



EFFICACY OF MANUAL THERAPY VERSUS ELECTROTHERAPY FOR MANAGEMENT OF DEGENERATIVE ARTHRITIS OF THE KNEE JOINT: PHYSIOTHERAPIST'S PERSPECTIVE

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ABSTRACT

Introduction & Purpose: Degenerative arthritis of the knee joint is one of the most common conditions being managed by Physiotherapists world over on a daily basis. Degeneration of the articular cartilage is characterized by pain, decrease in range of motion and decline in function which in turn affects their quality of life and has a great economic impact on individuals. Manual therapy and electrotherapy are accepted in literature as two most important pillars for the management strategies being practiced for managing OA of the knees with varying results. Hence, this research was carried out in order to identify various electrical and manual therapy modalities preferred by Physiotherapists in management of OA of knee joints.

Methodology-Post Institutional Ethics committee approval, this retrospective cross-sectional survey based study was conducted on 100 consenting practicing physical therapists with a minimum of 3 years of clinical experience who were asked for their choicest electrical & manual therapy techniques and their perceived effectiveness in managing signs & symptoms of OA knees

Data Analysis & Results- 85% of practicing physiotherapists preferred a combination of manual and electrotherapy. Joint mobilization was found to be most effective in pain modulation (71%) & improving ROM (82%).

Exercise was found most effective mode for the improvement in function and swelling.

In electrotherapy, 75% of the subjects found cryotherapy more effective than Heat for pain modulation and 79% subjects found it better than heat for managing swelling.

Conclusion- A combination of manual therapy and electrotherapy was perceived most effective by majority of practicing therapists

The study reaffirms the need for comparative studies to curtail use of obsolete modalities that are not providing efficacious results and newer techniques can be added with due deliberation of research and trial.

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INTRODUCTION

Osteoarthritis of the Knee has gained paramount importance in the modern times not only because of its high prevalence rate and but also an ever increasing incidence. Moreover there is an increased affliction seen in the younger age group thereby leading to significant functional and economic impairments presentation at earlier age groups particularly in younger age groups^(7,8). This painful and disabling disease has a profound effect on quality of life affecting both physical function and psychological parameters. Sedentary lifestyle, obesity, are few of the factors responsible for early degeneration because rapid destruction of the cartilage occurs with immobilization, as the cartilage is not being nourished adequately with synovial fluid and is thus deprived of its nutritional supply⁽⁶⁾. In view of the same, there has been a tremendous increase in the number of

patients approaching Physiotherapy OPD for management of the symptoms of OA knees patients. This drives the imperative demand of efficient as well as cost effective treatment strategies that limits the pain, disability and associated deterioration of quality of life. However various treatment options are available which prevent further deterioration of the associated condition to prevent further deconditioning and to provide some amount of relief to patients. Manual therapy and electrotherapy have found to be the two most important pillars for the management strategies being practiced for OA knees. Manual therapy includes manipulation and stretching techniques. Manual therapy is particularly aimed at the improvement of elasticity of the joint capsule and the surrounding muscles⁽⁹⁾. Manual therapy is provided by physical therapists (or medical doctors) with a special training in manual therapy. Exercise therapy includes both active and passive exercises. Exercise therapy aims at improvement of muscle function, increase of joint range of motion, decrease of

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pain and increase of walking ability.⁽¹⁰⁾ Electrotherapeutic treatment includes the use of electrical agents to give pain relief like TENS, reduce inflammation by using Ultrasound and strengthening the muscles with the use of faradic currents and various other modalities. Hence the purpose of this study is to identify various electrical and manual therapy modalities preferred by Physiotherapists in management of OA of knee joints.

METHODOLOGY

This retrospective study was conducted on 100 practicing physical therapists with a minimum of 3 years of clinical experience. Written informed consent was taken from all the subjects before undertaking the study. They were assured that the participation is voluntary and anonymous for the survey, a questionnaire was drafted based on a detailed study of the review of literature. This was then validated by an expert of the field. A pilot study was conducted on five subjects and appropriate recommendations as suggested from the pilot study were incorporated in the questionnaire.

Ethical Clearance

Ethical clearance was obtained by submitting a detailed methodology to the D.Y.Patil ethics committee. Written, informed consent was taken from the subjects and they were assured that the participation is anonymous.

