

**“ ASSESS THE EFFECTIVENESS OF HOT WATER COMPRESS WITH
EPSOM SALT AMONG ELDERLY WOMEN WITH KNEE JOINT PAIN
RESIDING AT SELECTED URBAN AREA CHOOLAI IN CHENNAI”.**

**M. Sc (NURSING) DEGREE EXAMINATION
BRANCH –IV COMMUNITY HEALTH NURSING**

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MADRAS MEDICAL COLLEGE, CHENNAI – 03.**



**A Dissertation submitted to
THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY,
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**In partial fulfillment of requirements for the degree of
MASTER OF SCIENCE IN NURSING**

APRIL 2014

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Approved by the Dissertation committee on _____

Research Guide _____

Dr. R. Lakshmi, M.Sc (N), Ph.D,
Principal,
College of Nursing, Madras Medical College,
Chennai-03

Clinical Speciality Guide

Mrs .J.S. Elizabeth Kalavath, ,M.S ((N), _____
Reader, Department of Community Health Nursing,
College of Nursing, Madras Medical College,
Chennai-03

Medical Expert

Dr.V.V.Anatharaman.B.Sc,M.D,M.Med,MBA,DPH,DD,DMIT, _____
Associate Professor,
Institute of Community Medicine,
Madras Medical College,
Chennai-03.

Approved by the Dissertation committee on _____

Statistical Guide

Mr.A.Vengatesan,M.Sc,M.phil,PGDCA,(P.h.D), _____
Lecturer in Statistics, Department of Statistics,
Madras Medical College

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CERTIFICATE

This is to certify that this dissertation titled“ **Assess the effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain residing at selected urban area choolai in Chennai**”. Is a bonafide work done by **Ms. G. Amudha**, M.Sc (N) II year, College of Nursing, Madras Medical College Chennai-03, submitted to **The Tamil Nadu Dr. MGR Medical University**, Chennai in partial fulfillment of the award of the degree of **Master of Science in Nursing, Branch-IV, Community Health Nursing** under our guidance and supervision during the academic period from 2012-2014

Dr.R.LAKSHMI, M.Sc(N), Ph.D,
Principal,
College of Nursing,
Madras Medical College,
Chennai-03

DR.R.JEYARAMAN,M.S,M.CH
Dean,
Madras Medical College,
Rajiv Gandhi Govt. General
Hospital,
Chennai-03

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LIST OF CONTENT

CHAPTER	TITLE	PAGE NO
I	INTRODUCTION	1
	1.1 Need for the study	4
	1.2 Statement of the Problem	6
	1.3 Objectives	6
	1.4 Hypothesis	6
	1.5 Operational definition	7
	1.6 Assumption	7
II	REVIEW OF LITERATURE	
	2.1 Reviews of related literature	8
	2.2 Conceptual frame work	16
III	RESEARCH METHODOLOGY	20
	3.1 Research Approach	20
	3.2 Research Design	20
	3.3 Variables	21
	3.4 Setting of the study	21
	3.5 Study population	21
	3.6 Sample	22
	3.7 Sample size	22
	3.8 Sampling Technique	22
	3.9 Criteria for sample selection	23
	3.10 Development and description of the tool	23
3.11 Ethical consideration	24	

LIST OF CONTENT

CHAPTER	TITLE	PAGE NO
	3.12 Testing of the tool	25
	3.12.1 Content Validity	25
	3.12.2 Pilot Study	25
	3.12.3 Reliability	25
	3.13 Data Collection Procedure	26
	3.14 Plan for data analysis	27
IV	DATA ANALYSIS AND INTERPRETATION	29
V	DISCUSSION	61
VI	SUMMARY & CONCLUSION	65
	6.1 Summary	65
	6.2 Major findings	67
	6.3 Implication of the study	68
	6.4 Recommendations	70
	6.5 Conclusion	71
	REFERENCE	72
	APPENDICES	i.

LIST OF TABLES

TABLE NO	TITLE	PAGE NO
1.	Distribution of Population	22
2.	Sampling Technique	23
3.	Demographic profile	30
4.	Pretest elderly women level of knee joint pain	43
5.	Post-test elderly women level of knee joint pain	45
6.	Comparison of experimental and control pain score	47
7.	Comparison of pretest and post-test pain score	48
8.	Level of pain between experimental and control group	50
9.	Effectiveness of hot water compress with Epsom salt in experimental and control group	51
10.	Association between level of pain reduction score and demographic variables (Experimental group)	52
11.	Association between level of pain reduction score and demographic variables (Control group)	57

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
1.	Conceptual frame Work -Modified king's Goal attainment theory	19
2.	Schematic representation of Research Design	28
3.	Distribution of sample Percentage according to Age	33
4.	Distribution of sample Percentage according to Education status	34
5.	Distribution of sample Percentage according to Occupation status	35
6.	Distribution of sample Percentage according to Family income	36
7.	Distribution of sample Percentage according to Religion	37
8.	Distribution of sample Percentage according to Marital status	38
9.	Distribution of sample Percentage according to Age at marriage	39
10.	Distribution of sample Percentage according to Number of children	40
11.	Distribution of sample Percentage according to Habit of exercise	41
12.	Distribution of sample Percentage according to Type of exercise	42
13.	Pretest elderly women level of knee joint pain	44
14.	Post-test elderly women level of knee joint pain	46
15.	Comparison of pretest and post-test pain score	49
16.	Association between level of pain reduction score and demographic variables (Experimental group) Association between level of pain reduction and age group	54
17.	Association between level of pain reduction and education status	55
18.	Association between level of pain reduction and Habit of exercise	56
19.	Association between level of pain reduction score and demographic variables (Control group) Posttest level of pain in both experimental and control groups	59
20.	Pretest and Posttest mean pain score	60

LIST OF APPENDIX

APPENDIX S. NO	PARTICULARS	PAGE NO
A	Tool for Data Collection	I
B	Permission letter From Institutional Ethics Committee	X
C	Certificate of Content Validity ❖ Medical expert ❖ Nursing expert	XI
D	Procedure of hot water compress with Epsom salt application	XV
E	Research Consent Form	XVII
F`	English Editing Certificate	XVIII

LIST OF ABBREVIATIONS

Sl.NO	ABBREVIATIONS	EXPANSION
1.	DF	Degrees of freedom
2.	SD	Standard deviation
3.	CI	Confidence Interval
4.	Fig	Figure
5.	H1 & H2	Research Hypothesis
6.	M. Sc (N)	Master of science in Nursing
7.	χ^2	Chi-square test
8.	NO	Number

ABSTRACT

Knee joint pain is one of the most common ailments for elderly people for which the clients visit the outpatient department. Epsom salt compress is a household item. This Epsom salt has the power to relieve muscle aches when applied externally. This study focuses on the effectiveness of hot water compress with Epsom salt in relieving knee joint pain among elderly women in urban areas- Chennai. The objectives of the study were to assess the pre assessment and post assessment, pain level of clients with knee joint pain in experimental and control group, to identify the effectiveness of hot water compress with Epsom salt on knee joint pain levels in experimental and control group, and to associate the findings with the demographic variables. For the experimental study design was adopted. 60 samples with knee joint pain were selected by the simple random sampling method. The pain level was checked using the numerical pain rating scale. The clients in the experimental group were given hot water compress with Epsom salt for ten days continuously and the control group followed their routine intervention and data was collected using questionnaires. The collected data were analyzed using descriptive and inferential statistics. The clients in the experimental group had 58% of reduction in pain levels as compared to the clients in the control group who had 3% of pain reduction. People today rely on pharmacological intervention to relieve pain, it has side effects. If we use hot water compress with Epsom salt to relieve muscle pain which has been proved in this study, it will be economical, culturally accepted, it can be practiced safely at home and it has less side effect as compared to pharmacological intervention.

CHAPTER-1

INTRODUCTION

"If you can go through life without experiencing pain, you probably haven't been born yet."

-Neil Simon

Pain is defined as an unpleasant sensation occurring in varying degrees of severity as a consequence of injury, disease, or emotional disorder. But the pain is more than unpleasant sensations. Pain is a system. Pain is a major component part of your nervous system. Pain is ultimately a perception, and a bodily state. Despite its unpleasantness, pain is a critical component of the body's defense system. It is part of a rapid warning and defense relay instructing the motor neurons of the central nervous system to minimize detected physical harm.

The word pain comes from the Latin word 'poena' meaning punishment, a fine, a penalty. Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in term of such damage-international association of pain. No perception frequently occurs without pain being felt and is below the level of consciousness. Despite it triggering pain and suffering perception is a critical component of the body's defense system. It is part of a rapid warning relay instructing the central nervous system to initiate motor neurons in order to minimize detected physical harm. Pain too is part of the body's defense system, it triggers mental problem solving strategies that seek to end the painful experience. Pain intensity may range from slight through severe to agonizing, it is experienced as having qualities such as sharp, throbbing, dull, nauseating, burning and shooting. It often has both an emotional quality and a sensed bodily location.

TYPES OF PAIN

Pain can be classified as acute or chronic. The distinction between acute and chronic is not based on its duration of the sensation, but rather of the pain itself. The primary distinction is that an acute pain serves to protect one, e.g. After an injury. Whereas chronic pain does not serve this or any other purpose and is the diseases of pain.

The experience of physiological pain can be grouped according to the source and related receptor as;

Cutaneous pain- is caused by injury to the skin or superficial tissues. Cutaneous receptors terminate just below the skin, and due to high concentration of the nerve endings, produce a well-defined localized pain of short duration. E. g. Minor cuts, minor burns and lacerations.

Somatic pain- originates from ligaments, tendons, bones, blood vessels and even nerve themselves. E.g, sprain, broken bones, myofascial pain.

Visceral pain- originates from viscera or organs. It is extremely difficult to localize and several injuries to visceral tissues exhibit referred pain where the sensation is localized to an area completely unrelated to the site of injury.

KNEE JOINT PAIN

Knee joint pain is a common musculoskeletal disorder affecting 80% of people at some point in their lives. In India it is the most common cause of job related disability and the second most common neurological ailment- only headache is more common. It can be either acute, sub acute (or) chronic in duration. With conservative measures, the symptoms of knee joint pain typically show significant improvement within a few weeks of onset.

Pain in the knee joint is a common concern, affecting up to 90% of Americans at some point in their lifetime. Up to 50% will have more than one

episode. Knee joint pain is not a specific disease, rather it is a symptom that may occur from a variety of different processes. In up to 85% of people with knee joint pain, despite a thorough medical examination, no specific cause of the pain can be identified. America spends approximately \$50 billion a year on knee joint pain.

UNDERLYING CAUSES OF KNEE JOINT PAIN

Crook J, Rideout, E, Browne G in 1984 reported that almost all joint injuries and diseases produce a stiff, aching pain, often referred to as "arthritis" pain. The prevalence of persistent pain increases with age. The old age is an incurable disease. In the old age, physiological aging process produces many changes in our body. These changes produce health problems and disabilities. Among the disabilities the problem in loco motor function makes the old aged person slow, immobile and falls. The joint pain in old age, mainly associated with osteoarthritis, gout, joint stiffness and injuries.

Health status of Indian women:

The health of Indian women is intrinsically linked to their status in society. Research on women's status has found that the contributions Indian women make to families often are overlooked, and instead they are viewed as economic burdens. There is a strong son preference in India, as sons are expected to care for parents as they age. This son preference, along with high dowry costs for daughters, sometimes results in the mistreatment of daughters. Further, Indian women have low levels of both education and formal labor force participation. They typically have little autonomy, living under the control of first their fathers, then their sons. (Chatterjee, 1990; Desai, 1994; Horowitz and Kishwar, 1985; The World Bank, 1996). All of these factors exert a negative impact on the health status of Indian women.

There are several women's health problems ranging from mild to severe. All the problems faced by women need proper attention and timely treatment. There are several problems faced by women that are very painful and distressing that it cannot be explained in words. Most of the problems are

so embarrassing to tell others that women keep suffering without taking treatment. But in fact, most of these problems have simple and effective treatment options.

1.1 NEED FOR THE STUDY

"The art of life is the art of avoiding pain"

-William Hazlin

Srivastava in 2007 reported that the elderly (people above the age of 60 years) comprise 7.5 percent of India's total population, and making health care available and accessible to them is one of the health priorities of the country.

The epidemiological data on health problems in elderly reported that in 2007 as follows: Poor Vision (45.4%), Hypertension (38.2%), Arthritis (36.1%), Bowel complaints (31.6%), Depression (23.6%), Difficulty in Hearing (20.5%), Weight Loss (19.6%), anemia (16.8%), Urinary complaints (13.4%), Diabetes (13.3%), Fall (8.7%), IHD (7.7%), Asthma (6.6%), COPD (4.8%), and Tuberculosis (3.1%) were the common health problems highlighted by the study.

According to the findings of the 60th National Sample Survey Round in 2006 reported that, the proportion of age, persons who cannot move and are confined to their bed or home ranges from 77 per 1000 in urban areas to 84 per 1000 in rural areas Morbidity⁷. It is currently estimated that adults over 60 years make up 8 per cent of India's population and by 2021 that number will be 137 million. India now has the second largest aged population in the world. The small-family norm means that fewer working, younger individuals is called upon to care for an increasing number of economically unproductive, elderly persons. In India 75% population living in the rural areas.

Shanthi G.S in 2005 conducted the prospective study evaluated among 100 patients above 60 years with falls a comprehensive geriatric assessment, including a detailed history of falls, ADL using the Barthel index, underlying medical disorders, and medication history was elicited. Examination included

assessment of all the systems. Results show that the 100 patients, 68% were females. Among the causes of falls, intrinsic causes of falls were more prevalent in people >70 years. Among the medical conditions causing falls, musculoskeletal problems (72%) and visual defects (54%) were common. 46% had 3 or more risk factors for falls. Drug induced falls accounted for 42% of which 20% were due to sedatives. Conclusion shows that Falls due to intrinsic causes such as joint pain and recurrent falls were common in people >70 years. Of the medical conditions predisposing to falls, musculoskeletal problems and visual defects were common.

Mathur.A2007 reported that home health service, entailing home visits to detect health problems and also, a community-based health center for the aged for educational and preventive activity will be initiated. This will be integrated with the National Rural Health Mission and an allocation made specifically for geriatric care. The Accredited Social Health Activist (ASHA) will be trained in geriatric care and the out-patient medical service, which serves as the base for home health service, will be enhanced. One of the aspects of home health service for the geriatrics is health education about the home remedies.

Most people don't get enough magnesium, which can affect their nerve, muscle and enzyme function, ultimately contributing to pain and inflammation that can affect your back, and knee according to the Epsom Salt Council. Soaking in Epsom salt is one of the best ways to get its benefits, since your body doesn't process ingested magnesium as efficiently as it does absorb magnesium.

On the physical side, Epsom salt, which is the mineral magnesium sulfate, has been found to help alleviate pain. Additionally, soaking in an Epsom Salt and Epsom salt compress helps to pull toxins from the body, which speeds the healing process. When a cold or the flu is coming on, adding Epsom Salt to a before-bed, bath, can often stop the virus in its track.

Doctors usually refer to knee joint pain as acute if it has been present for less than a month and chronic if it lasts for a longer period of time. Knee joint pain is one of the most common medical problems affecting 8 out of 10 people at some point during their lives. Knee joint pain can range from a dull, constant ache to a sudden, sharp pain.

1.2 STATEMENT OF THE PROBLEM

“ Assess the effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain residing at selected urban area Choolai in Chennai”.

1.3 OBJECTIVES OF THE STUDY

1. To assess the degree of knee joint pain of the elderly women before hot water compress with Epsom salt in both experimental and control groups.
2. To assess the degree of knee joint pain after administration of hot water application with Epsom salt in the experimental group.
3. To compare the post-assessment, pain score level among clients in experimental and control group.
4. To assess the effectiveness of hot water compress with Epsom salt in both experimental and control groups.
5. To find the association between selected demographic variables of elderly and degree of knee joint pain before and after application of hot water with Epsom salt.

1.4 HYPOTHESES

1. H1: The mean post assessment effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain will be significantly more than mean pre assessment effectiveness among elderly women.

2. H2: There will be a significant association between selected demographic variables of elderly and degree of knee joint pain before and after administration of hot water compress with Epsom salt.

1.5 OPERATIONAL DEFINITIONS

1. Assess: It is the organized, systematic and continuous process of collecting data from the elderly women regarding the level of joint pain.

2. Effectiveness: Outcome of the intervention measured with a numerical pain scale.

3. Hot Water compress: Applying the heat by local which produce the physiological change in the body, such as vasodilatation and relaxation of muscles which produce the beneficial therapeutic effect of relieving the knee joint pain.

4. Hot Water compress with Epsom Salt: Epsom salt is the one of the home remedy which is rich in magnesium. This is very helpful for relieving the knee joint pain.

5. Knee Joint Pain-discomfort of the knee joints due to stiffness of the joint, tendons, ligaments and muscles. It may be due to degenerative disease of the joint that is Arthritis

6. Elderly: Those who fall in the age group of 60 years and above.

1.6 ASSUMPTION

1. Hot application relieves pain, inflammation and congestion.

2. Epsom salt has analgesic properties.

3. Epsom salt easy to avail low cost

CHAPTER II

REVIEW OF LITERATURE

“A great literature is chiefly the product of inquiring minds in revolt against the immovable certainties of the notion”.

- H.L. Mencken

According to Polit and Hunglar, the literature review is defined as “a critical summary of research on a topic of interest often prepared to put a research problem in context.”

Literature review helps to lay the foundations for the study. It provides the background for understanding the current knowledge on Illustration the significance of the new study.

The investigator assembles knowledge by reviewing the literature of a selected problem and is presented under the following headings.

This section has two parts:

2.1 : Review of related literature

2.2 : Conceptual framework

- Review of literature related to Studies related to joint pain in elderly
- Review of literature related to hot water application and knee joint pain.
- Review of literature related to the effectiveness of Epsom salt, hot application and knee Joint pain.

1) Studies related to joint pain in elderly

Lena, et al. (2009) conducted a cross-sectional study of health and social problems among 231 elders in Udupi Taluk, Karnataka. The result of the study showed that a majority of them had problems such as hypertension followed by arthritis, diabetes, asthma, cataract, and anemia. Among them, 68% of the patients suffered with joint pain. Joint pain was found to be more common among female.

A survey conducted by the investigator in the Anderson pet village, Chennai (2010) showed the total number of elderly people as 160, among them 90% reported joint pain in either one or both joints.

