

**A STUDY TO ASSESS THE EFFECTIVENESS OF HOME CARE
MANAGEMENT AND REMEDIAL PRACTICES ON KNEE
JOINTPAIN AMONG ELDERLY AT SELECTED
COMMUNITIES IN COIMBATORE**

Reg. No. 30104431

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

APRIL 2012

CERTIFICATE

This is to certify that Dissertation entitled “**A STUDY TO ASSESS THE EFFECTIVENESS OF HOME CARE MANAGEMENT AND REMEDIAL PRACTICES ON KNEE JOINT PAIN AMONG ELDERLY AT SELECTED COMMUNITIES IN COIMBATORE.**” is submitted to the faculty of nursing, The Tamilnadu DR.M.G.R. Medical University, Chennai by **MS.LAKSHMI PRIYA .V** in partial fulfillment of requirement for the degree of Master of Science in Nursing. It is the bonafide work done by her and the conclusions are her own. It is further certified that this dissertation or any part thereof has not formed the basis for award of any degree, diploma or similar titles.

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COMMUNITIES IN COIMBATORE**

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LIST OF ABBREVIATIONS

S.NO.	ABBREVIATIONS
1.	KMCH -- Kovai Medical Center and Hospital
2.	ICMR -- Indian Council for Medical Research
3.	WHO--World Health Organization
4.	OA--OsteoArthritis
5.	GP-- General Practitioners
6.	RF -- Rectus Femoris
7.	ACL --Anterior Cruciate Ligament
8.	WOMAC--Western Ontario &McMaster Universities OsteoArthritisCouncil
9.	MVC --Maximum Voluntary Contraction
10.	QOL --Quality Of Life
11.	BBS --Berg's Balance Scale
12.	WEP -- Water Exercise Program
13.	BMI -- Body Mass Index

CHAPTER I

INTRODUCTION

“May the man live for a Hundred years,

May He be a Centnarianwith

All Senses Intact Till the End”

YAJURVED.

Aging is a lifelong process that begins at conception. In the early days of our country, age was respected and revered. Older men were sought after for advice gained through the experience of living a significant number of years. During era before and after World War II, age began to be viewed somewhat negatively. With the rise of the tremendous number of aging, attitudes toward aging seem to be changing once again. A study indicating the age does not necessarily lead to health decline.

Older people are the gate keepers of a nation's history, culture values and traditions. They are “those who have gone before and made today's technology and lifestyle possible. Elder people are predisposed to suffering bad health outcomes including bothersome symptoms, diminished ability to perform desired tasks and roles. The aging results in part from a gradual diminution in the maximum capacity of physiological system.

We stand at the beginning of a century that has huge growth in the number of older adults. Older adults are an extremely diverse group of individuals who possess a broad range of abilities and need in all domains of function. This reality, along with the varied lifestyles environmental conditions and life histories characteristics of older adults, creates the need for highly individualized nursing care. (Matteson & MC Connell's – 1997)

There is no typical older person. Each older adult is a different as the experiences that a person has encountered over a lifetime. In life expectancy at birth was 79yrs for women and 72.1 years for men. But with technologic advances in

medicine, improved nutrition, and an emphasis on disease prevention and health promotion, an increasingly high quality of health and a longer lifespan can be attained. In the year 2040, the projected life expectancy will be 82.8 years for women and 75.9 years for men. (Salley Roach-2001)

In the early 1900s, less than 5% of the population lived to be 65 years of age. Today, individuals older than 65 years account more than 12% of the U.S. population. By the year 2020, the population older than 85 years of age will triple. In the year 2002 there were an estimated 605 million old persons in the world of which 400 million are living in low income countries. Italy and Japan have the highest proportion of elderly. By 2025, the number of elderly people is expected to rise more than 1.2 billion with about 840 million in low income countries. (U.S. Bureau of the Census)

For standardization United Nations has defined an aged person as one who is 60 years and above. Generally, people above the age of 60 years are considered as Senior citizens in India. People between 60-75 years are categorized as “young old” between 75-85 years are categorized as “old –old” and people above the age of 85 are classified as “very old” or infirm.

In 2000 there were 600 million people aged 60 and over. There will be 1.2 million by 2025 and 2 billion by 2050. By 2025, about 75% of all older people will be from the developing countries. The ratio of very old women/men is 2:1. (Sunder Lal-2007).

In India the word ‘AGED’ is relative depending upon the society, its culture, the time and the prevalent condition. An aged person as one who is 60 yrs and above is called as elderly. Due to all round socioeconomic development in India, the life expectancy has increased from 37 years (1971) to 62 years (2000). Thus, we have added 25 years to longevity of life and it is going to increase further in coming years. (Webster’s medical association-2000)

“Old age is not synonymous with disease” The risk of health problems and disability increases with age. More than 80% of people over 65 years of age are estimated to have one or more chronic conditions. The most commonly occurring conditions were Arthritis, Hypertension, Hearing impairment, Heart diseases, orthopedic impairment, Cataract, Sinusitis and diabetes mellitus.

In 1984 about 6 million (23%) older people living in community had health related difficulties with one or more personal care activities, and 7.1 million (27%) had difficulty with one or more home management activities. Along with chronic conditions, older people suffers disproportionately from functional disability, with over half (52.5%) of individuals over 85 limited in their activity because of chronic condition. (Linton Adrienne Dill-2007)

In India for the year 2004, the SRS estimates are 7.2% of total population was above the age of 60 years. Aging is a biological and not a disease or curse, and during the biological process significant changes in human body. Aging is inevitable, irreversible and progressive. Prevention of disability and loneliness can help elderly to live happy and longer life.

There are 4 basic problems is common in elderly such as multiple illness and multiple therapy iatrogenic diseases, diminished vision, hearing and mobility, social isolation and psychological problems. The elderly people are suffering problems such as financial problem-40.88%, lack of occupation-27.35%, health-10.29%, family and future worries-10.28%, dependence, isolation and accommodation-3.25%. (TATA Institute of Social Sciences-1972)

In India 65% of elderly are visually handicap, 34% of elderly are pain in joints, 15% of elderly having vague body pain, 15% of elderly having giddiness, 10% are having cough, 8% having sleeplessness, 6% are having hearing deficit. All the articulating joint surfaces are subject to changes in structure and function with aging. Breakdown of components of the joint capsule results in inflammation, pain, stiffness and deformity. (ICMR)

In India, joint pain is a more prevalent among elderly. Nearly 34% of elderly are suffering by joint pain. It is a symptom, not a disease. The symptom may be used as a diagnosis until the true cause of the joint pain is determined. Joint pain is mostly associated with musculoskeletal in general involvement of only one joint suggests localized disease, and pain in multiple joints indicates systematic disease. Localized cause of joint pain includes infectious arthritis, inflammation of a vascular necrosis, tumor, inflammation of a tendon, or tendon sheath or trauma.

It is a common symptom that affects virtually everyone at some point during life and occurs in more prevalence or joint pain increases with age. Systematic causes of joint pain include Osteoarthritis, Fibromyalgia, Crystal – induced arthritis, Polymyalgia, Systemic lupus erythematosus, Rheumatoid fever, Sickle cell disease or Rheumatoid arthritis, Lyme disease, Influenza and other Systematic bacterial and Viral infections also can cause joint pain.

Attitudes and beliefs of GPs towards exercise for chronic knee pain vary widely and exercise appears to be underused in the management of chronic knee pain. Limitations of the evidence base include the paucity of studies directly examining attitudes of GPs, poor methodological quality, limited generalisability of results and ambiguity concerning GPs' expected roles. Further investigation is required of the roles of GPs in using exercise as first-line management of Chronic knee pain.(Elizabeth Cottrell-2010).

The treatment for joint pain depends on the underlying cause, the joint that is affected, severity of pain and the condition is acute or chronic. It can be treated at home with over the counter-medications that reduce pain and the swelling by taking warm compress or exercise. A community health nurse plays a major and vital in teaching the person to arrive at the decision on the type of treatment and self care strategy which will be the best for the elderly with joint pain.

NEED FOR THE STUDY

According to the healthy people 2000, the most important aspect of health promotion for the older people is to maintain health and functional independence. It noted that a significant number of the health problems evidenced with aging are either preventable or can be controlled by preventive activities, and the strong social support is important in promoting the health of older adults. (Stone Susan Clemen-2002)

The world is slowly aging and so is its population. The increasing life expectancy resulting in an increase in the grey population calls for jubilation, but this phenomenon is accompanied by several medical, social and economic concerns. Healthy people 2010 stated that a major goal for health of the nation is to increase the years of the healthy life for all Americans. This supports the new paradigm in aging. This change is significant because many of the chronic conditions that affect older adults are best managed within a framework of life style change. One of the objectives of healthy people 2010 is reduce the number of cases of osteoporosis to 8 %.(WHO-2009)

Coverly(2003)explained that, as per the Indian Council of Medical Research (ICMR) report on population projection there are 385 million people (60years and above) in the world and India has a contribution of 50 million. The Indian traditional joint family structure is getting replaced by nuclear family structure, thus leaving elderly people unattended. This necessitates the need to give attention to the changing health care needs of the geriatric population.

More than one billion people will be over 60 years by 2025. With it the burden of chronic disease will increase. To help and tackle the public, the Implications of aging, the WHO on 2004 launched an initiative named “towards age friendly Primary Health Care, for better care of elderly in the community. This initiative is geared towards early detection, appropriate intervention, management and follow-up of chronic conditions in early.(WHO-2002)

The care of the elderly is drawing more and more attention of the Government and the public. Aging has become an important issue because of the dramatic changes in life expectancy. Pain in joints, brittleness of bones and weakness of muscles, slowness of movements, unsteadiness of gait and sluggishness of reflexes are characteristic manifestations of aging.

Nurses must understand the normal aging process and be prepared to care for these clients. They must provide holistic nursing care to them with human touch, love and affection. They must be aware of the unique physical, psychological, legal, and ethical and socio economical issues around the aging process. (Saini, Gupta & Pandey - 2009)

The prevalence of joint pain in over 75 is very high and continues to increase into extreme elderly in both men and women, Joint pain is more prevalent in women and is associated with poor mobility, falling and low energy. The perception of joint pain shows considerable change overtime with no consistent trend towards deterioration. Psychological factors are intimately links with the fluctuation in joint pain. (I.P. Donald and C. Foy-2004)

It is a common symptom that affects everyone at some point during life and occurs in more prevalence or joint pain increases with age. The treatment for joint pain depends on the underlying cause and joint that affected severity of pain and the condition is acute or chronic. Joint pain can be treated at home with over the counter medications that reduce pain and swelling by taking warm compresses or exercise. In treating the knee joint pain the exercise, massage, thermal application and diet plays a major role in home setup.

Both knee exercises and hot herbal compression had shown effectiveness in decreasing knee joint pain as well as difficulty in performing activities of daily living among the elderly with chronic pain. Therefore, both of the treatments should be recommended for the elderly to take care themselves at home and for use in

combination with medical treatment to reduce the usage of analgesics which could possibly cause adverse effects. (Patporn Sukonthasam-2006)

Wafaa I.(2011)compare between uses of therapeutic exercise and heat application onrelieve pain, stiffness and improvement of physical function for patient with knee osteoarthritis. The use of a combination of therapeutic exercise and heat application together for relieving pain, stiffness and improving physical function for patient with knee osteoarthritis was successful.People who exercise regularly experience 25% less muscle and joint pain in their elderly than people who are less active. Research published in Arthritis Research & Therapy reveals that people who regularly participate in brisk aerobic exercises, such as running, experience less pain than non-runners even though they are more likely to suffer from pain from injuries. (Science Daily-2005)

The aroma massage therapy seems to have potential as an alternative method for short-term knee pain relief. (YIP YB, TAM AC, 2008). Distribution of joint pain among 58-68 years elderly people are 19% back pain, 17.5% at knees, 17.5% at hip, 12% at wrist, 10% ankles, 10% shoulder, 6% elbow, 2% none.(Flinders University-Adelaide- 2009)

Dorothea Virginia Atkins(2010) assess the effects of self-massage on reported pain, stiffness, function and limited range of motion in individuals with osteoarthritis (OA) of the knee. Both the knee joint and the quadriceps muscle have been reported to potentially affect symptoms and progression of knee OA. Massage has been well documented as an effective therapeutic intervention for various musculoskeletal conditions;the study results showed that participants who have OA of the knee may benefit from the self-massage intervention therapy and consistent self-massage therapy may equate to more improved results.

The combination of dietary weight loss plus exercises(51%)were more effective in improving self-reported physical function and mobility in osteoarthritis patients compared with 32%exercise only,31% diet only and 37% pain therapy.

(Ultrasound and transcutaneous electric stimulation (American College of Rheumatology, 2004)

Dietary changes are an important part of well-rounded joint pain treatment plan. Certain types of joint pain may respond to the eliminating foods belonging to concentrated carbohydrates from your diet. Eliminating foods belonging to the nightshade family – tomatoes, potatoes, eggplant and peppers – may also be helpful. Helpful dietary inclusions in treating your joint pain may include berries, which are rich in flavonoids, and foods that are high in fiber or complex carbohydrates. (Joseph E. Pizzorno Jr-2006)

Paul A van den Dolder (2004) Manual therapy for anterior knee pain Six sessions of manual therapy increase knee flexion and improve activity in people with anterior knee pain: a randomized controlled trial: Manual therapy is effective in improving knee flexion and stair climbing in patients with anterior knee pain. There is a trend towards a small improvement in pain.