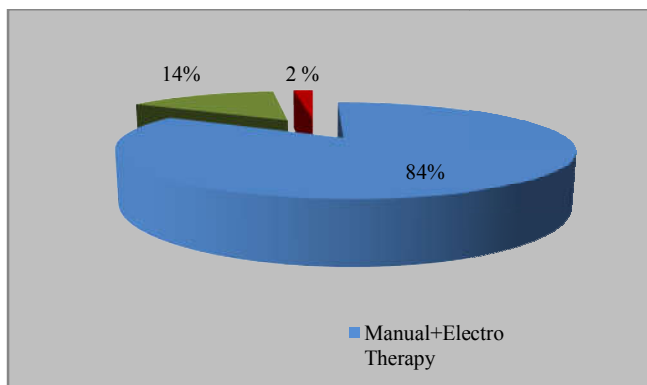
Data Analysis and Observation

Microsoft word and Microsoft excel were used for data analysis and representation. The responses of the questionnaire were analyzed and tabulated in excel. Qualitative analysis of the data was done and the responses were expressed in terms of % and mean \pm SD.

Demographic Details

- **Gender wise Distribution:** 96% of the study subjects were females which is in tune with the female dominated prevalence in the profession.
- **Mean Age-**The mean age of the therapists was 26+5.78 years
- **Education Qualification-** 75% of the study subjects had a Masters degree in the field and 25% were graduates.
- **Years of Clinical Experience-**75% of the therapists had 3-5 Years of experience and 25% had more than 5 years of experience.
- **Research Orientation of the study Subjects:** Only 25% therapists had their articles published in various journals which points to a lacunae in the inclination for Research in young clinical Therapists.

Treatment Preference



Graph 1 shows, - 84% therapists preferred a combination of manual therapy and electrotherapy.14% therapists preferred manual therapy and 2% used electrotherapy.

After the therapists planned treatment session, the report on discharge was as follows

- 61% of the surveyed therapists reported a relief in their patients' pain by 75-100% on completion of their treatment sessions.
- 51% showed an improvement in the range by 75-100%.
- 57% showed improvement in function by 75-100%.
- 64% showed reduction in swelling by 75-100%.
- The usual scenario in a government set up is of discharging the patients faster because of the workload in the hospitals, however therapists discharge their patients when they have achieved around 75-80% change on factors like pain, ROM, function, swelling and are advised to follow up once a month.(This question was asked to study the goal of the therapist that they intend to work UPon during their planned treatment protocol.)
- Home program- Home program of exercises was given by all the therapists in the study. However, only 18% patients followed the home program regularly as reported by the therapists, 81% patients followed the home program sometimes.

According to the results of the study, 58% patients complained of an episode of recurrence after the completion of the planned sessions. One of the reasons of recurrence could be the irregularity of the patient on following the home program and also that the therapists discharge their patients without considering all the parameters of pain, range, function and swelling and discharge their patients when one of the parameters have shown significant results.

- **Other Treatment-** 67% subjects reported that their patients did not take an additional treatment other than physiotherapy.10% took acupuncture.5% took aqua therapy and 18% took other forms of treatment.58% patients complained of an episode of recurrence after the completion of the planned sessions
- **Weight Examination-**42% therapists reported that they do not examine their patients weight routinely, 58% therapists regularly kept a check on their patients weight.

Weight is an important factor in the management of degenerative arthritis of the knee joint. As the knee joint is a weight bearing joint it has to take most of the body weight. With obesity, there are increased mechanical stresses placed on the joint .It is therefore important to examine a patients weight to avoid further damage to the bone.

DISCUSSION

OA knee is a highly prevalent condition which causes a major amount of disability in the population. Owing to the implications that various management strategies are being practiced by physiotherapists majorly including electrotherapy and manual therapy. Within the techniques there is a variation in the usage and efficacy of the techniques as perceived by the therapists, so this study was conducted to identify the efficacy of manual therapy versus electrotherapy

for the management of degenerative arthritis of the knee joint through a physiotherapist's perspective.

For the study, 120 questionnaires were distributed to therapists from various hospitals and clinics in Mumbai and Navi Mumbai out of which 110 were returned filled and 10 being incompletely filled were therefore discarded. Response Rate was 83.3%

Research orientation of subjects

The data mentioned above states that only 25% therapists had their articles published in various journals. The number of people indulged into clinical research among the practicing physiotherapists is less as compared to, those into academics. One of the major part of evidence based practice is clinical experience. Practicing physiotherapists must tabulate their data and publish it so that the evidence base in physiotherapy can be accomplished and more proven treatment protocols can be set and used.

