_Pain_and_its

Liping Li et al, Work-related Musculoskeletal disorders among school teachers in China, prevalence and occupational factors, British Medical journal,18 (1) Retrieved from : https://www.researchgate.net/.../46168568_Prevalence_of_Low_Back_Pain_and_its

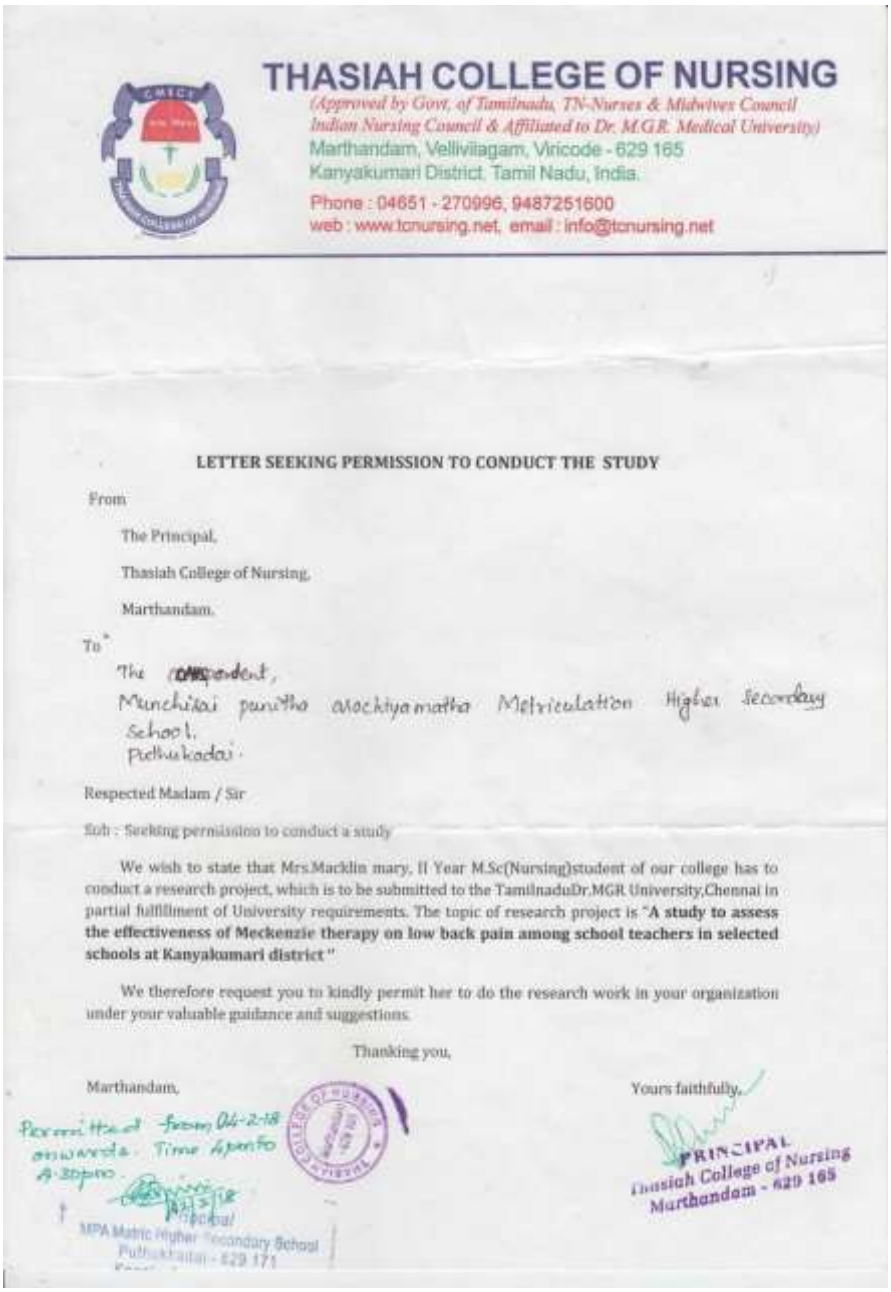
Burdorf, A. & Jansen, J. P. (2006). Predicting the Long Term Course of Low Back Pain and Its Consequences for Sickness Absence and Associated Work Disability. Occupational and Environmental Medicine, *63*(8), 522–529 Retrieved from : https://www.ncbi.nlm.nih.gov/pubmed/16849528

Saima Aziz (2016) effectiveness of mckenzie exercise in reducing back pain , International journal of physiotherapy, 3 (1), 7885-8336 Retrieved from : https://www.ijphy.org/view.issue.php