A community health nurse plays a major role and vital role in teaching the elderly to arrive at the decision on the type of treatment and self care strategy which will be best for the elderly with joint pain.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of home care management and remedial practices on knee joint pain among elderly at selected communities in Coimbatore.

OBJECTIVES

- Assess the level of knee joint pain among elderly.
- Determine the effectiveness of home care management and remedial practices among elderly with knee joint pain.
- Associate the demographic variables with effectiveness of home care management and remedial practices among elderly with knee joint pain.

OPERATIONAL DEFINITIONS

Effectiveness:

It refers to benefits of home care management and remedial practices to reduce the level of knee joint pain among elderly.

Knee joint pain:

Pain perceived at one or both knee joint, irrespective of the cause.

Elderly:

This refers to the people at 60-80 years old irrespective of the sex.

Home care management & remedial practices:

It includes Hot Water application, Oil massage (Karpoorathythailam), Muscle strengthening exercise (quadriceps strengthening contractions & thigh contractions exercise) and Diet education.

ASSUMPTION

Home care management and remedial practices were important non pharmacological measures for the good prognosis of elderly with knee joint pain.

HYPOTHESIS

There is significant reduction in knee joint pain among elderly who follow home care management and remedial practices than those who do not follow.

CONCEPTUAL FRAMEWORK

A concept is an idea. Conceptual framework is a group of concepts or ideas that are related to each other but the relationship is not explicit. Conceptual framework deals with abstractions that are assembled by virtue of their relevance to a common theme (Polit and Hungler). Conceptualizations is a process of forming ideas which are utilized and forms in the conceptual framework for the development of research design. It helps the researcher to know what data is to be collected and gives direction to an entire research process. It provides certain frame of reference for clinical practice and research. The conceptual frame work for this study was developed on the basis of Titler et al effectiveness model (2004).

This model was based on **Titler et al (2004) effectiveness model**. Effectiveness indicates the benefits of health care that are achieved under ordinary circumstance for patients. In this model there are two categories of independent variables are patient demographic characteristics and clinical data. The intervening variables are interventions delivered by the nurse to the patient problem. This model was developed to test the relationship of these variables to effective outcome. In this study modified Titler et al (2004) effectiveness model was adopted.

EFFECTIVENESS:

It indicates that the benefits of home care management and remedial practices among elderly with knee joint pain. Home care management and remedial practices (hot water application, oil massage, exercise and diet education) were applied for on knee joint pain among elderly. Based on Titler et al (2004) effectiveness model subjects were selected according to their characteristics and clinical condition. The investigator administered home care management and remedial practices daily. The effectiveness or outcome of this administration of home care management and remedial practices were evaluated by monitoring the pain perception in knee joint among elderly.

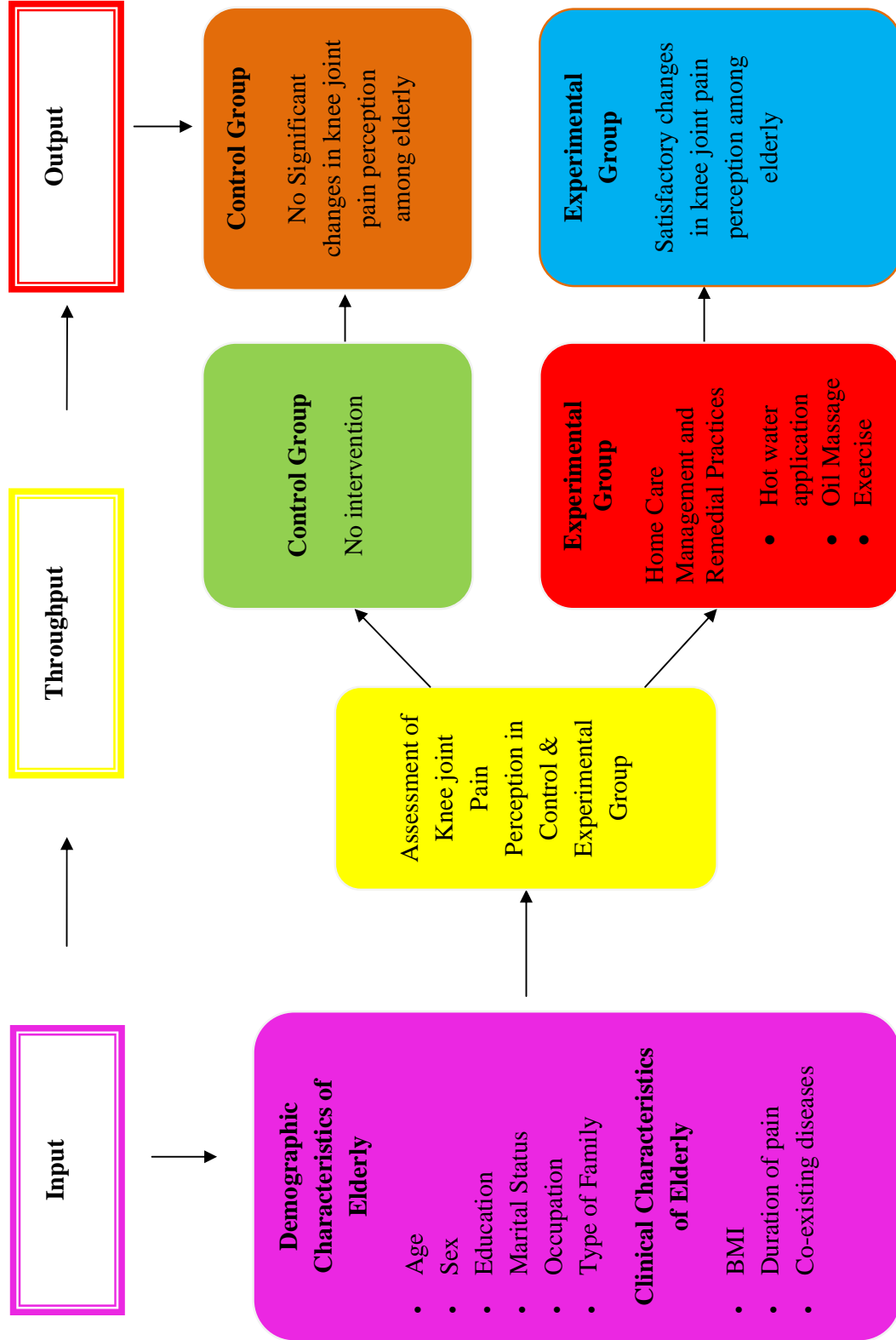


Fig: 1 Modified Titler et al (2004) Effectiveness Model

CHAPTER II

REVIEW OF LITERATURE

An extensive review of literature is done to familiarize with what is already known about the different aspects of present study and to develop a broad conceptual context into which the research problem will fit. It is a key step in research process. It is a broad, comprehensive in depth, systematic and critical review of scholarly publications. Review of Literature for the present study has been organized and presented in the following topics.

- Literature related to elderly with knee joint pain.
- Literature related to intervention.
 - ◆ Thermal application
 - ◆ Oil massage
 - ◆ Exercise
 - ◆ Diet

Literature related to Knee joint Pain

Gibson (1996) has determined the frequency of joint symptoms amongst 2022 affluent and 2210 poor adults in Karachi, Pakistan. Joint pain was significantly ($P = 0.025$) more common amongst the affluents (6.6%) compared with the poor (5%) and this was due to greater frequency of knee jointpain in the richer community (3% vs. 1.8%; $P = 0.008$). The prevalence increased with age and was more common in females. While compared with age &sex-matched controls, body weight was significantly greater amongst those with knee pain, both amongst the affluent ($P = 0.005$) and the poor ($P = 0.02$). No relationship could be demonstrated between knee pain and joint laxity of knee.

Ann Rheum Dis (2001) reviewed the burden and current uses of Primary Health Care for knee joint pain and osteoarthritis in older. They reported that joint pain is the single most common cause for disability in older adult people, and most patients with this condition would be managed in the community and primary health care. During a one year period 25% of people over 55 years have a persistent episode of knee pain, for whom about one in six in the UK and Netherlands consult their general practitioner about it at the same time period. The prevalence of painful disabling knee osteoarthritis in older people over 55 years were 10%, of whom one quarter is severely challenged.

Bookwala (2003) studied the effect of pain on functioning and well-being was examined among 367 older adults with osteoarthritis of the knee joint. Results showed that osteoarthritis-related pain was related to poorer physical and social functioning, had direct effect on depressive symptoms of pain, and direct and indirect effects on perceived health of elderly. Lower social functioning was related to more depressive symptoms, and both lower social and physical functioning predicted worse perceived health.

Elaine Thomas (2004) assessed the prevalence of pain and pain interference in a general population of older adults in knee joint. A cross-sectional postal survey was conducted among adults aged 50 years and over registered with three general practices in North Staffordshire using self-complete questionnaires. Gender, age, employment status, socio-economic classification, and general health status of respondents were gathered to characterize the population under study. Importantly the extent to which pain interferes with everyday life increases incrementally with age up to the oldest age-group in the community-dwelling general population.

Shigeyuki Muraki (2005) suggested that the Impact of knee joint and low back pain on health related to quality of life in Japanese women by assessing the associations between knee joint pain and low back pain and various QOL domains using measures. From the 3,040 Japanese women participating in this research on Osteoarthritis against the disability study, they analyzed data on 1,369 women

>40 years old (mean age 68.4 years). Knee jointpain and low back pain were found to be significantly associated with lower QOL scores among the Japanese women consistingthe study cohort.

Adamson (2005) examined the association between three modifiable risk factors of people (obesity, smoking, and alcohol consumption) and their reported joint pain. Cross sectional data was collected from 858 people aged 58 years living in the West of Scotland and with the same individuals four years later, aged 62 years. There was a positive relation between obesity and reported pain in the, knees, hips, ankles, and feet. There was the strongest relation with knee pain .There were no strong significant associations between smoking habits and pain in any joint after adjusting for sex, alcohol consumption, body mass index, social class, and occupational exposures. Similarly, alcohol was also not consistently related to pain in any joint in the fully adjusted models as per this study

Alan Mikesky, E.(2006) determined the effects of strength training on the incidence and progression of Knee jointpain in OsteoArthritis (OA). They described with a randomizedcontrolled trial of effects of lower-extremity strength training on incidence and progression of knee pain in OA. A total of 221 older olderadults (mean age 69 years) were stratified by the sex, presence of radiographic knee OA, and severity of knee jointpain, and were randomized to Strength Training (ST)exercises or Range-Of-Motion (ROM) exercises. By that they found The ST group retained more strength and exhibited less frequent progressive over 30 months than the ROM group.

Robert Kiningham (2005) facilitates a comprehensive, yet efficient evaluation of knee pain, recommend appropriate use of knee x-rays and MRI and provide optimal treatment of knee pain. Exercises are important. Many knee conditions will improve with conservative treatment consisting of low impact activities and exercises to improve muscular strength and flexibility. Patellofemoral dysfunction is best treated with vastusmedialis strengthening and hamstring and calf stretching. In most cases a home treatment program should be explained in detail to the patient, including specific guidelines for activity modification and exercises.

Marks.R.(2008) identified the differential impact of selected physical, psychological and demographic variables on pain and disability experienced by adults with moderate knee osteoarthritis, and the clinical implications of these observations. There were several significant ($p < 0.05$) associations between pain scores and walking capacity and gender, age, body mass, medical co morbidities, extent of depression, and perceived exertion when walking. Specifically, pain was correlated with body mass and depression. The study was concluded that the presentation of knee osteoarthritis is not uniform, and may be impacted differentially by age, gender, body mass, physical and mental health status.

Hermesen .E. (2011) assessed the functional outcome in older adults with joint pain and co morbidity. The study has been designed as a prospective cohort study, with measurements at baseline and after 6, 12 and 18 months. Patients are eligible for participation if they are 65 years or older, have at least two chronic conditions and report joint pain on most days. Data will be collected by using various methods (i.e. questionnaires, physical tests, patient interviews) Joint pain is a highly prevalent condition in the older population. Only a minority of the older adults consult the general practitioner for joint pain, and during consultation joint pain is often poorly recognized and treated, especially when other co-existing chronic conditions are involved. Older adults with joint pain and co morbidity may have a higher risk of poor functional outcome and decreased Quality of Life and possibly need more attention in primary care.

Vicente Sanchis-Alfonso (2007) done a study that anterior knee pain, diagnosed as Patellofemoral Pain Syndrome (PFPS), is one of the most common musculoskeletal disorders. It is of high socioeconomic prevalence as it occurs most frequently in young and active patients. The rate is around 15-33% in active adult population and 21-45 Per cent of adolescents. In spite of its high incidence and abundance of clinical and science research, its pathogenesis is still an enigma. The numerous treatment regimes that exist highlight the lack of knowledge regarding the

etiology of pain. The present review synthesizes our research on pathophysiology of anterior knee pain in the young patient.

Literature related to thermal application

Steven Mazzuca, A. (2004) conducted a study to identify changes in knee joint pain, stiffness, and functional ability in patients with Osteoarthritis (OA) after use of a knee sleeve that prevents loss of body temperature by the joint. Subjects with knee OA (n=52) were randomized to 2 intervention groups. Subjects wore the sleeve over the more painful OA knee joint for at least 12 hours daily for 4 weeks. This study was insufficiently powered to be a definitive trial of the heat-retaining sleeve.