Thyberg I et.al., (2009) conducted a cross-sectional study of health and social problems among two hundred and seventy-six elderly patients, 191 women and 85 men, with early rheumatoid arthritis were included. Aliments were examined with respect to 28-joint count disease activity score, and disability variables reflecting pain, sleep disturbance, fatigue, mental health, and activity limitation, at follow-ups at 1, 2 and 3 years after diagnosis. Among them, 80% reported joint pain in either one or both joints.

Catherine Hill, et al. (2008) conducted a prevalence study of joint pain among 4060 elderly population in the North West region of Adelaide, South Australia. Participants were asked to report their pain, aching or stiffness on most days in either of their joint. Overall, 17.4% of participants indicated that they had joint pain. This study concluded by saying that joint pain affected nearly one in five people in the community, was associated with age, female sex and pain in other body region.

Men'shikova IV, Babyre VV. (2008);) conducted a cross-sectional study. The study included 214 patients aged from 35 to 85 years with a pain level of at least 40 mm by the visual analog scale (VAS). The results of the physical and X-ray examination provided indications for further studies that were performed

by ultrasonographic (40.1%), arthroscopic (52.3%), and MRT (64.2%) techniques. One third of the patients were aged women with the body mass index > 40.1 and stage 3 osteoarthritis (OA) in whom pain was attributable to primary osteoarthritis. The remaining patients had pain of other origin. There was excellent (98.6%) agreement between MRT diagnosis and arthroscopic data on licensed intra-articular structures, articular cartilage, and subchondral bone. Arthroscopy revealed traumatic and degenerative meniscal tear in 85% patients, injured anterior cruciate ligament in 8%, signs of sinusitis in 52.6%, chondromalacia of the femoral condyle in 57.6%, and isolated pathology of patellofemoral articulation in 33% of the patients.

Rishmaki (2008) conducted a study on physical exercise and the risk of severe knee OA related joint pain requiring arthroplasty. The study result showed that, both in the men and women, the risk was less in those with higher numbers of cumulative hours of exercise than with those who had no regular physical exercise. The association was significant ($p < 0.05$). The study concluded that moderate recreational physical exercise is associated with a decrease in the risk of knee OA related joint pain.

Bartels EM, Lund H, Hagen KB, (2007) The coherent study conducted to compare the effectiveness and safety of aquatic-exercise interventions in the treatment of knee and hip osteoarthritis. In total, six trials (800 participants) were included. At the end of treatment for combined knee and hip osteoarthritis, there was a small-to-moderate effect on function (SMD 0.26, 95% confidence interval (CI) 0.11 to 0.42) and a small-to-moderate effect on quality of life (SMD 0.32, 95% CI 0.03 to 0.61). A minor effect of a 3% absolute reduction (0.6 fewer points on a 0 to 20 scale) and 6.6% relative reduction from baseline was found for pain. Aquatic exercise appears to have some beneficial short-term effects for patients with hip and/or knee OA while no long-term effects have been documented. Based on this, one may consider using aquatic exercise as the first part of a longer exercise programme for osteoarthritis patients.

Bhatia & Verma (2007) conducted an epidemiological study in correlated joint pain in 362 elderly people aged more than 65 years in the urban and rural areas of Chandigarh, India. The study revealed that the overall prevalence of joint pain among elderly as 56.6% in rural areas, it was 32.6% and in urban it was 60.3%. Joint pain was more in females compared to males (70.1% Vs 41.6%).

2.1) Studies related to hot water application and joint pain

Yildirim , N., Filiz Ulusoy, M., & Bodur, H. (19 Apr, 2010) conducted a study to evaluate the effect of heat application on pain, stiffness, physical function and quality of rheumatoid Arthritis Knee the faculty of health sciences, Midwifery department, Cumhuriyet university, turkey. The intervention group received 20 minute heat application every day for four weeks in addition to routine medication. It was found that heat application decreased pain and disability of the patients with rheumatoid arthritis knee. Heat application was found to improve the sub dimensions of quality of life scores of physical function, pain and general health perception of patients.

Kirk, J.A., & Kersley, G.D. (July, 2009) studied the effectiveness of heat in the physical treatment of rheumatoid arthritis of knee at Royal national 19 hospitals for rheumatic diseases. Hot packs were given for 20 minutes with temperatures approximately 45 degrees C at the beginning and at the end 41 degree C. Results showed that greater relief from pain and stiffness due to hot application.

Lehmann, JF., Warren, CG., & Scham, SM. (Mar – Apr, 2009) conducted a study to assess the therapeutic effect of heat on rheumatoid arthritis. Patients received heat application to affected knee joint. Hot application had an effect on pain and relieving stiffness. Patients preferred heat therapy. The researcher concluded that superficial heat can be applied to chronic pain management.

Stanton, DE., Lazaro, R., & Macdermid, JC. (Oct, 2008) reviewed the effectiveness of hot baths on rheumatoid arthritis at department of occupational therapy, Samuel Merritt college, California. The result addressed the physiological changes of hot application on blood flow, intramuscular temperature, subcutaneous temperature, and the influence of room temperature and age. The authors concluded that the heat bath procedure increased superficial blood flow and skin temperature.

Chou, R., Huffman, LH. (Oct, 2007) conducted a meta-analysis of studies of non – pharmacological therapies for chronic pain in rheumatoid arthritis: a review of the evidence for an American pain society, American college of physicians. They found good evidence that the only non pharmacological therapies with evidence to reduce pain or superficial heat application

Parminder Kaur, et.al., (2007) conducted a study to assess the effect of ‘moist heat application’ on the intensity of knee joint pain among the geriatric population (≥ 60 years of age) residing in Dadu Majra Colony, U.T., Chandigarh.. The sample size consisted of 87 subjects, i.e. 43 in the experimental and 44 in the control group. Intensity of knee joint pain was assessed on the 1st and the 8th day of the intervention among both experimental and control groups. ‘Moist heat’ was applied at the knee joint twice a day for seven days in the experimental group. The results show that the intensity of knee joint pain and intake of painkiller was reduced significantly in the experimental group as compared to the control group as indicated by the chi - square test. Hence, the use of moist heat application is recommended for home base management of knee joint pain.

Robinson, V., et al. (2007) conducted a review of research reports of studies at an institute of population health, university of Ottawa, Canada, on thermotherapy for treating rheumatoid arthritis to evaluate the effectiveness of thermo therapy application of objectives and subjective measures of disease activity in patients with RA. The review concluded that superficial moist heat can be used as palliative therapy.

Welch, V. Et al. (2007) the studies conducted to compare the ice and heat therapy in rehabilitation of rheumatoid arthritis patients. This study was conducted with 79 subjects to assess the effect of heat versus ice in relieving inflammation, pain and mobility. They found that patients preferred heat therapy to ice. The study concluded that heat therapy can be used as palliative therapy, which can be applied at home as needed to relieve pain

Oosterveld, FG., & Rasker, JJ. (Oct, 2006) reviewed the scientific basis for the treatment of arthritis pain with locally applied heat. They reviewed the experimental studies in healthy subjects and in patients. They found that the effect of heat on pain, stiffness of joints, grip strength and joint function in inflamed joints reported beneficial effects. They suggested that heat can be applied for chronic inflammation.

Preisinger, E., & quittan, M. (2006) reviewed the studies conducted to assess the effectiveness of thermotherapy at university of physical medicine and rehabilitation, Wein. Results showed that muscle spasm can be reduced by heat. Joint stiffness are decreased by heat application.

Kathleen L. Barman et al (2005) tested the efficacy of Treating knee joint Pain and Dysfunction Secondary to Osteoarthritis: Chiropractic Care Compared With The Moist Heat Alone. Two hundred fifty-two patients with knee joint pain secondary to OA were randomly assigned to either the treatment group (moist hot pack plus chiropractic care). Chiropractic care combined with heat is more effective than heat alone for treating OA-based knee joint pain.

Jeff Behar (2004) Hydrotherapy Additional measures to help ease the joint pain and stiffness include heat treatment. Simple hot water treatments are easy ways to soothe joint pain. To relieve stiffness and dull, penetrating pain, warm (not hot) compress applied directly to the affected area is the best option. Hot showers or baths or heating pads may also help by improving flexibility, especially before exercise or other physical activity.

Brosseau L, Yonge KA, Robinson Vet. Al (2003) conducted a randomized and controlled clinical trial to determine the effectiveness of

thermotherapy in the treatment of OA of the knee. This study involving 179 patients, were included in this review. 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) and another trail with hot applications. There was also a statistically significant improvement. The result showed that cold packs decreased knee edema. The thermotherapy reduces the pain. The study concluded that more well designed studies with a standardized protocol and adequate number of subjects is needed to evaluate the effect of thermotherapy in the treatment of OA of the knee.

Lloyd A, et al (2003) studied the Cost-effectiveness of low-level heat wrap therapy for knee joint pain. 371 patients aged 60 to 65 years presenting with acute uncomplicated knee joint pain. They found that low level heat wrap both clinically meaningful pain relief and clinically meaningful reduction in disability. They suggested heat wrap therapy in place of oral analgesics in managing episodes of knee joint pain.

Lurie-Luke E, et al (1984) found that between 60 and 80% of the population in industrialized countries experience knee joint pain at some time in their lives. An exploratory workplace study to investigate the perceived value of continuous low-level heat wrap therapy in manual workers was undertaken to investigate the benefits of a new form of continuous low-level heat wrap therapy available for the symptomatic relief of acute low back pain in the workplace. The study results show that use of the heatwrap therapy significantly reduced pain intensity and impact of pain on everyday activities.

2.2) Studies related to the effectiveness of Epsom salt, hot application and Joint pain

Adam Ramsay, (2014) 'Epsom salts, which are high in magnesium, can help to relieve joint pain, Christine Horner, nutritional therapist ' says at Margaret Hills Clinic the Epsom salt compress that helps patients with arthritis. 'Before bed, dissolve three teacups of Epsom salts into hot water'

Soak a clean cloth in hot water and make a compress, apply the compress to the knee joint for 10 to 15 minutes, whilst slowly exercising the joints and muscles this will help to relieve the knee joint pain.

Fioravanti A, Tenti S, Giannitti C, Fortunati NA, Galeazzi M. 2013 Jan 14. conducted a prospective randomized, single blind controlled trial to evaluate the effectiveness of epsom salt compress in 60 outpatients with bilateral knee pain divided into two groups with experiment group (n = 30) treated with 12 daily generalized thermal baths with magnesium sulfate mineral water added to usual treatment and control group (n = 30) continued regular outpatient care routine (exercise, NSAIDs and/or analgesics) for a duration of three months the study results confirmed that epsom salt compress had a beneficial effect in patients with knee OA.

Lawson, Michelle (2010) According to MayoClinic.com, arthritis is a chronic inflammatory disorder that commonly affects the small joints in our feet and hands. The website also states that arthritis is more common among women than men and typically occurs between the ages of 40 and 60. The use of an Epsom salt compress may reduce stiffness and pain due to arthritis.

Matthew Lewis at (2008), reported that there are dietary supplement of magnesium that everyone cannot use effectively. Scientists have learned that the best way to get magnesium in the body is topically through the skin. A hot Epsom Salt compress is the old New England home remedy for arthritis pain. Just the heat of the compress itself has been able to increase circulation and reduce swelling. It can also be used to soothe achy, burning feet.

The newspaper of **Neha Arora in 2008** on personal health posted about the home Remedies for joint pain, a very common problem encountered by many people. Home Remedies for Leg Pain and joint pain is a warm water compress of Epsom salt. Warm water compress of Epsom salt, which is rich in magnesium, is a good pain reliever. This is very helpful for arthritis.

Health & Wellness > Common ailments(2007) the article reported that 30 grams of *Epsom salts* added to one liter of boiling water(The

temperature of the boiling water is as tolerated by the client) creating a hot compress by dipping a clean washcloth in the boiling water, wringing it out, and applying for **20 minutes, twice a day for 7days to 10 days** will often relieve the joint pain ,leg pain and other joint muscle alignments. This will relieve the pain and reduce the swelling and stiffness of arthritic fingers. It can also be used to soothe achy, burning feet.

All the above literatures that have been reviewed clearly state that knee joint pain is very much prevalent worldwide and in India too. It mainly affects women more than men. Hot water compress with epsom salt has the property to relive pain as it has anti-inflammatory properties. Moist heat has proved to improve circulation and reduce pain. Hot water compress with epsom salt combines the positive effect in relieving pain and has no adverse effects on health.

2.2 CONCEPTUAL FRAME WORK

The conceptual framework for research study presents the measurement on which the purposes of the proposed study are based. The framework provides the prospective from which the investigator views the problem. The study is designed to assess the effectiveness of hot water compress with Epsom salt an elderly woman with knee joint pain.

The study is based on the concept to assess the pain perception before and after hot water compress with Epsom salt. The investigator adopted the Modified Imogene King's Goal attainment theory. The theory is based on the assumption that humans are open systems and who are having constant interaction with their environment. The major concepts in this theory of goal attainment are interacting, perception, communication, transaction, role, stress, growth and development, time and space.

The definitions of these concepts are as follows:

Interaction

In 1981 King proposed an open system model as a basis for her goal attainment theory. According to King all systems are open in that there is a continual exchange of matter energy and information. Open system has been verified degree of interaction with the input and gives feed backs. In this study the nurse explains the hot water compress with Epsom salt procedure and gets their consent for research.

Person

A person is rational, purposeful, active and time oriented being. They have fundamental health needs such as timely and useful health information, care that prevents illness and helps when the self-care demands cannot be met. Here the person is elderly women with knee joint pain.

Environment

Environment in the open system allows the exchange of matter, energy and the information. In this study the environment is the home of the elderly women with knee joint pain.

Health

Health is described as the dynamic state in the life using personal resources to achieve optimal daily living. All the clients in this study have deviated from health and need assistance to get back to optimal level of health.

Nursing

Nursing promotes, maintains and restores health and cares for the sick, uses a goal oriented approach in which the client and nurse interact to attain goal so that they can perform their own role independently. Here the researcher is the nurse who gives hot water compress with Epsom salt to relive knee joint pain in the clients with knee joint pain.

The main concepts of the open system model are input, throughput, output and feedback. In open system input refers to the matter, energy and information that enter into the system through its boundary. In this study input is the hot water compress with Epsom salt after pre-assessment of knee joint pain level.

Throughput refers to the process where the system transforms the energy matter. In this study throughput is the process taking place within the subjects during hot water compress with Epsom salt.

Output refers to the matter, energy and information in the environment that are in an altered state. In this study output is the reduction of knee joint pain.

Feedback refers to the environmental response to the system are adjustable, correction, accommodation and the interaction within the environment. In this study the satisfaction level expressed by the clients with knee joint pain after hot water compress with Epsom salt was the feedback.

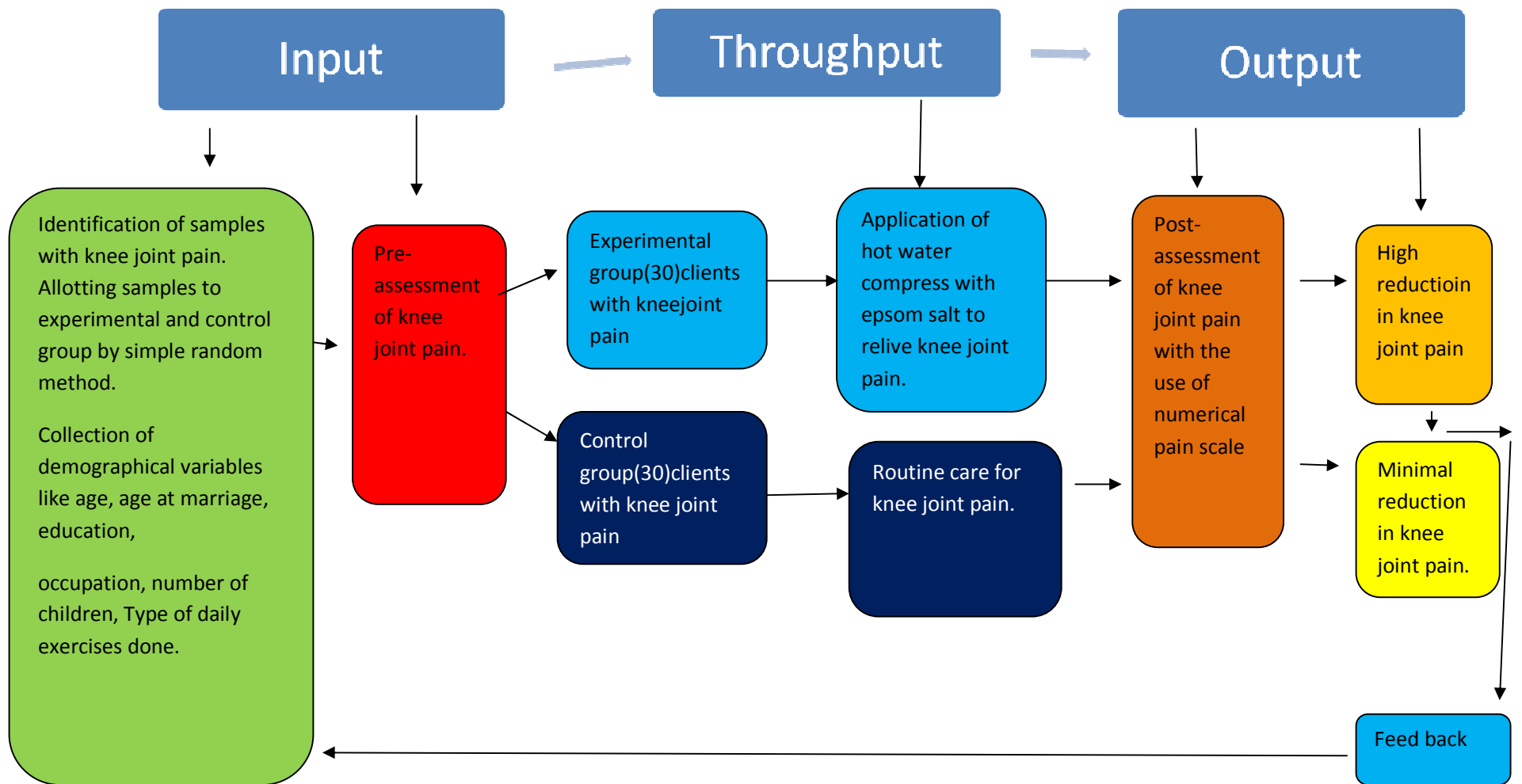


Fig 1Modified Imogene king's Goal attainment theory

CHAPTER III

METHODOLOGY

“Every discourse, even a poetic or oracular sentence carries with it a system of rules for producing analogous things and thus an outline of methodology’

-Jacques Dernida

This chapter includes the research design, the setting of the study and sampling technique. It further deals with the development of tool, procedure for data collection and plan for data analysis.