Ted Dreisinger.,(2004). Mckenzie Therapy for Mechanical Low Back Pain, Journal of physiotherapy, 4(1),41-43. Retrieved from : https://www.spine-health.com/author/thomas-e-ted-dreisinger-phd

ANNEXURE – 1

LETTER GRANTING PERMISSION TO CONDUCT STUDY IN PUNITHA AROCKIA MATHA MATRICULATION HIGHER SECONDARY SCHOOL



THASIAH COLLEGE OF NURSING

(Approved by Govt. of Tamilnadu, TN-Nurses & Midwives Council
Indian Nursing Council & Affiliated to Dr. M.G.R. Medical University)
Marthandam, Vellivilagam, Vricode - 629 165
Kanyakumari District, Tamil Nadu, India.
Phone : 04651 - 270996, 9487251600
web : www.tcnursing.net, email : info@tcnursing.net

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From

The Principal,

Thasiah College of Nursing,

Marthandam.

To

The Superintendent,
Munchirai punitha arockiya matha Matriculation Higher Secondary School.
Puthukadai.

Respected Madam / Sir

Sub : Seeking permission to conduct a study

We wish to state that Mrs.Macklin mary, II Year M.Sc(Nursing)student of our college has to conduct a research project, which is to be submitted to the TamilnaduDr.MGR University,Chennai in partial fulfillment of University requirements. The topic of research project is "**A study to assess the effectiveness of Meckenzie therapy on low back pain among school teachers in selected schools at Kanyakumari district**"

We therefore request you to kindly permit her to do the research work in your organization under your valuable guidance and suggestions.

Thanking you,

Marthandam,

Yours faithfully,

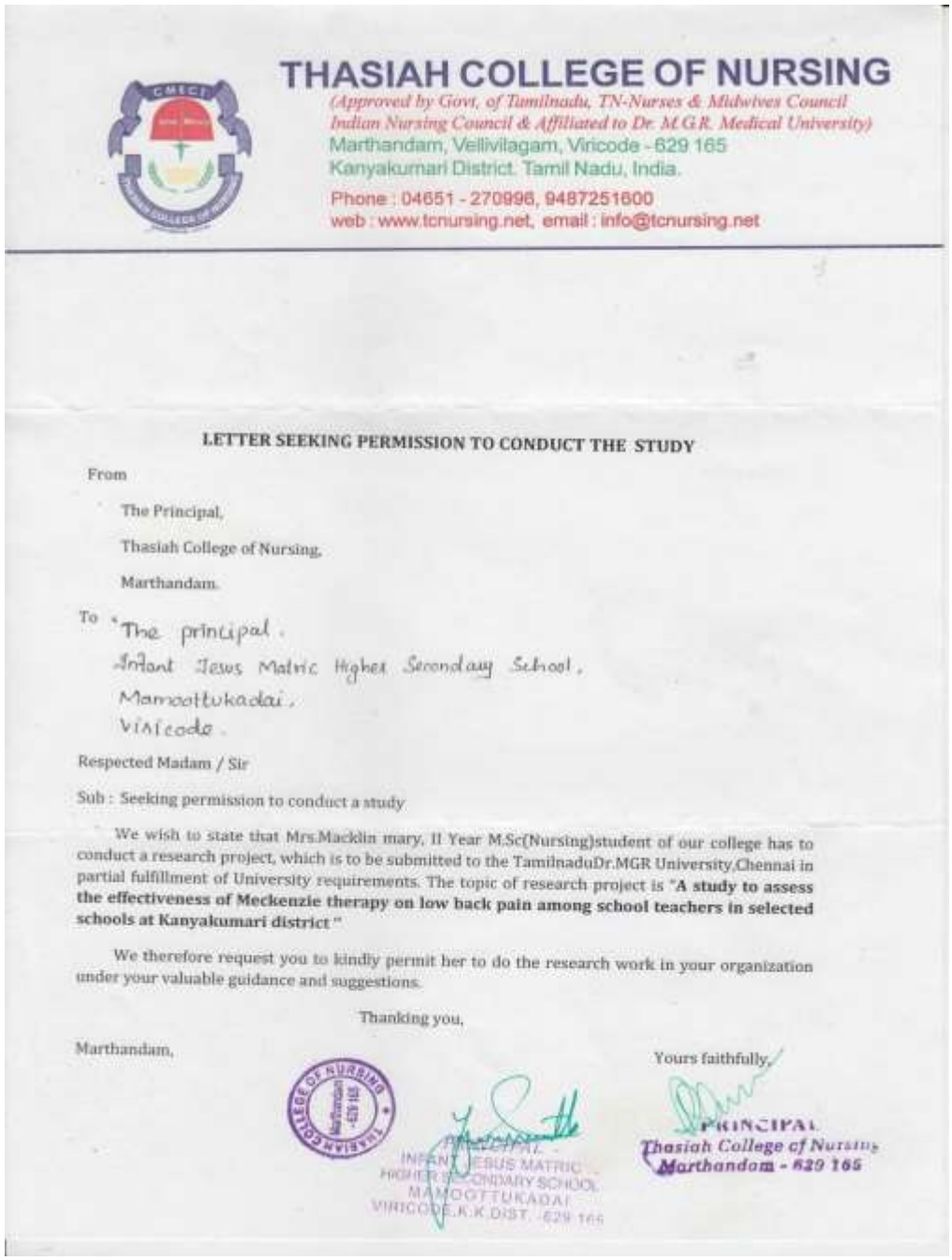
Permitted from 04-2-18 onwards. Time 4pm to 4.30pm