Marlene Fransen, Lillias Nairn. (2006) determined that whether Tai Chi or hydrotherapy classes for individuals with chronic symptomatic knee or hip osteoarthritis (OA) results in measurable clinical benefits. A randomized controlled trial study was conducted among 152 older persons with chronic symptomatic knee or hip OA. Participants were randomly allocated for 12 weeks for hydrotherapy classes (n =55), Tai Chi classes (n =56), or waiting list control group (n 41). Outcomes were assessed at 12 and 24 weeks after randomization and included pain and physical function (Western Ontario and McMaster Universities Osteoarthritis Index), general health status. They concluded that access to either hydrotherapy or Tai Chi classes can provide large and sustained improvements in physical function for many elderly, sedentary individuals with chronic hip or knee OA.

Thomas Benoit, G. (2007) conducted the study to examine the influence of clinical applications of heat and cold on arthrometric laxity measurements of the knee. There was no thermal effect on displacement ($p > .05$). A difference was found with respect to test position, in external rotation showing a greater displacement than internal rotation ($p < .05$). It concluded that there was no evidence that heat or cold whirlpool treatments alter knee laxity. Rotation of tibia does affect the magnitude of displacement of the knee joint. They suggest that further research was needed to

determine if these findings can be applied to ACL-deficient or ACL-reconstructed knees.

Aditya Dev. (2009) conducted a study on effect of Moist heat will reduce knee joint pain. From his study he suggested that knee joint pain has been reported as the most frequent complaint among the aging population. A current study by PGI's National Institute of Nursing Education stated that 48% of surveyed geriatric people were found to be suffering from the problem. The study also determined that application of moist heat on knee significantly helped in reducing the intensity of pain, instead of the intake of pain-killers.

DoiMaken,S. (2009) conducted a study to determine the effectiveness of thermal mineral water, compared with normal tap water in the treatment of knee joint pain. This randomized, double-blind, controlled, follow up study was included with 71 patients who underwent 20-minutes daily intervention sessions with medicinal water or with tap water, both at a temperature of 34°C, as 21 occasions. Both groups underwent additional adjunctive electrotherapy. Outcome measures were analysed with visual analogue scale scores, Schober's sign, Domján's signs, Oswestry disability and short form-36 questionnaire. The study parameters were administered on baseline, immediately after treatment, and after 15 weeks of intervention. In the group treated with thermal water, improvement occurred earlier, lasted longer and was statistically significant.

Hiroaki Seto(2010)conducted a study on effect of heat- and steam-generating sheet on daily activities of living patients with osteoarthritis of the knee among 41 female. Patients with knee OA were randomized to use the heat/steam-generating sheet or the dry heat-generating sheet, 37 patients (20 were using the heat/steam-generating sheet and 17 were using the dry heat-generating sheet) who used the sheets continuously for 4 weeks. Outcome measures included the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Japan Orthopedic Association scores, were applied at baseline and after 2 and 4 weeks of use. The study provided the evidence that the heat/steam-generating sheet that they developed was

effective for alleviating pain and is especially superior in regard to improving stiffness and gait impairment in patients with knee OA. Furthermore, the effects persist for at least 6 weeks after the interventional application.

Lin, Y.H. (2010) conducted a study on effects of thermal therapy in improving the passive range of knee joint motion: comparison of cold and superficial heat applications. For this Seventy-one subjects were randomized into two groups to conduct a clinical randomized before and after trial. Each subjects received either (1) cold pack or (2) hot pack during passive knee joint stretching. He concluded that Cold pack application had a limited but significant effect during mechanical stretching for restricted knee motion.

Literature related to Oil Massage

Laurie Barclay (2006) reported that Oil Massage therapy may diminish pain symptoms and improve the course of OA by increasing local circulation to the affected knee joint, improving the tone of supportive musculatures, improve the joint flexibility, and relieving pain. A controlled clinical trial, 68 adults with radiographically confirmed OA of the knee were randomized either to massage treatment (twice-weekly sessions of standard Swedish massage in weeks 1 to 4 and once-weekly sessions in weeks 5 to 8) or to the control group (delayed intervention). The main endpoints were changes in the Western Ontario and McMaster Universities Osteoarthritis Index pain and functional scores and the visual analog scale (VAS) of pain assessment. He concluded that given the limitations and potential adverse effects of pharmacologic and nonpharmacologic treatments for OA, massage therapy seems to be a visible option as an adjunct to more conventional treatment modalities.

Mc Burney Helen (2007) conducted a study to assess the effect of two different massage oils on pain and stiffness associated with joint arthritis. After an initial assessment and an instruction session, all participants used each massage oil for four week period. This was a double blind trial and participants were randomly selected with respect to order of oil use. There was two week period of non

intervention between uses of each oil. Joint pain, stiffness scores from questionnaire ratings were compared across time using repeated measures analysis of variance.

Yip, Y.B, Tam, A.C. (2008) conducted an experimental study on the effectiveness of massage with aromatic ginger and orange essential oil for moderate-to-severe knee jointpain among the elderly in Hong Kong. Fifty-nine subjects attending a Community Centre among senior citizens in Hong Kong at 2008 .Samples were assigned to one of three groups – an experimental group, receiving a series of six massages with the ginger and orange oil blend over three weeks; a placebo control group, receiving the same massage intervention with olive oil only; and a control group receiving no intervention. Subjects were assessed at baseline, one week after treatment, and four weeks after the interventions were applied. One week after treatment, the experimental group showed improvement in physical function and pain compared to the placebo and control group, but these improvements were not sustained four weeks after treatment. The authors concluded that aroma-massage therapy seems to have potential alternative method for short-term knee jointpain relief.

Literature related to exercise

Chen-Yi Song (2001)investigatedthat the short- and long-term effect of leg-press exercises in dealing with patellofemoral pain. Sixty subjects with patella femoral painwere participated. They were randomly assigned into leg-press exercise for experimental group and control (no exercise)group. Training consisted of three weekly sessions for eight weeks. Measurements of painwas done by visual analogue scale, Lysholm scale score, morphology of vastusmedialisobliquus (including crosssectionalarea and volume by ultrasonography) were obtained before and after 8 weeks treatment. Long-term follow-ups was carried out (on leg-press group only) at 6month and twelve-month later. Significant improvements in pain, functional score, and muscle hypertrophywere observed after leg-press intervention, not in the control group. The fair subjectiveand functional outcomes achieved immediately after exercise intervention were maintained atlong-term follow-up. Since the short- and

long-term prognoses of subjects who underwent leg-press exercise were relatively good, the simple and convenient leg-press exercise was recommended in rehabilitation of patella femoral pain.

Robert Kinningham (2002) was conducted a study on two hundred patients ranging in age from 40 to 70 years with diagnosed osteoarthritis of knee to examine the association of quadriceps strength with pain and disability of knee osteoarthritis. In addition to the relationships between various components of health related fitness, pain, effusion and disability were also examined in this study. Quadriceps strength seems to be an independent contributor to the severity of osteoarthritis knee; the findings illustrate the need for improving the muscle function in these patients. No association between disability and knee pain indicates that functional limitations in patients with osteoarthritis should be explored separately from the evaluation of symptoms.

Stensdotter (2003) conducted a study for treatment for various knee disorders, muscles are trained in open or closed kinetic chain tasks. Methods: Ten healthy men and women (mean age 28.5, 0.7) extended the knees isometrically in open and closed kinetic chain tasks in a reaction time paradigm using moderate force. Results in closed chain knee extension, the onset of activity of the four different muscle portions of the quadriceps was more simultaneous than in the open chain. In open chain, Rectus Femoris had the earliest onset while vastus medialis obliquus was activated last (13 ms after RF onset) and with smaller amplitude (30% of Maximal Voluntary Contraction (MVC)) than in closed kinetic chain exercise. (43% MVC). It was concluded that the exercise in closed kinetic chain promotes more balanced initial quadriceps activation than does exercise in open kinetic chain.

Coen Van Gool, H. (2004) published a study on effects of dietary interventions and quadriceps strengthening exercises on pain and function in overweight people with knee joint pain by randomized controlled trial. The study involved 389 subjects with a Body Mass Index of 28 or above with self-reported knee pain. They were randomly selected to dietary interventions plus quadriceps

strengthening exercises; dietary intervention only; quadriceps strengthening exercises only; or an advice leaflet only. Interventions were delivered during home visits over two years. In total, 289 subjects completed the study trial. At the end of the trial there was a significant reduction in knee jointpain in the knee exercise groups compared to those in the non-exercise groups. Dietary intervention resulted in moderate sustained weight loss and reduced depression, but had no greater influence on knee pain or function designing training programs aimed toward control of the patellofemoral joint.

Roddy.E,Zhang,Z. (2004) considered the evidence for a range of different types of exercise interventions. In view of the large number of studies in this area, only studies involving randomized controlled trials were included in the evidence review.Exercise involving land-based exercises was examined: 13 randomized controlled trials were identified using aerobic and strengthening exercises for the knee joint pain.

Yolanda Escalante (2004) conducted a study on Physical exercise and reduction of pain in adults with lower limb osteoarthritis: this study concluded that(i)despite recommendations for the use of exercise programs as pain therapy in patients with hip and knee osteoarthritis, very few randomized clinical studies were conducted; (ii) the structure of the exercise programs (content, duration, frequency and duration of the session) is very heterogeneous; (iii) on overall, exercise programs based on Tai Chi have better results than mixed exercise programs, but without clear differences in result.

Ali Cimbiz(2005) conducted a study to assess the effect of combined therapy (spa and physical therapy) on pain in different chronic diseases. The pain intensity and hemodynamic responses of 472 patients involved in a spa and physical therapy program were studied retrospectively. Assessment criteria used were pain (Visual Analog Scale) and hemodynamic responses (heart rate, blood pressure, respiratory rate). Assessments took place before, immediately after treatment, and after completion of the program that is before discharge. It concluded that to decrease pain

and high blood pressure without hemodynamic risk, a combined of spa and physical therapy program may help to decrease pain and improve hemodynamic response in patients with irreversible pathologies.

Bennell, K.L., Hinman, R.S. (2005) practiced the patients with osteoarthritis of knee, two simple exercises with graduated weights. Patients were randomly divided into those receiving treatment at hospital and those doing exercises at home. Both groups showed decreased pain and increased function, maximum weight lift and endurance at the end of 4 weeks of the study. The subjects which continued exercises daily had retained benefits, whereas those which cease exercising experienced more pain. It was concluded that if the regimens were routinely used, there would be great practical benefits for patient with pain.

Henna Muzaffar (2005) conducted the study on effects of life style modification on knee joint pain affected with osteoarthritis. A total of 60 subjects were randomly assigned to either the dietary modification only group or the dietary modification/exercise regimen group for a period of three months. They made two visits to the assessment laboratory where anthropometric measurements were taken, five questionnaires were given, and subjects received relevant counseling. The findings of this study suggest that lifestyle modifications which focus on changes in dietary and exercise behaviors can improve joint mobility via positive changes in the range of motion and pain of the knee afflicted with osteoarthritis.

Stephen Messier, P. (2005) had done a study on exercise and dietary weight loss in overweight and obese older adults with Osteoarthritis of knee. The objective of this study was to determine whether long term exercise and dietary weight loss were more effective, either separately or combinely, than usual care in improving physical function, pain, mobility in old adults with knee Osteoarthritis. As Randomized single blind clinical trial study for 18 months with 316 community people, this study was conducted. The result of the study was the combination of modest weight loss plus moderate exercise provides better overall improvements in self reported measures of

function and pain in all performance measures of mobility in overweight and obese adults with knee osteoarthritis compared with either intervention alone.

Thomas K.S. (2005) had assessed the cost effectiveness of a 2-year home exercise program for the treatment of knee joint pain. A total of 759 adults aged >45 years were randomized to receive exercise therapy, monthly by telephone contact, exercise therapy by telephone contact, or no intervention. Efficacy was measured using self-reported knee pain at 2 years. Costs to both National Health Service and to the patient were included. Exercise therapy was associated with higher costs and better effectiveness. Direct costs for the interventions were £112 for the exercise program and £61 for the monthly telephone support. Participants allocated to receive exercise therapy were significantly more likely to incur higher medical costs than those in the no-exercise groups (mean difference £225; 95% confidence interval £18, £232; $P < 0.001$). It concluded that exercise therapy was associated with improvements in knee joint pain, but the cost of delivering the exercise program was unlikely to be offset by any reduction in medical resource use.

Wong, Y.K. (2005) explored the feasibility and efficacy of an exercise programme for elderly with knee joint pain conducted via videoconferencing. Twenty-two community-dwelling subjects aged 60 years or above with knee pain were recruited from two community centers in Hong Kong. A 12-week exercise programme, including strengthening and balance training, was given via videoconferencing to subjects at both centers, in conjunction with a home-based exercise programme. The outcome measures included the Western Ontario and McMaster Universities Osteoarthritis Index, quadriceps muscle strength, Berg's Balance Scale and subjects' degree of acceptance of videoconferencing. Twenty subjects completed the 12-week programme and significant improvements occurred in all domains of the WOMAC score ($P < 0.003$). There was a 44% and a 13% increase in quadriceps muscle strength ($P < 0.001$) and BBS ($P < 0.001$), respectively. Over 80% of the elderly subjects who joined the programme agreed or strongly agreed about all aspects of using videoconferencing. Most of them felt that the system was user-friendly and convenient. Videoconferencing appears to be a useful method of

delivering a resistance-training programme for community-dwelling elderly persons with knee pain.

