

**TO ASSESS THE EFFECTIVENESS OF THERMOTHERAPY ON
PAIN AND RANGE OF MOTION AMONG ELDERLY CLIENTS
WITH ARTHRITIS IN SELECTED RURAL AREA OF MADURAI**

**M.Sc (NURSING) DEGREE EXAMINATION
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In partial fulfillment of requirement for the degree of

MASTER OF SCIENCE IN NURSING

APRIL - 2012

CERTIFICATE

This is to certify that this dissertation titled: **To assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.** is a bonafide work of Ms.Selvarani.R, college of nursing, Madurai medical college, Madurai-20 submitted to The Tamilnadu Dr.M.G.R Medical University, Chennai in partial fulfillment of requirement for the award of degree of Master of Science in nursing, Branch-IV Community Health Nursing under our guidance and supervision during the academic period 2010-2012.

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ABSTRACT

To assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.

INTRODUCTION

Old age has now become a prevalent social problem in our society. It is strange no one wants to grow old but everyone wants to live long. Due to increasing number of older adults in many countries, the prevalence of arthritis is expected to rise dramatically. Because of this growing epidemic, it is important to understand and monitor the impact of arthritis on health outcome.

OBJECTIVES OF THE STUDY:

1. To assess the level of pain and range of motion among elderly clients with arthritis.
2. To evaluate the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in experimental group.
3. To compare the pretest and post test level of pain and range of motion among elderly clients with arthritis in experiment and control group.
4. To associate pain and range of motion among elderly clients with arthritis in experimental and control group with selected demographic variables.

METHODOLOGY

The conceptual framework adopted the study was based on Nursing process ANA model, 2003. According to the statement of the problem and objective to be achieved, quantitative design was adopted for this study. 60 elderly clients with

arthritis (30 experimental and 30 control) who satisfied the inclusion criteria were selected by convenience sampling method.

Data were collected using structured questionnaire and arthritis impact measurement scale 2 to assess the pain and range of motion among elderly clients with arthritis. Collected data were analyzed using descriptive and inferential statistics like chi-square test, Pearson correlation coefficient, student independent and dependent 't' test.

FINDINGS

The finding of the study reveals that experimental group client's reduced pain 26.3% with t value 22.66, $p=0.001\%$ and improved 23.1% range of motion with t value 22.66, $p=0.001\%$ after thermotherapy. This percentage shows the net benefit of this study, which indicates the effectiveness of thermotherapy.

CONCLUSION

As the problems related to arthritis are quite frequent and often resulted in interruption of activities of daily living. On evaluation of thermo therapy the client's level of pain was reduced and range of motion was improved. Thermotherapy is easy and inexpensive compared to other treatment options show the investigator implemented thermotherapy for elderly clients with arthritis.

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CHAPTER - I

INTRODUCTION

In youth, everything seems possible; but we reach a point in the middle years

When we realize that we are never going to reach all the shining goals

We had set for ourselves, with what grace we can, to living with our ulcers and arthritis, our sense.

- *Adlai E. Stevenson.*

Health is the greatest possession of human being; it lays a solid foundation for happiness. Good health is a prerequisite to human productivity and development. Health is a complete state of relative equilibrium of the body, which results in successful dynamic adjustment to external forces. Health and illness are not static but dynamic entities, fluctuating in response to many external forces. Any deviation in the relative equilibrium of the body will result in illness. (Perkin, 1998). Illness could be transient, prolonged or persistent and can destroy the foundation of happiness so much, so the occurrence of diseases is always dreaded and detested. In the present dynamic living conditions, musculoskeletal diseases, which end up in disability. Among the major disabilities, arthritis a common illness that is often considered as a lifelong disability.

The word arthritis, derived from the Greek language, literally means “inflammation of the joints”. Arthritis is one of the oldest diseases in the

universe. There is evidence that arthritis has been in the world since the beginning of civilization and has been recorded in papyrus. Chinese medical literature has extensively described the woes of joint disease. (Wikipedia, 2003).

A report by world health organization on the global burden of disease suggest arthritis of knee is likely to become the 4th most global cause of disability in women and 8th most common in men.(Murray and Lopez, 1997).

Arthritis can be a very serious and extremely debilitating disease. While it is often thought of as only a disease that can affect seniors, arthritis can actually be found in people of any age. Since there are more than 100 different kinds of arthritis, one of the key parts of treatment is to correctly identify what type of arthritis is present.

Arthritis may be a chronic disease as opposed to an acute disease, and for the reason it is a very trying disease for all concerned – the patient, his or her family and the health care professionals looking after the patient, an arthritic patient is in pain all the time and this affects his or her personality. Arthritis necessarily hinders a person's independence or affects his personality. For the lucky person with arthritis, the disease may be nothing more than slight morning stiffness. But for millions of others, arthritis can become a disabling, even crippling disease. It can get severe enough to limit everyday activities, such as dressing, climbing stairs, getting out of bed or walking.

Old age has now become a prevalent social problem in our society. It is strange no one wants to grow old but everyone wants to live long. In our

modern society, where money is the scale of everything, the old age people are measured as an economic liability and a social burden. Due to increasing number of older adults in many countries, the prevalence of arthritis is expected to rise dramatically. Because of this growing epidemic, it is important to understand and monitor the impact of arthritis on health outcome. A fact that “people ignore arthritis both as public and personal health problems because it doesn’t kill you”. Arthritis can affect the quality of life and eventually lead to disability and the extent of suffering is going to get worse.

The arthritis foundation and American college of rheumatology agree that awareness, early diagnosis and aggressive treatment plan are key to stop arthritis from taking over your life. Among various treatment modalities thermotherapy is easy and inexpensive compared to other treatment options.

Thermotherapy involves the application of cold to the affected joints for the purpose of relieving arthritis symptoms. Thermotherapy is thought to work by improving circulation and relaxing muscles. The cold application numbs pain, reduces joint swelling and constricts blood vessels and blocks the nerve impulses to the affected joints. The Cochrane collaboration reviews that ice application for 20 minutes a day, 5 days a week for 2 weeks improves muscle strength in leg, improved range of motion in knee and resulted in less time needed to walk 50 feet.

There is a silver level of evidence that ice application could improve range of motion, decrease pain and improve functional status in people.

NEED FOR THE STUDY:

The world health organization estimates that arthritis will become the 4th most important cause of disability worldwide by 2010. It has declared the first decade of the 21st century as “bone and joint decade 2000-10”. World health organization (2007), reported prevalence of arthritis in the world as 1% but the rate varies among the age groups. More than 70% of individuals in North America affected by arthritis are over the age of 65. In the U.S, 55% of individuals age 65 and the older reports arthritis. It is estimated that prevalence of arthritis will rise from 43 million in 1997 to 60 million in 2020. In Canada, it is projected that the prevalence of arthritis will increase from 2.9 million to 6.5 million in 2031.

Center for Disease control estimates that 60 million people will be affected by arthritis and that more than 11 million will be disabled in America by the year 2020.

Arthritis affects 15% people i.e. over 180 million people in India. More than 46 million Indians are currently victims of arthritis.

Martin et al., (2009) stated that arthritis is one of the most common inflammatory joint diseases that require special care and a multidisciplinary team. The relief of symptoms, preservation of joint function, prevention of joint damage and deformity, maintenance of an acceptable lifestyle and patient education are the main goals of nursing management and the nurse plays a pivotal role within the multidisciplinary team, ensuring the highest quality of care.

King (2008) reported that arthritis affects more than 30% of the people above the age of 65 years .The affected persons in the age group of 65 years and above are projected as nearly 21.4 million in 2001 and it is estimated that by the year 2030, 41.4 million people would be affected by arthritis.

Arthritis foundation (2007) reported the prevalence rate of arthritis in the close relatives varies from 2% to 3%. Arthritis affects all people, irrespective of age, race and social status.

Simrankaur (2010) reported that the estimated yearly cost in lost wages and medical bill is \$65 billion for arthritis. The aging of the community brings with it new and serious problems both nationally and internationally, with WHO describing it as an important developmental element requiring emergency action.

Beyond the traditional approach of caring for the elderly in the accommodation of their own homes or in residential care homes, the state or private enterprise must seek alternative services in order to ensure the well-being of the elderly.

During home visit, the investigator came to know that many elderly are suffering from joint pain, stiffness and impose the effect on activities of daily living. A high morbidity of arthritis needs strengthening of geriatric health care services both community and hospital based. Thus the investigator felt a need to undertake a study to assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.

STATEMENT OF THE PROBLEM:

To assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.

OBJECTIVES OF THE STUDY:

1. To assess the level of pain and range of motion among elderly clients with arthritis.
2. To evaluate the effectiveness of thermotherapy on pain and range of motion in experimental group.
3. To compare the pretest and post test level of pain and range of motion among elderly clients with arthritis in experimental and control group.
4. To associate pain and range of motion among elderly clients with arthritis in experiment and control group with selected demographic variables.

HYPOTHESES:

1. There will be significant difference in the level of pain and range of motion before and after thermotherapy.
2. There will be significant association between pain and range of motion among elderly clients with arthritis with selected demographic variables.

OPERATIONAL DEFINITIONS:

Effectiveness:

It refers to the Excellency of thermotherapy to promote health of elderly clients with arthritis in terms of reduction of pain and improvement of range of motion.

Thermotherapy:

It refers to the application of cold pack for 15- 20 minutes a day x 5 days to joints to improve the symptoms of arthritis.

Pain:

It refers to the unpleasant sensory and emotional experience interferes with the activities of daily living.

Range of motion:

It refers to the movement for a joint usually flexion, extension and circumduction.

Elderly clients:

It refers to people who are above 60 years of age with arthritis.

Arthritis:

It refers to chronic inflammatory disease affects the joints associated with pain and decreased range of motion.

ASSUMPTION:

1. Elderly clients with arthritis will have more pain and impact upon activities of daily living.
2. Thermotherapy will significantly reduce the pain and improve range of motion.

DELIMITATION:

1. Clients residing in the rural area – paravai only.
2. The study period is 4 weeks only.

CHAPTER – II

REVIEW OF LITERATURE

This chapter presents a review of related literature relevant to the study on effectiveness of thermotherapy among elderly clients with arthritis. The review of literature entails systematic identification, location, scrutiny and summary of written material that contains information relevant to the problem under study. An extensive review of literature relevant to the research topic was done to gain insight and to collect maximum information for laying the foundation of the study. The purpose of review of literature is to obtain comprehensive knowledge base and in depth information about the effectiveness of thermotherapy among elderly clients with arthritis in selected rural area of Madurai.

This section has two parts:-

Part – A : Review of related literature

Part – B : Conceptual frame work

Part – A

Review of related literature

This section on literature is divided into 5 parts which explores the literature and the previous studies on effectiveness of thermotherapy among elderly clients with arthritis. This section is divided into the following headings:

1. Studies related to incidence and prevalence of arthritis.
2. Studies related to old age with arthritis.

3. Studies related to complications of arthritis in old age.
4. Studies related to effectiveness of thermotherapy for arthritis.
5. Studies related to other applications of thermotherapy.

LITERATURE RELATED TO INCIDENCE AND PREVALENCE OF ARTHRITIS

King (2008) reported that arthritis affects more than 30% of the people above the age of 65 years .The affected persons in the age group of 65 years and above are projected as nearly 21.4 million in 2001 and it is estimated that by the year 2030, 41.4 million people would be affected by arthritis.

World health organization (2007) reported prevalence of arthritis in the world as 1% but the rate varies among the age groups. More than 70% of individuals in North America affected by arthritis are over the age of 65. In the U.S, 55% of individuals age 65 and the older reports arthritis. It is estimated that prevalence of arthritis will rise from 43 million in 1997 to 60 million in 2020. In Canada, it is projected that the prevalence of arthritis will increase from 2.9 million to 6.5 million in 2031.

Sharma.et.al. (2007) conducted epidemiological study correlates osteoarthritis in geriatric population of Chandigarh. The results shows 5.3% of males and 4.8% of females are aged more than 65 years. The prevalence of this disorder in certain elderly group is as high as 85%. The prevalence of osteoarthritis among elderly as per the present study was 56.6%. Community survey data in rural & urban areas of India shows the prevalence of osteoarthritis to be in the range of 17 to 60.6%. The prevalence of osteoarthritis

amongst elderly in rural areas of Amritsar was 60.6% while it was 17% amongst the elderly of rural areas of Wardha (Maharashtra). In Aligarh the prevalence of osteoarthritis was 30.2%.