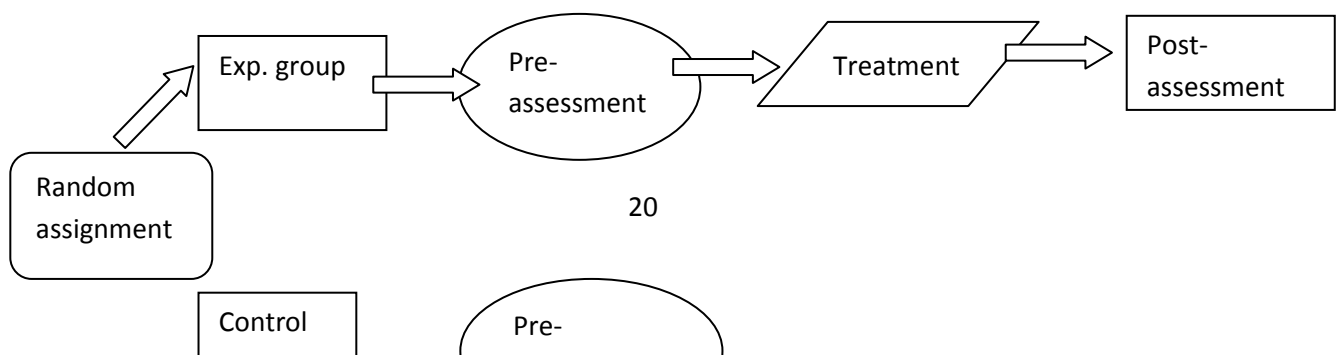
3.1 Research Approach

The research approach tells the researcher from where the data is to be collected, what is to be collected, how to collect and how to analyze them. It also suggests a possible conclusion and helps the researcher in answering specific research questions in an accurate and efficient way.

The research approach adopted for this study is an evaluative approach. This study aims at assessing the effectiveness of hot water compress with Epsom salt in reliving knee joint pain.

3.2 Research design

The research design selected for the present study is an experimental research design. Pre-test, post-test only design. In this study the subjects are randomly assigned to either the experimental or the control group. The effect of the dependent variable on both the groups is seen before the treatment. Later, the treatment is carried out in experimental group only, and after treatment observation of the dependent variable is made for both the groups to examine the effect of the manipulation of the independent variable on the dependent variable. (Dr. Suresh K. Sharma)





3.3 VARIABLES

Independent variables-Hot water compress with Epsom salt.

Dependent variables -Pain perception.

Extraneous Variable - Age, Occupation, number of childbirth and other treatments.

3.4 settings of the study

This study was conducted in urban area (Choolai) which belongs to the North Zone of Chennai Corporation and it is very near to urban health post. It has got four wards covering a total population of 56,744. Totally there are 16 streets in the Choolai area. Among these 16 streets, 2 streets were selected by simple random technique, using the lottery method to conduct the present study. College of Nursing provides comprehensive care to the population. The 2 streets which were selected to conduct the present study are Andiyappan Naickan Street and Alathur subramani street .

3.5 Study population

Population is the entire aggregation of cases that meet a designed set of criteria. In this present study population are subjects who are having knee joint pain. The accessible population for the present study is subjects having knee joint pain residing at Choolai. The total clients with knee joint pain from the selected streets in Choolai were 402.

Table.1 Distribution of population

S.NO	Name of the street	Total population	Elderly women with knee joint pain
1	Andiyappan naickan	2045	235

	street		
2	Alathur subramani street	1654	167
	Total	3699	402

3.6 Sample

Sample refers to subjects of a population selected to participate in a research study. In this present study the sample consisted of 60 subjects who were having non specific knee joint pain. The simple random sampling technique was adopted to select the subjects.

3.7 sample size

Sample consist a total number of 60 subjects with non specific knee joint pain residing in Choolai area who were selected from 2 streets of Choolai namely Andiyappan naickan street and Alathur subramani street.

3.8 Sampling Technique

Sampling technique used for the present study to select the streets was a simple random technique by lottery method. The investigator conducted a survey in the Choolai area to identify the total number of subjects with non specific knee joint pain. In Choolai area 2 streets were surveyed and the total number of elderly female with knee joint pain was 402. Each subject in particular street had been numbered and samples had been selected by simple random sampling by a lottery method in each street. The required number of knee joint pain subjects was selected as the sample. The sample selection of each street is given below.

Table-2:Sampling Technique

S.No	Name of the street	Samples fulfilling the criteria	Selected samples inclusion
1	Andiyappan naickan street	188	30
2	Alathur subramani street	96	30

	Total	194	60
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3.9 Criteria for sample selection

The sample was selected based on the following inclusion and exclusion criteria.

I Inclusion criteria

1. The elderly women who are able to understand Tamil or English
2. The elderly women who are willing to give consent.
3. The elderly women who were available at the time of data collection.
4. The elderly women who have knee joint pain.

II Exclusion criteria

Clients with

- 1) Elderly women with severe neuropathies, burns, skin lesion on knee.
- 2) Elderly women with complicated like facilities, neuropathies, vascular compromise and systemic lupus erythematosus.
- 3) Who are not willing to participate in the study.

3.10 Development and description of tool

The tools for the study had four sections.

Section – A

Had questions for collection of demographic data. It was developed by the researcher. It had 11 questions with multiple options. The study participants had to tick the appropriate boxes. It had questions related to age, education, occupation, monthly income, marital status, age at marriage, exercise, the number of children, religion, and total number of family members.

Section – B

Pain numerical rating scale. It is a standardized tool. The scoring key is given below.

Min=0 Max=10

Description	Rater
No Pain	0
Mild Pain	1-3
Moderate pain	4-6
Severe	7-9
Unbearable	10

Section – c

Had Subjective opinion questioner. It was prepared by the researcher. It had four questions related to the clients experience with hot water compress with Epsom salt. The questions were formed to assess the subjective effect of hot water compress with Epsom salt like relaxation, smoothening, pain relief etc.

3.11 ETHICAL CONSIDERATION

Research proposal was approved by experts prior to the pilot study and permission for the main study was obtained from the ethical committee, Head of the department, Department of Community Health Nursing, College of Nursing, Madras Medical College, Chennai – 3. Permission was also obtained from the Chennai corporation health department. A written consent of each study subject was obtained before starting the data collection, assurance was given to the subjects that confidentiality and privacy would be maintained.

3.12 TESTING OF THE TOOL

3.12.1 Content validity

The content validity of the tool was obtained by giving it to the experts. They were requested to judge the items for their clarity, relevance, comprehensiveness and appropriateness of the content. One expert was from the Institute of social and preventive Medicine and one from the department of

nursing was obtained. Based on their valid suggestions, reframing of the tool was done.

3.12.2 Pilot study

In order to test the feasibility of the study, a pilot study was conducted among six clients in the same manner as final study. Elderly women with non-specific knee joint pain (six in number) were selected using a simple random sampling technique for the purpose of the pilot study. They were assessed for pain perception on the first day using the research tools.

After the pre assessment, hot water compress with Epsom salt was given for about 20 minutes twice a day for ten consecutive days. At the end of the hot water compresses with Epsom salt therapy, on the tenth day, the subjects were assessed again for pain perception using the research tool. The tool was found to be satisfactory in terms of simplicity and clarity. Based on the findings of the pilot study it was concluded that it was feasible and practicable to conduct the main study and criterion measures were found to be effective.

3.12.3 Reliability

Reliability of the tool was assessed by using the interrater method and its correlation coefficient r - value is 0.87. This correlation coefficient is very high and it is a good tool for assessing the effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain residing in selected urban area.

3.13 Data collection procedure

Formal written permission to conduct the study in a choolai community area was obtained from the City Health officer of Chennai corporation. During the 1st visit, the researcher introduced herself and explained the purpose of the study and confirmed the willingness of the elderly

women to participate in the study by getting consent from them as per the inclusion criteria

The data collection was done in Choolai urban area . The time taken for each client 20 minutes. (Appendix –D) The objective of the study was explained to the medical officer and other paramedical personnel, who were posted in the Choolai Health post of Chennai, before starting the data collection to get their cooperation during the data collection. Based on the criteria for sample selection 10 subjects from the experimental group were selected each week.

The subjects were explained about the purpose of the study and were assured of confidentiality of the data collected. Adequate privacy was provided. On the first day of sample selection, the demographic data and pre assessment of pain perception of the subjects were assessed.

Epsom salt compress was prepared by adding 30 grams of *Epsom salts* to one liter of boiling water (The temperature of the boiling water is as tolerated by the client) creating a hot compress by dipping a clean washcloth in the boiling water, wringing it out, and applying for **20 minutes over the knee joint, twice a day for 10 days** will often relieve the joint pain, leg pain and other joint muscle alignments.

3.14 Plan for data analysis

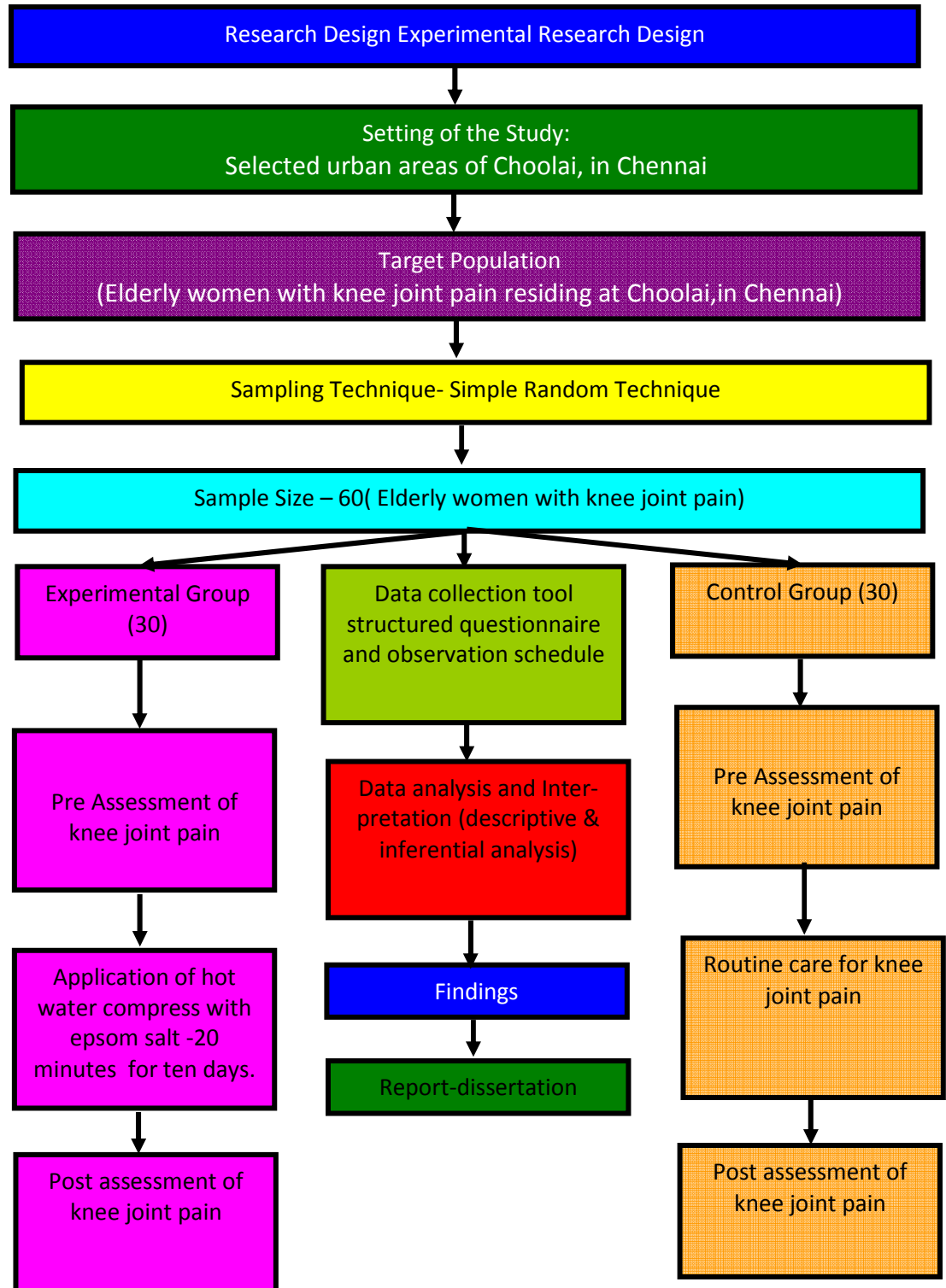
After the data collection, the collected data were organized, tabulated, summarized and analyzed. The data were analyzed according to the objectives of the study using descriptive and inferential statistics

1. Analysis of the frequency and percentage distribution of the demographic data.

2. Hypothesis related to the effectiveness of Hot water compress with Epsom salt therapy, reducing the pain perception was tested using student paired “t” test, mean and standard deviation and McNemar Chi-square test, test of significance.

3. ANOVA-F test and student independent ‘t’ test were used to find out the association between the level of pain perception and selected demographic variables (age, occupation, marital status, number of children etc.)

FIGURE-2: Schematic representation of research methodology



CHAPTER –IV

DATA ANALYSIS AND INTERPRETATION

“Analysis is the art of creation through destruction.”

P.S. Baber,

“The ultimate authority must always rest with the individual's own reason and critical analysis”.

Dalai Lama

Analysis is the appraisal of the data and interpretation of the data consisting of a relation between the findings of the study of the research problem and theoretical framework of the study. An important function of the process of interpretation is to link the findings of the study to the mainstream of scientific knowledge in the field.

This chapter deals with the analysis and interpretation of data collected from patients with knee joint pain in Choolai – Chennai.

The data collected from 60 samples (30 experimental group and 30 control group) of clients with knee joint pain are 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 the clients with knee joint pain.

Section II: Assess the pre-assessment, pain score among clients with knee joint pain in experimental and control group.

Section III: Compare the post-assessment, pain score level among clients in experimental and control group.

Section IV: Identify the effectiveness of Hot water compress with Epsom salt on knee joint pain levels among clients with knee joint pain.

Section V: Associate the findings with the selected demographic variables.

Section I

Description of demographic variables of the clients with knee joint pain.

Table 3: DEMOGRAPHIC PROFILE

Demographic variables		Group			
		Experiment		Control	
		N	%	n	%
Age	60 -65 yrs	10	33.3%	14	46.7%
	66 -70 yrs	14	46.7%	10	33.3%
	71 -75 yrs	4	13.3%	3	10.0%
	76 -80 yrs	2	6.7%	3	10.0%
Educational Status	1 - 5 std	21	70.0%	17	56.7%
	6 - 9 std	7	23.3%	10	33.3%
	9 - 12 std	2	6.7%	3	10.0%
Occupation	Unemployed	26	86.7%	27	90.0%
	Professional	4	13.3%	3	10.0%
Family Income Per Month	Rs.2000 -3000	20	66.7%	12	40.0%
	Rs.3001 -4000	5	16.7%	5	16.7%
	Rs.4001 -5000	2	6.7%	7	23.3%
	Rs.5001 -6000	3	10.0%	6	20.0%
Religion	Hindu	27	90.0%	28	93.3%
	Christian	3	10.0%	2	6.7%
Marital status	Married	27	90.0%	27	90.0%
	Widow	3	10.0%	3	10.0%
Age at marriage	< 20 yrs	20	66.7%	17	56.7%
	20 -25 yrs	7	23.3%	11	36.7%
	26 -30 yrs	3	10.0%	2	6.7%
How many children do you have	None	4	13.3%	3	10.0%
	One	5	16.7%	5	16.7%
	Two	8	26.7%	7	23.3%
	> Two	13	43.3%	15	50.0%
Do you perform any exercise?	Yes	4	13.3%	4	13.3%
	No	26	86.7%	26	86.7%
If yes, what type of exercise?	Yoga	1	50.0%	2	50.0%
	Walking	1	50.0%	2	50.0%

Table 3 shows the demographic information of patients who participated in the following study “Assess the effectiveness of Hot water compress with Epsom salt among elderly women with knee joint pain residing at selected urban area at choolai in Chennai.” That in the study group, 46.7% of elderly

women were in the age group of 66-70 years, 33.3% of them in the age group of 60-65 years, and 13.3% were in 71-75 years of age and 6.7% were in the 76-80 years of age. In the control group, 46.7% were in the age group of 60-65 years 33.3% of elderly women were in the age group of 66-70 years and 10.0% of them were in the age group of 71-75 years, and 10.0% of them were in the age group of 76-80 years.

Educational status of the study group reveals that 6.7% (2) had education up to higher secondary level, 23.3% (7) had education up to high school level and 70.0% (21) had a primary level of education respectively. In the control group, 10.0% (3) had education up to higher secondary level, 33.3% (10) had education up to high school level and 56.7% (17) had completed primary level of education.

Occupational status of the study group reveals that 86.7% (26) were unemployed and, 13.3% (4) were professional. In the control group, 90.0% (27) were unemployed and, 10.0% (3) were professional.

The monthly income of the study group reveals that 10.0% (3) of the elderly women's family income Rs.5001-6000, 6.7% (2) of the elderly women's family income Rs.4001-5000, 16.7% (5) of the elderly women's family income Rs.3001-4000, 66.7% (20) of the elderly women's family income Rs.2000-3000. In the control group that 20.0% (6) of the elderly women's family income Rs.5001-6000, 23.3% (7) of the elderly women's family income Rs.4001-5000, 16.7% (5) of the elderly women's family income Rs.3001-4000, 40.0% (12) of the elderly women's family income Rs.2000-3000.

The data regarding the religion of the study group reveal that 10.0% (3) of the elderly women belongs to Christian, 90.0% (27) of the elderly women belongs to Hindu. In the control group that 6.7% (2) of the elderly women belongs to Christian, 93.3% (28) of the elderly women belongs to Hindu.

Marital status of the study group reveals that 90.0% (27) of the elderly women were married, and 10.0% (3) of the elderly women were widowed. In

the control group that 90.0% (27) of the elderly women were married, and 10.0% (3) of the elderly women were widowed.