Robert Goldberg, J. (2006) did the meta-analysis of the analgesic effects of omega-3 polyunsaturated fatty acid supplementation for inflammatory joint pain. They conducted a meta-analysis of 17 randomized, controlled trials assessing the pain relieving effects of ω -3 PUFAs in patients with rheumatoid arthritis or joint pain secondary to inflammatory bowel disease and dysmenorrhea. The results suggest that ω -3 PUFAs are an attractive adjunctive treatment for joint pain associated with rheumatoid arthritis, inflammatory bowel disease, and dysmenorrhea condition.

Fisher N.M.(2010)conductedQuantitative effects of water exercise program on functional and physiological capacity among subjects with knee osteoarthritis Osteoarthritis (OA) is a common disease that often affects the knees. Patients suffer from pain and disability and have associated reductions in muscle and cardiopulmonary function. We quantitatively evaluated the effects of an 8-week water exercise program on muscle, cardiovascular, and functional capacity on patients with knee OA. Functional capacity (walking time, Jette functional status index, habitual physical activity questionnaire), muscle function (strength, endurance, contraction speed of the quadriceps and hamstrings), and cardiovascular function (oxygen consumption, blood pressure, heart rate) were evaluated before and after WEP on 9 men and 9 women with knee OA. After 8 weeks of WEP, no significant changes were observed in measured variables. Although patients with knee OA enjoyed the WEP and thought that it was beneficial to them, it did not significantly improve muscle and cardiovascular fitness or functional capacity.

Nor Azlin, Su Lyn,K. (2010) conducted a study to assess the Effects of Passive joint mobilization on patients with knee jointpain in Knee Osteoarthritis. A controlled, single blinded experimental study was conducted to determine the effects of passive joint mobilization on pain and stairs ascending-descending time in subjects with knee osteoarthritis (OA knee). A total of 22 subjects aged 40 and above with mild and moderate OA knee were assigned to passive knee mobilization plus

conventional physiotherapy (experimental group) or conventional physiotherapy alone (control group). Both groups received 2 therapy sessions per week, for 4 weeks. No significant correlation was found between pain score and stairs ascending-descending time, $r = 0.34$, $p = 0.16$. The addition of passive joint mobilization to conventional physiotherapy reduced pain but not stairs ascending-descending time among subjects with knee joint pain in OsteoArthritis.

Laurence Wood.R.J.(2011) conducted a study on exercise therapy for knee joint pain and osteoarthritis remains a key element of conservative treatment, recommended in clinical guidelines. 60 participants from an existing observational cohort of community-dwelling older adults with knee pain participants have with at least one of the three physical impairments of weak quadriceps, a reduced range of knee flexion and poor standing balance. Primary outcome measures will be isometric quadriceps strength, knee flexion range of motion, timed single-leg standing balance and the “Four Balance Test Scale” at 12 weeks. Outcome measures will be taken at three time-points (baseline, six weeks and twelve weeks) by a study nurse blinded to the exercise status of the participants. Exercises targeted at the specific physical impairments of older adults with knee pain may be able to significantly improve those impairments.

Literature related to diet

Younis, Munshi1, I. (2006) conducted a Questionnaire Based Survey on Role of diet in the disease activity of Arthritis. The study was questionnaire based survey of the patients with joint disorders who attended the Out Patients department of Regional Research Institute of Unani Medicine, Srinagar Kashmir India. The survey was conducted among 100 patients consisting of 85% osteoarthritis patients and 15% rheumatoid arthritis patients. The 80% of rheumatoid arthritis patients believed that diet has some effective role in disease activity and 53% of osteoarthritis patients believed the aggravation of symptoms with certain diets. On the whole red meat was found to be major constituent of diet which aggravated the symptoms in 80% of rheumatoid arthritis patient's and 41.1% osteoarthritis patients. Influence of fasting

during the month of Ramadan was also recorded and it was observed that 61% of rheumatoid arthritis patients had relief during fast while as 49.3% of osteoarthritis patients had relief in symptoms during the fasting. The details are discussed in the paper. It is concluded that certain diets have definite role to play on the disease activity in joint disorders and fasting has some effect on the severity of the disease.

Wang Wanyuan, Y. (2007) examined the effect of dietary antioxidants on knee structure in a cohort of healthy, middle aged subjects with no clinical knee osteoarthritis. Two hundred and ninety-three healthy adults (mean age = 58.0 years, standard deviation = 5.5) without knee pain were selected from an existing community-based cohort. The present study suggests that beneficial effect of fruit consumption and vitamin C intake as they are associated with a reduction in bone size and the number of bone marrow lesions both was important in the pathogenesis of knee osteoarthritis.

Through these above reviews it was realized that knee joint pain is a common symptom that would occur in geriatric people. By following certain measures it will be possible to alleviate the pain. Amidst all these measures it is possible to apply Hot water application, Oil massage, Exercise and diet education to reduce the pain perception in knee joint among elderly in community setup.

CHAPTER III

METHODOLOGY

RESEARCH METHODOLOGY

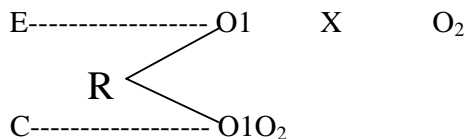
This chapter dealt about the methodology adopted by the investigator to assess the pain perception in knee joint among elderly and home care management and remedial practices to reduce the knee joint pain. It includes , research design, variables under the study, setting of the study, population, criteria for selection of the sample, sample size, sampling technique, development and description of the tool for data collection, content validity, reliability, method of data collection and statistical analysis.

RESEARCH DESIGN

True experimental, pretest and post-test control group design was adopted for this study.

Home care measures and remedial practices were applied for experimental group.

No Home care measures and remedial practices were applied for control group.



KEYS:-

E-Experimental Group

C -Control Group

O₁-First Observation

O₂-Second Observation

X -Intervention (home care management and remedial practices)

R -Randomization

VARIABLES UNDER THE STUDY

In this study home care management and remedial practices was an independent variable. Knee joint pain was the dependent variable.

SETTING OF THE STUDY

This study was conducted among elderly with knee joint pain. The samples were selected from Kalapatti which is situated 4 kilometers away from KMCH. This area was taken for control group. For experimental group, I have selected Veeriyampalayam which is situated 5 kilometers away from Kovai Medical Center and Hospital.

AREA	TOTAL POPULATION	TOTAL FAMILIES	ELDERLY BETWEEN 60-80 YRS	ELDERLY WITH KNEE JOINT PAIN
Kalapatti	5557	1578	259	121
Veeriyampalayam	3743	1005	166	92

POPULATION OF THE STUDY

The study population was comprised elderly from 60-80 years old with knee joint pain.

SAMPLE SIZE

The sample size for this study was 60 elderly with knee joint pain. Among this, 30 were selected for control group from Kalapatti and 30 were selected for experimental group from Veeriyampalayam.

SAMPLING TECHNIQUE

Sarkarsamakulum Primary Health Centre covering 13 subcentres. Through lottery method, the investigator had selected 2 areas namely Kalapatti and Veeriyampalayam.

In Kalapatti there were 121 elderly with knee joint pain have fulfilled the inclusion criteria of the study. Through systematic random sampling technique, every 4th elderly with knee joint pain and totally 30 were selected as a sample for the study as control group.

In Veeriyampalayam around 92 elderly with knee joint pain have fulfilled the inclusion criteria of the study. Through systemic random sampling technique, every 3rd elderly with knee joint pain totally 30 were selected as a sample for the study as experimental group.

CRITERIA FOR SELECTION OF SAMPLES

The researcher followed criteria in selecting the samples for control and experimental groups.

Inclusion Criteria

- Elderly from 60-80 years old, irrespective of sex.
- Elderly with knee joint pain.

Exclusion Criteria

- Elderly who are all taking treatment for knee joint pain
- Elderly who are all practicing home care remedies in their day to day life for knee jointpain.

DESCRIPTION OF THE INTERVENTION

- ✓ Hot Water application -5min
- ✓ Massage (Karpoorathythylam) -10min
- ✓ Muscle Strengthening Exercise (Quadriceps strengthening and thigh contraction exercise) -10 min
- ✓ Diet Education (omega -3 fatty acids) -5min

Total Duration = 30 min

DEVELOPMENT AND DESCRIPTION OF THE TOOL

The primary purpose of home care management and remedial practices are to reduce the knee joint pain among elderly. It includes Demographic variables, Clinical variables and Numerical Pain Intensity Scale.

SECTION-A

Demographic variables comprise sample number, Age, Sex, Education, Marital Status, Occupation and Type of family.

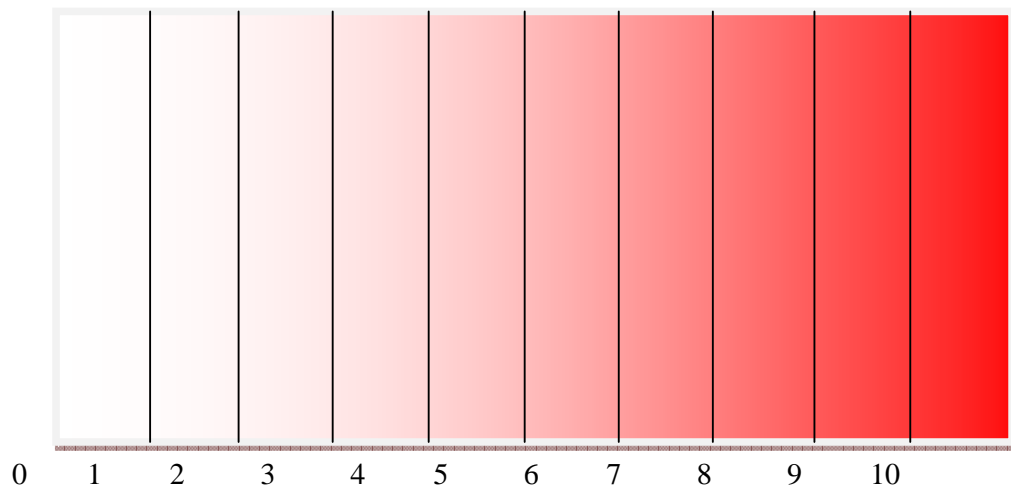
SECTION-B

Clinical variables include Height, Weight, BMI, Duration of pain and Co-existing diseases.

SECTION-C

Description of the Tool

The Numerical Pain Intensity Scale is ranging from 0-10. This scale was used to assess the pain perception of elderly in knee joint. The elderly with knee joint pain was asked to choose the appropriate pain perception level in this scale during pretest and post test for both control and experimental group.



KEYS:

- 0 - No Pain
- 1-3 - Mild pain
- 4-6 - Moderate pain
- 7-10 - Severe pain

TESTING OF THE TOOL

CONTENT VALIDITY

The tool was given to four experts in the field of nursing and medicine for content validity. All suggestions were considered and appropriate changes were made and the corrected tool was found to be valid.

PILOT STUDY

The pilot study was conducted for a period of one week among 20 elderly people from 60-80 years with knee joint pain. Randomly 10 Elderly people with knee joint pain for control group were selected from Athikuttai and 10 for experimental group was selected from Rangansamy Gounden Pudur. Pretest was conducted for control and experimental group. Interventions were applied to the experimental group. The study was found to be feasible.

RELIABILITY

The standardized numerical pain intensity scale was used and tools were found to be valid.

PROCEDURE FOR DATA COLLECTION

Before data collection, the researcher got formal permission from the Medical Officer at Sarkarsamakulam Primary Health Centre to conduct a study at Kalapatti and Veeriyampalayam. The investigator had selected the subjects who have fulfilled the inclusion criteria. Brief explanation was given about the purpose of the study. Assurance was given that the data collected from the elderly will be utilized only for the purpose of this study.

The investigator introduced her to the elderly and collected demographic variables from control and experimental group. The investigator used Numerical Pain Intensity Scale which is standardized to assess the level of knee joint pain perception through structured interview questionnaire method. The pretest was collected from both control and experimental group by using the Numerical Pain Intensity scale. The duration of the interview for each subject is about 15 minutes in both groups. For

control group no interventions were applied. In experimental group for each sample, around 30 minutes was spent for demonstrating the practices of interventions. The investigator applied interventions (hot water application, oil massage, exercise & diet education) for 10 samples per day. The practice of each sample was verified with checklist and unstructured questionnaire.

Following the pretest, for six weeks, interventions were applied to experimental group only. After six weeks, post test knee joint pain perception level was assessed for both control and experimental group by using the same Numerical Pain Intensity Scale.

STATISTICAL ANALYSIS

The collected data was analyzed by Descriptive and Inferential statistics. Descriptive statistics include mean and percentage to assess the knee joint pain perception of elderly. Inferential statistical analysis such as independent 't' test and paired 't' test were applied to assess the effectiveness of home care management and remedial practices on knee joint pain perception in control and experimental group. Chi-square was used to associate the knee joint pain perception with demographic variables.

CHAPTER IV

ANALYSIS AND INTERPRETATION

The collected data regarding home care management and remedial practices on knee joint pain among elderly were organized, analyzed and interpreted as follows.

SECTION A: Distribution of the subjects according to their demographic variables

SECTION B: Distribution of subjects according to mean pre test knee joint pain in control group and experimental group.

SECTION C: Distribution of subjects according to mean post test knee joint pain in control group and experimental group.

SECTION D: Comparison of knee joint pain level of elderly between pre test and post test in control and experimental group.

SECTION E: Comparison of pre test and post test knee joint pain level of elderly between control and experimental group.