Principal
MPA Matric Higher Secondary School
Puthukadai - 629 171

PRINCIPAL
Thasiah College of Nursing
Marthandam - 629 165

ANNEXURE – 2

LETTER FOR GRANTING TO PERMISSION CONDUCT STUDY IN INFANT JESUS MATRICULATION SCHOOL, MAMOOTUKADAI



THASIAH COLLEGE OF NURSING

(Approved by Govt. of Tamilnadu, TN-Nurses & Midwives Council Indian Nursing Council & Affiliated to Dr. M.G.R. Medical University)

Marthandam, Vellivilagam, Viricode - 629 165
Kanyakumari District. Tamil Nadu, India.
Phone : 04651 - 270996, 9487251600
web : www.tcnursing.net, email : info@tcnursing.net

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From

The Principal,

Thasiah College of Nursing,

Marthandam.

To

The principal.
Infant Jesus Matric Higher Secondary School,
Mamoottukadai.
Viricode.

Respected Madam / Sir

Sub : Seeking permission to conduct a study

We wish to state that Mrs.Macklin mary, II Year M.Sc(Nursing)student of our college has to conduct a research project, which is to be submitted to the TamilnaduDr.MGR University,Chennai in partial fulfillment of University requirements. The topic of research project is **"A study to assess the effectiveness of Meckenzie therapy on low back pain among school teachers in selected schools at Kanyakumari district "**

We therefore request you to kindly permit her to do the research work in your organization under your valuable guidance and suggestions.

Thanking you,

Marthandam,

Yours faithfully,

PRINCIPAL
Thasiah College of Nursing
Marthandam - 629 165

PRINCIPAL
INFANT JESUS MATRIC
HIGHER SECONDARY SCHOOL
MAMOOTTUKADAI
VIRICODE,K.K.DIST. 629 165

ANNEXURE – 3

CERTIFICATE FOR PROJECT COMPLITION

✆ :04651- 234844
MUNCHIRAI PUNITHA AROCKIYA MATHA MATRIC.
HIGHER SECONDARY SCHOOL
Reg. No.27- M- 0040 - 0520
PUTHUKKADAI - 629 171 KANYAKUMARI DISTRICT.

Ref. No.....