Age at marriage of the study group reveals that 66.7% (20) of the elderly women were married at the age of below 20, and 23.3% (7) of the elderly women were married at the age of between 20-25, and 10.0% (3) of the elderly women were married at the age of between 26-30. In the control group that 56.7% (17) of the elderly women were married at the age of below 20, and 36.7% (11) of the elderly women were married at the age of between 20-25, and 6.7% (2) of the elderly women were married at the age of between 26-30.

The clients who participated in the study, the study group that 43.3% (13) of the elderly women were having more than two children, and 26.7% (8) of the elderly women were having two children, and 16.7% (5) of the elderly women were having one child, and 13.3% (4) of the elderly women were having none, In the control group that 50.0% (15) of the elderly women were having more than two children, and 23.3% (7) of the elderly women were having two children, and 16.7% (5) of the elderly women were having one child, and 10.0% (3) of the elderly women were having none.

The study group the elderly women who were perform any exercise 13.3% (4), who were not perform any exercise 86.7% (26). In the control group the elderly women who were perform any exercise 13.3% (4), who were not perform any exercise 86.7% (26).

Regarding exercise, the study group of elderly women who were performed Yoga exercise 50.0% (1), who were performing Walking exercise 50.0% (1). In the control group of elderly women who were performing Yoga exercise 50.0% (2), who were performing Walking exercise 50.0% (2).