SECTION F: Association of pre test knee joint pain level with demographic variables of subjects in control group.

SECTION G: Association of pretest and post test knee joint pain level with demographic variables of subjects in experimental group.

SECTION- A

Table 1: Distribution of subjects according to their demographic variables

N=60

S.No	Demographic Variables	Control group		Experimental group	
		n(30)	%	n(30)	%
1	Age in years				
	a) 60-65 yrs	20	66.67	13	43.33
	b) Above 65 yrs	10	33.33	17	56.67
2	Sex				
	a) Male	6	20	5	16.67
	b) Female	24	80	25	83.33
3	Education				
	a) Illiterate	22	73.33	20	66.67
	b) Literate	8	26.67	10	33.33
4	Marital Status				
	a) Married	20	66.67	23	76.67
	b) Widow/Widower	10	33.33	7	23.33
5	Occupation				
	a) Employed	13	43.33	14	46.67
	b) Unemployed	17	56.67	16	53.33
6	Type of Family				
	a) Nuclear	9	30	8	26.67
	b) Joint	21	70	22	73.33
7	BMI				
	a) >24	13	43.33	18	60
	b) 24.1 - 24.9	4	13.33	1	3.33
	c) 25.0 - 29.0	13	43.33	9	30
	d) 29.1 - 39.0	0	0	2	6.66

Table 1 describes the distribution of the subjects in control and experimental groups according to Age, Sex, Educational status, Marital status, Occupation, Type of family, and BMI.

In control group:

- Regarding the age, most of the subjects were at 60-65 years. 66.67 Per cent (20) are at 60-65 years old. 33.33 Percent (10) were more than 65 years old.
- Regarding sex, 20 Percent (6) were male and 80 Percent (24) were female.
- Regarding education, 73.33 Per cent (22) was illiterate and 26.67 Percent (8) were literate.
- Regarding marital status, 66.67 Percent (20) were married and 33.33 Percent (10) were widow or widower.
- Regarding occupation, 43.33 Percent (13) were employed and 56.67 Percent (17) were unemployed.
- Regarding type of family, 30 Percent (9) were from nuclear family and 70 Percent (21) were from joint family.
- Regarding BMI, 43.33 Percent (13) elderly were <24, 13.33 Percent (4) were between 24.1-24.9, 43.33 Percent (13) were at 25-29 and no one was more than 29 in BMI.

In experimental group:

- Regarding age, 43.33 Percent (13) were at 60-65 years and 56.67 Percent (17) were above 65 years old.
- Regarding sex, 16.6 Percent (5) were male and 83.33 Percent (25) were female.
- Regarding education, 66.67 Percent (20) was illiterate and 33.33 Percent (10) were literate.
- Regarding marital status, 76.67 Percent (23) were married and 23.33 Percent (7) were widow or widower.
- Regarding occupation, 46.67 Percent (14) were employed and 53.33 Percent (16) were unemployed.
- Regarding type of family, 26.66 Percent (8) were from nuclear family and 73.33 Percent (22) were from joint family.
- Regarding BMI, 60 Percent (18) of elderly were <24, 3.33 Percent (1) were at 24.1-24.9, 30 Percent (9) were at 25-29 and 6.66 Percent (2) were at 29.1-39 in BMI.

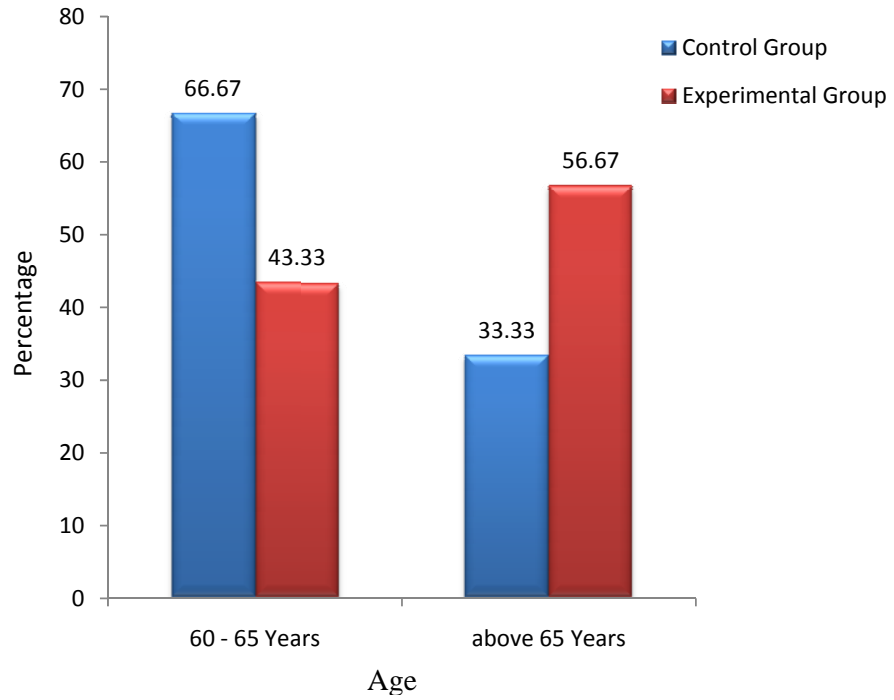


Fig: 2 Distribution of the subjects according to Age

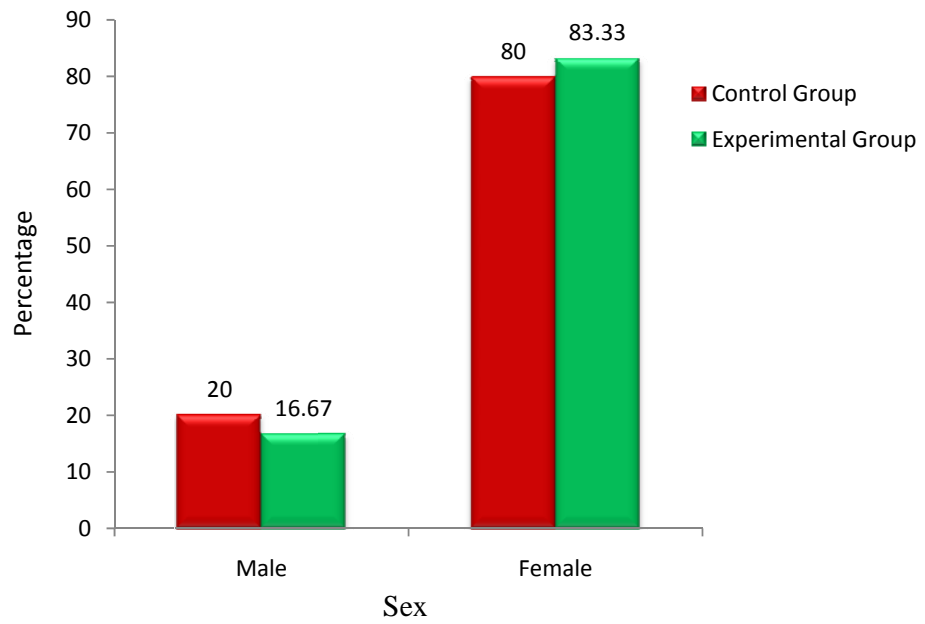


Fig: 3 Distribution of the subjects according to Sex

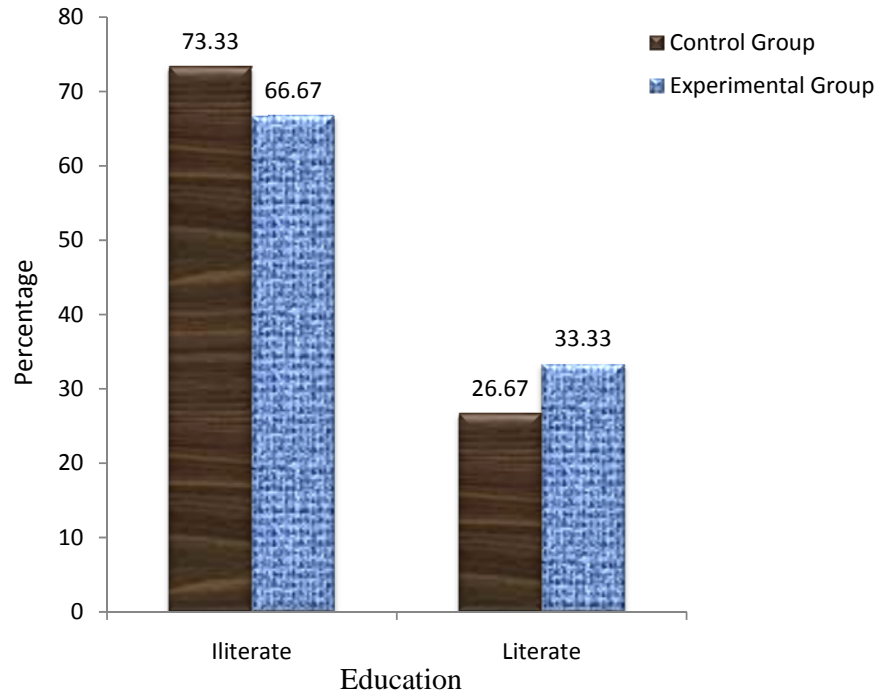


Fig: 4 Distribution of the subjects according to Education

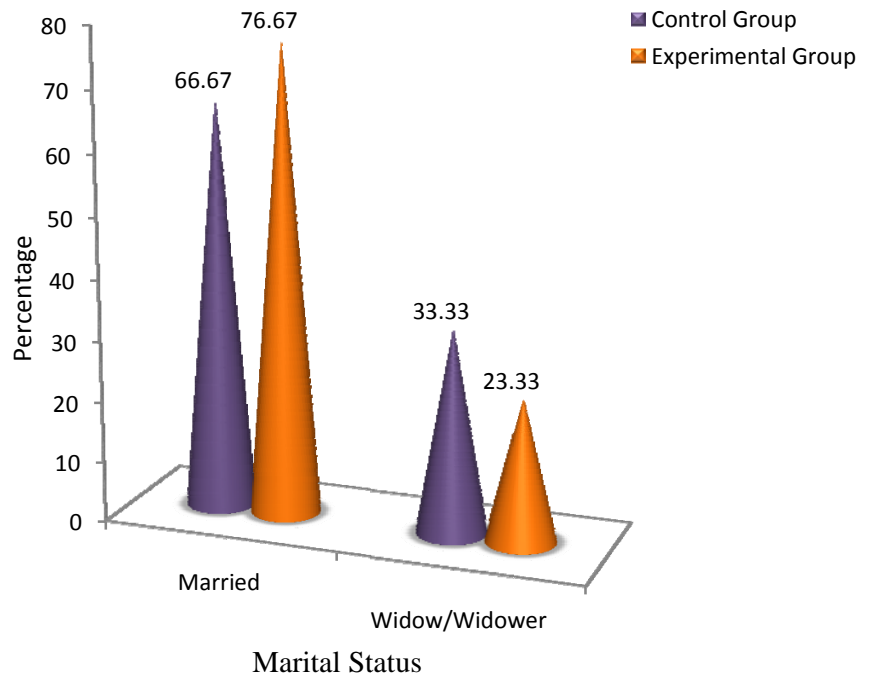


Fig: 5 Distribution of the subjects according to Marital Status



Fig: 6 Distribution of the subjects according to Occupation

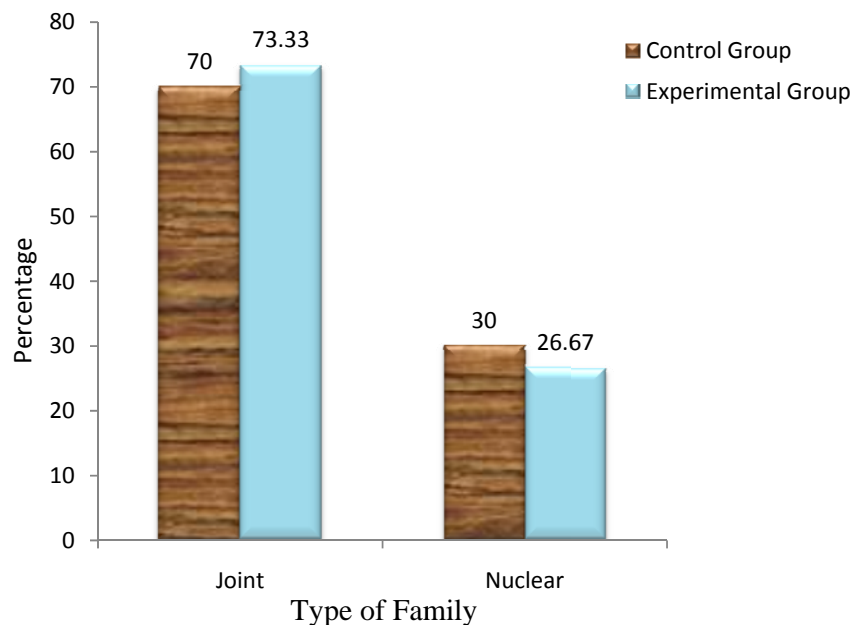


Fig: 7 Distribution of the subjects according to Type of Family

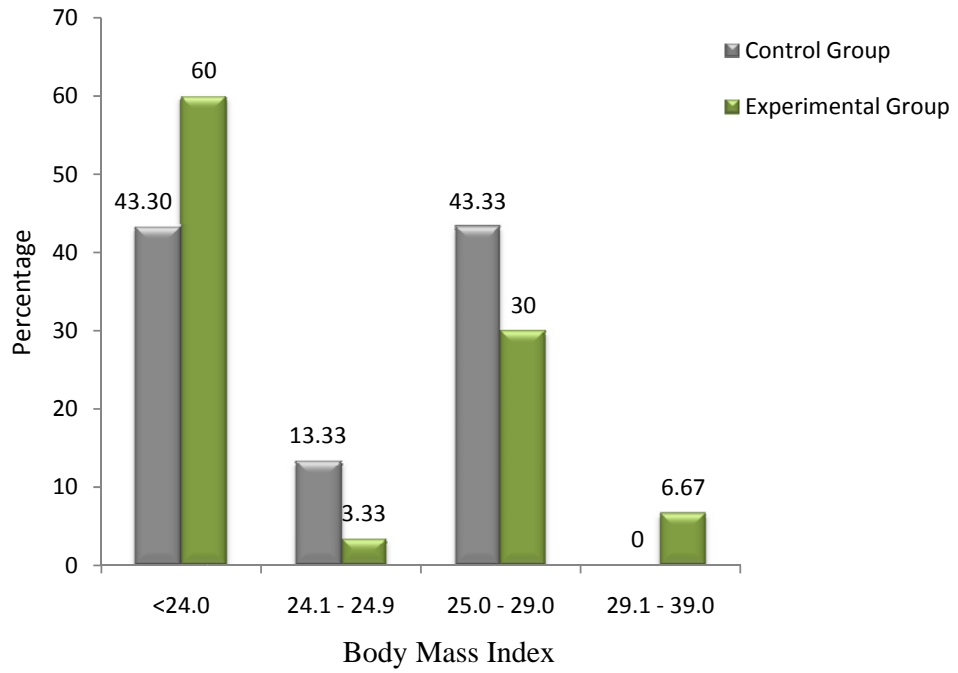


Fig: 8 Distribution of the subjects according to Body Mass Index

SECTION-B

Table 2: Distribution of subjects according to mean pre test knee joint pain perception level in control group and experimental group.