Date : 03-08-2018

PROJECT COMPLETION CERTIFICATE

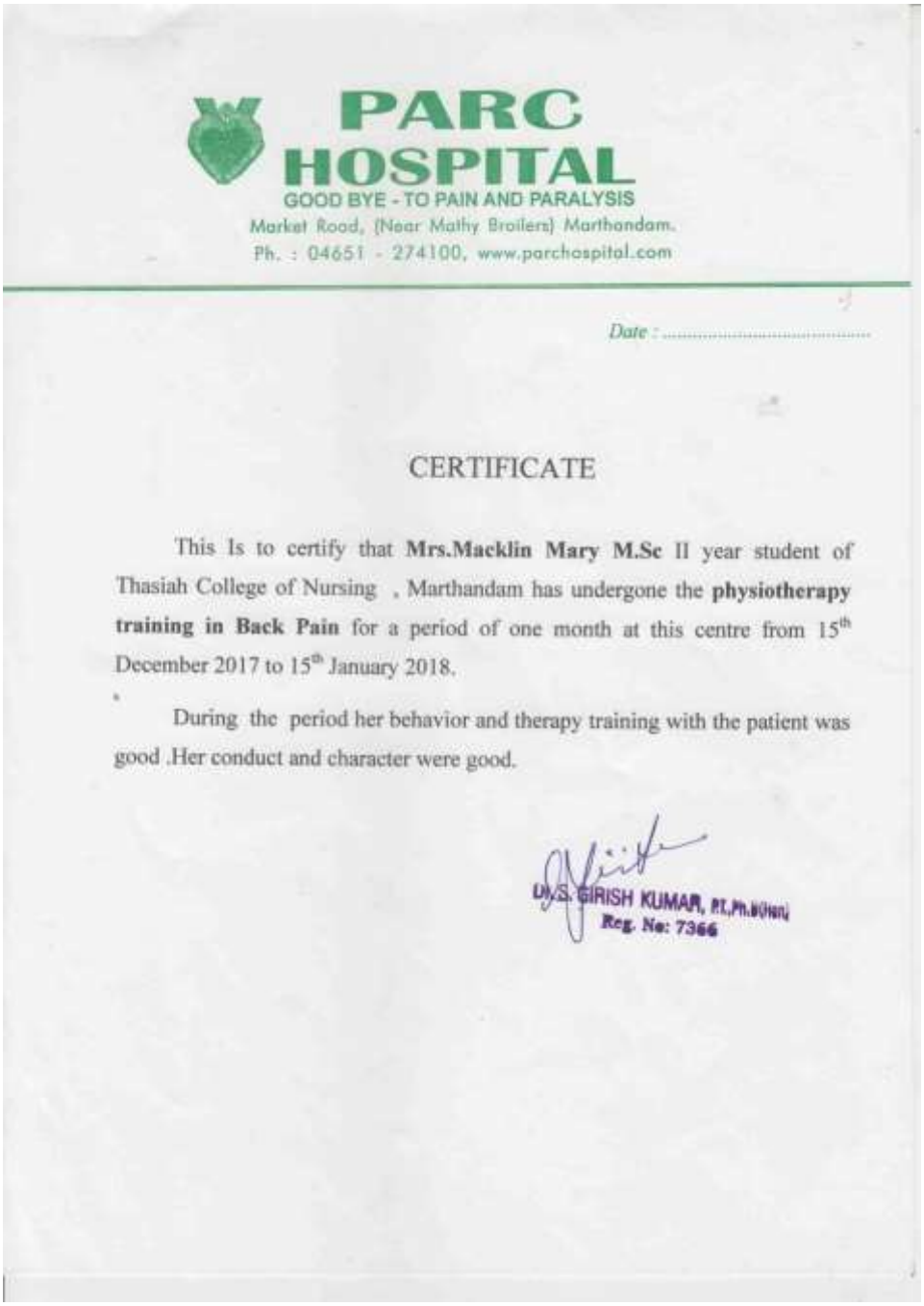
This is to certify that Mrs. S. Macklin Mary M.Sc. (N) Student of Thasiah College of Nursing Marthandam, Kanyakumari Disctict has successfully completed the data collection in our school, for the project work on **A study to evaluate the effectiveness of mckenzie therapy on low back pain among school teachers in selected schools at Kanyakumari District.**

3/8/18

P. RAJENDRA BABU, M.A.,M.Ed.,
PRINCIPAL
M.P.A MATRIC H.S.S.
Puthukkadai - 629 171
Kanyakumari District.

ANNEXURE-IV

CERTIFICATE OF TRAINING IN MCKENZIE THERAPY



PARC HOSPITAL
GOOD BYE - TO PAIN AND PARALYSIS
Market Road, (Near Mathy Broilers) Marthandam.
Ph. : 04651 - 274100, www.parchospital.com

Date : .....

CERTIFICATE

This Is to certify that **Mrs.Macklin Mary M.Sc** II year student of Thasiah College of Nursing , Marthandam has undergone the **physiotherapy training in Back Pain** for a period of one month at this centre from 15th December 2017 to 15th January 2018.

During the period her behavior and therapy training with the patient was good .Her conduct and character were good.

Dr.S. GIRISH KUMAR, M.P.Th.(Ortho)
Reg. No: 7366

ANNEXURE – 5

LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From

W. S.Macklin Mary

M.sc. Nursing II year,

Thasish college of Nursing

Marthandam

Respected sir/ Madam

Sub: Requisition to expect opinion and suggestion for content validity

I am S. Macklin Mary, M.Sc. Nursing II year, Thasiah College of Nursing, Marthandam, have selected the following topic, " **A study to assess the effectiveness of Mckenzie therapy on low back pain among school teachers in selected school at Kanya kumari district"** for my dissertation to be submitted to Tamilnadu Dr. M.G.R. Medical University in the partial fulfillment of the requirement for award of Master of science in Nursing.