RahmanNPenm.et.al. (2006) conducted a study on Arthritis and musculoskeletal conditions in Australia. The study reports More than 6.1 million Australians are reported to have arthritis or a musculoskeletal condition. Most commonly reported conditions are back pain and various forms of arthritis. Almost 1.2 million of these are reported to have disability associated with their condition. In view of their large disease burden-the number of people affected and the high disability impact-Australian Health ministers declared arthritis and musculoskeletal conditions were declared a National Health Priority Area (NHPA) in July 2002.

Reva. C. Lawrance.et. al. (2006) conducted a study on prevalence of arthritis and selected musculoskeletal disorders in the United States. The results shows 15% (40 million) of Americans had some form or arthritis in 1995. By the year 2020, an estimated 18.2% (59.4 million) will be affected.

The Indian scenario shows that arthritis affects 15% people i.e. over 180 million people in India. More than 46 million Indians are currently victims of arthritis.

LITERATURE RELATED TO OLD AGE WITH ARTHRITIS

Kelli L Dominick.et.al. (2007) conducted a study on health-related quality of life among older adults with arthritis. The population-based studies have examined the relationship of specific arthritic conditions, such as

osteoarthritis and rheumatoid arthritis with Health-related quality of life. The results shows individuals with arthritis, all subject characteristics including age, race, sex, nursing home residence, and marital status, income, and co morbid illnesses were significantly related to at least one Health-related quality of life item. Older age, nursing home residence, and greater comorbidity were the most consistently associated with poorer Health-related quality of life.

Cathleen J. Appelt.et .al. (2006) conducted a study on arthritis specific health beliefs related to aging among older male patients with knee and or hip osteoarthritis. The cross sectional survey of 591 elderly primary care patients, who had symptomatic osteoarthritis of the knee and or hip. Data were collected on age, race, educational level, income. The study reports that disease specific beliefs may impact patient perceptions of the efficacy of various treatment options, thus it is important to understand these beliefs. Patients with 70 years old or older as compared to patients 50 – 59 years. Old are more likely to believe that arthritis is a natural part of growing old. People should expect that when they get older, they won't be able to walk as well and people should expect to live with pain as they grow older.

Felson.et.al (2006) conducted a study on estimation of obesity among osteoarthritis in old age in urban and rural area. The Present study showed significant difference in the prevalence of osteoarthritis in elderly of rural & urban areas. The low prevalence of osteoarthritis in rural elderly could be due to differences in their life style. Rural elderly are usually more mobile, (in present study also limitation of movements in rural elderly was significantly less than in urban elderly) have less obesity compared to urban elderly and have better social interactions. The last factor makes rural elderly to divert their minds away from symptoms. It was seen in the present study that peak

prevalence of osteoarthritis was among the elderly of age group 84 year and older. As degeneration increases with age, osteoarthritis also increases with age.

LITERATURE RELATED TO COMPLICATIONS OF ARTHRITIS IN OLD AGE

Dr.Simran Kaur (2010) conducted a study on arthritis - the old age apathy reports that Women are almost twice as likely as men to suffer from arthritis. The disease becomes more prevalent after age 45. The estimated yearly cost in lost wages & medical bills is \$ 65 billion – second only to the bill for heart disease. Arthritis patients average 8 visits to their doctor each year – twice as many as those suffering from other chronic illnesses like high blood pressure. More than 46 million Indians of all ages are currently victims of arthritis & related conditions.

Blake Biddulph (2010) conducted a study on complications of arthritis. The study reports that pain, numbness and tingling, joint swelling and joint stiffness, physical inactivity. This is a huge financial burden and detriment to the individual and to society in general.

MayoClinic.com reports that one of the main symptoms and complications of arthritis is joint stiffness. The limitations in motion can arise from pain and inflammation or from actual joint destruction. In the case of osteoarthritis, bone spurs may grow on the edge of normal bone. These bone spurs are smooth projections that can limit motion and cause nerve compression and pain. Rheumatoid arthritis affects the synovial lining of the joints and leads to joint destruction and loss of range of motion.

The Surgeon General's Report on overlooked complication of all forms of arthritis is the effect that pain and stiffness have on physical activity. Physical Activity and Health, found that individuals with osteoarthritis need to engage in physical activity to maintain normal muscle strength, joint structure and joint function. It further found that physical activity did not increase joint destruction.

HealthCentral.com (2000) study report found that about one-third of individuals with rheumatoid arthritis stopped working within five years of the onset of disease. This is a huge financial burden and detriment to the individual and to the society in general. Other possible complications or effects of living with arthritis may include heart disease, lung disease, osteoporosis, and anemia and skin problems. Some of these conditions may be caused by inactivity and others may be due to the disease process itself.

LITERATURE RELATED TO EFFECTIVENESS OF THERMOTHERAPY FOR ARTHRITIS

Brosseau.L.et.al. (2011) conducted a study on effectiveness of thermo therapy. Over 170 people with osteoarthritis continue to take their medications but used hot, cold or ice packs/towels with or without massage or no treatment. Study showed that massaging with ice for 20 minutes, 5 days a week for 2 weeks, improved muscle strength in the leg, the range of motion in the knee and decreased time to walk 50 feet compared to no treatment.

Welch, V.et.al. (2011) conducted a study on treating thermotherapy for arthritis. Heat and cold therapy is often used as adjuncts in the treatment of rheumatoid arthritis by rehabilitation specialists. Quality was assessed by two

reviewers using a 5 point scale that measured the quality of randomization, double-blinding and description of withdrawals. Three studies (79 subjects) met the inclusion criteria. There was no effect on objective measures of disease activity (including inflammation, pain and x-ray measured joint destruction) of either ice versus control or heat versus control. Patients reported that they preferred heat therapy to no therapy (94% prefer heat therapy to no therapy). There was no difference in patient preference for heat or ice. No harmful effects of ice or heat were reported. Since patients preferred thermotherapy to no therapy, thermotherapy can be used as a palliative therapy which can be applied at home as needed to relieve pain.

Jeannie Chao.et.al. (2010) conducted a study on managing osteoarthritis a multi disciplinary approach. The results show that increasing age is the strongest risk factor for most types of osteoarthritis. A diagnosis of knee osteoarthritis can be made with clinical findings or with a combination of clinical and radiographic findings . A multifaceted approach involving non pharmacological and pharmacological therapies is recommended. Thermotherapy may be considered for treatment of patients with knee osteoarthritis, although data are limited. A Cochrane review noted that ice massage may improve range of motion and function and cold packs may decrease swelling.

The Cochrane Library. (2009) conducted a study to determine the effectiveness and safety of hot and cold therapy in patients with osteoarthritis of the knee. The participant criteria include knee pain, age over 50, joint stiffness, crepitus, bony tenderness and or enlargement, osteophytes and no palpable warmth. Interventions using heat or cold therapy only were included. The results show that heat and cryotherapy are commonly used in physical rehabilitation for patients with osteoarthritis and effective in living pain. Both

can be self applied easily by the patient at home and may combined with other rehabilitation intervention. Treatment options include pharmacologic intervention, exercise therapy, surgery and hot and/or cold therapy (Fife 1997).Thermotherapy is one such noninvasive therapy. Cold therapy is used in rehabilitation to reduce inflammation, pain and edema, which in turn facilitates improvement in mobility.

Robinson, V.et.al (2008) conducted a study on efficacy of thermotherapy for osteoarthritis. Three randomized controlled trials, involving 179 patients, were included in this review. The included trials varied in terms of design, outcomes measured, cryotherapy or thermotherapy treatments and overall methodological quality. In one trial, administration of 20 minutes of ice massage, 5 days per week, for 3 weeks, compared to control demonstrated a clinically important benefit for knee osteoarthritis on increasing quadriceps strength (29% relative difference). There was also a statistically significant improvement, in knee flexion (8% relative difference) and functional status (11% relative difference).

Julie Minton, BS. (2007) conducted a study on comparison of thermotherapy and cryotherapy in enhancing supine, extended leg, hip flexion. eighteen healthy subjects (13females and 5males) were pretested and post tested under- two treatment conditions in order- to compare the effects of cold therapy and heat therapy on supine, extended-leg, hip flexion measurements. Cryotherapy treatments consisted of crushed ice bags secured to the posterior thigh for- 20 minutes. Cryotherapy is reported to enhance joint stretching by decreasing pain perception, interfering with muscle spasm, and possibly causing reflex vasodilation. The results suggest that both cryotherapy and thermotherapy significantly improved immediate range of motion however there were no differences between the two treatment conditions.

LITERATURE RELATED TO OTHER APPLICATIONS OF THERMOTHERAPY

SedefBayata.et.al. (2011) conducted a study on thermotherapy in dermatology. The results shows that significant results have been achieved in the treatment of Bowen's disease, melanoma and simple warts. Thermotherapy, which today has also shown advancements in cosmetology, can be delivered by liquid nitrogen in the form of hypothermia and a variety of ways ranging from hot water pads to ultrasound and even to lasers, in the form of hyperthermia.

Incheol Jeong.et.al. (2008) conducted a study on research for evaluation on stress change via thermotherapy and massage. The physiological changes namely Heart Rate, Heart Rate Variability and Skin Temperature of the subjects which reflect the autonomic nervous system and cardiovascular relationship were obtained and analyzed. In order to evaluate the assumption that the treatment relieves the subject's physiological and psychological stress, experiment was carried out on 25 adults (13 male and 12 female, age 52.32 ± 18.121) through stages consisted of relaxation, pre-treatment, treatment and post-treatment. Treatment was provided to the back, stomach and leg area by massaging 55°C heat to the back. According as the physiological changes of subjects before and after treatment were compared, the present research was able to prove that thermotherapy and massage treatment induces physiological change of patients thus relieves stress.

Thiagarajan.et.al. (2008) conducted a study to investigate the effectiveness of transpupillary thermotherapy for neovascular age-related macular degeneration. A total of 84 patients with neovascular age-related macular degeneration were recruited and the main outcome measures were

Snellen visual acuity both before and after transpupillary thermotherapy. Those with persistent oedema were retreated when assessed after 8 weeks or after subsequent visits. The results No more than 1 Snellen line was lost in 44(68.8%) patients at 3 months, 41(71.9%) patients at 6 months, and 23 (53.5%) patients at 12 months. There were more than 2 Snellen lines lost in 20(31.2%) patients at 3 months, 16(28.1%) patients at 6 months and 20(46.5%) patients at 12 months. Only 24 patients required more than a single treatment. Transpupillary thermotherapy treatment for neovascular age-related macular degeneration shows the visual acuity to be stable in the short-term as the majority had no more than a single Snellen line of visual acuity loss.

William C. Dooley.et.al. (2008) conducted a study on randomized study of preoperative focused microwave phased array thermotherapy for early- stage invasive breast cancer. The study was to investigate the hypothesis that preoperative focused microwave thermotherapy (FMT) kills breast carcinomas prior to surgery and reduces the incidence of positive margins. This is a prospective, randomized multi-center study of preoperative focused microwave phased array thermotherapy for patients with T1, T2 invasive breast cancer receiving breast conservation therapy. Interim statistical analysis was performed on a study group of 75 patients, consisting of 34 patients (mean age, 59.4 years) treated with thermotherapy prior to surgery and 41 patients (mean age, 58.0 years) that received surgery alone. After treatments were completed, in the thermotherapy arm 0 of 34 (0%) patients had positive margins and in the surgery-alone arm 4 of 41 (9.8%) patients had positive margins ($p=0.13$). The results shows that microwave thermotherapy can reduce the rate of positive margins compared with breast conservation surgery alone.

Frank Eickmeyer et al. (2006) conducted a study on MR-guided laser-induced interstitial thermotherapy of recurrent glioblastoma multiforme: Preliminary results in 16 patients. They investigated the survival after laser-induced interstitial thermotherapy in 16 patients suffering from recurrent glioblastoma multiforme. They concluded that cytoreduction by laser irradiation might be a promising option for patients suffering from recurrent glioblastoma multiforme.

Carol L Shields et al. (2006) conducted a study on Primary transpupillary thermotherapy for small choroidal melanoma in 256 consecutive cases: outcomes and limitations. The participants included 256 patients with newly diagnosed choroidal melanoma. The results show that complete tumor control without recurrence was found in 232 cases (91%) and recurrence in 24 cases (9%). Transpupillary thermotherapy is an effective treatment for certain small choroidal melanomas.

Blute M et al. (2006) conducted a study on cost effectiveness of microwave thermotherapy in patients with benign prostatic hyperplasia. A cost-effectiveness analysis was performed from the societal perspective for a hypothetical cohort of 65-year-old men with moderate-to-severe benign prostatic hyperplasia symptoms. Thermotherapy had a higher utility and lower cost compared with transurethral resection of prostate and thus was dominant over transurethral resection of prostate. From a societal perspective, thermotherapy appears to be a reasonable and cost-effective alternative to both medical and surgical treatment.