N=60

S.No	Pre test score	Control Group		Experimental Group	
		n(30)	%	n(30)	%
1	Mild	0	0	0	0
2	Moderate	11	36.67	15	50
3	Severe	19	63.33	15	50

Mean pretest score in control group 5.5

Mean pretest score in experimental group 6.5

Table 2 shows that the distribution of subjects according to their mean pretest scores. In control group 36.67 Per cent (11) were scored moderate pain perception and 63.33 Per cent (19) was scored severe pain perception.

In experimental group 50 Per cent (15) had moderate pain and 50 Per cent (15) had severe pain perception. No one had mild level pain. It shows that maximum of elderly had severe knee joint pain in control and experimental group.

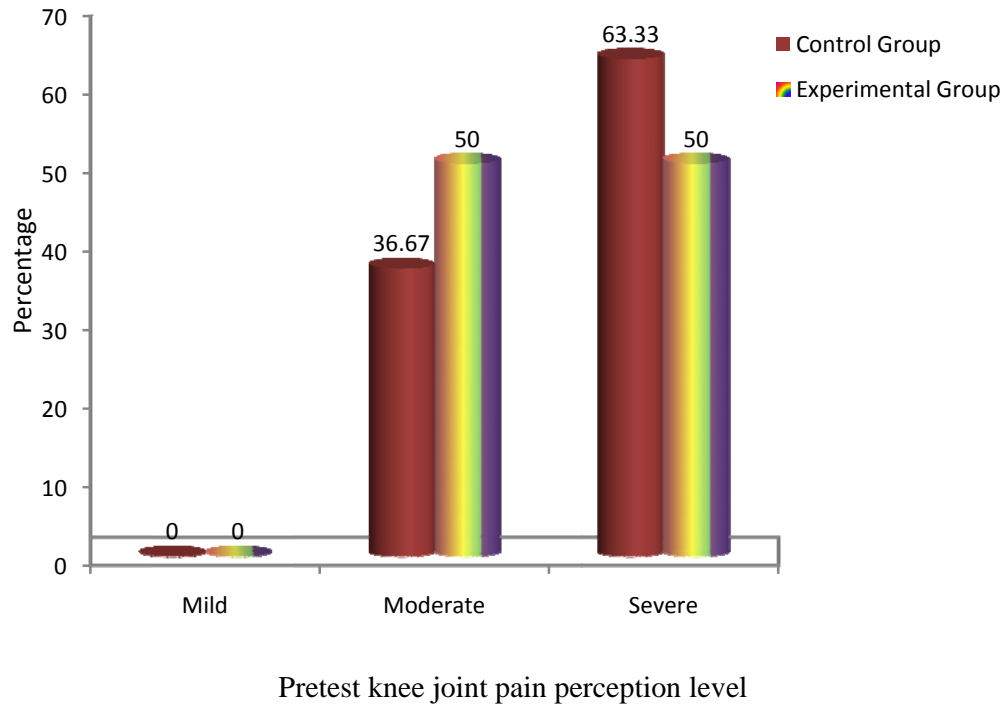


Fig: 9 Distribution of the subjects according to mean pretest knee joint pain perception level in control and experimental group

SECTION -C

Table 3:Distribution of subjects according to mean post test knee jointpainperception levelin control group and experimental group.

N=60

S.No	Knee joint Pain	Control Group		Experimental Group	
		n (30)	%	n (30)	%
1	Mild	0	0	8	26.66
2	Moderate	11	36.67	20	66.66
3	Severe	19	63.33	2	6.66

Mean post test score in control group 5.5

Mean post test score in experimental group 4.1

Table 3 describes the distribution of subjects according to mean post test knee joint painperception level. In control group, the distributions of samples with knee joint pain perception level were same as pretest. In experimental group, 8(26.66 Per cent) had mild pain, 20(66.66 Per cent) had moderate pain and 2 (6.66 Per cent) elderly had severe pain. It reveals that compared with pretest, only less number of elderly had mild pain after the interventions were applied. It means that the interventions were very effective.

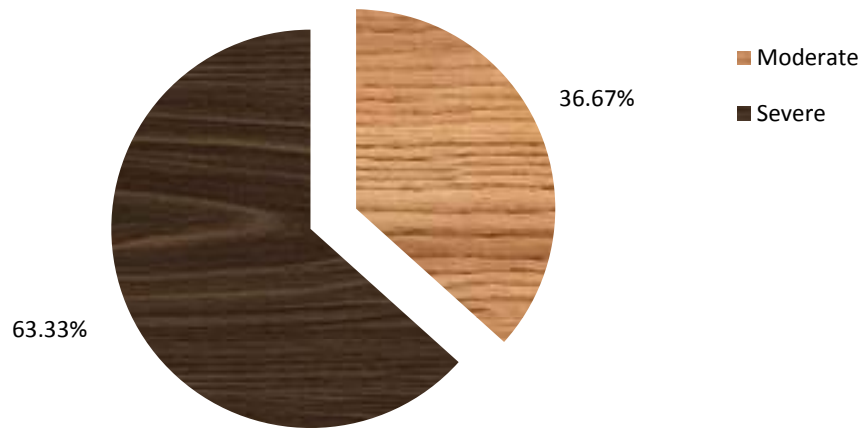


Fig: 10 Distribution of the subjects according to meanpost test knee joint pain perception level in control group

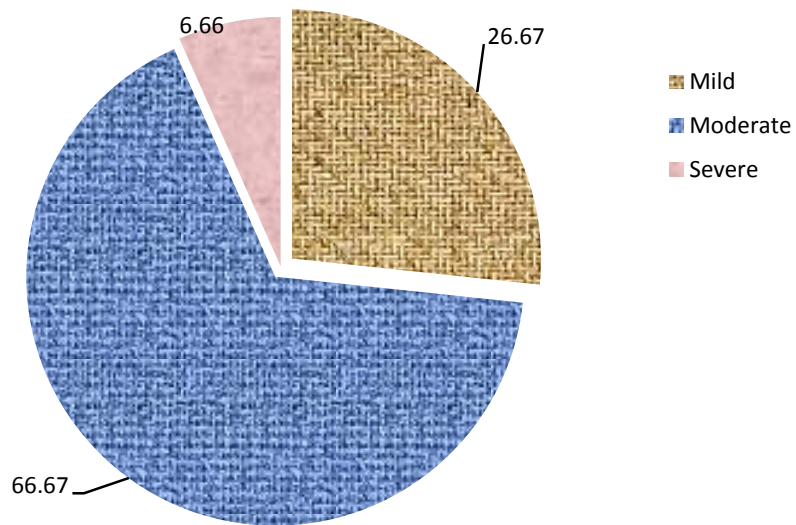


Fig: 11 Distribution of the subjects according to mean post test knee joint pain perception level in experimental group

SECTION-D

Table4: Comparison of mean knee joint pain perception level of elderly between mean pretest and post test in control group

N=30

S.No	Control Group	Mean	S.D	df	't' Value
1	Pre Test	5.5			
2	Post Test	5.5	0	29	0

** -P<0.01

Table 4 describes the mean knee jointpain level in control group and the computed value of 't'(0) was less than table value(2.462) at df 29.It shows that 't' value for mean difference between pre and post test knee joint pain level in control group was not significant at 0.01 level. This data shows that there was no difference between pre and post test in control group.

Table5: Comparison of mean knee joint pain perception level of elderly between mean pretest and post test in experimental group

N=30

S.No	Experimental Group	Mean	S.D	df	't' Value
1	Pre Test	6.5			
2	Post Test	4.1	1.69	29	7.759**

** -P<0.01

Table 5 describesthe mean knee joint pain level in experimental group and the computed value of 't' (7.759) was more than the table value (2.462) at df 29. It shows that't' value for mean difference between pre and post test knee joint pain level in experimental group was significant at P< 0.01 level. This data shows that the severity of knee jointpain among elderly was reduced in experimental group after administered the interventions.

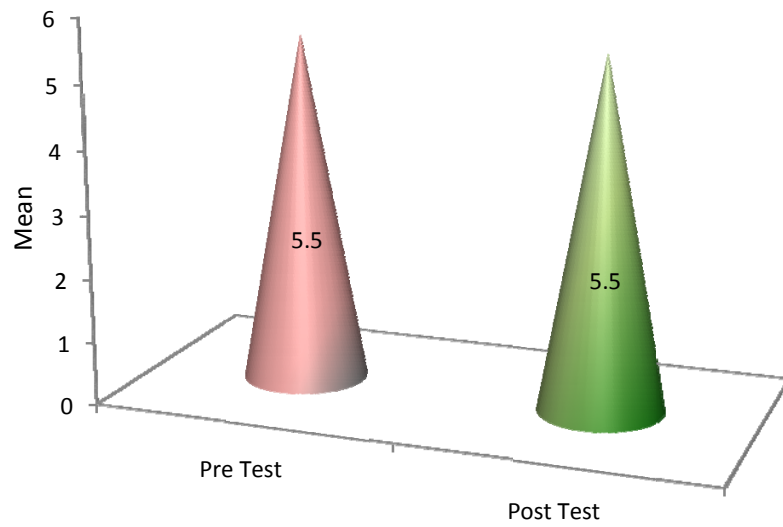


Fig: 12 Comparison of mean knee joint pain perception level of elderly between pretest & post test in control group

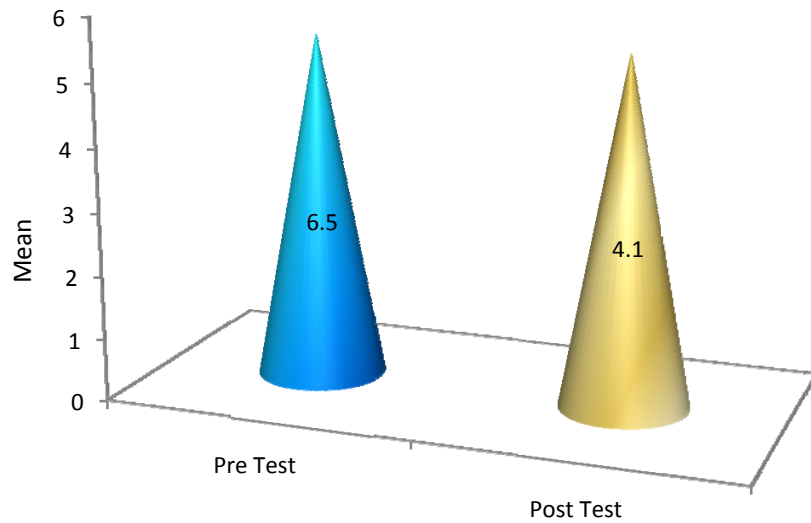


Fig: 13 Comparison of mean knee joint pain perception level of elderly between pretest & post test in experimental group

SECTION-E

Table 6: Comparison of mean pre test pain perception level of elderly between control & experimental group

N=60

S. No	Group	Mean	S.D	df	't' Value
1	Control Group	5.5			
2.	Experimental Group	6.5	1.74	58	2.2076

**-P<0.01

Table 6 reveals the mean pretest knee joint pain level between control and experimental group. The calculated value of 't' (2.2076) was less than the table value (2.462) at df 58. It indicates that 't' value of both groups pre test knee joint pain level was not significant at p<0.01 level. Homogeneity between control and experimental group was obtained in pretest. This shows that there was no difference between the control and experimental group with regard to pretest knee joint pain level.