I request you to go through the items and give your valuable suggestion and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions if any in the remarks column.

Thanking You,

Place: Marthandam Yours Sincerely,

Date: - S.Macklin Mary

ENCLOSURE:

1. Problem statement, objectives, and hypothesis of the study.
2. Demographic profile.
3. Oswetry low back pain scale.
4. Evaluation Performance.

ANNEXURE – 6

EVALUATION CRITERIA CHECK LIST FOR VALIDATION

INTRODUCTION:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly place tick mark in the appropriate column and given remarks.

Interpretation of Column:

Column I : Meets the criteria.

Column II : Partially meets the criteria.

Column III : Does not meet the criteria.

S.No	Criteria	1	2	3	Remarks
1`	Scoring – Adequacy – Clarity – Simplicity				
2	Content – Logical Sequence – Adequacy – Relevance				
3	Language – Appropriate – Clarity – Simplicity				
4	Practicability – It is easy to Score – Does it pres – Utility				

Signature Any other Suggestion

Name Designation

Address

ANNEXURE – 7

LIST OF EXPERTS

Mrs.D. Neslin Suji, M.Sc(Nsg)

Reader in Nursing,

C S I College Of Nursing,

Marthandam.

Mrs.Brightrick jolio, M.Sc (Nsg)

Assistant Professor in Nursing,

White Memorial College of Nursing,

Attoor.

Dr. Dante Ruskin,M.D(Gen.Med)

Consultant Physician,

P.P.K.Hospital,

Marthandam.

Dr. P. Chendra Sekhar, MBBS,Dip.in Ortho,

Rama Krishna Hospital,

Marthandam.

Dr .Grish MPT,

Park physiotherapy,

Marthandam.

ANNEXURE – 8

Informed consent for project

Informed Consent for Project

Name: …… Age…….Sex……..

I hereby give informed consent to answer the questionnaire for evaluating the effectiveness of……

I have been informed about the Mckenzie therapy that Mrs.S,Macklin Mary going to teach to me and I know by doing these are no side effects. I, hereby willingly give my consent to participate in this project. I am also aware that, I can refuse to participate and that will not affect my treatment in any way.

Signature of the patient Date/Time

ANNEXURE – 9

செயல்முறைகளுக்கான ஒப்புதல் படிவம்

பெயர் : ..... வயது..... பாலினம் .....

நான் ..... மெக்கன்சி தெரபி பற்றிய கேள்விகளுக்கு பதில் அளிக்க சம்மதிக்கிறேன்.

எனக்கு இந்த செயல் முறை பற்றி **திருமதி. மேக்ளின் மேரி** கற்றுத்தரபோகிறார். என்றும் இந்த செயல் முறை செய்வதால் எந்தவித பின்விளைவுகளும் இல்லை என்பதையும் நன்கு அறிவேன். எனவே நான் முழு மனதுடன் இந்த செயல் முறைக்கு என் விருப்பத்துடன் சம்மதத்தை தெரிவிக்கிறேன். எனக்கு இந்த செயல் முறை வேண்டாம் என்றால் அதை நான் மறுக்கவும் என்னால் முடியும் என்பதையும் இது எந்தவகையிலும் என்னுடைய சிகிட்சையைபாதிக்காது என்பதையும் நான் அறிந்துள்ளேன்.

நோயாளியின் கையொப்பம் தேதி.:.நேரம்

ANNEXURE – 10

CERTIFICATE FOR ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the tool developed by Mrs. Macklin Mary .S., II Year M.Sc., Nursing students of Thasiah College of Nursing, Marthandam for dissertation "A study to evaluate the effectiveness of Mckenzie Therapy on low back pain among school teachers in selected schools at Kanyakumari District", is edited for English language and its appropriateness.