PART -B

CONCEPTUAL FRAMEWORK

A conceptual framework is a theoretical approach to study the problems that are scientifically based which emphasis the selection, arrangement and classification of its concepts. It is referred to as the interrelated concepts or abstracts that are assembled together in some rational scheme by virtue of their relevance to a common theme.

The conceptual framework for this study is based on nursing process, ANA model, 2003. The present study is aimed to assess the effectiveness of thermotherapy in reduction of pain and improving range of motion among elderly clients with arthritis in selected rural area of Madurai.

Nursing process is an organized systemic approach to client's clinical problems. In this course of developing patient care, nurses collect relevant information, make assessments and diagnosis, develops plan for appropriate nursing actions, initiate interventions and evaluate the effects of these interventions. The process incorporates general and specific, critical thinking competencies in a manner that focuses on particular client needs.

Assessment:

It is the deliberate and systematic collection of data to determine clients' present, past health status and functional status. In this study, assessment was done on elderly clients by background factors and arthritis impact measurement scale 2. Background factors such as age, sex, religion, educational status, type of family, income, type of treatment, duration of illness.

Planning:

It is the category of nursing behaviors in which client centered goals and expected outcomes are established and nursing interventions are selected. The interventions are specifically chosen to resolve the client problem and achieve the goal. In this study the plan included is application of thermotherapy for 5 days.

Goal:

Goal is the objective to be achieved and the outcome to be expected. Here the goal is to reduce the pain and improve range of motion.

Implementation:

It is the step of nursing process where nurses provide care to the patient. In this study the investigator applied thermotherapy for 5 days.

Evaluation:

It is the final step of the nursing process, is crucial to determine the client's condition or well being improves after the application of nursing process. In this study, evaluation is done through arthritis impact measurement scale 2. Effectiveness was tested by using significance in post mean difference.

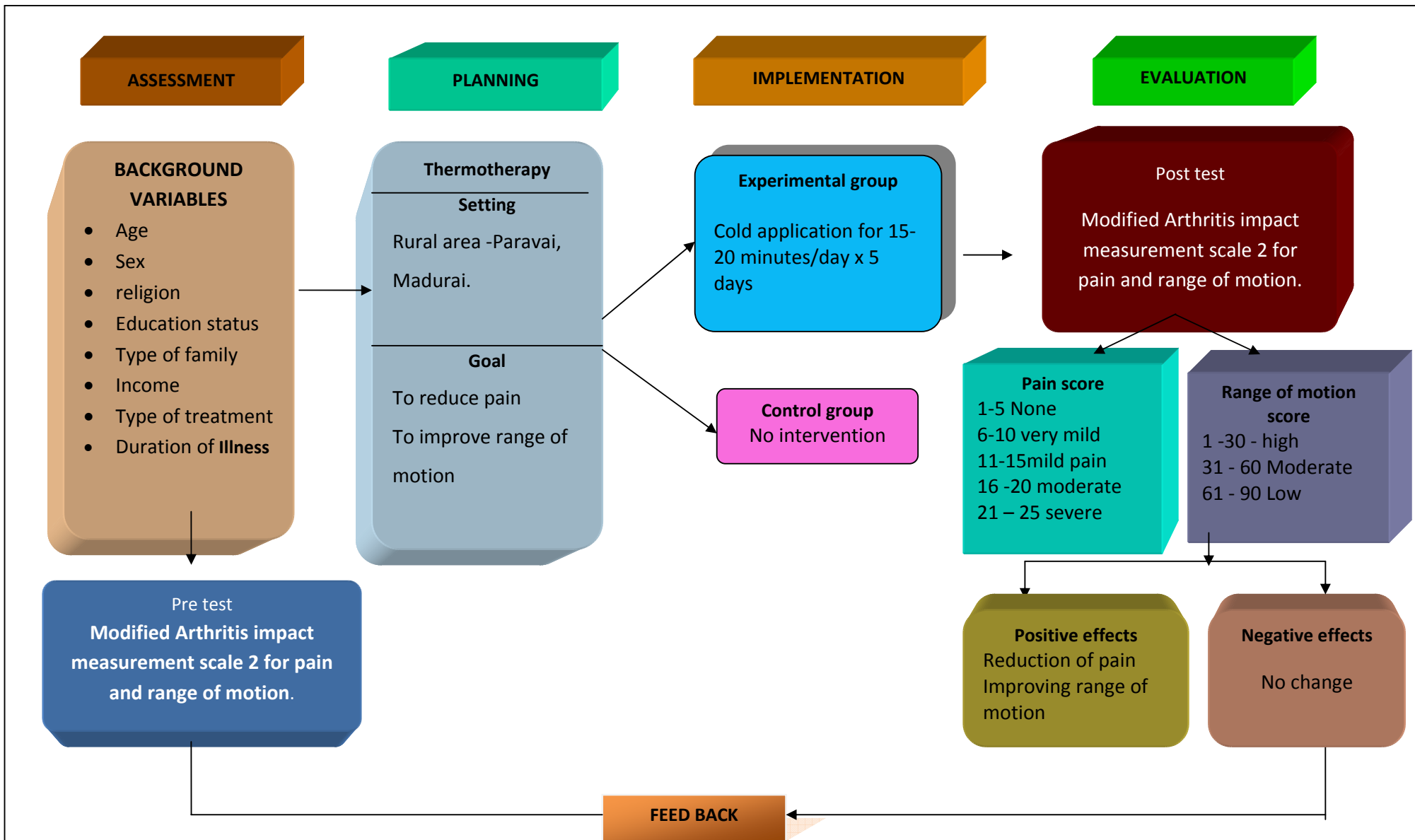


FIGURE: 1 CONCEPTUAL FRAME WORK BASED ON MODIFIED NURSING PROCESS (ANA MODEL, 2003)

CHAPTER – III

METHODOLOGY

This chapter deals with the description of the methods and different steps used for collecting and organizing data for the investigations. It includes the description of the research approach, research design, setting, population, the sample and the sampling technique, sampling criteria, the development and description of tool, the pilot study, the data collection procedure and the plan for data analysis in the study. This present study was done to assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.

RESEARCH APPROACH

The investigator selected quantitative design - evaluative approach as research approach in selected rural area of Madurai.

RESEARCH DESIGN

The research design selected for this study was quasi experimental – pretest post test control group design.

Research Notation

E	O ₁ X O ₂
C	O ₁ O ₂
O ₁	- Pretest
X	- Intervention
O ₂	- Posttest

SETTING OF THE STUDY:

The study was conducted in the rural area Paravai. There are 23 streets in Paravai area. Among 23 streets 15 streets were adopted by the department of community health nursing. Among these 15 streets 4 streets have been selected for experimental group and another 3 streets for control group. Nethaji Street, Chithambaranar Street, Thiruvalluvar Street and Karupana samy koil streets are selected for experimental group with a population of elderly clients with arthritis is 30. Kamban Street, Muthuramalinga Nagar and thadco colony have been selected for control group with a population of 30.

POPULATION:

The total target population of this present study is elderly clients with arthritis. The accessible population for the present study is elderly clients with arthritis residing at paravai. The total population for experimental and control group is 30 respectively.

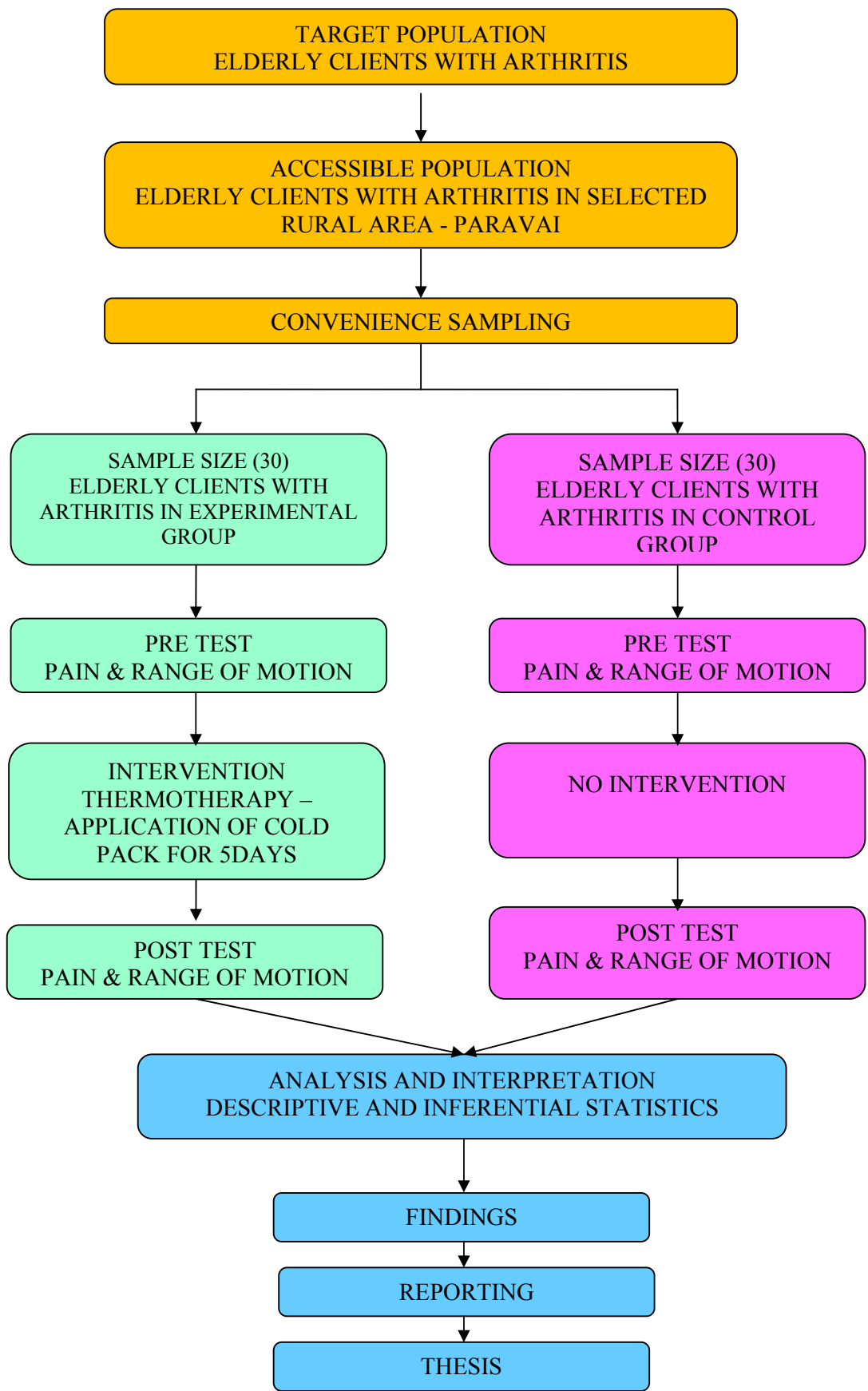
SAMPLE:

The sample for the present study comprised of elderly clients with arthritis in selected rural area (paravai) and who have met the inclusion criteria.

SAMPLE SIZE:

Sample size of the present study is 60 elderly clients (30 in experiment and 30 in control group).

FIGURE: 2 SCHEMATIC REPRESENTATION OF STUDY



SAMPLING TECHNIQUES:

The sample consists of 60 in number, elderly clients with arthritis in selected rural area paravai who satisfy the inclusion criteria. The samples for experimental group are selected from 4 streets namely Nethaji Street, Chithambaranar Street, Thiruvalluvar Street and Karupana samy Koil Street. Kamban Street, Muthuramalinga nagar and thadco colony was selected for control group. Convenience sampling method was used to select the samples.

The sample size for each street is given below:

Experimental group:

Nethaji Street	–	8
Chithambaranar Street	-	9
Thiruvalluvar Street	-	6
Karupana samy koil	-	7

Control group:

Kamban Street	-	9
Thadco colony	-	13
Muthuramalinga nagar	-	8

CRITERIA FOR SAMPLE SELECTION:

INCLUSION CRITERIA

1. Elderly clients residing at Paravai.
2. Elderly clients aged 60 years and above.
3. Elderly clients include both men and women.
4. Elderly clients who can speak and understand Tamil.

EXCLUSION CRITERIA

1. Elderly clients who are not willing to participate.
2. Elderly clients with any physical deformities and vascular disorders.
3. Pilot study samples not included for main study.

VARIABLES:

Variables are characters that can have more than one value. The three categories of variables discussed in the present study are:

Independent variable: Thermotherapy

Dependent variable : Pain and Range of motion.

Attributed variable : Age, sex, religion, education status, type of family, income, type of treatment, duration of illness.

DEVELOPMENT OF THE TOOL:

The arthritis impact measurement scale was used and modified by the researcher. It is based on the objectives of the study, through review of literature on related studies, journals, books opinion form the experts. All these helped in the ultimate development of the tool.