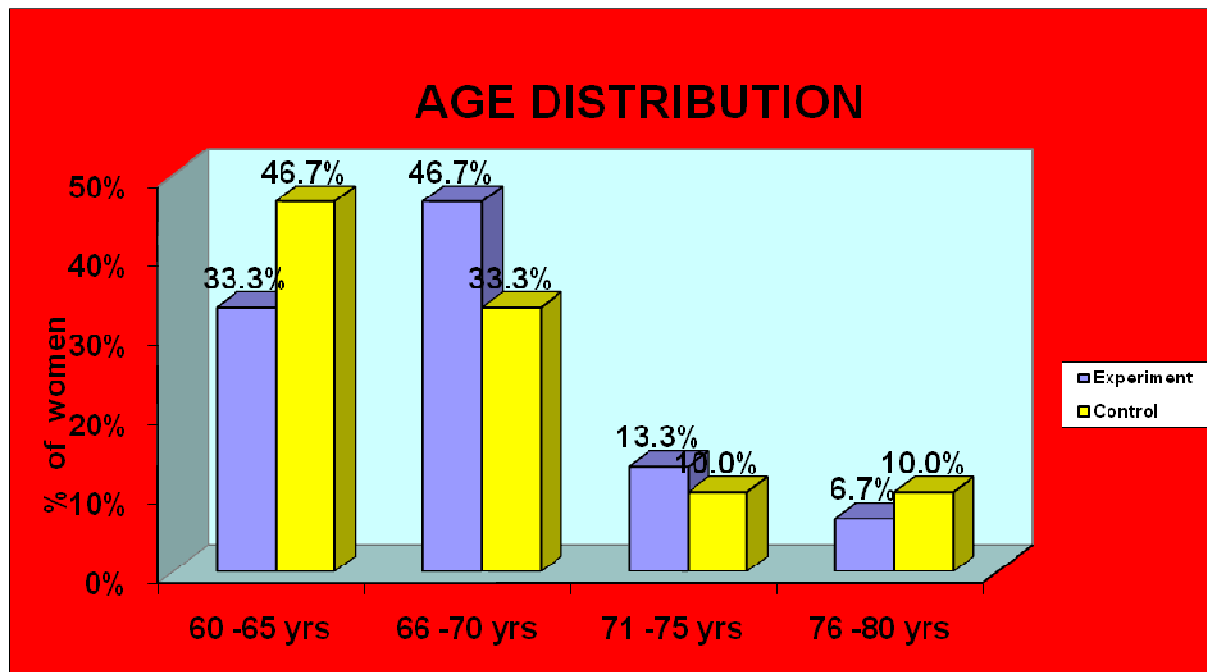


Figure:3 :Distribution of sample percentage according to age

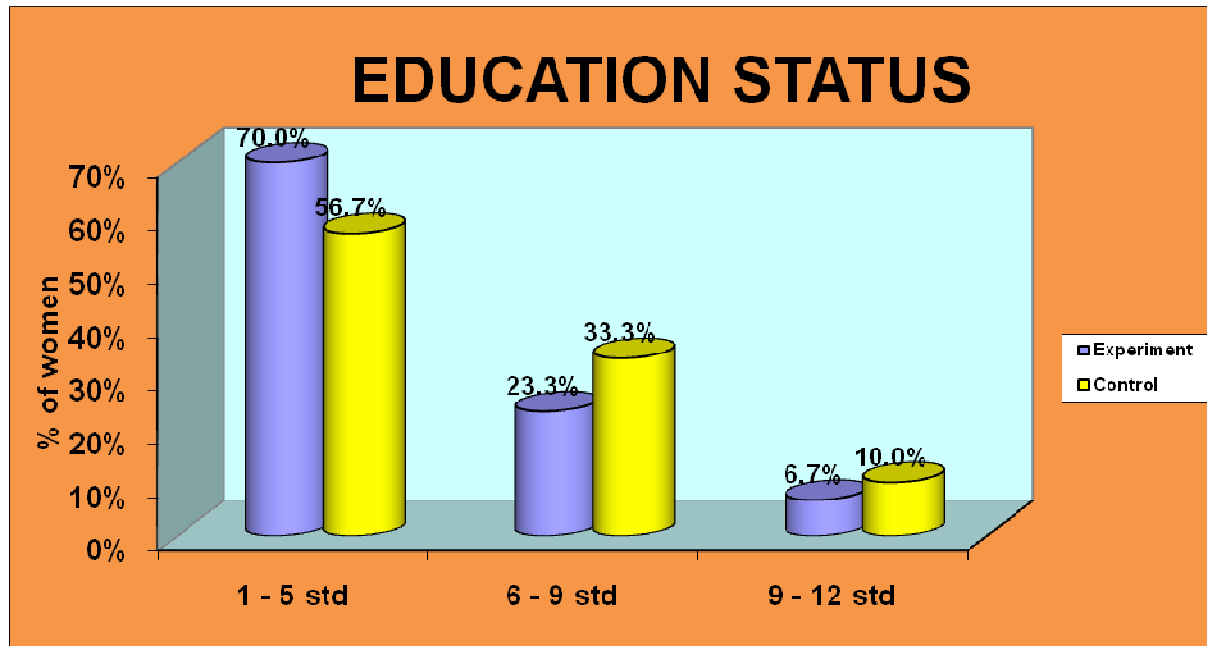


Figure:4 Distribution of sample percentage according to Education

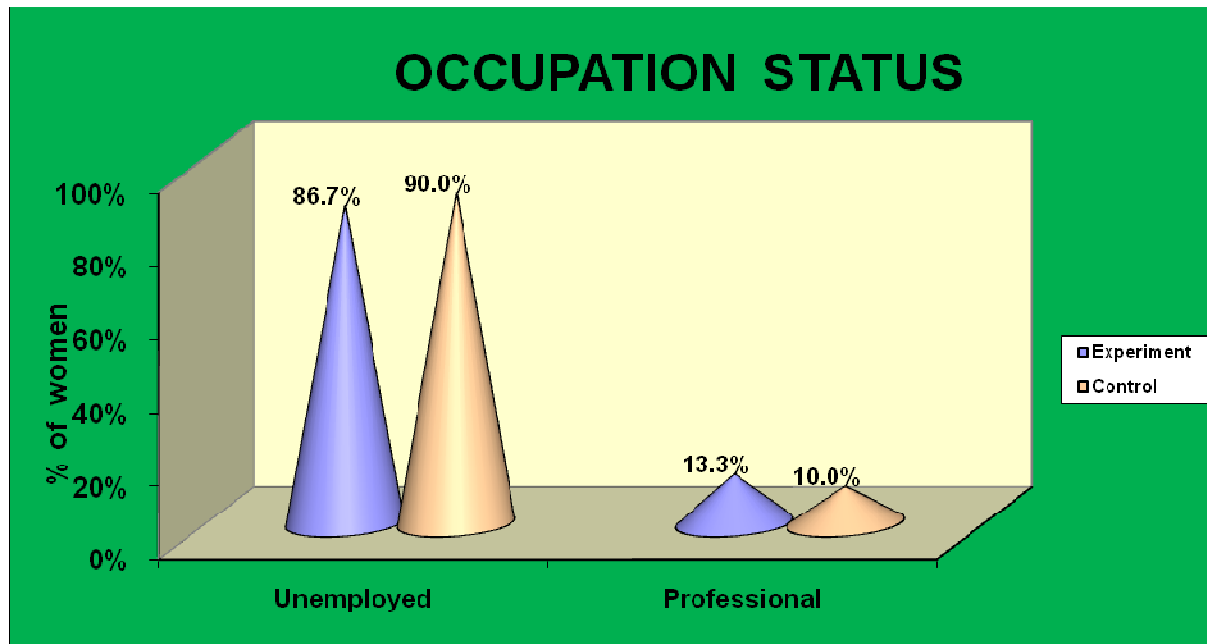


Figure:5 Distribution of sample percentage according to Occupation

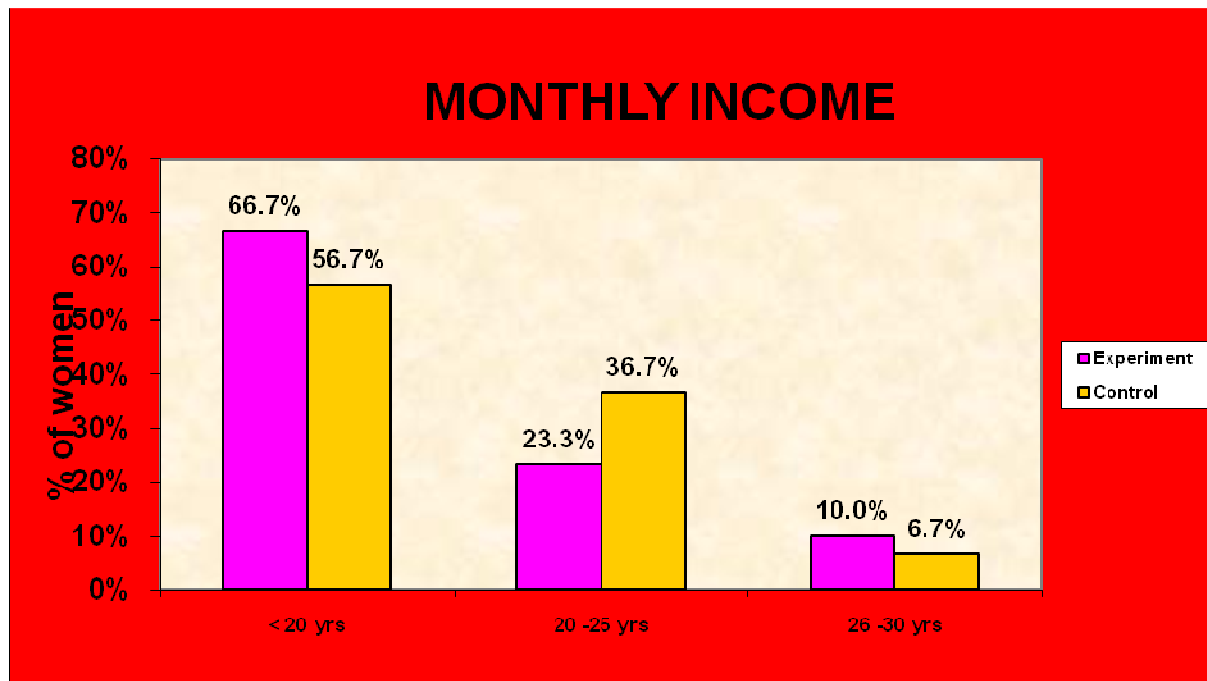


Figure:6 Distribution of sample percentage according to Monthly income

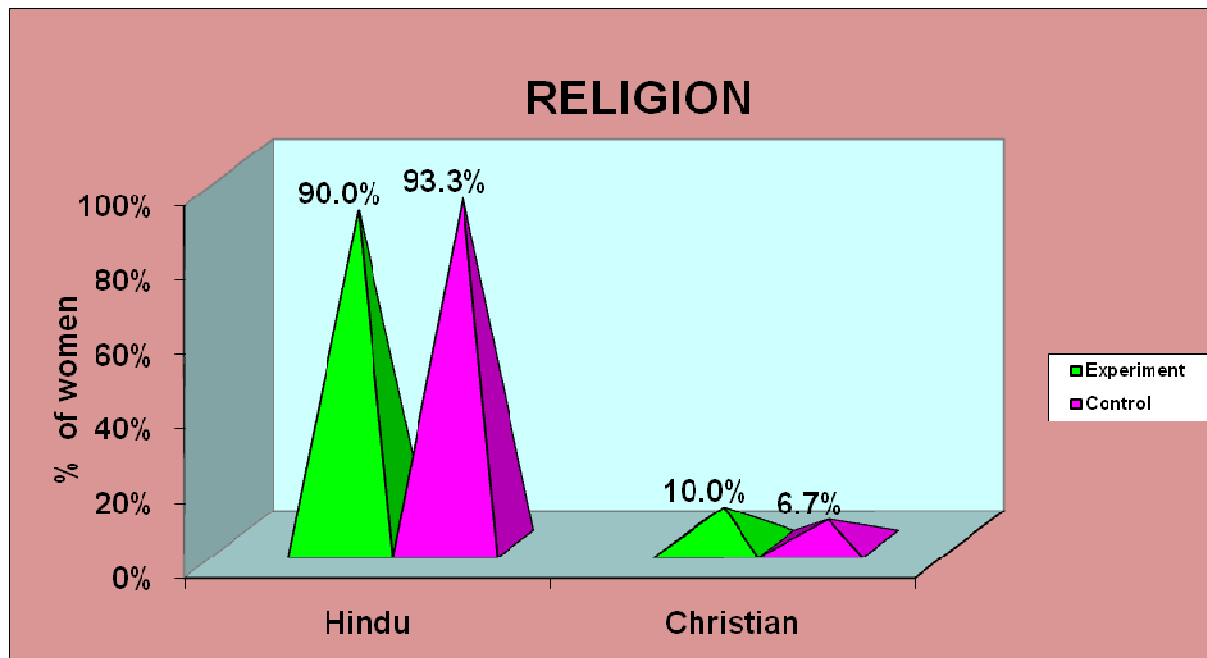


Figure:7 Distribution of sample percentage according to Religion

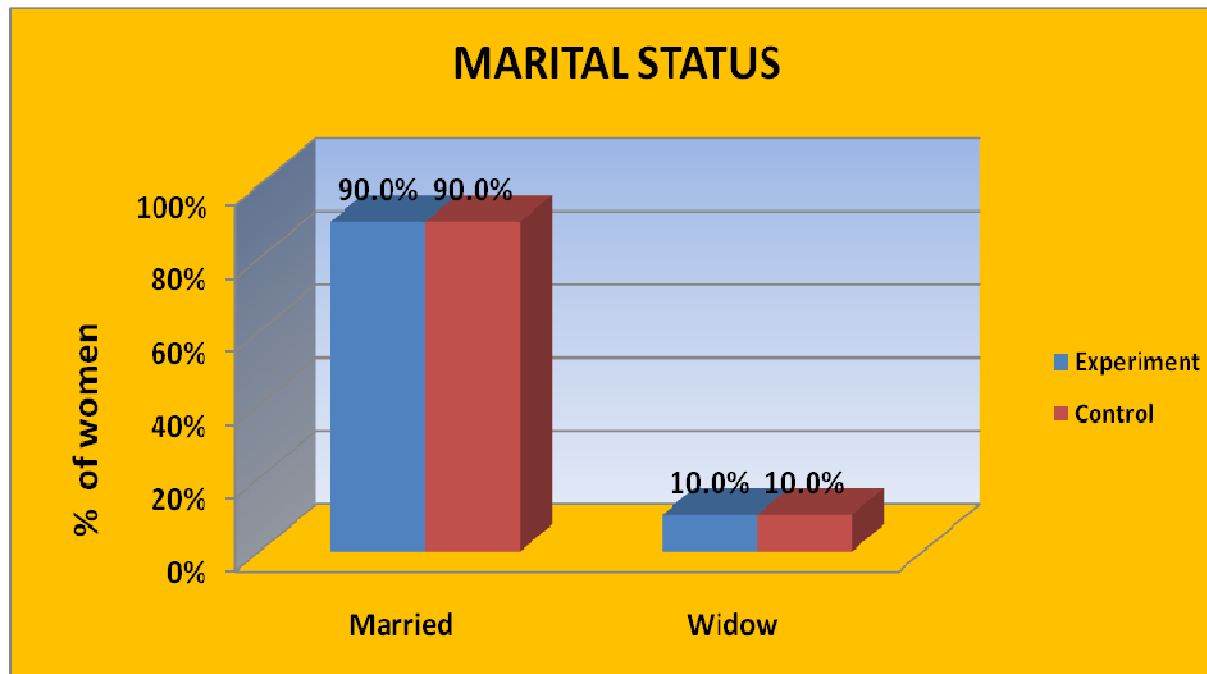


Figure:8Distribution of sample percentage according to Marital status

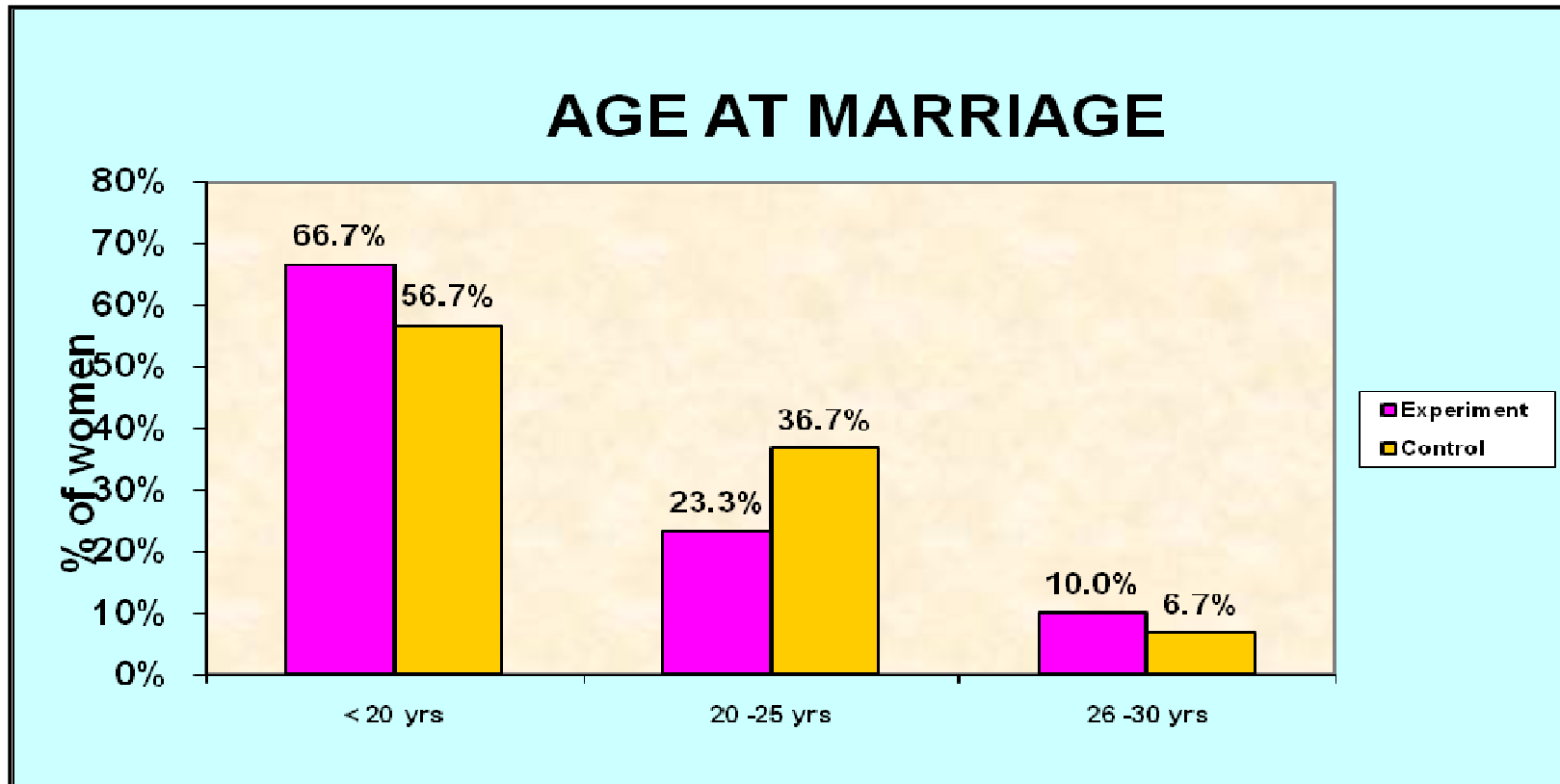


Figure:9 Distribution of sample percentage according to Age at marriage

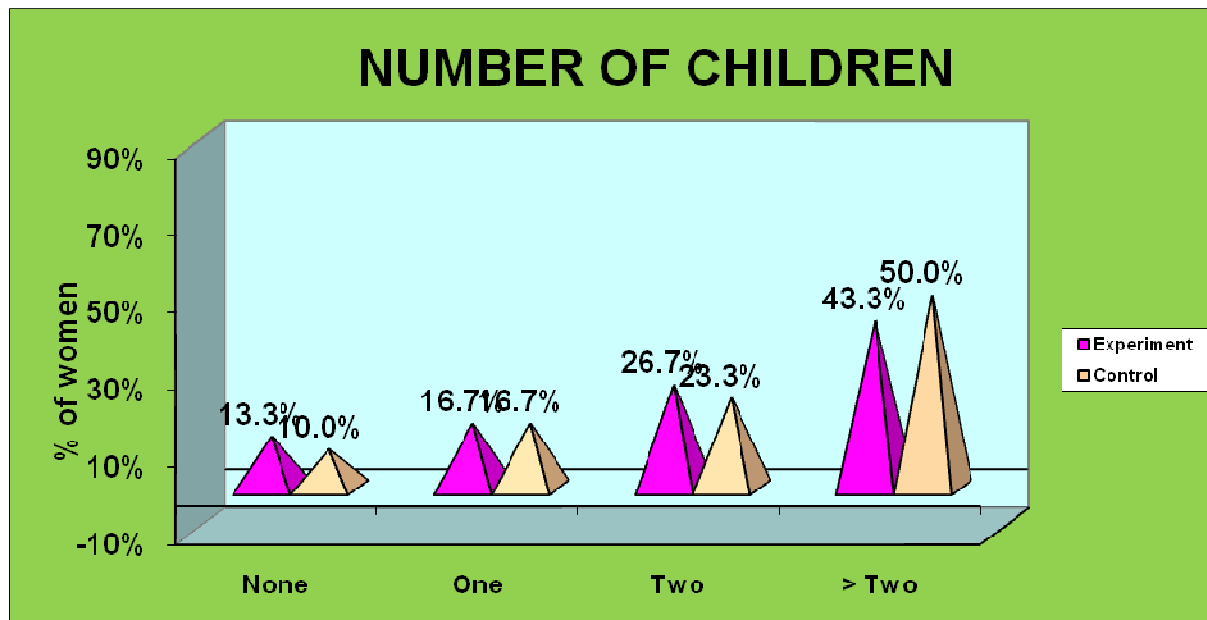


Figure:10 Distribution of sample percentage according to Number of children

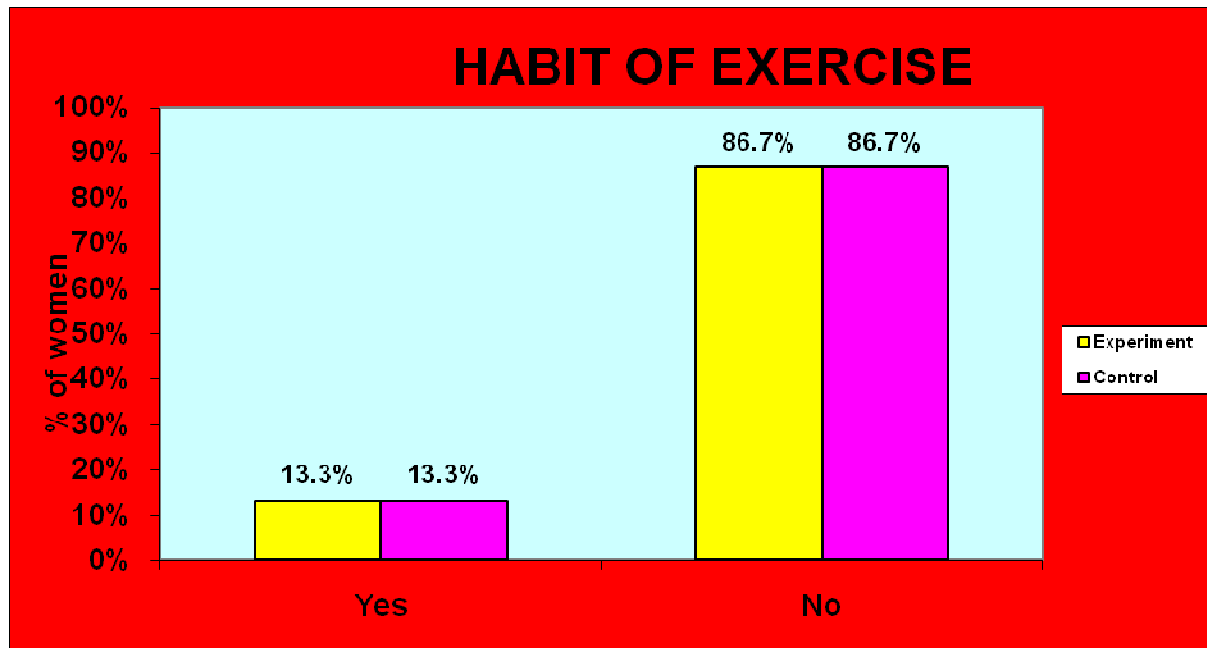


Figure:11 Distribution of sample percentage according to Habit of exercise

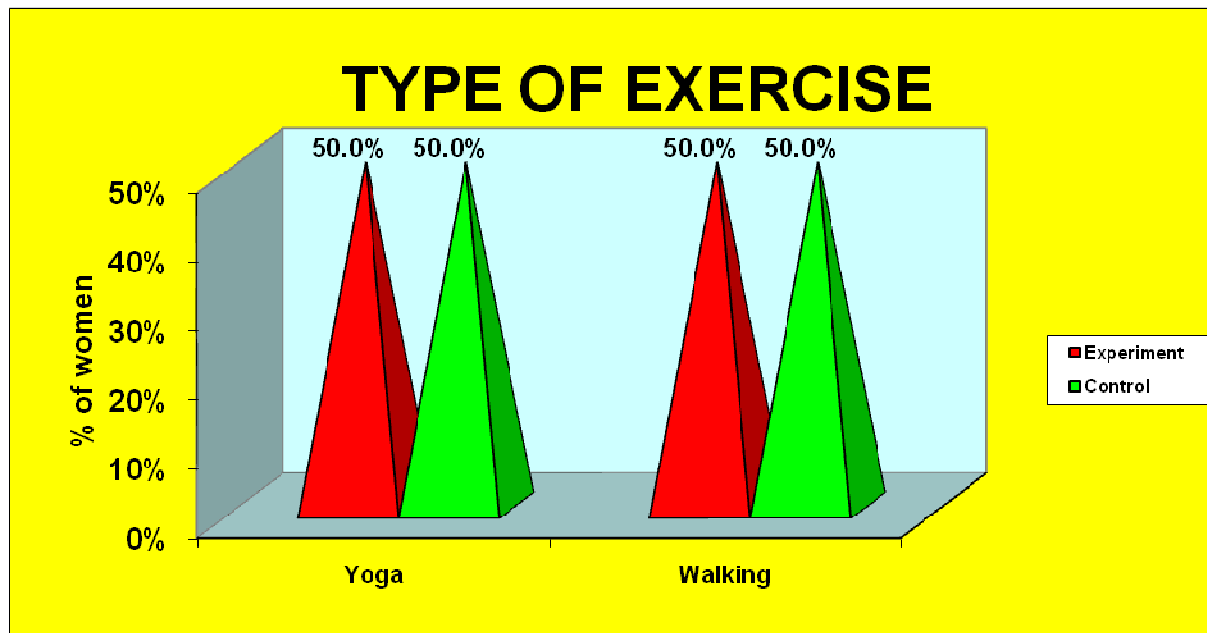


Figure:12 Distribution of sample percentage according to Type of exercise

Section II

Assess the pre-assessment, pain score among clients with knee joint pain in experimental and control group.

Table 4: PRETEST ELDERLY WOMEN LEVEL OF KNEE JOINT PAIN

Level of pain	Experiment		Control	
	N	%	n	%
No pain	0	0.0%	0	0.0%
Mild pain	1	3.3%	2	6.7%
Moderate pain	4	13.3%	2	6.7%
Severe pain	18	60.0%	15	50.0%
Unbearable	7	23.3%	11	36.7%
Total	30	100.0%	30	100.0%

Table 4 assess the knee joint pain of the elderly women before hot water compress with epsom salt in both experimental and control groups.

In the experimental group, 3.3% of the elderly women are having mild pain, 13.3% are having moderate pain , 60% of them are having severe pain and 23.3% of them are having unbearable pain.

In the control group, 6.7% of the elderly women are having mild pain, 6.7% are having moderate pain , 50% of them are having severe pain and 36.7% of them are having unbearable pain.

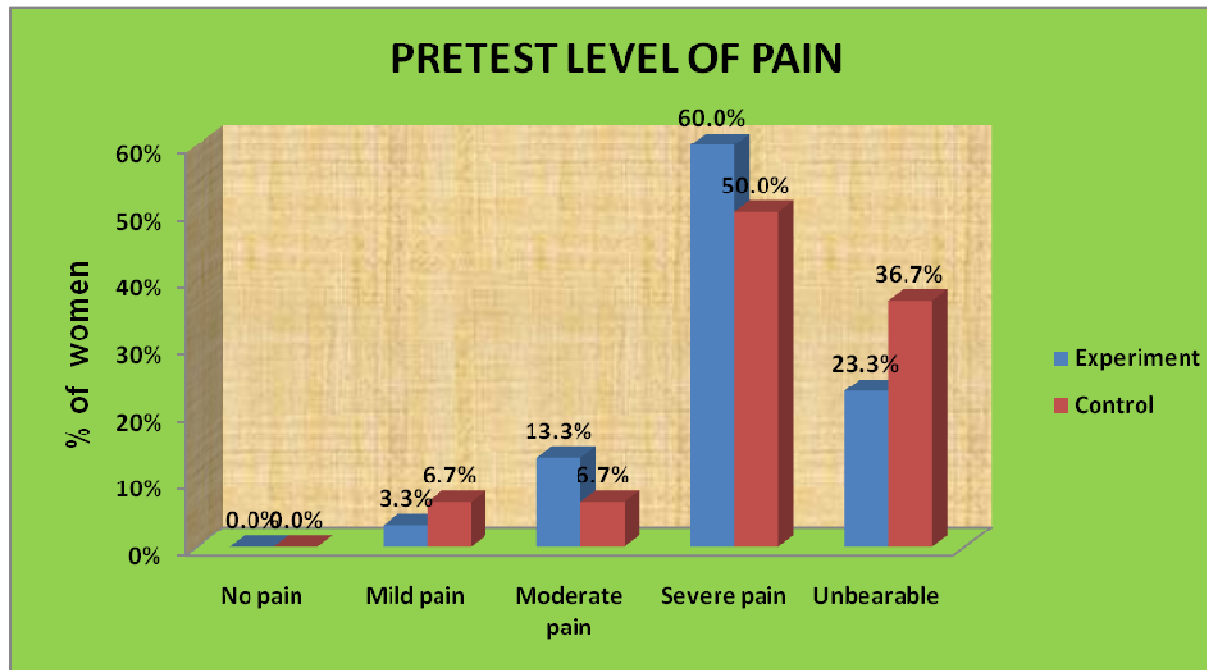


Figure:13 Pretest level of knee joint pain both experimental and control group

Section III:

Compare the post-assessment, pain score level among clients in experimental and control group.

Table 5: POSTTEST ELDERLY WOMEN LEVEL OF KNEE JOINT PAIN

Level of pain	Experiment		Control	
	n	%	N	%
No pain	16	53.3%	1	3.3%
Mild pain	8	26.7%	2	6.7%
Moderate pain	6	20.0%	3	10.0%
Severe pain	0	0.0%	13	43.3%
Unbearable	0	0.0%	11	36.7%
Total	30	100.0%	30	100.0%

Table 5 assess the knee joint pain of the elderly women after hot water compress with epsom salt in both experimental and control group..

In experiment group, 16 % of them are having no pain 26.7% of the elderly women are having mild pain, 20.0% are having moderate pain.

In control group, 3.3% of them are having no pain 6.7% of the elderly women are having mild pain, 10.0% are having moderate pain , 43.3% of them are having severe pain and 36.7% of them are having unbearable pain

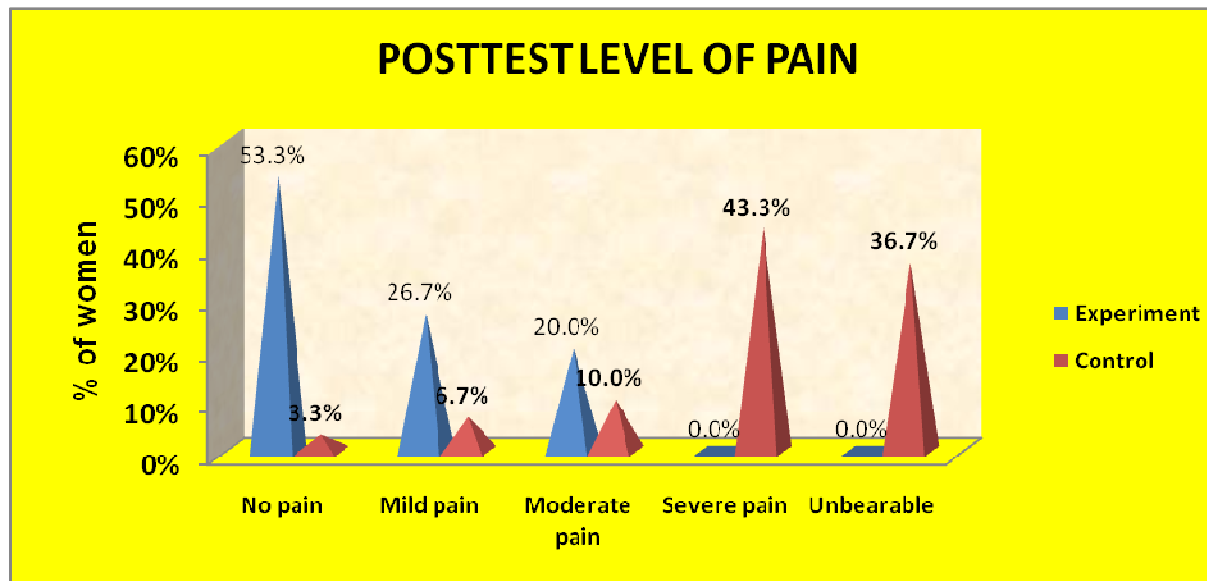


Figure:14 Post test level of knee joint pain, both experimental and control groups

Table 6: COMPARISON OF EXPERIMENT AND CONTROL PAIN SCORE

	No. of women	Experiment		Control		Student's Independent t-test
		Mean	SD	Mean	SD	
Pretest	30	7.80	1.79	7.97	1.99	t=0.34P=0.73
Posttest	30	2.00	2.40	7.66	2.48	t=8.97P=0.001***

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 6 compares the knee joint pain of the elderly women before and after hot water compress with epsom salt in both experimental and control groups..

At pretest , experiment group women are having 7.80 pain score and a control group are having 7.97 pain score, so the difference is 0.17 , this difference is small and it is not statistically significant difference.

In posttest , experiment group women are having 2.00 score and control group are having 7.66 scores in posttest, so the difference is 5.67 , this difference is large and it is a statistically significant difference. *Statistical significance was calculated using student's independent t-test.*

Table 7: COMPARISON OF PRETEST AND POSTTEST PAIN SCORE

	No. of women	PRETEST		POSTTEST		Student's paired t-test
		Mean	SD	Mean	SD	

Experiment	30	7.80	1.79	2.00	2.40	t=10.03P=0.001***
Control	30	7.97	1.99	7.66	2.48	t=0.86P=0.39

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 7 compares knee joint pain of the elderly women before and after hot water compress with Epsom salt in both experimental and control groups.