Signature

ANNEXURE – 11

TOOL FOR DATA COLLECTION

SECTION A -DEMOGRAPHIC VARIABLES

1)Age in year

a) 31 - 40 years
b) 41- 50 years
c) 51 – 58 years

2)Education

a) B.A, B.Sc
b) B.Sc ,B.Ed
c) M.Sc , B.Ed

3)Marital status

a) Married
b) Unmarried

4)Type of family

a) Nuclear family
b) Joint family

5)Dietary pattern

a) Vegetarian
b) Non vegetarian

6)Habit of doing exercise

a) Mild
b) Moderate
c) Heavy
d) None

7) Work experience

a) < 5years
b) 5 -10 years
c) 10 years

Section B -Clinical Variables

8) BMI

a) 15.5 -18.5
b) 8.5-24.9
c) 24.9- 30.4

9) Associated disease

a) Pelvic inflammatory disease
b) Osteoarthritis
c) Kidney disease
d) Others

10) Duration of low back pain

a) 1 - 2 years
b) 2 – 3 years
c) 3 – 4 years
d) More than 5 years

Oswestry Low Back Pain Disability Questionnaire

Instructions

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking ONE box in each section for the statement which best applies to you. We realise you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

Section 1 – Pain intensity

- ☐ I have no pain at the moment
- ☐ The pain is very mild at the moment
- ☐ The pain is moderate at the moment
- ☐ The pain is fairly severe at the moment The pain is very severe at the moment
- ☐ The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc)

- ☐ I can look after myself normally without causing extra pain
- ☐ I can look after myself normally but it causes extra pain
- ☐ It is painful to look after myself and I am slow and careful
- ☐ I need some help but manage most of my personal care
- ☐ I need help every day in most aspects of self- care
- ☐ I do not get dressed, I wash with difficulty and stay in bed
- ☐ I cannot lift or carry anything at all

Section 4 – Walking*

- ☐ Pain does not prevent me walking any distance Pain prevents me from walking more than __PLOH

Section 3 – Lifting

I can lift heavy weights without extra pain ☐

I can lift heavy weights but it gives extra pain ☐

Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table ☐

Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned ☐

I can lift very light weights ☐

Pain prevents me from walking more than 1_____PLOH ☐

Pain prevents me from walking more than ___\DUGV ☐

I can only walk using a stick or crutches I am in bed most of the time ☐

Section 5 – Sitting

I can sit in any chair as long as I like ☐

I can only sit in my favourite chair as long as I like ☐

Pain prevents me sitting more than one hour ☐

Pain prevents me from sitting more than 30 minutes ☐

Pain prevents me from sitting more than 10 minutes ☐

Pain prevents me from sitting at all ☐

Section 6 – Standing

- ☐ I can stand as long as I want without extra pain
- ☐ I can stand as long as I want but it gives me extra pain
- ☐ Pain prevents me from standing for more than 1 hour
- ☐ Pain prevents me from standing for more than 30 minutes
- ☐ Pain prevents me from standing for more than 10 minutes
- ☐ Pain prevents me from standing at all

Section 7 – Sleeping

- ☐ My sleep is never disturbed by pain
- ☐ My sleep is occasionally disturbed by pain
- ☐ Because of pain I have less than 6 hours sleep
- ☐ Because of pain I have less than 4 hours sleep
- ☐ Because of pain I have less than 2 hours sleep
- ☐ Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)

- ☐ My sex life is normal and causes no extra pain
- ☐ My sex life is normal but causes some extra pain
- ☐ My sex life is nearly normal but is very painful
- ☐ My sex life is severely restricted by pain
- ☐ My sex life is nearly absent because of pain
- ☐ Pain prevents any sex life at all

Section 9 – Social life

- ☐ My social life is normal and gives me no extra pain
- ☐ My social life is normal but increases the degree of pain
- ☐ Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
- ☐ Pain has restricted my social life and I do not go out as often
- ☐ Pain has restricted my social life to my home
- ☐ I have no social life because of pain

Section 10 – Travelling

- ☐ I can travel anywhere without pain
- ☐ I can travel anywhere but it gives me extra pain
- ☐ Pain is bad but I manage journeys over two hours
- ☐ Pain restricts me to journeys of less than one hour
- ☐ Pain restricts me to short necessary journeys under 30 minutes
- ☐ Pain prevents me from travelling except to receive treatment
- ☐

ANNEXURE

ஆஸ்வெஸ்டிரி- ன் இயலாமை குறியீடு கேள்வி தொகுப்பு

இந்த கேள்வித் தொகுப்பு உங்கள் முதுகு மற்றும் அதன் காரணத்தால் உங்கள் காலில் பரவும் வலி எவ்வாறு உங்கள் அன்றாட வாழ்க்கையை பாதிக்கின்றது என்பதை நாம் அறிந்து கொள்ள உதவுகிறது.

தயவு செய்து அத்து பகுதிகளுக்கும் பதில் அளிக்கவும். ஒவ்வொரு பகுதியிலும்

இன்றைய உங்கள் நிலையை நெருக்கமாக உணர்த்தும் ஒரு கட்டத்தை மட்டும் குறியிடவும்.