DESCRIPTION OF THE INSTRUMENT:

The instrument used in this study consists of two sections which are as follows:

Part – I: Demographic variable (Age, sex, religion, educational status, type of family, income, type of treatment, duration of illness).

Part – II: It consist of 23 statements that focused a subjective feeling on pain and range of motion.

SCORE INTEREPRETATION:

The modified arthritis impact measurement scale 2 is scored in a coherent fashion so that low value indicates high health status.

PART – II: Range of motion

1 – 30 → highest level of function

31 – 60 → Moderate level of function

61 – 90 → lowest level of function.

Pain

1 – 5 → None

6- 10 → Very mild pain

11 – 15 → Mild pain

16 – 20 → Moderate pain

21 – 25 → severe pain

CONTENT VALIDITY

In order to measure the content validity, the tool was given to 5 Nursing experts from community health nursing department and 1 medical expert from preventive and social medicine department. Experts were requested to judge the items for their relevance, comprehensiveness and appropriateness of the content. The modifications were made in each section as per the suggestions given by the experts.

VALIDITY FOR THERMOTHERAPY

The investigator learned and took training from the Valliammal institution. The investigator demonstrated the procedure and certification was obtained.

RELIABILITY

Reliability is the degree of consistency that the instrument of the procedure whatever is measuring it does so consistently. After pilot study, the reliability of the tool was assessed by using split half method and inter rater method. The calculated correlation coefficient for range of motion was 0.83 and pain is 0.80. These correlation coefficients are high and it is excellent tool for assessing thermotherapy in reduction of pain and improving range of motion among elderly clients with arthritis. The tool was feasible and practicable.

ETHICAL COMMITTEE CONSENT

The researcher got the approval from ethical committee on 09.05.2011. By viewing the presentation, the committee asked the researcher to continue the main study with slight modifications.

PILOT STUDY

Pilot study was conducted at Mandaiyan Street, paravai from 11.07.2011 to 17.07.2011. 6 older adults were selected based on inclusion criteria. This street sample was not used for main study. The modified arthritis impact measurement scale 2 was administered. The investigator found that the instrument was feasible to use and no further modifications are needed before actual implementation of the study.

DATA COLLECTION METHOD:

The data collection was done for a period of 4 weeks from 1-9-2011 to 30-09-2011. The data was collected on all the days including Sundays. The investigator got permission from the medical officer, Samayanallur. The clients were selected on the basis of inclusion criteria. The investigator went to their home on morning. Convenient and flexible timings were ensured before starting the data collection.

The investigator established rapport with the clients, pretest assessment was done on the first day followed by the application of cold pack .Before applying cold pack the skin is cleaned, dried and confirmed that it is free from cuts and sores. The cold pack is applied to the joints for 15-20 minutes.

After cold application, the client's was instructed to move the joints gently to reduce the stiffness. The investigator has spent approximately 30 – 40 minutes with each client to complete the instrument as well as the application of cold pack for 15 – 20minutes. The investigator has visited 7-8 clients per day. The clients were very cooperative during the whole procedure. Posttest scores of pain and range of motion was assessed after fifth day

DATA ANALYSIS:

Data analysis enables the researcher to reduce, summarize, organize, evaluate, interpret and communicate numerical information to obtain answer to research questions. Analysis and interpretation was done based on the objectives of the study. The data was analyzed using descriptive and inferential statistics like frequency, percentage, chi square and Pearson correlation coefficient, student's independent 't' test and student dependent 't' test. The significant findings were expressed in the form of table.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of the data collected and thereby to assess the effectiveness of thermotherapy in reduction of pain and improving range of motion among elderly clients with arthritis in selected rural area of Madurai. Analysis is the appraisal of the data and interpretation of the data consisting of relation between findings of the study to the research problem and theoretical frame work for the study. An important function of the process of interpretation is to link the findings of the study to the main stream of scientific knowledge in the field. The data collected from 60 elderly clients with arthritis being analyzed, classified and tabulated on the basis of the objectives of the study.

Presentation of data

The study findings of the samples are presented in the following sections.

Section – I: Description of demographic variables of elderly clients with arthritis.

Section – II: Assess the level of pain and range of motion among elderly clients with arthritis in experiment and control group.

Section – III: .Evaluate the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in experimental group and control group.

Section – IV: Compare the pretest and posttest level of pain and range of motion among elderly clients with arthritis in experiment and control group

Section – V: Associate pain and range of motion among elderly clients with arthritis in experiment and control group with selected demographic variables.

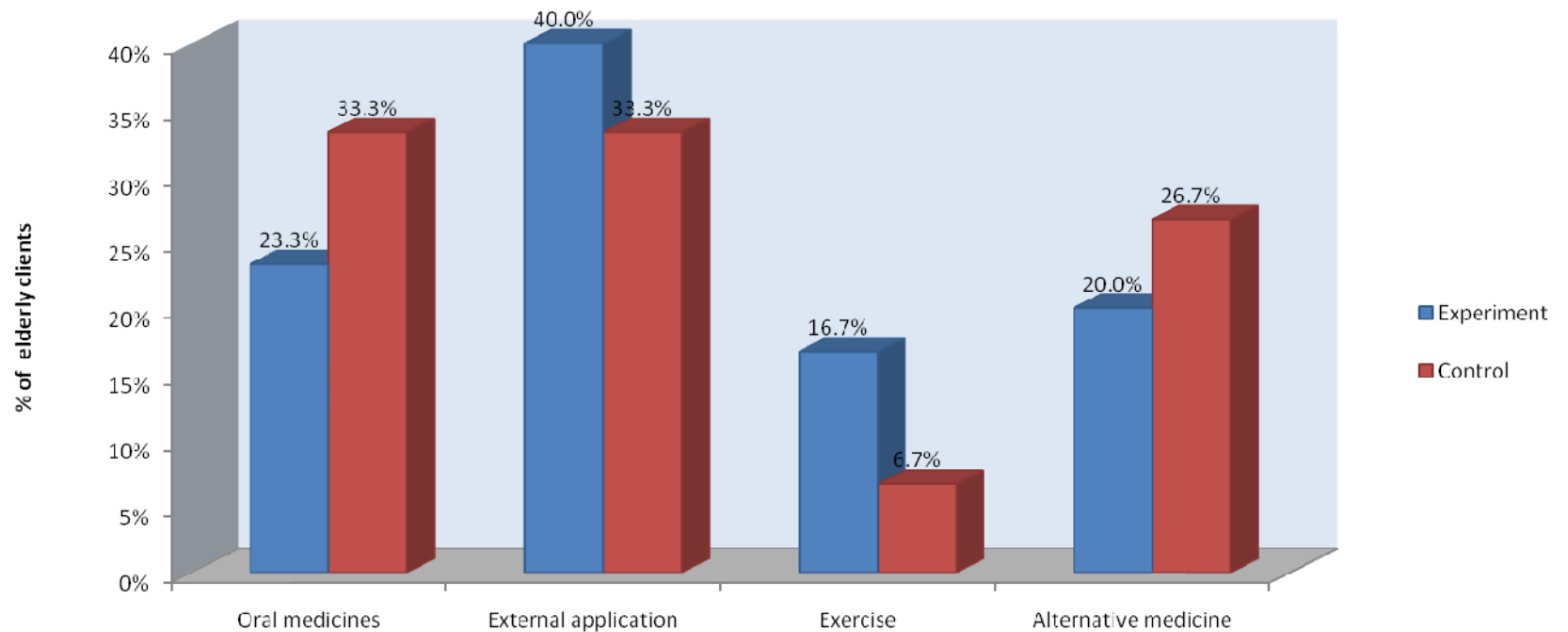
SECTION - I
TABLE - 1
DESCRIPTION OF DEMOGRAPHIC VARIABLES OF ELDERLY
CLIENTS WITH ARTHRITIS

N = 60

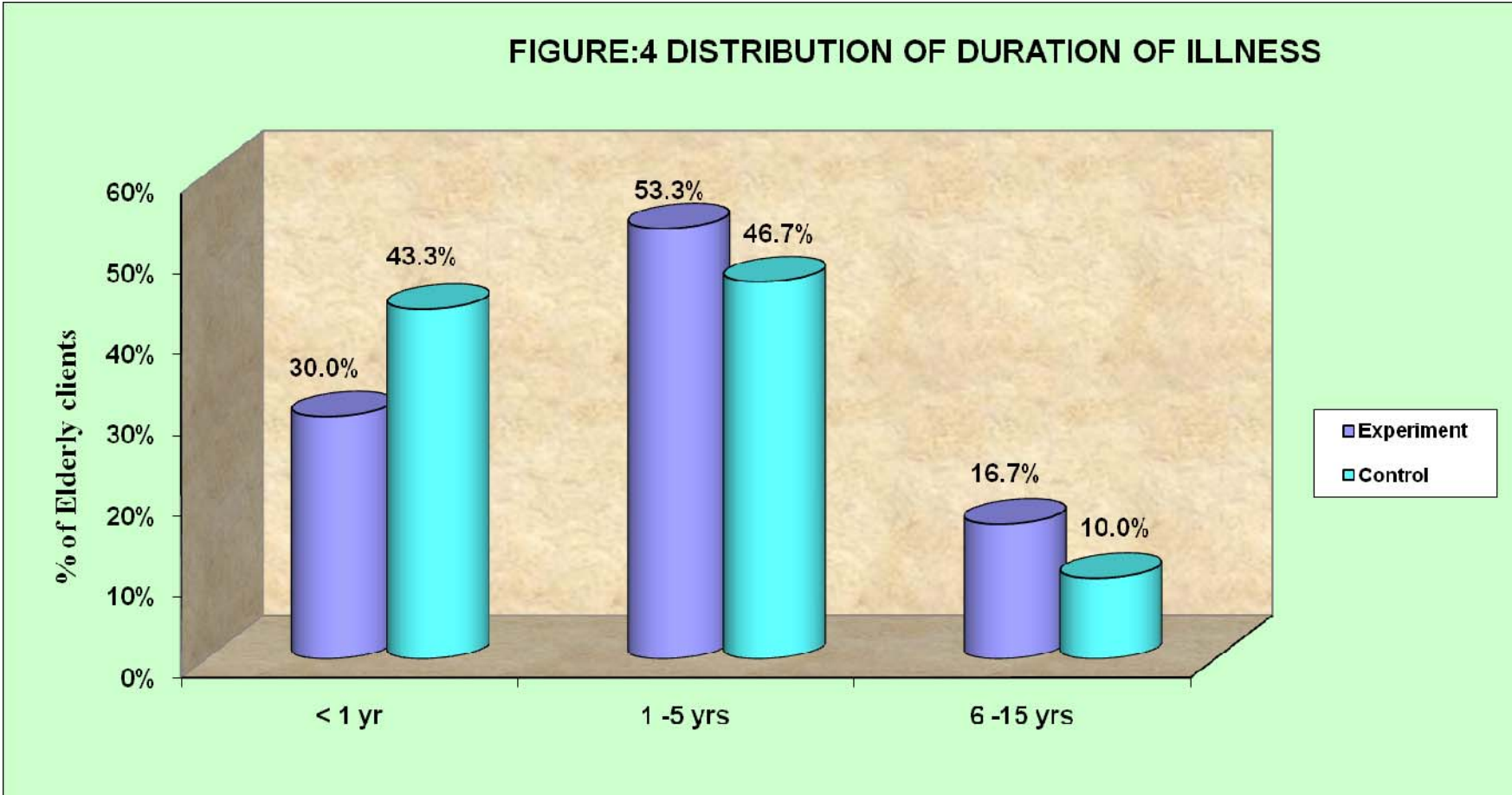
DEMOGRAPHIC VARIABLE		GROUP			
		EXPERIMENT		CONTROL	
		N	%	N	%
Age	60 -65 yrs	13	43.3%	12	40.0%
	66 -70 yrs	9	30.0%	14	46.7%
	71 -75 yrs	8	26.7%	4	13.3%
Sex	Male	7	23.3%	5	16.7%
	Female	23	76.7%	25	83.3%
Religion	Hindu	28	93.3%	28	93.3%
	Christian	2	6.7%	2	6.7%
Education status	Non formal	20	66.7%	19	63.3%
	Primary	10	33.3%	11	36.7%
Type of family	Joint family	18	60.0%	18	60.0%
	Nuclear family	10	33.3%	8	26.7%
	Extended family	2	6.7%	4	13.3%
Income	< Rs.5000	28	93.3%	25	83.3%
	Rs.5001 - 10000	2	6.7%	5	16.7%

The above table reveals that maximum percentage of elderly clients (43.3%) belongs to 60 – 65 years in experimental and (46.7%) belongs to 66-70 yrs in control group. Female respondents (76.7%) belong to experimental and (83.3%) in control group majority of respondents belongs to Hindu religion (93.3%) in both groups. More than half of the proportion of elderly clients had nonformal education (66.7%) in experimental and (63.3%) in control group. (60.0%) of elderly clients living in joint family in both groups. The income status that (93.3%) of clients getting < 5000 in experimental and (83.3%) in control group.