Statistical significance was calculated using student's paired t-test

In pre-assessment there was no significant difference between experiment (7.80) and control (7.97), but in a post-assessment it was an observed significant difference between the experimental group (2.00) and control (7.66). The P value of the experimental group was $P = 0.001$ this indicates a very high significance, whereas the p value of the control group was $P = 0.39$ which indicates it was not significant.

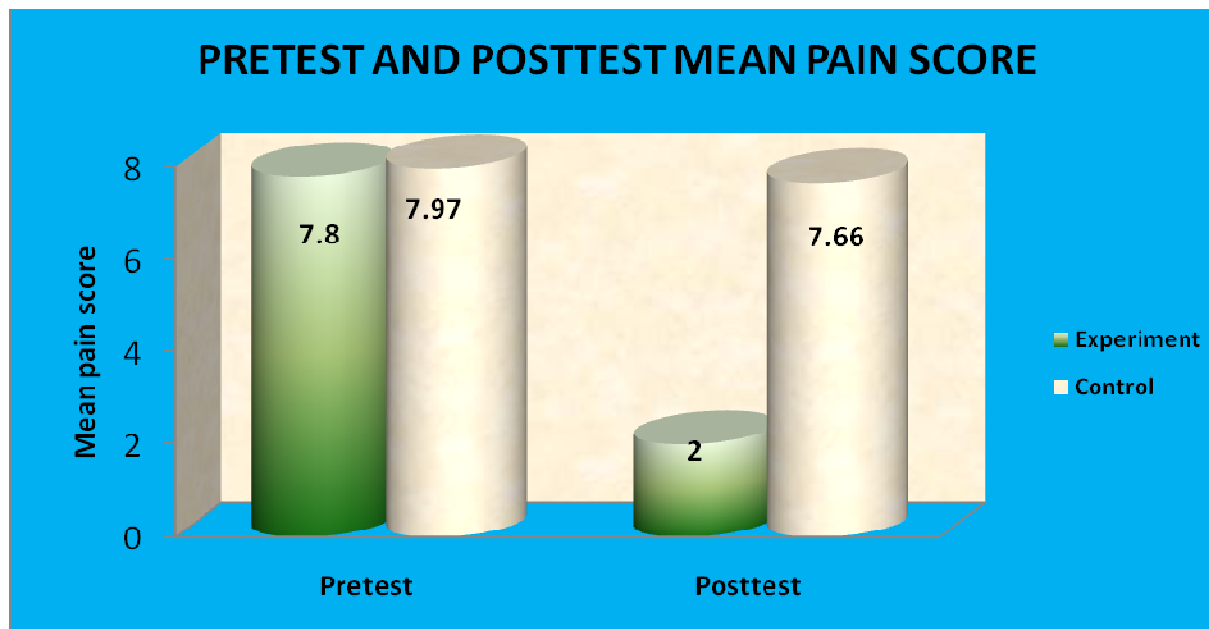


Figure:15 Comparison of Pretest and Posttest mean pain score

Table 8: LEVEL OF PAIN BETWEEN EXPERIMENT AND CONTROL

	Level of knowledge	Experiment		Control		Chi square test
		n	%	N	%	
Pretest	No pain	0	0.0%	0	0.0%	$\chi^2=2.16$ P=0.54 DF=1 Not significant
	Mild pain	1	3.3%	2	6.7%	
	Moderate pain	4	13.3%	2	6.7%	
	Severe pain	18	60.0%	15	50.0%	
	Unbearable	7	23.3%	11	36.7%	
Posttest	No pain	16	53.3%	1	3.3%	$\chi^2=41.83$ P=0.001*** DF=2 significant
	Mild pain	8	26.7%	2	6.7%	
	Moderate pain	6	20.0%	3	10.0%	
	Severe pain			13	43.3%	
	Unbearable			11	36.7%	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 8 assess the knee joint pain of the elderly women before hot water compress with Epsom salt in both experimental and control groups..

In the experimental group, 3.3% of the elderly women are having mild pain, 13.3% are having moderate pain, 60% of them are having severe pain and 23.3% of them are having unbearable pain.

In the control group, 6.7% of the elderly women are having mild pain, 6.7% are having moderate pain, 50% of them are having severe pain and 36.7% of them are having unbearable pain.

In the experimental group, 16% of them are having no pain 26.7% of the elderly women are having mild pain, 20.0% are having moderate pain.

In the control group, 3.3% of them are having no pain 6.7% of the elderly women are having mild pain, 10.0% are having moderate pain, 43.3% of them are having severe pain and 36.7% of them are having unbearable pain.

This difference is large and it is a statistically significant difference. *Statistical significance was calculated using chi square test.*

Section IV:

Identify the effectiveness of Hot water compress with Epsom salt on knee joint pain levels among clients with knee joint pain.

Table 9: Effectiveness of hot water compress with Epsom salt

		Max scores	Mean score	Mean difference with 95% Confidence interval	Percentage difference with 95% Confidence interval
Experiment	Pretest	10	7.80	5.80(4.61-6.98)	58.0%(4.6%-69.8%)
	Posttest	10	2.00		
Control	Pretest	10	7.97	0.30(0.0—1.01)	3.0%(-4.0%-10.0%)
	Posttest	10	7.66		

Table no 9 shows the comparison of overall pain score between experimental and control group.

*On an average, experiment women are reduced 58% of pain score, whereas in the control group is reduced 3%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. **This difference shows the effectiveness of hot water compress with Epsom salt***

Section V

Associate the findings with the selected demographic variables.

Table 10: Association between level of pain reduction score and demographic variables(Experiment)

Demographic variables		Level of pain reduction				Total	Chisquare test
		Below average(<5.8)		Above average(>5.8)			
		N	%	n	%		
Age	60 -65 yrs	2	20.0%	8	80.0%	10	$\chi^2=9.60P=0.02$ *
	66 -70 yrs	7	50.0%	7	50.0%	14	
	71 -75 yrs	4	100.0%	0	0.0%	4	
	76 -80 yrs	2	100.0%	0	0.0%	2	
Education Status	1 - 5 std	14	66.7%	7	33.3%	21	$\chi^2=7.90P=0.02$ *
	6 - 9 std	1	14.2%	6	85.8%	7	
	9 - 12 std	0	0.0%	2	100.0%	2	
Occupation	Unemployed	12	46.2%	14	53.8%	26	$\chi^2=1.15P=0.28$
	Professional	3	75.0%	1	25.0%	4	
Family Income Per Month	Rs.2000 - 3000	10	50.0%	10	50.0%	20	$\chi^2=0.53P=0.91$
	Rs.3001 - 4000	3	60.0%	2	40.0%	5	
	Rs.4001 - 5000	1	50.0%	1	50.0%	2	
	Rs.5001 - 6000	1	33.3%	2	66.7%	3	
Religion	Hindu	12	44.4%	15	55.6%	27	$\chi^2=3.34P=0.07$
	Christian	3	100.0%			3	
Marital status	Married	13	48.1%	14	51.9%	27	$\chi^2=0.37P=0.54$
	Widow	2	66.7%	1	33.3%	3	
Age at marriage	< 20 yrs	10	50.0%	10	50.0%	20	$\chi^2=4.28P=0.11$
	20 -25 yrs	5	71.4%	2	28.6%	7	

	26 -30 yrs			3	100.0%	3	
How many children do you have	None	1	25.0%	3	75.0%	4	$\chi^2=1.77P=0.62$
	One	3	60.0%	2	40.0%	5	
	Two	5	62.5%	3	37.5%	8	
	> Two	6	46.2%	7	53.8%	13	
Do you perform any exercise?	Yes	0	0.0%	4	100.0%	4	$\chi^2=4.62P=0.03$ *
	No	15	57.6%	11	42.4%	26	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Pain reduction = pretest score- posttest score

Table no 10 shows the association between level of pain reduction and their demographic variables. Elders , More educated and exercise people are reduced more pain. Statistical significance was calculated using chi square test

Table 10 shows the association between post-assessment level of Joint pain and elderly women demographic variables. Elderly women in the age of 76 – 80 years had 100% (2) pain relief from hot water compress with Epsom salt , followed by women in the age group of 71 – 75 years who had 100%(4) of pain relief after hot water compress with Epsom salt. Working elderly women had better pain relief from hot water compress with Epsom salt that is 75.0% (3) and women who exercised are benefiting more than others, that is 100% pain reduction was found in women who did yoga and also who practiced walking. Statistical significance was calculated using chi square test. The results of this table have been represented in the following diagrams below

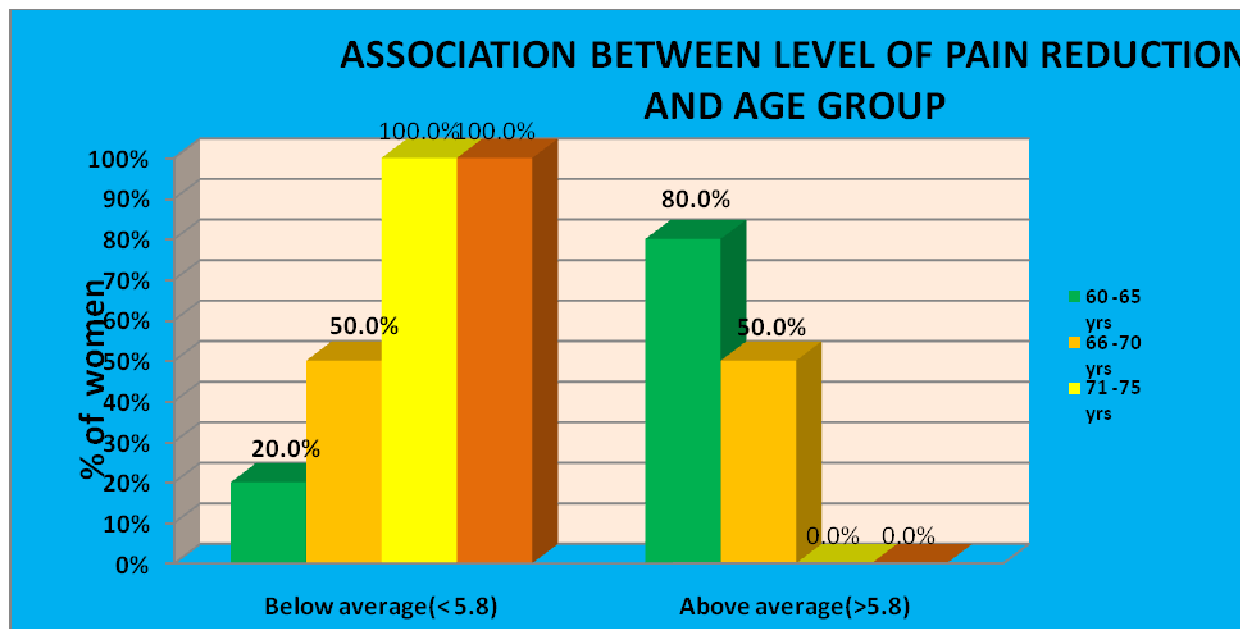


Figure:16 Association between level of pain reduction and age group

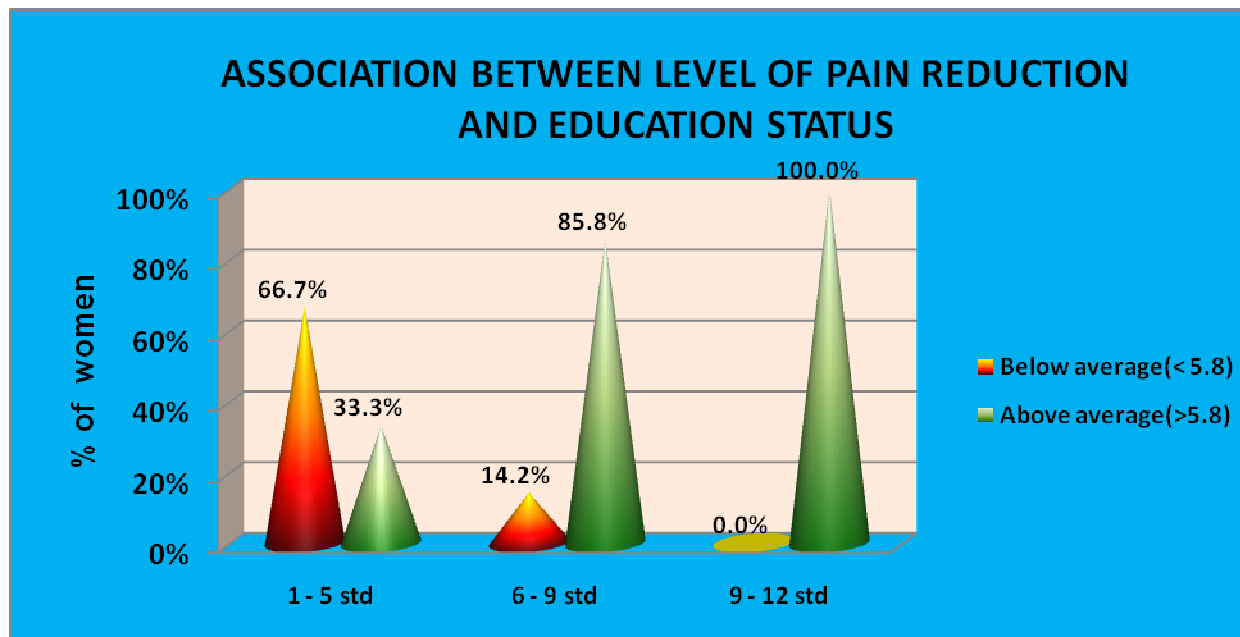


Figure:17 Association between level of pain reduction and education status

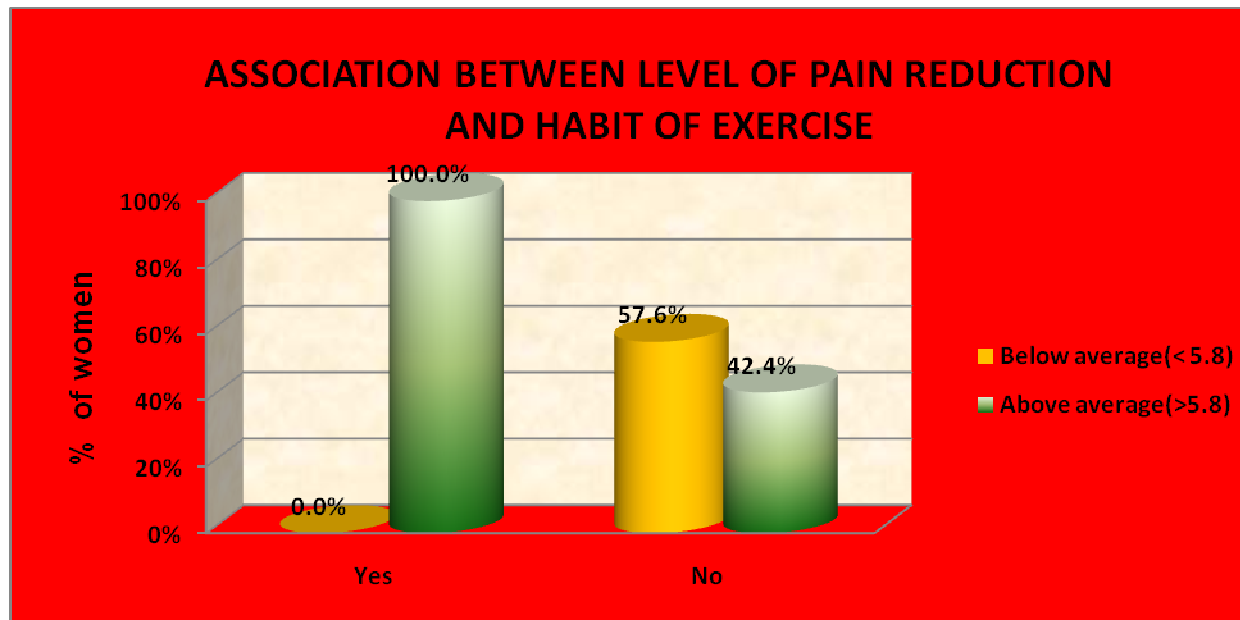


Figure:18 Association between level of pain reduction and Habit of exercise

Table 11: Association between level of pain reduction score and demographic variables(Control)

Demographic variables		Level of pain reduction				Total	Chisquare test
		Below average(<0.3)		Above average(>0.3)			
		n	%	n	%		
Age	60 -65 yrs	8	57.1%	6	42.9%	14	$\chi^2=0.95P=0.81$
	66 -70 yrs	5	50.0%	5	50.0%	10	
	71 -75 yrs	1	33.3%	2	66.7%	3	
	76 -80 yrs	1	33.3%	2	66.7%	3	
Educational Status	1 - 5 std	7	41.2%	10	58.8%	17	$\chi^2=2.46P=0.29$
	6 - 9 std	7	70.0%	3	30.0%	10	
	9 - 12 std	1	33.3%	2	66.7%	3	
Occupation	Unemployed	13	48.1%	14	51.9%	27	$\chi^2=0.37P=0.54$
	Professional	2	66.7%	1	33.3%	3	
Family Income Per Month	Rs.2000 - 3000	4	33.3%	8	66.7%	12	$\chi^2=3.94P=0.26$
	Rs.3001 - 4000	4	80.0%	1	20.0%	5	
	Rs.4001 - 5000	3	42.9%	4	57.1%	7	
	Rs.5001 - 6000	4	66.7%	2	33.3%	6	
Religion	Hindu	13	46.4%	15	53.6%	28	$\chi^2=2.14P=0.14$
	Christian	2	100.0%	0	0.0%	2	
Marital status	Married	15	55.6%	12	44.4%	27	$\chi^2=3.37P=0.07$
	Widow	0	0.0%	3	100.0%	3	
Age at marriage	< 20 yrs	11	64.7%	6	35.3%	17	$\chi^2=4.28P=0.11$
	20 -25 yrs	4	36.4%	7	63.6%	11	
	26 -30 yrs	0	0.0%	2	100.0%	2	
How many children do you have	None	0	0.0%	3	100.0%	3	$\chi^2=5.01P=0.17$
	One	4	80.0%	1	20.0%	5	
	Two	4	57.1%	3	42.9%	7	
	> Two	7	46.7%	8	53.3%	15	
Do you perform any exercise?	Yes	1	25.0%	3	75.0%	4	$\chi^2=1.15P=0.28$
	No	14	53.8%	12	46.2%	26	

* significant at $P \leq 0.05$ ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Pain reduction = pretest score- posttest score