பகுதி – 1 வலியின் கொடுமை

- எனக்கு தற்போது எந்த வித வலியுமில்லை
- எனக்கு தற்போது குறைவான வலியே உள்ளது.
- எனக்கு தற்போது மீதமான வலியே உள்ளது.
- எனக்கு தற்போது சிறிது அதிகமான வலி உள்ளது.
- எனக்கு தற்போது மிகவும் அதிகமான வலி உள்ளது.
- எனக்கு தற்போது தாங்க முடியாத அளவிற்கு வலி உள்ளது.
-

பகுதி – 2 சுய பராமரிப்பு (குளிப்பது, உடை மாற்றி கொள்வரு போன்றவை)

- என்னுடைய பராமரிப்பு காரியங்களை வலி அதிகரிக்காமல் வழக்கம் போல செய்ய முடிகிறது.
- வலி இருந்தாலும் என்னுடைய சுய பராமரிப்பு காரியங்களை வழக்கம் போல செய்ய முடிகிறது.
- வலி அதிகமாக உள்ளதால், என்னுடைய சுய பராமரிப்பு காரியங்களை கவனமாகவும், மொதுவாகவும் செய்கிறேன்.
- பெரும்பாலும் சுய பாரமரிப்பு காரியங்களை என்னால் செய்ய முடிந்தாலும் ஒரு சில காரியங்களில் பிறரின் உதவி தேவைப்படுகிறது.
- பெரும்பாலான சுய பராமரிப்பு காரியங்களில் தினமும் பிறரின் உதவி தேவைப்படுகிறது.
- என்னால் எந்த சுய பராமரிப்பு காரியங்களையும் செய்ய முடிவதில்லை. படுக்கையிலே இருக்கிறேன்.

பகுதி – 3 பளு தூக்குதல்

- என்னால் அதிக எடையுள்ள பொருள்களை வலி அதிகரிக்காமேலே தூக்க முடிகிறது.
- என்னால் அதிக எடையுள்ள பொருட்களை தூக்க முடிகிறது. ஆனால் வலி அதிகரிக்கிறது.
- வலியின் காரணமாக அதிக எடையுள்ள பொருட்களை தரையிலிருந்து தூக்க முடிவதில்லை. ஆனால் சரியான
- உயரத்திலிருந்து பொருட்களை தூக்க முடிகிறது.
- என்னால் மிகவும் குறைவான எடையுள்ள பொருட்களை மட்டுமே தூக்க முடிகிறது.
  என்னால் எந்த பொருளையும் தூக்கவோ, தூக்கி கொண்டு நடக்கவோ முடிவதில்லை.

பகுதி – 4 நடத்து செல்லுதல்

- எவ்வளவு தூரம் நடப்பதற்கும் வலி தடையாக இருப்பதில்லை.
- வலியின் காரணமாக 1 கிலோ மீட்டருக்கு மேல் என்னால்
- நடக்கமுடிவதில்லை. வலியின் காரணமாக 250 கிலோ மீட்டருக்கு மேல் எனனால் நடக்க முடிவதில்லை.
- வலியின் காரணமாக 100 கிலோ மீட்டருக்கு மேல் எனனால் நடக்கமுடிவதில்லை.
- ஊன்றுகோல் அல்லது கை தடியின் உதவியோடுதான் என்னால் நடக்க
- முடிகிறது. நான் அதிக நேரம் படுக்கையிலேயே படுத்திருக்கிறேன். கழிப்பறைக்கு தவழந்து செல்கிறேன்.

பகுதி – 5 உட்காருதல்

- எந்த வகையான இருக்கையிலும் எவ்வளவு நேரம் வேண்டுமானாலும் என்னால் உட்கார முடிகிறது.
- உனக்கு மிகவும் வட்டமான இருக்கையில் எவ்வளவு நேரம் வேண்டுமானாலும் என்னால் உட்கார முடிகிறது.
- வலியின் காரணமாக 1 மணி நேரத்திற்கு மேல் எனனால் உட்கார
- முடிவதில்லை வலியின் காரணமாக 1.̓.2 மணி நேரத்திற்கு மேல் எனனால் உட்கார முடிவதில்லை
- வலியின் காரணமாக 10 மணி நேரத்திற்கு மேல் எனனால் உட்கார முடிவதில்லை
- வலியின் காரணமாக என்னால் உட்கார முடிவதில்லை