FIGURE :3 DISTRIBUTION OF TYPE OF TREATMENT



The above figure shows that higher percentage of elderly clients had external application (40%) in experimental and (33.3%) includes both oral medicine and external application in control group.



The above figure shows that higher percentage of elderly clients had duration of illness 1-5 years in experimental group (53.3%) and (46.7%) in control group.

SECTION - II

ASSESS THE PRETEST LEVEL OF PAIN AND RANGE OF MOTION AMONG ELDERLY CLIENTS WITH ARTHRITIS IN EXPERIMENT AND CONTROL GROUP.

TABLE: 2 PRETEST LEVEL OF PAIN

LEVEL OF PAIN	EXPERIMENT		CONTROL	
	n	%	n	%
Mild	2	(6.7%)	2	(6.7%)
Moderate	25	(83.3%)	26	(86.7%)
Severe	3	(10.0%)	2	(6.7%)

The above table reveals that (83.3%) in experiment group (86.7%) in control group had moderate level of pain.

TABLE – 3 PRETEST LEVEL OF RANGE OF MOTION

RANGE OF MOTION	EXPERIMENT		CONTROL	
	n	%	n	%
Highest level of function	0	(0.0%)	0	(0.0%)
Moderate level of function	13	(43.3%)	12	(40.0%)
Lowest level of function	17	(56.7%)	18	(60.0%)

The above table reveals that (56.7%) of elderly clients in experiment and (60%) in control group had lowest level of function

SECTION – III

TABLE - 4

EVALUATE THE EFFECTIVENESS OF THERMOTHERAPY IN REDUCING PAIN AND RANGE OF MOTION AMONG ELDERLY CLIENTS WITH ARTHRITIS IN EXPERIMENT AND CONTROL GROUP.

THERMO THERAPY	GROUP	PRETEST	POSTTEST	% OF DIFFERENCE
ROM	Experiment	68.10%	45.00%	↓23.10%
	Control	68.90%	68.10%	↓0.80%
Pain	Experiment	73.00%	46.70%	↓26.30%
	Control	71.30%	70.10%	↓1.20%

The above table depicts that experiment group client's improved 23.1% range of motion and 26.3% reduced pain after thermotherapy. This percentage shows the net benefit of this study, which indicates the effectiveness of thermotherapy.

SECTION – IV

COMPARE THE PRETEST AND POSTTEST LEVEL OF PAIN AND RANGE OF MOTION AMONG ELDERLY CLIENTS WITH ARTHRITIS IN EXPERIMENT AND CONTROL GROUP.

TABLE- 5 PRE AND POSTTEST LEVEL OF PAIN

PAIN SCORE	Experiment group		Control group		Student's Independent t-test
	Mean	SD	Mean	SD	
Pretest	18.27	1.60	17.83	1.74	t=1.00 P=0.32 DF=58 not significant
Posttest	11.67	1.52	17.53	1.76	t=13.84 P=0.001*** DF=58 significant
Student Dependent test	t=22.76 P=0.001*** significant		t=1.71 P=0.10 not significant		t=22.76 P=0.001*** significant

The above table depicts there is no significance difference between experiment and control group in the pretest, but in posttest it is observed significant difference between experiment and control group.

TABLE-6 PRE AND POSTTEST LEVEL OF RANGE OF MOTION

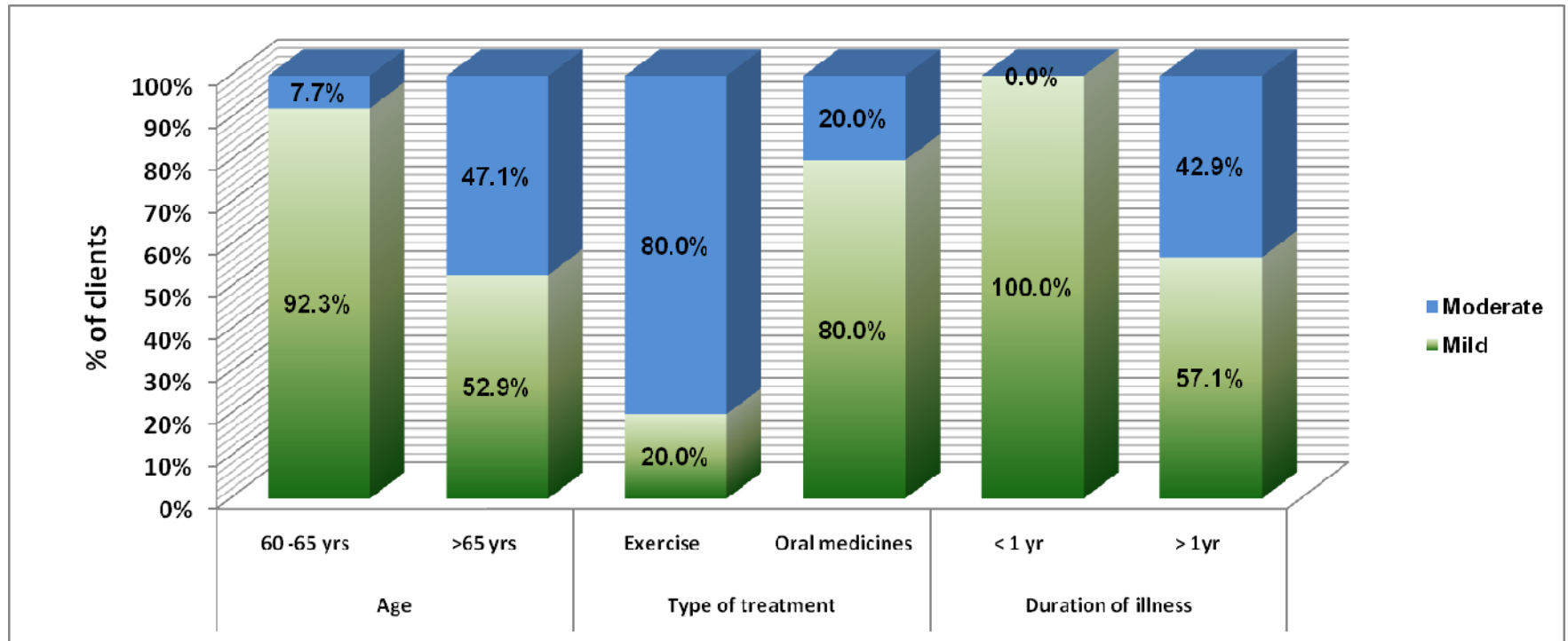
RANGE OF MOTION	PRETEST				POSTTEST				Student's independent t-test
	Experiment		Control		Experiment		Control		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Mobility level	18.07	2.02	18.60	1.87	12.23	1.41	18.53	1.91	t=14.56 P=0.001*** DF=58 significant
Walking and pending	16.80	2.01	16.67	1.45	11.43	1.25	16.60	1.61	t=13.87 P=0.001*** DF=58 significant
Self care task	12.47	1.22	12.73	.74	7.57	1.01	12.57	.82	t=21.12 P=0.001*** DF=58 significant
House hold task	13.93	1.98	13.87	1.61	9.27	1.34	13.63	1.77	t=10.77 P=0.001*** DF=58 significant
Total	61.27	4.62	61.97	3.78	40.50	2.92	61.33	4.01	t=22.99 P=0.001*** DF=58 significant

The above table depicts that the elderly clients mobility level walking and pending self care task, house hold task is improved in the post test in the experimental group than control group which is significant.

SECTION – V

FIGURE - 5

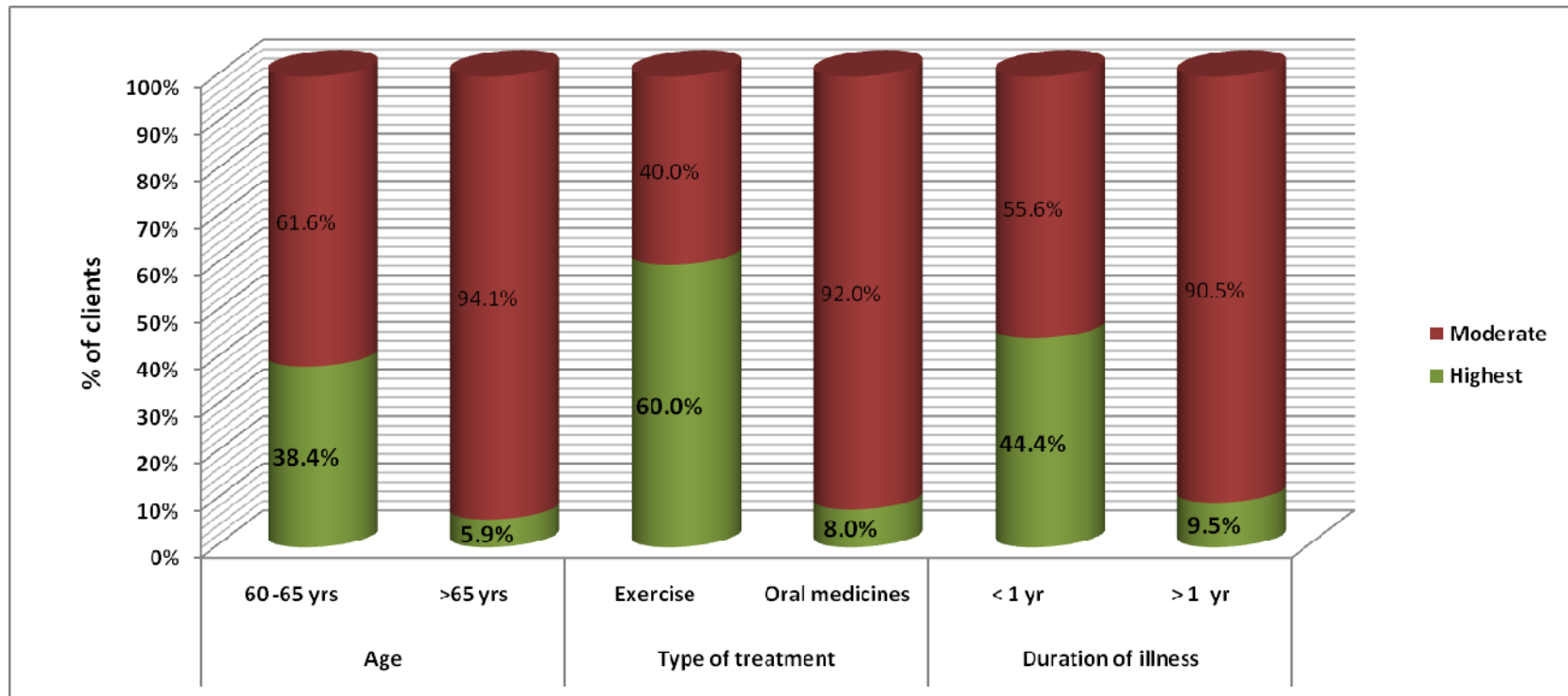
ASSOCIATE SELECTED DEMOGRAPHIC VARIABLES WITH PAIN AMONG ELDERLY CLIENTS WITH ARTHRITIS IN EXPERIMENTAL GROUP.



The above figure shows that (92.3%) who have mild pain in 60 – 65 years and (47.1%) have moderate pain in more than 65 years. The difference is significant. The younger, oral medicine and less duration of illness in elderly clients with arthritis are benefitted more than others.

FIGURE – 6

**ASSOCIATION BETWEEN SELECTED DEMOGRAPHIC VARIABLES WITH RANGE OF MOTION
AMONG ELDERLY CLIENTS WITH ARTHRITIS IN EXPERIMENTAL GROUP.**



The above figure shows that (38.4%) have highest level of function belongs to 60 – 65yrs and (94.1%) have moderate level of function belongs to more than 65yrs. Younger, exercise and less duration of illness in elderly clients with arthritis are benefitted more than others.

CHAPTER – V

DISCUSSION

Arthritis is a disease that is second only to heart disease when it comes to the cause of disability. Arthritis can affect quality of life and eventually lead to disability. Due to the increasing number of older adults, the prevalence of arthritis is rising dramatically. Millions of senior citizen across the globe is not getting the proper health care they need because the societies are not aware enough of the problem. Some health problems and common ailments that generally affect senior citizens. Once they occur, these diseases may take long time to get medical checkups regularly to prevent the onset of disease conditions.