Table no 11 shows the association between level of pain reduction and their demographic variables. None of the demographic variables are significantly associated with level of reduced pain. Statistical significance was calculated using chi square test

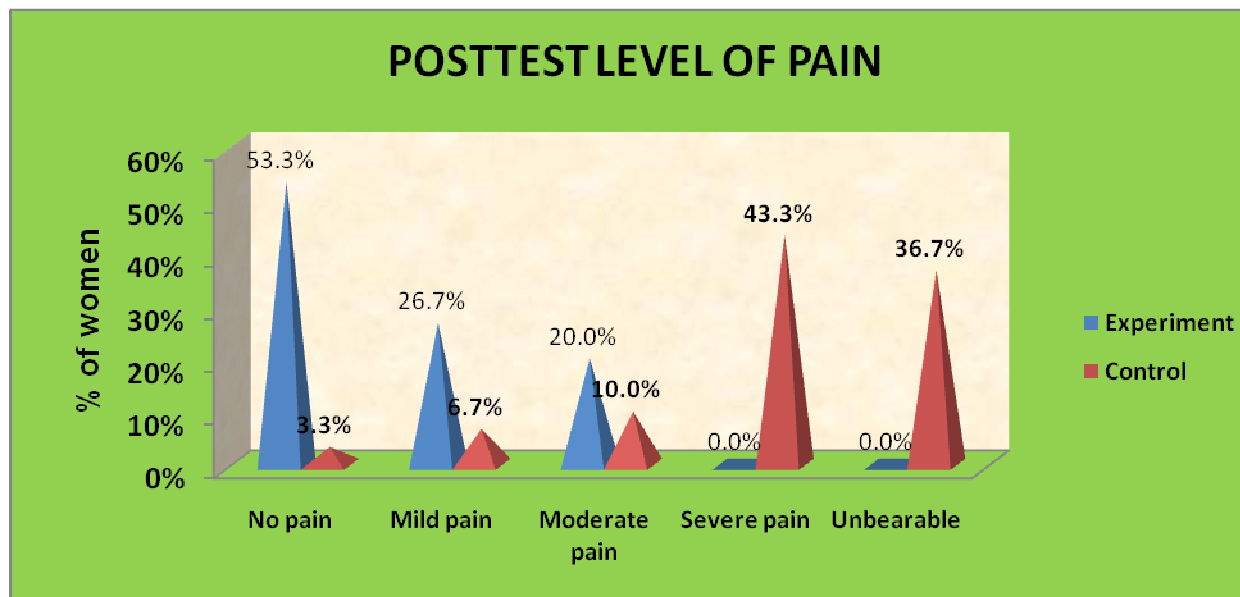


Figure:19 Posttest level of pain in both experimental and control groups

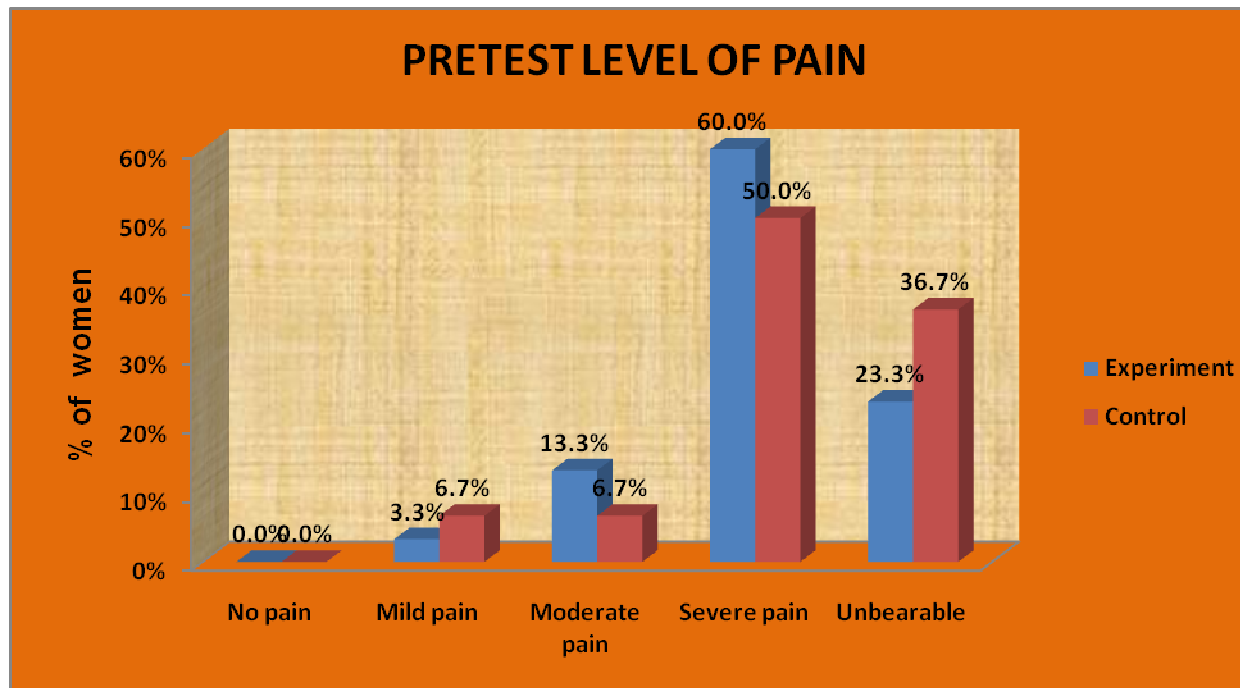


Figure:20 Pretest and Posttest mean pain score

CHAPTER V

DISCUSSION

This chapter deals with the findings of the study based on the interpretation of the statistical analysis. The findings are discussed in relation to the objectives of the study. The findings are supported by the review of literature.

The main focus of this study is to assess the effectiveness of Hot water compress with Epsom salt among elderly women with knee joint pain residing in selected urban area at choolai in Chennai.” The research design adopted was an experimental pretest and post test control group design. The population was elderly female in the age group of 60-80 years with knee joint pain. The conceptual framework of this research was based on Modified imogene king's Goal attainment theory model. The study has adopted is simple random sampling technique and the estimated sample size was 60 elderly females. Descriptive statistics were used to analyze the data and to test the study hypothesis.

The first objective was to assess the degree of knee joint pain of the elderly women before hot water compress with Epsom salt in both experimental and control groups.

This was done by using the tool numerical pain rating scale. The findings of the data are as follows in the pre- assessment for the control and experimental group, among experimental group, 3.3% of the elderly women are having mild pain, 13.3% are having moderate pain, 60% of them are having severe pain and 23.3% of them are having unbearable pain.

In the control group, 6.7% of the elderly women are having mild pain, 6.7% are having moderate pain, 50% of them are having severe pain and 36.7% of them are having unbearable pain.

This has been supported by the studies done by Thyberg I et.al., (2009) conducted a cross-sectional study of health and social problems among two hundred and seventy-six patients, 191 women and 85 men, with early rheumatoid arthritis were included. Aliments were examined with respect to 28-joint count disease activity

score, and disability variables reflecting pain, sleep disturbance, fatigue, mental health, and activity limitation, at follow-ups at 1, 2 and 3 years after diagnosis. Among them ,80% reported joint pain in either one or both joints.

The second objective was to assess the degree of knee joint pain after administration of hot water application with Epsom salt in the experimental group

In post assessment among experimental group, 16 % of them are having no pain 26.7% of the elderly women are having mild pain, 20.0% are having moderate pain.

In the control group, 3.3% of them are having no pain 6.7% of the elderly women are having mild pain, 10.0% are having moderate pain, 43.3% of them are having severe pain and 36.7% of them are having unbearable pain.

The data findings show that the mean pain score in the pretest, experiment group women are having 7.80 pain score and a control group are having 7.97 pain score, so the difference is 0.17, this difference is small and it is not statistically significant difference.

*In posttest, experiment group women are having 2.00 score and control group are having 7.66 scores in posttest, so the difference is 5.67, this difference is large and it is a statistically significant difference. *Statistical significance was calculated using student's independent t-test.* This proves that hot water compress with Epsom salt was very effective in reducing knee joint pain in the study.*

This is also supported by a study which was conducted by Yildirim , N., Filiz Ulusoy, M., & Bodur, H. (19 Apr, 2010) to evaluate the effect of heat application on pain, stiffness, physical function and quality of rheumatoid Arthritis Knee the faculty of health sciences, Midwifery department, Cumhuriyet university, turkey. The intervention group received 20 minute heat application every day for four weeks in addition to routine medication. It was found that heat application decreased pain and disability of the patients with rheumatoid arthritis knee. Heat application was found to

improve the sub dimensions of quality of life scores of physical function, pain and general health perception of patients.

The third objective of the study was to compare the post-assessment, pain score level among clients in experimental and control group.

In protest, experiment group women are having 2.00 score and control group are having 7.66 scores in posttest, so the difference is 5.67, this difference is large and it is a statistically significant difference. *Statistical significance was calculated using student's independent t-test.* This proves that hot water compress with Epsom salt was very effective in reducing knee joint pain in the study.

The fourth objective to assess the effectiveness of hot water compress with Epsom salt in both experimental and control groups.

On an average, experiment women are reduced 58% of pain score, whereas in the control group is reduced 3%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. This difference shows the effectiveness of hot water compress with Epsom salt

In posttest , experiment group women are having mean score 2.00 and control group are having mean score 7.66 in posttest, so the difference is 5.67 , this difference is large and it is a statistically significant difference. *Statistical significance was calculated using student's independent t-test.* This proves that hot water compress with Epsom salt was very effective in reducing knee joint pain in the study.

This is also supported by a study was conducted by Fioravanti A, Tenti S, Giannitti C, Fortunati NA, Galeazzi M. 2013 Jan 14. a prospective randomized , single blind controlled trial to evaluate the effectiveness of epsom salt compress in 60 outpatients with bilateral knee pain divided into two groups with experiment group (n=30) treated with 12 daily generalized thermal baths with magnesium sulfate mineral water added to usual treatment and control group (n=30) continued regular outpatient care routine (exercise, NSAIDs and/or analgesics) for a duration of three months the study results confirmed that Epsom salt compress had a beneficial effect in patients with knee OA .

The fifth objective of the study was to find the association between selected demographic variables of elderly and degree of knee joint pain before and after application of hot water with Epsom salt.

The association between post-assessment level of Joint pain and elderly women demographic variables in experimental group . Elderly women in the age of 76 – 80 years had 100% (2) pain relief from hot water compress with Epsom salt, followed by women in the age group of 71 – 75 years who had 100% (4) of pain relief after hot water compress with Epsom salt. Working with elderly women had better pain relief from hot water compress with Epsom salt that is 75.0% (3) and women who exercised are benefiting more than others, that is 100% pain reduction was found in women who did yoga and also who practiced walking. Statistical significance was calculated using chi square test.

The association between level of pain reduction and their demographic variables in control group none of the demographic variables are significantly associated with level of reduced pain. Statistical significance was calculated using chi square test

CHAPTER VI

SUMMARY AND CONCLUSION

This chapter deals with the summary of the study and the conclusions drawn. It clarifies the limitations of the study. The implications and recommendations are given for different areas of nursing such as practice, education, research and administration in the health care delivery system.

6.1 Summary of the study

Women are the core structure of the family. The well-being of the family members depends on the well-being of the women. Most women suffer from knee joint pain than men. The cause of this complex syndrome is unknown, and there is no known cure. Numerous research results indicate that non-pharmacological interventions are found to be effective in relieving the knee joint pain. Hence this study was undertaken to determine the effectiveness of hot water compress with Epsom salt in reducing the pain of the female patients with knee joint pain.

The following objectives were set for the study:

1. To assess the degree of knee joint pain of the elderly women before hot water compress with Epsom salt in both experimental and control groups.
2. To assess the degree of knee joint pain after administration of hot water application with Epsom salt in the experimental group .
3. To compare the post-assessment, pain score level among clients in experimental and control group.
4. To assess the effectiveness of hot water compress with Epsom salt in both experimental and control groups.
5. To find the association between selected demographic variables of elderly and degree of knee joint pain before and after application of hot water with Epsom salt.

The study was based on the assumption that

Hot water compress with Epsom salt may reduce the intensity of pain perceived. The following hypotheses were formulated:

1. H1: The mean post assessment effectiveness of hot water compress with Epsom salt among elderly women with knee joint pain will be significantly more than mean pre assessment effectiveness among elderly women.

2. H2: There will be a significant association between selected demographic variables of elderly and degree of knee joint pain before and after administration of hot water compress with Epsom salt.

The variables were studied :

Independent variable Hot water compress with Epsom salt

Dependent variable pain perception score

Extensive review of literature, professional experience and expert guidance from the field of community medicine, orthopedics, and nursing led the investigator to design the methodology, develop the tool for data collection and the protocol for administering hot water compress with Epsom salt. The conceptual framework developed for the study was based on the Imogene King's Modified Goal attainment theory. Every week from Monday to Saturday, the data were collected. Formal permission was obtained from the Head of the department of preventive and social medicine, and corporation of Chennai.

The objective of the study was explained to the Medical Officer of the Health Post and the participants before starting the data collection to get their cooperation during data collection. The researcher adopted the True experimental research design to assess the effectiveness of hot water compress with Epsom salt. The Simple random sampling technique was used to select 60 women with non-specific knee joint pain, based on the criteria for sample selection.

Hot water compress with Epsom salt was given for 20 minutes for ten consecutive days. Adequate privacy was provided during the procedure. The post

assessment of pain perception was obtained at the end of the tenth day. The opinion questionnaire regarding the intervention was also tested at the end of the tenth day.

Descriptive statistics (Viz-percentage distribution, mean, standard deviation) and inferential statistics (Viz-t' chi square and ANOVA-F test) were used to analyze the data and to analyze the data and to test hypotheses. The data were then interpreted and discussed based on the objectives of the study, hypotheses and relevant studies from the literature reviewed.

Major findings of the study:

With regard to the demographic variables of clients with knee joint pain,

- ❖ Among the experimental group majority 46.7% (14) of the clients were between the age group of 66 – 70yrs, 70% (21) of them had finished primary school, 86.7% (26) of the clients were unemployed 66.7% (20) of the clients had a monthly income between Rs. 2000-3000, 90.0% (27) of the clients were married, 66.7% (20) of the clients married under 20 years of age, 86.7% (26) of them did not do any exercise, 43.3% (13) of them had more than two children, 90% (27) of them were Hindus.
- ❖ Among the control group majority 46.7% (14) of the clients were between the age group of 60 – 65 years, 56.7% (17) of them had finished primary school education, 90% (27) of the clients were unemployed, 40.0% (12) of the clients earned monthly between Rs. 2000-3000, 90% (27) of the clients were married, 56.7% (17) of the clients were married under 20 years of age, 86.7% (26) of the clients did not do any exercise, 50.0% (15) of the clients had more than two children, 93.3% (28) of the clients were Hindu.

The major objectives brought out the following findings,

- ❖ *In the* experimental group, 3.3% of the elderly women are having mild pain, 13.3% are having moderate pain , 60% of them are having severe pain and 23.3% of them are having unbearable pain.
- ❖ *In the* control group, 6.7% of the elderly women are having mild pain, 6.7% are having moderate pain , 50% of them are having severe pain and 36.7% of them are having unbearable pain.

- ❖ *In the experimental group, 16 % of them are having no pain 26.7% of the elderly women are having mild pain, 20.0% are having moderate pain.*
- ❖ *In the control group, 3.3% of them are having no pain 6.7% of the elderly women are having mild pain, 10.0% are having moderate pain , 43.3% of them are having severe pain and 36.7% of them are having unbearable pain.*
- ❖ *Hot water compress with Epsom salt for knee joint pain was found to be effective *experiment women are reduced 58% of pain score whereas in the control group are reduced 3%. Differences between pretest and posttest score was analyzed using proportion with 95% CI and mean difference with 95% CI. This difference shows the effectiveness of hot water compress with Epsom salt**

6.3 Implications

Low cost treatment is an economic advent to developing countries like India. Home is a place of prevention, long term care and follow up, hence such preparations have to be taught to the elderly with joint pain and their family members in order to practice and to benefit from the long standing effects in combating joint pain. Hence community health nurses have to realize their responsibility in creating the awareness regarding complimentary alternative medicine. The implication drawn from the present study is of vital concern to the health team including the professional nurse practitioners, nurse administrators, nurse educators and researchers.

6.3.1 Implications for Nursing practice

1. The findings of the study enlighten the fact that hot water compress with Epsom salt therapy can be used to reduce the pain perception of knee joint pain patients.
2. The study findings will help the nursing personnel to include that hot water compress with Epsom salt therapy as a nursing intervention in the management knee joint pain.

3. A protocol steps for implementation of the that hot water compress with Epsom salt therapy can be developed and used in all nursing care settings.
4. The study signifies the early institution of that hot water compress with Epsom salt therapy and better pain reduction.

6.3.2 Implication for Nursing education

1. The study has proved that hot water compress with Epsom salt therapy has an effect in reducing non-specific knee joint pain in the patients.
2. To practice this, nursing personnel need to have adequate knowledge, desirable attitude and skill regarding the hot water compress with Epsom salt therapy .
3. These findings would help nursing faculty to give importance for hot water compress with Epsom salt therapy as a nursing intervention in the management knee joint pain.
4. Motivate the nursing students to use this intervention in the management of these patients .

6.3.3 Implication of Nursing research

There is a need for extensive and intensive research in this area.

1. One of the aims of Nursing research is to expand and broaden the scope of nursing; findings of this study will provide baseline data about the pain perception and the hot water compress with Epsom salt therapy implication . Hence it can be used for further studies in this area.
2. This study also brings about the fact that more studies need to be done at different settings which is culturally acceptable.

6.3.4 Implications for Nursing Administration

1. Nursing administrator should prepare a procedure manual and protocol regarding which can be used in the community setting and in the hospitals.
2. Clinical Nurses and Nurse Educators should be given an in-service education to update their knowledge regarding that hot water compress with Epsom salt therapy and its technique.
3. Periodic conference, seminar, symposium can be arranged for Nursing personnel regarding the care of non-specific knee joint pain patients and the new findings regarding their care.

6.4 RECOMMENDATIONS

1. A similar kind of study can be conducted for a larger group to generate the findings.
2. A longitudinal study can be conducted to assess the effect of hot water compress with Epsom salt therapy in reducing pain.
3. The same study can be conducted among different age groups.
4. A comparison study can be done to determine the effect of hot water compress with Epsom salt therapy in different settings.
5. The study can be conducted by using other techniques of the hot water compress with Epsom salt that is Cold water compress with Epsom salt.