பகுதி – 6 நிற்பது

- என்னால் வலி அதிகரிக்காமல் எவ்வளவு நேரம் வேண்டுமானலும் நிற்க முடிகிறது.
- என்னால் எவ்வளவு நேரம் வேண்டுமானாலும் நிற்க முடியும். ஆனால் வலி அதிகரிக்கறது.
- வலியின் காரணமாக1 மணி நேரத்திற்கு மேல் என்னால் நிற்க முடிவதில்லை.
- வலியின் காரணமாக ½ மணி நேரத்திற்கு மேல் என்னால நிற்க முடிவதில்லை.
- வலியின் காரணமாக 10 மணி நேரத்திற்கு மேல் என்னால் நிற்க முடிவதில்லை
- வலியின் காரணமாக் என்னால் நிற்கவே முடிவதில்லை

பகுதி – 7 தூங்குதல்

- வலியின் காரணமாக என் தூக்கம் எப்போதும் தடைபடுவதில்லை.
- வலியின் காரணமாக என் தூக்கம் எப்போதாவது தடைபடுகிறது.
- வலியின் காரணமாக என்னால் 6 மணி நேரத்திற்கும் குறைவாகவே தூங்க முடிகிறது.
- வலியின் காரணமாக என்னால் 4 மணி நேரத்திற்கும் குறைவாகவே தூங்க முடிகிறது.
- வலியின் காரணமாக என்னால் 2 மணி நேரத்திற்கும் குறைவாகவே தூங்க முடிகிறது.
- வலியின் காரணமாக என்னால் தூங்கவே முடிவதில்லை.

புகுதி – 8 பாலியல் வாழ்க்கை

- எனது பாலியல் வாழ்க்கை இயல்பாக உள்ளது. வலி அதிகரிப்பதில்லை.
- எனது பாலியல் வாழ்க்கை இயல்பாக உள்ளது, ஆனால் சற்று வலி அதிகரிக்கிறது.
- எனது பாலியல் வாழ்க்கை ஏறக்குறைய இயல்பாக உள்ளது, ஆனால் வலி சற்று அதிகமாக உள்ளது.
- எனது பாலியல் வாழ்க்கை வலியின் காரணமாக கடுமையாக
- தடைபடுகிறது.
- எனது பாலியல் வாழ்க்கை வலியின் காரணமாக ஏறக்குறைய நிகழ்வதே இல்லை. எனது பாலியல் வாழ்க்கை வலியின் காரணமாக முற்றிலும் தடைபடுகிறது.

பகுதி – 9 சமூக வாழ்க்கை

(விளையாட்டு பொழுதுபோக்கு, சுகம் மற்றும் துக்க நிகழ்ச்சிகளில் ஈடுபாடு)

- எனது வாழ்வு இயல்பாக உள்ளது. வலி அதிகரிப்பதில்லை.
- வலி அதிகமாக இருந்தாலும் எனது சமூக வாழ்வு இயல்பாக உள்ளது.
- வலி எனது சமூக வாழ்வில் குறிப்பிடதக்க விளைவுகள் ஒன்றையும் ஏற்படுத்தவில்லை என்றாலும் விளையாட்டு போன்ற சுறுசுறுப்பான செயல்களில் ஈடுபடுவதற்கு தடையாக உள்ளது.
- எனது சமூக வாழ்வை வலி தடை செய்கிறது. என்னால் அதிகமாக வெளியே செல்ல முடிவதில்லை.
- வலியின் காரணமாக எனது சமூக வாழ்வு முற்றிலுமாக தடைபட்டு உள்ளது.

பகுதி – 10

- வலியே வராமல் எங்கு வேண்டுமானாலும் என்னால் பயணம் செய்ய முடிகிறது.
- எங்கு வேண்டுமானாலும் என்னால் பயணம் செய்ய முடிகிறது. ஆனால் வலி அதிகரிக்கிறது.
- வலியின் காரணமாக 2 மணி நேரத்திற்கும் மேலாக என்னால் பயணம் செய்ய முடிகிறது,
- வலியின் காரணமாக 1 மணி நேரத்திற்கும் மேலாக என்னால் பயணம் செய்ய முடிகிறது,
- வலியின் காரணமாக 30 மணி நேரத்திற்கும் மேலாக என்னால் பயணம் செய்ய முடிகிறது.
- வலியின் காரணமாக மருத்துவ சிகிச்சைக்கு செல்வதை தவிர வேறு எங்கும் பயணம் செய்ய முடிவதில்லை.