The study was to assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai. The sample consists of 60 older adults- 30 in experimental group and 30 in control group. Structured interview schedule was framed based on demographic data and pain and range of motion regarding impact of arthritis.

Demographic variables of elderly clients with arthritis

The elderly clients who were selected for the study belongs to 60 – 65 years in experimental (43.3%) and belongs to 66-70 yrs in control group (46.7%).

The present study was supported by Sharma.et.al, (2007) conducted an epidemiological study of correlates of osteoarthritis in geriatric population of Chandigarh. The results shows 5.3% of males and 4.8% of females are aged more than 65 years.

World health organization (2007), reported prevalence of arthritis in the world as 1% but the rate varies among the age groups. More than 70% of individuals in North America affected by arthritis are over the age of 65. In United States, 55% of individuals age 65 and the older reports arthritis. It is estimated that prevalence of arthritis will rise from 43 million in 1997 to 60 million in 2020. In Canada, it is projected that the prevalence of arthritis will increase from 2.9 million to 6.5 million in 2031.

Arthritis Foundation, USA (2007) stated that arthritis is one of the leading chronic diseases in United States particularly in the age group of 60 years and above, which accounts for 12.1 million.

Female respondents (76.7%) belong to experimental and (83.3%) in control group. Majority of respondents belongs to Hindu religion (93.3%) in both groups. More than half of the proportion of elderly clients had nonformal education (66.7%) in experimental and (63.3%) in control group. (60.0%) of elderly clients living in joint family in both groups. The income status that (93.3%) of clients getting < 5000 in experimental and (83.3%) in control group. Higher percentage of elderly clients had external application (40%) in experiment and (33.3%) includes both oral medicine and external application in control group. Higher percentage of elderly clients had duration of illness 1-5 years in experimental group (53.3%) and (46.7%) in control group.

The present study also shows that majority of the respondent's belongs to the age group of 60 and above.

The first objective of the study was to assess the pretest level of pain and range of motion among elderly clients with arthritis in experiment and control group.

In this study (83.3%) in experiment group (86.7%) in control group had moderate level of pain and (56.7%) of elderly clients in experiment and (60%) in control group had lowest level of function.

The present study was supported by Hakkinen and Krishnan et al., (2007), conducted a study in Finland to predict the morbidity of patients with arthritis among 1095 patients with rheumatoid arthritis in the experimental group and 1490 community controls. The study found that in the experimental group there were 404 patients with arthritis who had difficulties in activities of daily living. In the community controls there were 147 samples with difficulties of daily living and. The findings showed that there was no much significant difference between the experimental and control groups in terms of morbidity.

The second objective of the study was to compare the pretest and posttest level of pain and range of motion among elderly clients with arthritis in experiment and control group.

The present study depicts that there is no significance difference for pain experiment and control group in the pretest, but in posttest it is observed significant difference for pain between experimental $t=22.76$ ($p = 0.001$) and control group $t=1.71$ ($P=0.10$). The study depicts that the elderly clients range of motion which includes mobility level walking and pending self care task, house hold task is improved in the post test in the experimental group $t = 22.99$ ($p = 0.001$) than control group which is significant.

The present study is supported by Brosseau.L.et.al, (2011) conducted a study on effectiveness of thermotherapy. Over 170 people with osteoarthritis continue to take their medications but used hot, cold or ice packs/towels with or without massage or no treatment. Study showed that massaging with ice for 20 minutes, 5 days a week for 2 weeks, improved muscle strength in the leg, the range of motion in the knee and decreased time to walk 50 feet compared to no treatment. It found that that ice massage statistically significantly improved range of motion) time to walk 50 feet compared with control.

Cameron (2009) conducted a study on cold application has been show to have significant physiologic effects in musculoskeletal conditions. Statistically significant results favoring ice massage over a control group were found in patients with arthritis of knee after approximately two weeks of treatment. Improvements were reported in objective measures of range of motion in knee flexion and function. These improvements ranged from 8 to 29% greater improvement relative to the control group.

The third objective of the study was to evaluate the effectiveness of thermotherapy in reducing pain and improving range of motion in experimental and control group

The present study reveals that experimental group client's reduced pain 26.3% and improved 23.1% range of motion after thermotherapy. This percentage shows the net benefit of this study, which indicates the effectiveness of thermotherapy.

This study was supported by Welch.V.et.al, (2011) conducted a study on treating arthritis with thermotherapy. Heat and cold therapy is often used as adjuncts in the treatment of arthritis by rehabilitation specialists. Quality was

assessed by two reviewers using a 5 point scale that measured the quality of randomization, double-blinding and description of withdrawals. Three studies (79 subjects) met the inclusion criteria. Since patients preferred thermotherapy to no therapy, thermotherapy can be used as a palliative therapy which can be applied at home as needed to relieve pain.

Robinson.V. et al (2008) conducted a study on efficacy of thermotherapy for osteoarthritis. Three randomized controlled trials, involving 179 patients, were included in this review. The included trials varied in terms of design, outcomes measured, cryotherapy or thermotherapy treatments and overall methodological quality. In one trial, administration of 20 minutes of ice massage, 5 days per week, for 3 weeks, compared to control demonstrated a clinically important benefit for knee OA on increasing quadriceps strength (29% relative difference). There was also a statistically significant improvement, in knee flexion ROM (8% relative difference) and functional status (11% relative difference).

Julie Minton, BS, ATC.et.al, (2008) conducted a study on comparison of thermotherapy and cryotherapy in enhancing supine, extended leg, hip flexion. eighteen healthy subjects (13females and 5males) were pretested and post tested under- two treatment conditions in order- to compare the effects of cold therapy and heat therapy on supine, extended-leg, hip flexion measurements. Cryotherapy treatments consisted of crushed ice bags secured to the posterior thigh for- 20 minutes. Cryotherapy is reported to enhance joint stretching by decreasing pain perception, interfering with muscle spasm, and possibly causing reflex vasodilation. The results suggest that both cryotherapy and thermotherapy significantly improved immediate range of motion however there were no differences between the two treatment conditions.

The fourth objective of the study was to associate pain and range of motion among elderly clients with arthritis in experimental and control group with selected demographic variables.

The present study shows that (92.3%) who have mild pain in 60 – 65 years and (47.1%) have moderate pain in more than 65 years. The difference is significant. The younger, oral medicine, and less duration of illness in elderly clients with arthritis are benefitted more than others.

The study shows that (38.4%) have highest level of function belongs to 60 – 65yrs and (94.1%) have moderate level of function belongs to more than 65yrs. Younger, exercise and less duration of illness in elderly clients with arthritis are benefitted more than others.

The present study was supported by Kelli.L.Dominick.et.al, (2007) conducted a study on health-related quality of life among older adults with arthritis. The population-based studies have examined the relationship of specific arthritic conditions, such as osteoarthritis and rheumatoid arthritis with Health-related quality of life. The results shows individuals with arthritis, all subject characteristics (including age, race, sex, nursing home residence, and marital status, income, and co morbid illnesses) were significantly related to at least one Health-related quality of life item. Older age, nursing home residence, and greater co morbidity were the most consistently associated with poorer Health-related quality of life.

Cathleen.J.Appelt.et.al, (2006) conducted a study on arthritis specific health beliefs related to aging among older male patients with knee and or hip osteoarthritis. The cross sectional survey of 591 elderly primary care patients, who had symptomatic osteoarthritis of the knee and or hip. Data were collected

on age, race, educational level, income. The study reports that disease specific beliefs may impact patient perceptions of the efficacy of various treatment options, thus it is important to understand these beliefs. Patients 70 years old or older as compared to patients 50 – 59 years old are more likely to believe that arthritis is a natural part of growing old. People should expect that when they get older, they won't be able to walk as well and people should expect to live with pain as they grow older.

Felson.et.al, (2006) conducted a study on estimation of obesity among osteoarthritis in old age in urban and rural area. The Present study showed significant difference in the prevalence of osteoarthritis in elderly of rural & urban areas. The low prevalence of osteoarthritis in rural elderly could be due to differences in their life style. Rural elderly are usually more mobile, (in present study also limitation of movements in rural elderly was significantly less than in urban elderly) have less obesity compared to urban elderly and have better social interactions. The last factor makes rural elderly to divert their minds away from symptoms. It was seen in the present study that peak prevalence of osteoarthritis was among the elderly of age group 84 year and older. As degeneration increases with age, osteoarthritis also increases with age.

CHAPTER – VI

SUMMARY, CONCLUSION AND RECOMMENDATION

Arthritis necessarily hinders a person's independence or affects his personality. For the lucky person with arthritis, the disease may be nothing more than slight morning stiffness. But for millions of others, arthritis can become a disabling, even crippling disease. It can get severe enough to limit everyday activities, such as dressing, climbing stairs, getting out of bed or walking.

Arthritis, besides being an extremely physical disease, also exacts a severe mental, emotional, and financial toll. An estimated one in nine Indians - nearly 10 crore people have some or other form of arthritis. Most of the people feel the pain of the disease after the age of 50, though in rare cases arthritis is known to strike adolescents and children as well.

Arthritis may be a chronic disease as opposed to an acute disease, and for the reason it is a very trying disease for all concerned – the patient, his or her family and the health care professionals looking after the patient, an arthritic patient is in pain all the time and this affects his or her personality. Care should be taken to ensure that their mobility and participation in family affairs to be maintained.

The present study was to assess the effectiveness of thermotherapy on pain and range of motion among elderly clients with arthritis in selected rural area of Madurai.

The Objectives of the study was

1. To assess the level of pain and range of motion among elderly clients with arthritis.
2. To evaluate the effectiveness of thermotherapy in reducing pain and improving range of motion in experimental group.
3. To compare the pretest and post test level of pain and range of motion among elderly clients with arthritis in experimental and control group.
4. To associate pain and range of motion among elderly clients with arthritis in experiment and control group with selected demographic variables.

The study attempt to examine the following hypotheses:

- a. There will be significant difference in the level of pain and range of motion before and after thermotherapy.
- b. There will be significant association between pain and range of motion among elderly clients with arthritis in experiment and control group with selected demographic variables.

The review of literature enabled the investigator to develop conceptual framework, tool and methodology for the study, literature review was done as follows, studies related to incidence and studies related to prevalence of arthritis, studies related to old age with arthritis, studies related to complications of arthritis in old age, studies related to effectiveness of thermotherapy for arthritis, studies related to other applications of thermotherapy.

The conceptual frame work adopted for the present study was based on Modified Nursing Process, ANA model 2003. This model helped the investigator and approaching the problem in a comprehensive and systematic manner.

The methodology used for this study was quasi experimental – quantitative research design. A sample size of 60 elderly clients with arthritis residing at paravai (30 in experimental and 30 in control group). Convenience sampling technique was used to collect the samples. The tool used for this study was modified arthritis impact measurement scale 2. The tool was tested for the content validity and reliability prior to the study. Subsequently, pilot study was conducted and found that the tool was feasible and practicable.

The data collection was done for a period of 4 weeks from 01.09.2011 to 30.09.2011. The data was collected on all the days including Sundays. Permission to conduct the study was obtained from the medical officer, Samayanallur. The investigator visited 7-8 clients per day and the clients were selected on the basis of inclusion criteria. The purpose of the study was informed to the clients confidentiality was assured. Each client was interviewed and assessed separately. The investigator has spent approximately 30 – 40 minutes with each client to complete the instrument. The adults were very cooperative during the whole procedure. Posttest scores of pain and range of motion was assessed after fifth day. In control group all the clients received their routine treatment. The collected data were entered in data sheet and it is analyzed and interpreted in terms of the objectives using descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY

- ❖ The elderly clients who were selected for the study belongs to 60 – 65 years in experimental (43.3%) and belongs to 66-70 yrs in control group (46.7%).
- ❖ Female respondents (76.7%) belong to experimental and (83.3%) in control group.
- ❖ Majority of respondents belongs to Hindu religion (93.3%) in both groups.
- ❖ More than half of the proportion of elderly clients had nonformal education (66.7%) in experimental and (63.3%) in control group.
- ❖ Majority of the elderly clients living in joint family in both groups (60.0%).
- ❖ The income status that (93.3%) of clients getting < 5000 in experimental and (83.3%) in control group.
- ❖ Higher percentage of elderly clients had external application (40%) in experiment and (33.3%) includes both oral medicine and external application in control group.
- ❖ Higher percentage of elderly clients had duration of illness 1-5 years in experimental group (53.3%) and (46.7%) in control group.
- ❖ In Pretest (83.3%) in experiment group (86.7%) in control group had moderate level of pain and (56.7%) of elderly clients in experiment and (60%) in control group had lowest level of function.