6. The effectiveness of hot water compress with Epsom salt can be tested for other types of pain.
7. This study can be done as comparative studies between male and female patients.
8. This study can be done as comparative studies between cold and hot water compress with Epsom salt.
9. A similar kind of study can be in patients who are having other orthopedic disorder.
10. The same study can be conducted by administering hot water compress with Epsom salt for a long period.

6.5 Conclusions

The following conclusions were drawn from the study:

There was a significant difference in the mean pain perception score of the patients with knee joint pain before and after hot water compress with Epsom salt.

There was an association between the levels of pain perception of the patients with the selected demographic variables. Justification for undertaking this study was to relieve the clients from knee joint pain by hot water compress with Epsom salt and to determine its effectiveness, so that hot water compress with Epsom salt can be used in the future for all the knee joint pain patients for health promotion.

REFERENCES

1. Abdul Raheem. b, &Amodu. F. (2010). Prevalence and correlates of physical disability and functional limitation among elders. *Journal of Aging research*, 18 (1). 1-9.
2. Arnold and Taylor, W.E. (1982). *The Principles and Practice of Physical Therapy*. 2nd Edition. Cheltenham: Stanley Thrones Publication Limited.
3. Bhatia.L.,Verma.K.Karur.,Swami.MM.,&Sharma.Mk.(2007). Correlates of osteo_arthritis in Geriatric population. *Indian journal of community*, 32 (1), 43-47.
4. Brink J Pamela and Marilyn J wood, (2003). *Basic Steps in Planning Nursing, Nursing Research, From Question to Proposal*. California: Wadsworth Health Sciences Division, Monterey.
5. Bolen. J., Helmick. G., Sacks. J., &Langmaid. G. (2001). Prevalence of self reported arthritis among elders. *Advanced journal of Nursing*, 15 (8), 32-35.
6. Briggs. E. (2002). The nursing management of pain in elderly people. *Advanced journal of Nursing*, 14 (7), 23-25.
7. Catherine L Hill., Tiffany K Gill., Hylton BMehz., &Anne W Taylor. (2008). Prevalence of joint pain among elders. *Journal of Rheumatology*, 5 (1), 3-9.
8. Crespo. M., & Ling. I., &Anderson. R. (2000). prevalence of joint pain among elders. *Journal of American Geriatric Society*, 4 (3), 435-438.
9. Chaurasia B.D, (1998). *Human Anatomy, Upper Limb and Thorax*. Vol.1. New Delhi: CBS Publisher and Distributors.
10. Clamp. G. F Gough Stephen, (1999). *Resources for Nursing Research*. London: SAGE publications.
11. Desiree Lie. K. (2009). Chronic pain linked to risk for fall in elders. *journal of American Medical Association*, 302 (2), 81-84.

12. Donald&Foy. C. (2004). Joint pain in older people. *Journal of Rheumatology*, 6 (4), 224-228 Ebersole. J. *Geriatric Nursing and Healthy aging* (1st Ed). London: Mosby Company.
13. Denise F. Poet and Cheryl T, B, (2004). *Nursing Research*. 7th Edition. Philadelphia: J.B. Lippincott Company.
14. Goldman, J and Hatch M. (2000). *Women and Health*. San Diego: Academic press.
15. Gopal Ingle., Anita Nath. (2008) *Geriatric Health in India*. *Indian Journal of community medicine*, 3 (4), 214-215.
16. Gupta, Mc&Mahajan. B. K. (2005). *Text book of preventive and social medicine* (3rd Ed). New Delhi: Jaypee brothers.
17. Howard. M., Fillit., Kenneth Rock wood., &Kenneth Woodhouse. (2009). *Text book of Geriatric medicine and Gerontology* (7th Ed). USA: Saunders Elsevie.
18. Halim A (2001). *Human aaaaaaaAnatomy Vol.3*. 1st edition. New Delhi: Modern publishers.
19. Jeetender Singh. (2010). Home remedies for selected common minor ailments. *Journal of community health nursing*, 6 (2), 50-53.
20. Juan Chen., Amanda Devine., Ian M Dick., Salvinder SDhaliwal&Richard L Prince. (2005). Prevalence of lower extremity pain and its association with quality of life in elderly women. . *Journal of Rheumatology*, 13 (4), 71-72.
21. Kishore. S., &Garg. B. S. (2010). Socio Medical problem of age population. *Indian Journal of Public Health*, 59 (2), 43-48.
22. Julia M Leahy Patricia. (1998). *Foundations of Nursing*. Philadelphia: W. B. Saunders Company.
23. Kintzel, Kay Corman. (1991). *Advanced Concepts in Clinical Nursing*. Philadelphia: J.B Lippincott Company.
24. Kozier, Barbara (1995). *Fundamentals of Nursing: Concepts and Procedures*. California: Addison Wesley Publishers.

25. Lynnwieck, Eunice and King (1994). *Illustrated Manual of Nursing Technique*. Philadelphia: Mosby Publications.
26. Nancy Burn and Susan K. Grove (2001). *The Practice of Nursing Research*. 4th Edition. Philadelphia: W. B. Saunders Company.
27. Oslen K. (1992). *An Encyclopedia of Alternative Health Care*. Philadelphia: Mosby Publications.
28. Potter and Perry (2006). *Basic Skills and Procedure*. 6th Edition, Mosby Publications.
29. Vishwesra Rao, K. (1996). *Biostatistics*. Bangalore: Jaypee Publications.
30. Wesley. L. Ruby. (1992). *Nursing Theories and Models*. Pennsylvania: spring House Corporation.

Journals

1. Bliddal H, Rosetzky A et al. (2000), A randomized, placebo-controlled, crossover study of ginger extracts and ibuprofen in osteoarthritis. *Osteoarthritis and Cartilage/OARS, osteoarthritis Research Society*. 8(1):9-12.
2. Bradis, H. Et al. (2001), *Journal of Holistic Nursing*. March 19 (1), pp 57-70.
3. Butlin, J. (2001), The use of herbs and phytonutrients in pain and inflammation. *Positive Health*. 60.
4. Cherkin, DC. And Sherman, K.J. Et al. (2003), Complementary and alternative medical therapies for chronic knee joint pain. *Archives of internal Medicine*, Vol. 138 (11).
5. Chou, R., & Huffman, LH. (Apr 2008). Effect of heat or cold for knee joint pain. *Ann Intern MED* Apr.3 (9), 998 – 1006. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16261384>

6. Cohen, R. J, Ek K, Pan C. X. (2002). Complementary and alternative medicine (CAM) use by older adults: A comparison of self-report and physician chart documentation. *J Gerontol A Biol Sci Med Sci.*57(4):M223–7.
7. Cousins and Phillips, et al. (1998), *Neuro Anatomy of Pain*, *Journal of Clinical Neuro Physiology*, Vol. 14 (1).
8. Eisenberg, D. And Sherman K.J. Et al. (2001), Randomized trial comparing traditional Chinese medical acupuncture, Therapeutic massage and self-care education for chronic knee joint pain. *Archives of Internal Medicine*, VOL. 161, PP 1081 – 1088.
9. Febibel. (2010). The effect of heat application of pain, stiffness, physical functioning and quality of life of patients with rheumatoid arthritis. Retrieved from onlinelibrary.wiley.com/doi/10.1111/j.1365-2702.2009.03070.X/full
10. Kapidzic,N., Seleskovic, H., & Mulic, S. (2000). Effect of heat therapy on functional ability of patients with rheumatoid arthritis. *MED. Ah.* 61(3), 164 – 168.
11. Krawczy, K., Wasielewska, A et al. (2010). Assessment of patient's functional condition with rheumatoid arthritis before and after physical therapy treatment. *Chir Narzadow Ruchu Orthop Pol*, 74 (6), 361366.Retrievedfrom<http://www.ncbi.nlm.nih.gov/pubmed/20201335>.
12. Lehmann, JF., Warren, CG., & Scham, SM. (2009). Therapeutic heat and cold. *Clin Orthop relat Res*, (99), 207245. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/4133064>.

13. Oosterveld, FG., & Rasker, JJ. (2009). Treating arthritis with locally – applied heat or cold. *Seminars in Arthritis and Rheumatology*. Oct 24 (2), 82 – 90. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/7839157>.
14. Rosenbaum CC, et al. (2010). Antioxidants and anti-inflammatory dietary supplements for osteoarthritis and rheumatoid arthritis. *Alternative Therapeutics in Health and Medicine*. Mar – Apr 16 (2): 32-40.
15. Salminen, J.J., Pentti, J. And Wickström, G. (1991). Tenderness and pain in the neck and shoulders in relation to type A Behavior. *Scandinavian Journal of Rheumatology*, Vol. 20, pp 344 – 350.

ELECTRONIC VERSION

1. <http://www.pain.com>
2. <http://www.nursingtimes.net.com>
3. <http://www.ijtmb.org>
4. <http://www.massageonline.com>
5. <http://www.google.com>
6. <http://www.pubmed.com>
7. <http://www.medscape.com>
8. <http://www.higewire.com>
9. <http://www.medline.com>
10. <http://www.painclinic.com>

HOT WATER COMPRESS WITH EPSOM SALT PROCEDURE:

DEFINITION: Sometimes called Epsom salt fomentation. A compress made from Epsom salt and very hot water. Applied hot to an affected area of the body, it serves to stimulate circulation and dissolve stagnation

PURPOSES:

- To reduce the muscle spasm
- To reduce the pain
- To reduce the inflammation

PREPARATION OF THE PATIENT:

- Explain the procedure to the patient
- The area to be used should be clean and dry
- Provide privacy

ARTICLES REQUIRED:

- ❖ 1 liter of boiling water
- ❖ Large pot
- ❖ 30 grams of Epsom salt
- ❖ towels
- ❖ Mackintosh with towel
- ❖ Screen

PREPARATION OF THE ARTICLES:

ARTICLES	PURPOSE
A tray containing 1 liter of boiling water	-For Heat application
Large pot	-To hold water
30 grams of Epsom salt	-To prepare an Epsom salt compress
3 towels	-To apply an Epsom salt compress
Mackintosh with towel	

PREPARATION OF THE PATIENT:

PROCEDURE	PURPOSE
<ul style="list-style-type: none">➤ Inform the procedure to the patient➤ Provide privacy ➤ Bring the patient to the edge of the bed➤ Place the Mackintosh and a towel under the area of application	<ul style="list-style-type: none">➤ To gain confidence ➤ To prevent discomfort ➤ For easy application ➤ To prevent soiling of the bed

PROCEDURE:

STEPS	RATIONAL
<p>➤ Wash hands</p> <p>➤ Apply the Epsom salt compress on the knee joint</p> <p>➤ Check the Epsom salt compress at regular intervals and observe the Skin for discoloration or numbness</p> <p>TERMINATION:</p> <p>➤ Remove the Epsom salt compress after 20 minutes</p> <p>➤ Dry the part gently Inspect the part for discoloration or Numbness</p> <p>➤ Position the patient</p> <p>➤ Wash the hands and replace the articles</p> <p>DOCUMENTATION</p> <p>➤ Record the procedure with the date, time, duration, reaction.</p>	<p>➤ Prevents transmission of infection</p> <p>➤ A discoloration or Numbness perceived by the patient terminates Treatment</p> <p>➤ To prevent skin Maceration</p> <p>➤ To take appropriate intervention</p> <p>➤ Make the patient Comfortable</p>

SECTION-A

DEMOGRAPHIC DATA

Sample No:

1. Age

- a)60-65 years b)66-70years
c)71-75years d)76-80years

2.Education

- a) 1st -5th standard b) 6th - 8th standard
c)9th - 12th standard d)Degree
e) Diploma

3) 3)Occupation

- a) Unemployed b) Labor c) professional

4))Monthly income:

- a))Rs.2000-3000 b)Rs3001-4000
c) c)Rs4001-5000 d)5001-6000

5) Religion

- a) a)Hindu b)Muslim
c) Christian d)Others

6) Marital status

- a) a)Married b) Unmarried
c) c)Divorced d) d)Widow
e) Separated

7)Age at marriage

- a)Below20 b)20-25 years
c)26 -30years d)above 30 years

8)How many children do you have

- a)None b)One
c)Two d)More than two

9)Do you perform any exercise?

- a) Yes b)No

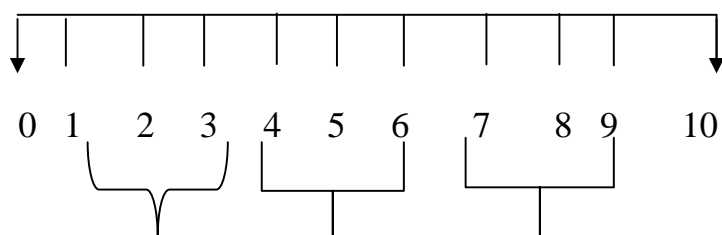
10) If yes, what type of exercise?

- a)Yoga b)Walking
c) Deep breathing exercise d)No
e)Others

11)Total family members.....

SECTION -B

PAIN NUMERICAL RATING SCALE



No pain **Mild** **Moderate** **Severe** **Unbearable**

Description	Rate	Score
No pain	0	0
Mild	1-3	1
Moderate	4-6	2
Severe	7-9	3
Unbearable	10	4

SECTION -C

QUESTIONNAIRE:

1 Are you are experiencing pain after Hot water compress with Epsom salt

A. Yes

B. No

C) Not able to say.

2. Do you feel Hot water compress with Epsom salt was useful

A. Yes

B. No

3. If yes, why?

a. Relieves pain

b. Induce sleep

c. Provides relaxation

d. All of the above

4.If no, why?

a. Increases pain

b. Gives no relief

c. Any other.....

5. Describe in own word how you felt with Hot water compress with Epsom salt

- a. Soothing
- b. Comfortable
- c. Relaxing
- d. Relieves pain.

பகுதி-அ

விஞ்ஞான ரீதியானமக்களின்தகவல்

மாதிரிஎண்:

1) வயது

அ)60-65 வயது ஆ)66-70வயது இ)71-75 வயது
ஈ)76-80 வயது

2)கல்விபடிப்பு

அ)1ஆம்வகுப்பு முதல் 5ஆம்வகுப்பு வரை
ஆ)6ஆம்வகுப்பு முதல் 8ஆம் வகுப்பு வரை
இ)9ஆம்வகுப்பு முதல் 12ஆம்வகுப்பு வரை ஈ)பட்டயபடிப்பு
உ)பட்டபடிப்பு

3)தொழில்

அ)வேலைஇல்லை ஆ)அரசு லையில்இருப்பவர்
இ)சுயதொழில் ஈ)தனிய வலையில்இருப்பவர்

4)மாதவருவாய்

அ)ரூ.2000-3000 ஆ)ரூ.3001-4000
இ)ரூ.4001-5000 ஈ)ரூ.5001 மற்றும்அதற்குமேல்

5)சமயம்

அ)இந்து ஆ)இஸ்லாம் றுஸ்த்துவர்
ஈ)மற்றவர்கள்

5)திருமணநிலை

அ)திருமணம்ஆனவர்

இ)விவாகரத்து

ஆ)திருமணம்ஆகாதவர்

ஈ)விதவை

7)திருமணமானவயது

அ)20 வயதுக்குமேல்

20-25 வயதுக்குள்

இ)26-30 வயதுக்குள்

30 வயதுக்குமேல்

8)எத்தனைபிள்ளைகள்உள்ளனர்

அ)எதுவுமில்லை

ஆ)ஒன்று

இ)இரண்டு

ஈ)இரண்டுக்கும்மேல்

9)உடற்பயிற்சிசெய்வீர்களா?

அ)ஆம்

ஆ)இல்லை

9)ஆம் என்றால் எவ்வகைஉடற்பயிற்சிசெய்வீர்கள்

அ)யோகா

ஆ)நடைபயிற்சி

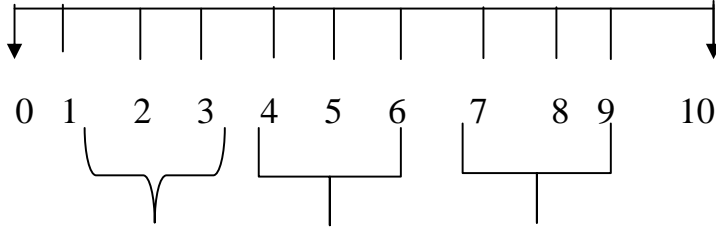
இ)ஆழ்ந்தசுவாசபயிற்சி

ஈ)இல்லை

10)குடும்பத்தில்உள்ளமொத்தநபர்கள்.....

பகுதி - ஆ

எண்ணிக்கைவலி அளவுகோள்



வலிஇல்லை சிறிதளவுவலி ஓரளவுவலி அதிகமாக தாங்கமுடியாதவலி

விளக்கம்	அளவு	மதிப்பு
வலிஇல்லை	0	0
சிறிதளவுவலி	1-3	1
ஓரளவுவலி	4-6	2
அதிகமாக	7-9	3
தாங்கமுடியாதவலி	10	4

பகுதி- இ

வேற்றுமை கொள்கையை விவரித்ததுரைக்க

1.இந்த எப்சம் உப்புகலந்த சுடு தண்ணீர் ஒத்தடம் கொடுத்தபின்பு வலியை
உணர்ந்தீர்களா?

அ)ஆம்

ஆ)இல்லை

2.எப்சம் உப்புகலந்த சுடு தண்ணீர் ஒத்தடம் பயனுள்ளது என்று நீங்கள்
உணருகிறீர்களா?

அ)ஆம்

ஆ)இல்லை

3.ஆம் என்றால் ஏன்?

அ)வலி போக்குகிறது

ஆ)தூக்கம் உண்டாகிறது

இ)ஓய்வை தருகிறது

ஈ)மேல்கண்ட எல்லாம்

4.இல்லையெனில் ஏன்?

அ)வலி அதிகமாகிறது

ஆ)நோவை அகற்றவில்லை

இ)வேறு ஏதாவது.....

5.எப்சம் உப்புகலந்த சுடு தண்ணீர் ஒத்தடம் பற்றி நீங்கள் எவ்வாறு நினைக்கிறீர்கள் என்பதை சொந்த வாக்கியத்தில் எழுதவும்?

அ)கடுமையை குறைக்கிறது

ஆ)சுகம் அளிக்கிறது

இ)ஓய்வு தருகிறது

ஈ)வலி நிவாரணி