Table 7: Comparison of mean post test pain perception level of elderly between control & experimental group

N=60

S.No	Group	Mean	S.D	df	't' Value
1	Control Group	5.5			
2	Experimental Group	4.1	1.8	58	3.00**

**-P<0.01

Table 7 compares the mean post testknee jointpain level among control and experimental group and the computed value of 't' 3.00 was more than the table value (2.462) at df(58) which was statistically significant at 0.01 level. This describes that; compared to control group, elderly in experimental group experienced better knee joint pain reduction due to home care management and remedial practices. It shows,home care management and remedial practices were more effective in reducing theknee joint pain perception of elderly.

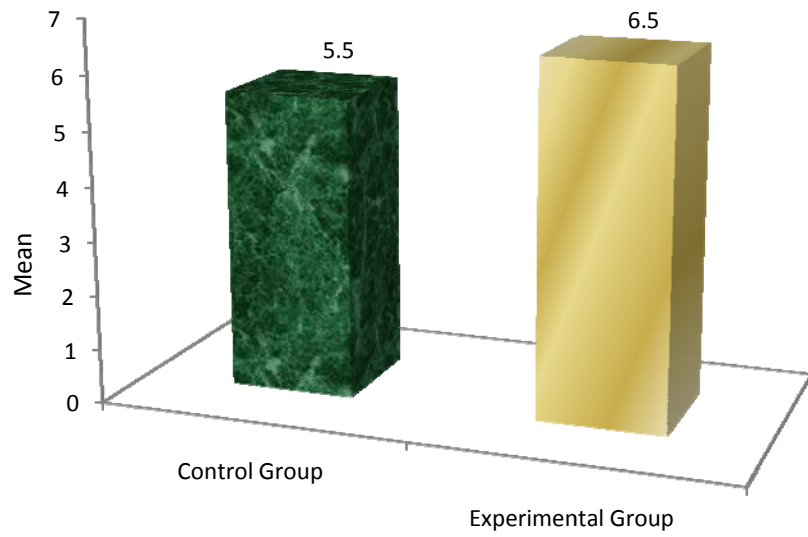


Fig: 14 Comparison of mean pre test knee joint pain perception level of elderly between control and experimental group

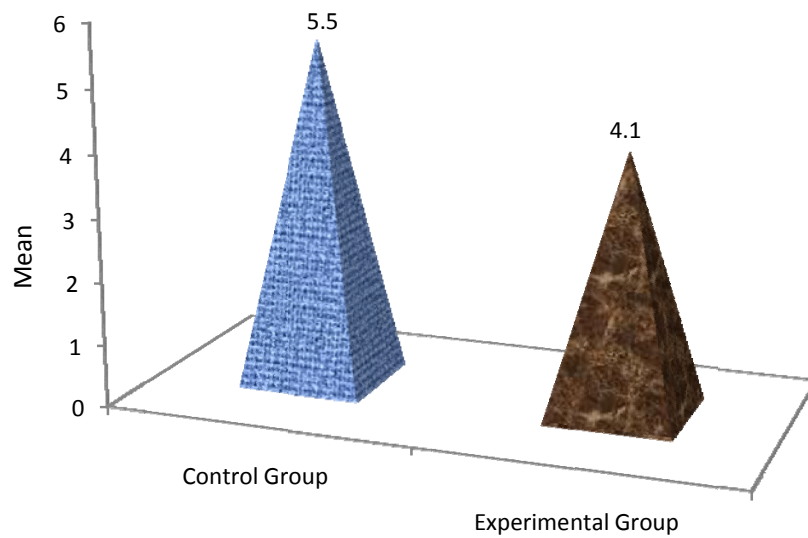


Fig: 15 Comparison of mean post test knee joint pain perception level of elderly between control and experimental group

SECTION-F

Table 8: Association of pretest pain perception with demographic variables of subjects in control group. N=30

S.No	Demographic Variables	Pain Perception Score			df	X ²
		Mild (1-3)	Moderate (4-6)	Severe (7-10)		
1	Age in years				2	0.0712(NS)
	a) 60-65 yrs	0	7	13		
	b) Above 65 yrs	0	4	6		
2	Sex				2	0.0357(NS)
	a) Male	0	2	4		
	b) Female	0	9	15		
3	Education				2	0.0035(NS)
	a) Illiterate	0	8	14		
	b) Literate	0	3	5		
4	Marital Status				2	1.1423(NS)
	a) Married	0	6	14		
	b) Widow/Widower	0	5	5		
5	Occupation				2	0.3379(NS)
	a) Employed	0	4	9		
	b) Unemployed	0	7	10		
6	Type of Family				2	1.1549(NS)
	a) Nuclear	0	9	12		
	b) Joint	0	2	7		
7	BMI				4	0.2702(NS)
	a) >24	0	5	8		
	b) 24.1 - 24.9	0	1	3		
	c) 25.0 - 29.0	0	5	8		

NS – Not Significant

Table 8 describes that there is no association ($p < 0.01$) between demographic variables and pre test knee joint pain perception in control group.

SECTION- G

Table9: Association of pretest pain perceptionwith demographic variables of subjects in experimental group. N=30

S.No	Demographic Variables	Pain Perception Score			df	X ²
		Mild (1-3)	Moderate (4-6)	Severe (7-10)		
1	Age in years				2	0.1358(NS)
	a) 60-65 yrs	0	6	7		
	b) Above 65 yrs	0	9	8		
2	Sex				2	2.16(NS)
	a) Male	0	1	4		
	b) Female	0	14	11		
3	Education				2	0.6(NS)
	a) Illiterate	0	11	9		
	b) Literate	0	4	6		
4	Marital Status				2	0.1862(NS)
	a) Married	0	12	11		
	b) Widow/Widower	0	3	4		
5	Occupation				2	4.8214*
	a) Employed	0	10	4		
	b) Unemployed	0	5	11		
6	Type of Family				2	0.6818(NS)
	a) Nuclear	0	3	5		
	b) Joint	0	12	10		
7	BMI				6	1.5(NS)
	a) >24	0	11	7		
	b) 24.1 - 24.9	0	0	1		
	c) 25.0 - 29.0	0	5	4		
	d) 29.1 - 39.0	0	1	1		

* - Significant

NS - Not Significant

Table 9describes that in experimental group thepre test pain level was significant (p<0.01) with **Occupation**.Other than occupation, pretest pain level has no significant association (p<0.01) with demographic variables of subjects.

Table 10: Association between post test pain perception and demographic variables of subjects in the experimental group. N=30

S.No	Demographic Variables	Pain Perception Score			df	X ²
		Mild (1-3)	Moderate (4-6)	Severe (7-10)		
1	Age in years				2	1.4941 (NS)
	a) 60-65 yrs	2	10	1		
	b) Above 65 yrs	6	10	1		
2	Sex				2	0.6551(NS)
	a) Male	1	4	0		
	b) Female	7	16	2		
3	Education				2	1.8654(NS)
	a) Illiterate	4	15	1		
	b) Literate	4	5	1		
4	Marital Status				2	0.9183(NS)
	a) Married	6	16	1		
	b) Widow/Widower	2	4	1		
5	Occupation				2	1.8651(NS)
	a) Employed	4	10	0		
	b) Unemployed	4	10	2		
6	Type of Family				2	1.2331(NS)
	a) Nuclear	3	5	0		
	b) Joint	5	15	2		
7	BMI				6	4.367(NS)
	a) >24	6	10	2		
	b) 24.1 - 24.9	0	1	0		
	c) 25.0 - 29.0	1	8	0		
	d) 29.1-39	1	1	0		

NS - Not Significant

Table 10 describes that the post test pain perception level in experimental group has no significant association ($p < 0.01$) with demographic variables of subjects.

CHAPTER V

DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

DISCUSSION

Elderly is an irreversible biological phenomenon that eventually terminates with the end of the life of human being. It is a gift that no one can refuse to take but the various changes that occur in our society sometimes make us scare of this stage as every one of us faces it one day. At present the proportion of elderly is increasing more than any other age group. Nowadays more attention is given by the private and Government organization in the care of elderly people.

1. The first objective of the study was to assess the level of knee joint pain among elderly.

According to **Age**, in control group, compare with above 65 years old age group (33.33 Per cent), the group at 60-65 years were in double (66.67 Per cent). In experimental group nearly $\frac{3}{5}$ th (56.67 Per cent) of elderly were above 65 years old age and nearly $\frac{2}{5}$ th of elderly were at 60-65 years old age group. Regarding **Sex**, females were 4 times (80 Per cent) more than males (20 Per cent) in control group. In case of experimental group females were 5 times (83.33 Per cent) higher in distribution than males.

In control group related to **Literacy**, nearly $\frac{2}{3}$ rd of elderly (73.33 Per cent) were illiterate and $\frac{1}{3}$ rd of elderly (26.67 Per cent) were literate. In experimental group illiterate (66.67 Per cent) were double in distribution than literate (33.33 Per cent). With regards to **Marital status**, 66.67 Per cent of elderly were married & 33.33 Per cent of elderly were widow or widower in control group. In experimental group, 76.67 Per cent were married & 23.33 Per cent of elderly were widow or widower.

In details to **Occupation**, in control group among 30 samples 13 elderly (43.33 Per cent) were employed and 17 (56.67 Per cent) were unemployed. In experimental group also the distribution of samples was more or less equal to control group that is employed were 46.67 Per cent and unemployed were 53.33 Per cent. On

the basis of **Type of family** in control group 30Per cent of elderly were belongs to Nuclear family &70Per cent were belongs to Joint family.In experimental group 1/3rd (30Per cent) of elderly were from Nuclear family and 2/3rd of elderly were belongs to Joint family.

Considering to **Body Mass Index (BMI)**, 43.33 Per cent were >24 BMI, 13.33Per cent were at 24.1-24.9 BMI, and 43.33Per cent were in 25-29 BMI in control group. None of them were above 29 BMI .In experimental group 60Per cent were less than 24, 3.33Per cent were at 24.1-24.9BMI, and 30Per cent were at 25-29 and 6.66Per cent were at 29.1-39 BMI .No one of them was above39 in BMI.

2. The second objective of this study was to determine the effectiveness of home care management and remedial practices among elderly with knee joint pain.

In control group the mean score of pre test knee joint pain level was 5.5 and the mean score of post test was 5.5.The mean difference was 0.The 't' value between pre test and post test was 0.(p<0.01) at df 29. In experimental group, the mean score of pre test of pain level was 6.5 and the post test pain level was 4.1.The mean difference was2.4.The independent't' value between pre test and post test was 7.759(p<0.01) at df 29. This value was more than the table value. It denoted that the't' value for mean difference between pre and post testpain level of knee joint in experimental group was significant at 0.01 level.

The mean score of pre test knee joint pain level of elderly in control group was 5.5 and in experimental group it was 6.5.The mean difference was 1.The calculated value ofindependent't' (2.2076) was less than the table value 2.462(p<0.01) at df 58.This shows that there was no difference between the control group and experimental group with regards to pre test pain score.

The mean score of post test pain level in control group was 5.5 and in experimental group was4.1.The mean difference was 1.4.The independent't' value between these groups was 3.00at df 58.This findings revealed that, compared withcontrol group, elderly persons in experimental group experienced better knee joint pain reduction due to home care management and remedial practices.It showed thatstatistically the interventions (home care management and remedial practices) were more effective in reducing the knee joint pain perception of elderly.

This was consistent with the findings of Robert Kiningham, (2007) who were conducted a study on combined effects of diet and exercise intervention on self-Reported knee pain associated with Osteoarthritis. A total of 60 subjects were randomly assigned to either the dietary modification only group or the dietary modification/exercise regimen group for a period of three months. After three months of intervention, the nutrition and exercise intervention had a significant effect on extension ($P= 0.041$). The nutrition and exercise intervention in comparison to nutrition alone was also associated with a greater reduction in pain from baseline to follow up ($p= 0.02$). The findings of this study suggest that lifestyle modifications which focus on changes in dietary and exercise behaviors can improve joint mobility via positive changes in knee joint pain.

3. The third objective of the study was to associate the demographic variables with effectiveness of home care management and remedial practices among elderly with knee joint pain.

The chi-square was used to associate the level of knee joint pain with Age, Sex, Education, Marital Status, Occupation, Type of family and BMI with pre test and post test of control and experimental group.

The chi-square value of all demographic variables (Age, Sex, Education, Marital status, Occupation, Type of family and BMI) of pretest and post test pain score in control group was less than the table value. It denoted that the values were not significant. This result revealed that in control group knee joint pain perception was not associated with demographic variables of elderly.

In experimental group, the chi-square value of all demographic variables of pretest pain score was less than the table value. It explained that the values were not significant. This result denoted that in experimental group knee joint pain perception was not associated with demographic variables of elderly except occupation. In occupation, calculated value was more than the table value which indicates that there was association between knee joint pain perception and employment. The chi-square value of all demographic variable experimental group in post test pain perception was less than the table value which was not significant and resulted in there was no association between the demographic variables.

SUMMARY

The aim of this study was to assess the effectiveness of home care management and remedial practices on knee joint pain among elderly person at selected communities in Coimbatore. For that the following objectives were formulated.

- .Assess the level of knee joint pain among elderly.
- Determine the effectiveness of home care management and remedial practices among elderly with knee joint pain.
- Associate the demographic variables with effectiveness of home care management and remedial practices among elderly with knee joint pain.