- ❖ The present study depicts that there is no significance difference for pain in experiment and control group in the pretest, but in posttest it is observed significant difference for pain between experimental $t=22.76$ ($p = 0.001$) and control group $t=1.71$ ($P=0.10$). The study depicts that the elderly clients range of motion which includes mobility level walking and pending self care task, house hold task is improved in the post test in the experimental group $t = 22.99$ ($p = 0.001$) than control group which is significant.
- ❖ The present study reveals that experimental group client's reduced pain 26.3% and improved 23.1% range of motion after thermotherapy. This percentage shows the net benefit of this study, which indicates the effectiveness of thermotherapy.
- ❖ The present study shows that (92.3%) who have mild pain in 60 – 65 years and (47.1%) have moderate pain in more than 65 years. The difference is significant. The younger, oral medicine, and less duration of illness in elderly clients with arthritis are benefitted more than others. Statistical significance was analyzed using Pearson chi-square test.
- ❖ The study shows that (38.4%) have highest level of function belongs to 60 – 65yrs and (94.1%) have moderate level of function belongs to more than 65yrs. Younger, exercise and less duration of illness in elderly clients with arthritis are benefitted more than others. Statistical significance was analyzed using Pearson chi-square test.

NURSING IMPLICATIONS

NURSING SERVICE

- ❖ Thermotherapy can be practiced as a routine nursing care
- ❖ The Community health nurse as to educate the elderly clients about the health services available at government hospital, primary health center, both in urban and rural areas.
- ❖ The Community health nurse should know the life style practices of the people in her working area to adopt the health life style practices to reduce morbidity and disability rates due to musculoskeletal diseases.
- ❖ Thermotherapy can be taught to the care takers for elderly clients with arthritis
- ❖ The nurse should gain insight to detect certain problems like pain, discomfort, tenderness, swelling, and full assessment which would guide them to detect life support measures appropriately to prevent further complications.
- ❖ In the clinical setting thermotherapy is used as an adjunct therapy combined with others, such as exercise.

NURSING EDUCATION

- ❖ Nurses who are working in community area should be expected to have thorough knowledge in management of old age group with arthritis, and identification of existing problem needs and quick assessment skills.
- ❖ General information about the geriatric health issues and problems to be included in nursing curriculum.
- ❖ Conduct periodic in service education to the health personnel working in community.
- ❖ Organize workshops and hands on training for health personnel working in the community.
- ❖ Periodicals can be published on the newer paradigm of geriatric health services available in the community.

NURSING ADMINISTRATION

- ❖ The administrator manages the old age group with arthritis. The nurse leaders in nursing care confronted to undertake the health needs for the most vulnerable effective organization and management.
- ❖ The nursing administrator should give attention in proper selection, placement of effective utilization of the nurses in all access within the available resources giving importance for their creativity, internal ability in education.

- ❖ The administrator should provide adequate in service education programme on latest management strategies in care of arthritis and handling of advanced technologies would motivate nurses to carryout nursing intervention and improve the standards of living.
- ❖ Develop comprehensive strategy and policy for active utilization of geriatric health services.
- ❖ Allocate resources for the training and implementation of other strategies for various geriatric health services
- ❖ Ensure that the government health care facilities should have proper infrastructure, service personnel, and quality of health services made available to the geriatric population.
- ❖ Budgetary allocation could be hiked for differential funding pattern based on the need for geriatric health issues.

NURSING RESEARCH

- ❖ The generalization of study result can be made by replication of the study.
- ❖ Disseminate the findings through conferences, seminars, publication in journals and World Wide Web.
- ❖ The researcher can encourage use of alternative therapies along with pharmacological management
- ❖ The findings of the study can help to expand the scientific body of professional knowledge upon which further research can be conducted. It will in turn strengthen nursing research pertaining to clinical nursing.
- ❖ This study directs the nursing personnel's to broaden and expand their knowledge and skill to elicit problems and to conduct various researches to improve their power to implement prompt activities.
- ❖ Develop network for new directions in research and collaboration in utilizing geriatric health services in India.
- ❖ Nurses and nursing students should undertake more research activities in geriatric health problems and issues in India.

RECOMMENDATION

Based on the research findings the following recommendations are made,

- ❖ Similar study can be conducted with large samples `
- ❖ This study can be conducted in urban area
- ❖ Experimental study can be conducted by introducing structured teaching programme.
- ❖ A descriptive study can also be conducted to evaluate problems and institute nursing care for old age group with arthritis.
- ❖ Descriptive study on assessment of knowledge, attitude, and practice of arthritis and ortho rehabilitation can be initiated.
- ❖ A comparative study can be conducted to assess the effects of hot and cold application for elderly clients with arthritis.

CONCLUSION

Community health nurse plays an important role in health promotion of geriatric population. As the problems related to arthritis quite frequent and often resulted in interruption of activities of daily living. On evaluation of thermo therapy the client's level of pain was reduced and range of motion was improved. Thermotherapy is easy and inexpensive compared to other treatment options show the investigator implemented thermotherapy for elderly clients

with arthritis. The findings of the study revealed that thermotherapy was effective on significant reduction of pain and improving range of motion among elderly clients with arthritis.

LIMITATION

- The study is done only to elderly clients with arthritis. So generalization of findings cannot be done.
- Preference to cold pack application to joints is less among clients .
- The data collection period is 4 weeks only.

BIBLIOGRAPHY

1. Barbara.C.Long.(1993).*MedicalSurgicalNursing* .(1sted.).NewYork:Mosby Publication.
2. Bickeston, T. (1985). *Medical Surgical Nursing*. (1sted) .London:William Heinemann Medical Books Limited
3. Breudeg.G.Bare and Suzzane Cosmelter. (1992).*Medical Surgical Nursing*. (8 th ed.). Philadelphia: Lippincott company.
4. Brunner and Suddarth's. (1996). *Text Book of Medical Surgical Nursing*.(18 ed.). Philadelphia: Lippincott Raven Publishers.
5. Corole.B.Levis.(1995). *Orthopedic Assessment and Treatment of Geriatric Patient*.(1 st ed). NewYork: Mosby Publications.
6. Chad Stanbey. (1998). *Evaluation of Orthopedics*. Philadelphia.:F.A.Davis Company
7. David.J. (2002). *Essential Orthopedic and Trauma*.(3rd ed).London: Churchill Livingstone.
8. Davidson. (1995). *Principles and Practice*.(19th ed.)London: Churchill Livingstone.
9. Delores, C.Schoen. *Adult Orthopedicnursing*, Philadelphia:Lippincott Raven Publishers.
10. Dewitt.S.C. (2000) *.Essential of Medical & Surgical Nursing*(.4 th ed). philadelphia:W.B.Saunders.
11. Frances Donovan Monahar. (1998) *.Medical Surgical Nursing*,(2 nd ed). New York :W.B.Saunders company.
12. Gail.A and Harkness. (1977).*Medical Surgical Nursing*.(10 th ed).New york: Mosby Publications.
13. Harkin, Dinctor. (1996). *Medical Surgical Nursing*.(10 th ed). Philadelphia: portland.
14. Idolia Coxcollier. (1999). *Medical Surgical Nursing*(6 th ed). London: Mosby Publications.
15. Jajuddin, M.. (1992). *Advances in Orthopedics*.(5 th ed).New delhi: Buthimore University Partk Press.

16. Jane.F.Mauk. (1999). *Medical Surgical Nursing*.(12 th ed). London: Mosby publication.
17. Joan.A. and Royale. (1992). *Medical Surgical Nursing*.(4 th ed) .Philadelphia: Lippincott Company.
18. John Ebinezar. *Text Book of Orthopedics*.(3 rd ed)New Delhi: Jaypee Brothers.
19. Joyce.M. Black (1993). *Medical Surgical Nursing*(4 th ed),philadelphia: W.B.Saunders.
20. Levis. (1996).*Medical Surgical Nursing Assessment and Management of Clinical Problems*. New Delhi: Jaypee Brothers.
21. Lewis, Sharon, Matik.*Medical Surgical Nursing - Assessment of clinical problem*.(4 th e d), London: Mosby.
22. Luckmann. (1998) .*Medical Surgical Nursing*. (4th ed),.philadelphia:Saunders Company.
23. Many Powel. (1994),*Orthopedic Nursing and Rehabilitation*. New York:Churchill Livingstone.
24. Monakanneigh. “*Medical Surgical Nursing*.(2nd ed). Philadelphia:Saunders company.
25. Michael,H. and Rawford .(1995). *Current Diagnosis and Treatment in Orthopedics*(3rd ed) Larse Medical Book
26. Park, J.E and Park K.(2007). *Text book of Preventive and Social Medicine*.(19th ed), Jabalpur :banarsidar Bharat Publishers.
27. Phipps(2000). *Medical surgical Nursing and Clinical Practice*.(6th ed). Philadelphia: Lippincott company.
28. Polit, D.F.(1998) .*Nursing Research*, (6 th ed).philadelphia:Lippincott Company.
29. Poris Smith Siddarth.(1991). *Medical Surgical Nursing*.(15th ed).philadelphia:Lippincott company.
30. Roger.DC. *Principles of Orthopedic Practice*.(2nd ed).philadelphia: Lippincott Company.
31. S.Tevay, Cavale Campbell’s. “*Operative Orthopedics*”.(10th ed).london:Mosby Publications.

32. Sancrel, L. Turek. *Orthopedics*.(2 nd ed)philadelphia: Lippincott Raven Publishers.
33. Susan.B. Sullivan. *Physical Rehabilitation*.(5 th ed)New Delhi:Jaypee Brothers.
34. Suzanne.C,Smeltzer. (1992). “*Medical Surgical Nursing*”(10th ed)., Washington, T.P.Lippincott company,
35. Watson. (1994).*Medical Surgical*.(4th ed).philadelphia: Saunders company,
36. Wilma. (1994). *Medical Surgical Nursing*.(7 th ed).Philadelphia: Lippincott company
37. Wash.H,S.(1994). *Medical Surgical Nursing*. Philadelphia:Lippincott company
38. Williams. (1998) .*Manual Nursing of Clinical Practice*.(5 th ed). Philadelphia: Lippincott Company.

JOURNAL REFERENCE

1. Ashwini Dashputre. (2009). Arthritis – an ailment Which cripples the whole world: *International journal of medical sciences*, April .(8)pg no 123-125.
2. Ameye LG and Chee W.S.(2008). Arthritis and nutrition, A systematic review of the scientific evidence: *Asian journal of orthopedics and rheumatology* October – December.(8)pg no 127.
3. Brosseau L .(2005). Approach to the patient with a single swollen joint:*American College of Physicians* .Annual Session (16). Pg no 292.
4. Cibere J. (2006) .Acute monoarthritis: *journal of rheumatology*. July(30) pg no.1577-83.
5. Floyd Richard, M. (2008). Stigma reduction of persons affected by arthritis: *Arthritis Review*.December 71(4).
6. Goekoop Ruiterman YP. (2007).Comparison of treatment strategies in early arthritis: *Arthritis Rheumatology*.june (54).

7. Heijnders, M. (2008). The dynamics of stigma in arthritis: *International journal of arthritis*, December 72(4).
8. Holm I, Flottorp S. (2006). Physical performance in patients with osteoarthritis of the knee: *Arthritis rheumatology*. Dec 43 (17).
9. Holder L, Studley M. (2007). Septic Arthritis Medicine: *Arthritis Rheumatology*, March 12 (34).
10. Kidd, B. (2006). A multicenter randomized study of comparing lornoxicam with diclofenac in arthritis: *Journal of Rheumatology*. March. 23(9).
11. Kherani RB, Shojania. (2007). Septic arthritis in patients with preexisting inflammatory arthritis.: *CMAJ*. May 22;176(11):1605-8.
12. Levine M, Siegel LB. (2006). "A swollen joint: why all the fuss?" *Arthritis Review* May-Jun;10(3)
13. Main C, (2007). Treatment of septic arthritis: *CMAJ*. Oct 9;177(8):899.
14. Margaretten ME, Kohlwe J. (2007). Does this adult patient have septic arthritis?: *Journal of Arthritis Medical Association*. Apr 4; 297(13):1478-88.
15. Matheson AJ and Perry CM. (2007). "Glucosamine – A review of its use in the management of arthritis": *Journal of osteopath Association*, 20(14).
16. Reptango Dewis. (2006). The management of septic arthritis: *Journal of orthopaedic association* 14 (28)
17. Thuve Dahm K. (2006). Comparing hot pack and functional status of women with osteoarthritic knees: *journal of orthopaedics* 12(4).
18. Weston V, Coakley G. (2007). Guideline for the management of the hot swollen joint in adults with a particular focus on septic arthritis: *journal of British society of Rheumatology* 93 (12).