This study was based on **Titler et al(2004) Effectiveness Model**.The research design applied for the study was True experimental, pretest and post-test control group design. From selected communities, 30 elderly for control group and 30 for experimental group were selected by probability simple random sampling technique through lottery method, without replacement. The tool used for data collection consists of Demographic variables, Clinical variables and Numerical Pain Intensity Scale to assess the level of knee joint pain. The data was collected for a period of 6 weeks. Descriptive and Inferential statistics was used in statistical analysis, to compare the effect of home care management and remedial practices on knee joint pain and associate the demographic variables with knee joint pain perception.

This study had tested and accepted the hypothesis that, there is a significant reduction in knee joint pain perception among elderly who follow home care management and remedial practices than those who do not follow.

Major findings of the study

- In control group, the knee joint pain level was same in both pre test and post test. Among the study subjects, no one had reported as mild pain. 36.67 Per cent of elderly had reported as moderate pain. Maximum of elderly (63.33 Per cent) had severe pain.

- In experimental group, during pretest, none of them had mild pain. Elderly at this group were having moderate and severe pain as equally (50 Per cent).
- Atpost test, the samples were distributed in mild level pain also at 26.66%. The elderly with moderate level pain were 66.66% in experimental group.
- In this study there was an association between Occupations of elderly with knee joint pain.It reveals that Occupation has an influence on knee joint pain. Other demographic variables (Age, Sex, Education, Marital status,Type of family & BMI) were not having association with knee joint pain of elderly.
- In experimental group, compare with pretest, atpost test, the elderly with severe knee joint pain were reduced in distribution tremendously (6.66%)after administered the interventions. At pretest, the elderly had moderate and severe level ofknee jointpain only. But after administered the interventions the severity of knee joint pain was reduced among elderly as excellently.It reveals that the interventions (home care management and remedial practices) were effective.

CONCLUSION

PatpornSukonthasarn(2006) was conducted a study to assess the effectiveness of hot herbal compression and knee exercises on knee joint pain reduction among the elderly. The results of this study was after the treatment, the group that engaged in knee exercises, and the group that received the combination of knee exercises and hot herbal compression had a more significantly decreased mean of difference of difficulty in performing activities of daily living compared to the group that received hot herbal compression alone ($p < .001$).From above study it was clear that both knee exercises and hot herbal compression had shown effectiveness in decreasing knee joint pain as well as difficulty in performing activities of daily living among the elderly with chronic pain. Therefore, both of the treatments should be recommended for the elderly to take care themselves at home and for use in combination with medical measures to reduce the usage of analgesics which could possibly cause adverse effects.

Aging is a lifelong process that begins at conception itself. Age-related changes are inevitable. These changes may affect lifestyle, but most changes can be managed as their own. Knee joint pain is one of the common problems of aging. From this study, it was very clear that home care management and remedial practices were very effective in reducing the knee joint pain.

IMPLICATION

Nurses can incorporate the home care management and remedial practices as one of the best alternative therapies for relieving knee joint pain among the elderly. The present study findings have several implications in Nursing practice, Nursing education, Nursing administration and Nursing research.

Nursing practice:

- Knee joint pain is more prevalent among the elderly. It is due to the aging process. This study implies the effectiveness of home care management and remedial practices for knee joint pain among the elderly.
- This study creates awareness among health care professionals and the public to use home care management and remedial practices for reducing pain in the knee joint in this modernized world.
- These interventions can be used by all types of people to improve the physical health. The community health nurse can gain skill in providing holistic care to clients who are all suffering by knee joint pain in improving quality of life.

Nursing Education:

- Nurse educator can create awareness about benefits of home care management and remedial practices by preparing a reference guide, which provides information about positions, steps and methods and effects of these interventions.
- Nurse educator can provide in-service education to the nursing personnel to update their knowledge on home care management and remedial practices and its valuable benefits to the patients and

community and for their personnel practice and a means of pain reliever.

- Nurse educator can teach the nursing students about the home care management and remedial practices to reduce the level of pain in knee joint among them and their family members.
- Nurse educator can include these home care measures and remedial practices as a complementary therapy in their curriculum. This can be adopted by the students.

Nursing Administration

- Nurse administrator can train the Nursing students and staffs how to practice home care measures and remedial practices in reducing the pain in knee joint.
- Nurse administrator can plan and organize in service education.
- Nurse administrator can formulate policies to incorporate these home care measures and remedial practices in the community.
- Nurse administrator may motivate and allocate resources for further studies.
- Nurse administrator can conduct programme for community health personnel to update their knowledge.

Nursing Research

- ❖ This study provides scope for further research.
- ❖ Utilization of findings and discriminations of knowledge in the field of nursing practice.
- ❖ Extensive research must be conducted on this area to identify the beneficial outcome by practicing home caremanagement and remedial practices.

LIMITATIONS

- The target population was limited only with elderly.
- The study was limited to only with knee joint pain.

RECOMMENDATIONS

- A similar study can be conducted with larger sample to generalize the research findings.
- Comparative study can be conducted between elderly and late adulthood people.
- Similar study can be conducted among geriatrics with chronic illness.
- A study can be conducted to assess the prevalence of geriatric problems.
- A study can be done to assess the knowledge on complementary therapy in reducing theknee joint pain among elderly.
- Comparative study can be done to assess the effectiveness of hot water application, oil massage, exercise and diet education among elderly.

ABSTRACT

The present study entitled “Assess the effectiveness of home care management and remedial practices on knee joint pain among elderly at selected communities in Coimbatore” was undertaken during the year 2011-2012 as a partial fulfillment of the requirement for the degree of **MASTER OF SCIENCE IN NURSING AT KMCH COLLEGE OF NURSING, COIMBATORE**. This is affiliated to **THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI**.

Objective: Objectives were as follows, assess the level of knee joint pain among elderly, determine the effectiveness of home care management and remedial practices among elderly with knee joint pain, and associate the demographic variables with effectiveness of home care management and remedial practices among elderly with knee joint pain. **Design:** True experimental pretest and post test control group design **Setting:** Kalapatti and Veeriyampalayam under the Sarkarsamakulam Primary Health Centre. **Sample:** Elderly with the age group of 60-80 years. The sample size was 60, in which 30 were in control group and 30 were in experimental group. **Sampling technique:** Probability Systemic Random Sampling. **Conceptual framework:** Titler et al (2004) Effectiveness model. **Data collection:** Numerical Pain Intensity Scale was used to assess the level of pain among elderly. **Intervention:** Hot water application, Oil massage, Exercise and Diet education was administered for 30 minutes with the period of 6 weeks. **Outcome measure:** Level of knee joint pain was assessed through the Numerical Pain Intensity Scale. **Results:** Samples for whom the interventions were applied, had shown significant reduction in pain perception than the samples for whom the interventions were not applied. This is proved by ‘t’ test (**p<0.01). It shows that the home care management and remedial practices were more effective in reducing the knee joint pain among elderly. **Conclusion:** The result supported that home care management and remedial practices was very suitable and practicable therapy of non pharmacological measures of reducing the knee joint pain among elderly.

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APPENDIX - A
DATA COLLECTION TOOL-ENGLISH
DEMOGRAPHIC VARIABLE

1. Sample Number : _____

2. Address : _____

3. Age in Years : _____

4. Sex

- a) Male
- b) Female

5. Education

- a) Illiterate
- b) Literate

6. Marital Status

- a) Married
- b) Widow/Widower

7. Occupation

- a) Employed
- b) Unemployed

8. Type of Family

- a) Nuclear Family
- b) Joint Family

CLINICAL DATA

1. Height : ----- cms

2. Weight : -----kgs

3. BMI : -----

4. Duration of pain

1) Acute

2) Chronic

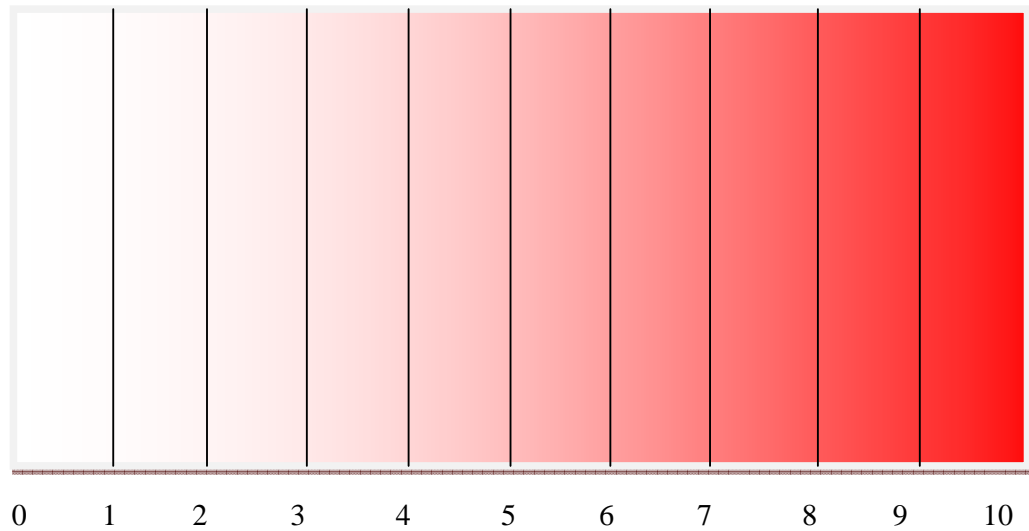
5. Co-existing diseases

1) Communicable diseases

2) Non communicable diseases

NUMERICAL PAIN INTENSITY SCALE

The Numerical Pain Intensity Scale is ranging from 0-10. This scale was used to assess the pain perception of elderly in knee joint. The elderly with knee joint pain was asked to choose the appropriate pain perception level in this scale during pretest and post test for both control and experimental group.



KEYS:-

- 0 - No pain
- 1-3- Mild pain
- 4-6 - Moderate pain
- 7-10 - Severe pain

APPENDIX-C

DESCRIPTION OF THE INTERVENTIONS

HOT WATER APPLICATION:



Steps:

- Take $\frac{3}{4}$ of clean water in one medium size bowl.
- Heat the water in its own boiling point by closing with its lid.
- Ask the elderly to expose the needed area in affected knee.
- Take a clean cloth to apply hot water application over the affected knee joint.
- Check the temperature of the water at the back of the palm.
- The water need not to be too hot. It should be at the tolerance level of the elderly.
- Apply the hot water over an affected knee joint for 5 minutes.

OIL MASSAGE: (Karpoorathythylam)



Steps:

- Ask the elderly to clean the affected knee thoroughly before going to give massage.
- Ask the person to sit comfortably by support the heel of the leg on floor by slightly flex the affected knee at 45 degree angle.
- Expose only the needed area
- By measuring the ounce glass take 10ml of **karpoorathythylam**.
- Apply the oil over the affected knee joint.
- Massage the knee joint and affected muscles by the following steps for 10 minutes.
 - Circular
 - Effleurage
 - Pertisage

MUSCLE STRENGTHENING EXERCISE:

Quadiceps strengthening contractions



Steps:

1. Sit on a chair and extend legs.
2. Heels must touch floor and knees must be straight.
3. Tighten the thigh muscles and retain the state for a count for 1 to 10 numbers.
4. Loosen the thigh muscles and retain the state count for 1-3 numbers.
5. Perform the above counts for 10 repetitions to complete 1 set.
6. Whenever possible do the same at many times in a day.

Thigh Contractions exercise



Steps:

1. Lie flat on your back and straighten both legs.
2. Roll a towel and place it under the ankle of the affected foot. This will automatically straighten the knees.
3. Press into the towel with your ankle and you'll see that the knee gets straightened further.
4. Hold this position for 5-10 seconds and Release.
5. Relax for 1-2 minutes and repeat the same.
6. Do the same for 10 more times.

CHECK LIST FOR MUSCLE STRENGTHENING EXERCISE

STEPS	YES	NO
<p>QUADRICEPS STRENGTHENING CONTRACTIONS</p> <ol style="list-style-type: none">1) Sit on a chair and extend legs2) Heels touch floor and knees keep straight3) Tighten the thigh muscle and count for 1 to 10 numbers4) Loosen the thigh muscles and count 1 to 3 numbers5) Perform the above counts for 10 repetitions to complete 1 set. <p>THIGH CONTRACTIONS</p> <ol style="list-style-type: none">1) Lie flat on back and straighten both legs.2) Roll a towel and place it under the ankle of the affected foot.3) Straighten the knees.4) Press into the towel with ankle and see that the knee gets straighter.5) Hold this position for 5-10 seconds and release.6) Do the same for 10 more times.		

DIET EDUCATION



A well balanced diet can help you maintain bone strength and a healthy weight. Also, studies that moderate amounts of omega 3 fatty acids can help to ease some of the pain and discomfort associated with knee joint pain(Ex: All fishes, Fish Oil,Milk, Egg , Cereals, Pulses, Nuts, etc.,)

APPENDIX-H
LIST OF EXPERTS

1) Dr.GEETHA.M.B.B.S.,

Medical Officer,
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2)Dr.MUTHUKRISHNASWAMY. BSMS,

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3) Dr.EDMUND M.D.COUTO. MBBS.,D.Phys.,MED

Consult psychiatrist,
Kovai Medical Center and Hospital,
Coimbatore - 641 014.

4) MS. SUMATHI. M.Sc (N).,

Associate Professor
KMCH College of Nursing
Coimbatore-641 014.

5) DR.MANIVANNAN.Ph.D. (N)

Principal,
CithiraiCollege of Nursing,
Madurai.

6)PROF.GIRIJA.M.Sc (N).,

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7) MRS.KUMUTHAVALLI.

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