19. Yamanaka L, Herbert ME .(2006).An Elevated Leukocyte Count Distinguishes Septic Arthritis from less serious causes of hip pain: *Journal of Medicine* .Oct;175(4):275-6.

NET REFERENCE

- <http://www.arthritis.org>
- <http://arthritis-research.com>
- <http://www.ncbi.in>
- <http://www.kneeguru.co.uk/>
- www.whoindia.org
- www.rhmjournal.org
- www.elsevier.org
- www.circulike.org
- www.ncbi.com
- www.wiley.com
- www.musculoskeletal.com
- www.pubget.com
- www.hindawi.com
- www.webmd.com

APPENDIX -A

SECTION A

DEMOGRAPHIC PROFILE

- 1. AGE IN YEARS** []
 - a) 60-65 years
 - b) 66-70 years
 - c) 71-75 years
 - d) Above75 years
- 2. SEX** []
 - a) Male
 - b) Female
- 3. RELIGION** []
 - a) Hindu
 - b) Christian
 - c) Muslim
 - d) Others
- 4. EDUCATIONAL STATUS** []
 - a) Non formal
 - b) Primary
 - c) higher secondary
 - d) College
- 5. TYPE OF FAMILY** []
 - a) Joint
 - b) Nuclear
 - c) Extended
- 6. INCOME** []
 - a) <5000
 - b) 5001-10000
 - c) > 10000
- 7. TYPE OF TREATMENT** []
 - a) Oral medicines
 - b) External application
 - c) Exercises
 - d) Alternative medicines
- 8. DURATION OF ILLNESS** []
 - a) <1 year
 - b) 1-5 years
 - c) 6- 15 years
 - d) >15 years

SECTION B

MODIFIED ARTHRITIS IMPACT MEASUREMENT SCALE 2

S.NO	DESCRIPTION	SCORES				
		All days (5)	Most days (4)	Some days (3)	Few days (2)	No days (1)
1.	MOBILITY LEVEL					
	<p>1. How often you feel difficulty to use public transportation?</p> <p>2. How often were you out of the house for at least part of the day?</p> <p>3. How often were you able to do errands in the neighborhood?</p> <p>4. How often did someone have to assist you to get around outside your home?</p> <p>5. How often were you in a bed or chair for most or all of the day?</p>					
2.	WALKING AND BENDING					
	<p>6. Did you have trouble in doing vigorous activities such as running, lifting heavy objects?</p> <p>7. Did you have trouble either walking several blocks or climbing a few flights of stairs?</p> <p>8. Did you have trouble in bending, lifting or stooping?</p> <p>9. Did you have trouble</p>					

S.NO	DESCRIPTION	SCORES				
	either walking one block or climbing one flight of stairs? 10. Were you unable to walk unless assisted by another person or by cane, crutch or walker?					
3.	SELF CARE TASK	Alwa ys (5)	Very often (4)	Some times (3)	Almost never (2)	Neve r (1)
	11. Did you need help to take bath? 12. Did you need help to get dressed? 13. Did you need help to use the toilet? 14. Did you need help to get in or out of bed?					
4.	HOUSE HOLD TASKS	Always (5)	Very often (4)	Some times (3)	Almost never (2)	Never (1)
	15. Could you have difficulty to go shopping for groceries without help? 16. Could you have difficulty to prepare your own meals without help? 17. Could you have difficulty to do your own house work without help? 18. Could you have difficulty to do your own laundry without help?					
5.	ARTHRITIS PAIN 1. How would you describe the arthritis pain you usually had?	Severe (5)	Moderate (4)	Mild (3)	Very mild (2)	None (1)

S.NO	DESCRIPTION	SCORES				
	<p>2. How often did you have severe pain from your arthritis?</p> <p>3. How often did you have pain in two or more joints at the same time?</p> <p>4. How often did your morning stiffness lasts for more than one hour from the time you woke up?</p> <p>5. How often did your pain make it difficult for you to sleep</p>	All days (5)	Most days (4)	Some days (3)	Few days (2)	No days (1)

INTERPRETATION OF SCORES FOR RANGE OF MOTION:

1-30----highest level of function

31-60----moderate level of function

61-90---- lowest level of function

SCORING FOR PAIN

1-5—none

6-10---very mild pain

11-15---mild pain

16-20—moderate pain

21-25---severe pain

gphpT - m
jd;tpguf;Fwpg;G

- 1. taJ (Mz;Lfspy;)** ()
m. 60 Kjy; 65 tiu
M. 65 Kjy; 70 tiu
. 70 Kjy; 75 tiu
<. 75f;Fk; Nky;
- 2. ghypdk;** ()
m. Mz;
M. ngz;
- 3. kjk;** ()
m. ,e;J
M. fpwp];jth;
. K];yPk;
<. gpw kjj;jth;
- 4. fy;tpj;jFjp** ()
m. gbg;G ,y;iy
M. Muk;gf;fy;tp
. Nky;epiyf;fy;tp
<. fy;Yhhp fy;tp
- 5. FLk;g tif** ()
m. \$l;Lf;FLk;gk;
M. jdpf;FLk;gk;
. ePl;bf;fg;gl;l FLk;gk;
- 6. tUkhdk;** ()
m. &.5000f;Fk; Fiwthf
M. &.5001 Kjy; 10>000 tiu
. &.10>000f;Fk; mjpfkhf
- 7. kUj;Jt Kiw** ()
m. tha;topahf cl;nfhs;Sk; kUe;J
M. Nky;Gwkhf gad;gLj;jg;gLk; kUe;J
. clw;gapw;rp
<. khw;W kUe;J
- 8. Nehapd; fhy msT** ()
m. 1Mz;Lf;Fk; Fiwthf
M. 1 Kjy; 5 tUlq;fs; tiu
. 6 Kjy; 15 tUlq;fs;

<. 15 tUlq;fSf;F Nky;

gFjp - M
Mh;j;iub]; ,k;ghf;l; msT Nfhy; - 2

t. vz;	mirtpd; msT	vy;yh ehl;fspYk; (5)	kpfTk; mjpfkhd ehl;fs; (4)	xUrpy ehl;fs; (3)	rpy ehl;fs; (2)	,y;iy (1)
1.	vj;jid Kiw jq;fshy; thfdj;jpy; gazk; nra;a KbfpwJ?					
2.	vt;tsT Kiw xU ehspy; cq;fshy; tPl;il tpl;L ntspapy; nry;y KbfpwJ?					
3.	vj;jid Kiw cq;fSf;F gf;fj;J tPl;bdhpd; cjtp Njitg;gLfpwJ?					
4.	vj;jid Kiw cq;fSf;F tPl;il tpl;L ntspapy; nry;y gpwh; cjtp Njitg;gLfpwJ?					
5.	xU ehspy; vt;tsT Kiw gLf;ifapy; ,Ug;gPh;fs;?					
elj;jy; kw;Wk; tisjy;						
6.	jq;fSf;F XLk;NghJ (my;yJ) fdkhd nghUl;fis Jhf;Fk; NghJ rpukk; Vw;gLfpwjh?					
7.	jq;fSf;F gb VWk;NghJ rpukk; Vw;gLfpwjh?					
8.	jq;fSf;F FdpAk; Nghj (my;yJ) VNjDk; vLf;Fk; NghJ rpukk; Vw;gLfpwjh?					
9.	jq;fSf;F xU khb VWk;nghOJ rpukk; Vw;gLfpwjh?					
10.	jhq;fs; elf;Fk;NghJ gpwh; cjtpNah (my;yJ) gpw cgfuzq;fs; ,d;wp elf;f Kbfpwjh?					

RaNtiyg;ghl;Lj;jpwd;		vg;nghOJK; (5)	mbf;fb (4)	vg;nghOjhtJ (3)	Kbe;j tiu fpilahJ (2)	vg;NghJK; fpilahJ (1)
11.	jhq;fs; Fspg;gjw;F ahUila cjtpAk; Njitg;gLfpwjh?					
12.	jq;fSf;F Milfs; mzptjw;F cjtp Njitg;gLfpwjh?					
13.	jq;fSf;F fopg;giwia gad;gLj;Jtjw;F cjtp Njitg;gLfpwjh?					
14.	jq;Sf;F gLf;ifia gad;gLj;Jtjw;F cjtp Njitg;gLfpwjh?					
tPl;LNtiyg;ghl;Lj;jpwd;						
15.	jq;fSf;F Nghf;Ftuj;J trjpf; ,Ue;jhYk;> tPl;L kspifg;nghUl;fs; thq;f ahUila cjtpAk; ,d;wp nry;y Kbfpwjh?					
16.	jq;fSf;F ve;j cjtpAkpd;wp czTfis jahhpf;f Kbfpwjh?					
17.	jq;fSf;F ve;j cjtpAK; ,y;yhky; tPl;L Ntiyfis nra;a Kbfpwjh?					
18.	jq;fSf;F ve;j cjtpAk; ,y;yhky; Jzpfis Jitf;f Kbfpwjh?					

%l;Ltyp		mjpfk; (5)	kpjkhd msT (4)	FiwT (3)	kpfTk; FiwT (2)	,y;iy (1)
19.	jq;Sf;F %l;Ltypapd; msT vt;tsT cs;sJ?					
20.	vt;tsT Kiw jq;fSf;F %l;Ltyp mjpfk; Vw;gLfpwJ?					
21.	vt;tsT Kiw jq;fSf;F xd;Wf;F Nkw;gl;l %l;Lfspy; typ Vwg;LfpwJ?					
22.	vt;tsT Kiw jq;fSf;F xU kzpNeuj;jpw;Fk; Nkyhd %l;L gpbG;G ,Uf;fpwJ?					
23.	vt;tsT Kiw jq;fSf;F %l;L typahy; Jhf;fkpd;wp mtjgg;gLfpwPh;fs;?					

typ msTNfhy;

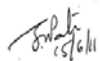
- 0-5 - ,y;iy
- 6-10 - kpfTk; FiwT
- 11 – 15 - FiwT
- 16-20 - kpjkhd msT.
- 21 – 25 - mjpfk;

mirtpd; msT

- 1-30 - mjpf msT Ntiyg;ghl;Lj;jpwd;
- 31-60 - kpjkhd msT Ntiyg;ghl;Lj;jpwd;
- 61-90 - Fiwe;j msT Ntiyg;ghl;Lj;jpwd;

CERTIFICATE OF CONTENT VALIDITY

This is to certify the tool developed by Ms.R.Selvarani ,M.Sc.(N) I year student ,college of nursing, Madurai Medical College, Madurai-20 for her topic “***A STUDY TO ASSESS THE EFFECTIVENESS OF THERMOTHERAPY IN REDUCTION OF PAIN AND IMPROVING RANGE OF MOTION AMONG ELDERLY CLIENTS WITH ARTHRITIS IN SELECTED RURAL AREA OF MADURAI***” is validated by me and she can proceed with this tool to conduct the main study

Signature: 

Name & Seal: Dr Joy PATRICIA M.D (Community Medici

HEAD OF THE DEPARTMENT
INSTITUTE OF COMMUNITY MEDICINE
MADURAI MEDICAL COLLEGE
MADURAI


Date: 15/6/11

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SIGNATURE: T.V. MALLIGA, M.Sc., (N)
NAME: PRINCIPAL
DESIGNATION: COLLEGE OF NURSING
GOVT. CHENGALPATTU MEDICAL COLLEGE
CHENGALPATTU
DATE:

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Signature: 

Name & Seal:

Mrs. Kannammal.C.

Head of the Department
Community Health Nursing


Date: 12.7.2011



CERTIFICATE OF CONTENT VALIDITY

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Signature:


Name & Seal: Mrs. Bharathi Subbaran

xq;Giy; mwpf;if

vdf;F ,e;j Ma;itg;gw;wpa KO tptuk; tpsf;fkhf vLj;Jiuf;fg;gl;IJ.
,e;j Ma;tpy; gq;FngWtjpy; cs;s ed;ifs; kw;Wk; jPikfs; gw;wp ehd;
Ghpe;J nfhz;Nld;. ehd; ,e;j Ma;tpy; jhdhfNt Kd;te;J gq;F
ngWfpNwd;. NkYk; vdf;F ,e;j Ma;tpy; ,Ue;j ve;j NeuKk; tpyf;nfhs;s
KO mDkjp toq;fg;gl;Ls;sJ. vd;Dila rpfpr;ir Mtzq;fisg; ghh;tiapl;L
mjpy; cs;s tptuq;fis Ma;tpy; gad;gLj;jpf; nfhs;s mDkjp
mspf;fpd;Nwd;. vd;Dila ngah; kw;Wk; milahsq;fs; ufrpakhf itj;Jf;
nfhs;sg;gLk; vd;Wk; vdf;F cWjpaspf;fg;gl;Ls;sJ.

,g;gbf;F>

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