TENS

The study showed that only 38% of the subjects achieved marked change in pain with TENS, while 60% achieved slight change in pain, 56% change in ROM, 73% therapists achieved slight change in function and 39% change in swelling, while literature and books state that TENS has been proved through evidence that it gives pain relief and all the factors like rom, function, swelling are dependent on pain. Since the subjects did not achieve a significant change in pain, various factors have to be taken into consideration like whether the correct type of tens was used, at what stage was it used, in case it was used in a chronic case, the nerve accommodation has taken place and hence tens was not as effective in relieving pain as it should have been. A question also rises if the symptoms were co-related and whether the appropriate modality was used, whether a higher frequency of tens was required and a lower frequency type of tens was used, whether the modality was used for an appropriate amount of time. The usual time of application of tens in most of the set ups is ten minutes and sometimes ten minutes are not sufficient for the changes to occur. These could be the probable reasons why significant change was not achieved by TENS.

Laser

Laser is primarily used for pain relief and acceleration of repair. However, the study revealed only 37% marked change and 60% slight change in pain.

27% marked change and 60% slight change in the range of motion.

35% marked change in function and 60% slight change in the function.

30% marked change and 50% slight change in swelling.

One of the reasons of the low results could be the lack of availability of the laser machines or the machines were not updated and therefore did not get the expected results.

Russian Currents - Russian currents stimulate the secretion of endorphins which helps in reducing pain. Out of 100 subjects, 14% used Russian currents and out of those 14, 35% reported a marked change in pain, 21% change in range and function and 14% change in swelling. Since 35% subjects have reported

change in pain, we should consider doing more research on the use and its effects and making it more available in the OPD set up.

(Positive Findings)

Domain	Manual Therapy Technique	Therapist perceived Change	Electrotherapy Modality	Therapist perceived Change
PAIN	Mobilization	71%	Cryotherapy	75%
	Mobilization	82%	Hot Packs	55%
FUNCTION	Exercises	77%	Strong Surge Faradic	57%
SWELLING	Exercises	45%	Cryotherapy	79%

Cryotherapy - Cryotherapy is the application of cold which causes vasoconstriction of the blood vessels, thereby reducing the blood flow to the swollen area, reducing pain, swelling and inflammation. It has a significant role in the reduction in swelling and pain. ⁽¹³⁾ and similar results were reported in our study, showing maximum relief in pain by 75%, 43% change in the range, 46% improvement in function and 79% reduction in swelling.

Hot Packs- Heat therapy has a physiological effect of relaxation on muscles, it increases the blood supply and nutrition to the muscles by washing out the metabolites and enhancing healing ⁽¹³⁾. Similar results were reported in our study giving significant amount of relief in pain by 73% increase in range by 55%, improvement in function by 52% and change in swelling by 79%.

Strong Surge Faradic- This type of faradic current is used for motor stimulation and strengthening of weak muscles, primarily required in osteoarthritis of the knee joint ⁽¹⁵⁾ and significant results were reported by the subjects stating 68% marked change in pain, 44% in range, 57% in function and swelling.

Mobilization - Is effective in reducing pain by the stimulation of A-delta fibers and increasing the range. Grade 1 mobilization is effective in view of the pain gate mechanism. However, grade 2 and 3 give relief by reducing the stiffness and hence increasing the range of motion and function. ⁽¹⁶⁾. Significant changes were reported in the study stating 99 subjects out of 100 opted for Joint mobilization and reported 71% marked change in pain, 82% change in range, 74% change in function 24% change in swelling.

CONCLUSION

- 85% of practicing physiotherapists preferred a combination of manual and electrotherapy.
- 71% of the study subjects found joint mobilization to be effective in pain modulation & 82% found an increase in the range of motion.
- 77% of the study subjects found Exercise regime to be an effective mode for the improvement in function and 45% found them effective in swelling.
- In electrotherapy, 75% of the subjects found cryotherapy to be effective for pain modulation and 79% subjects reported a change in swelling.
- 55% found hot packs to be effective in improving the range of motion and 57% found an increase in their function through faradic currents.

Hence, from the above data and discussion, it can be concluded that a combination of manual therapy and

electrotherapy would be the most effective, however some modalities need to be re assessed and discarded if they are not providing efficacious results and newer techniques can be added with due deliberation of research and trial.

Recommendations

- Clinical practice in physiotherapy must have a sound basis. For this, the practicing therapists must be encouraged to conduct good quality research themselves and review the researches on the topics being conducted not just in India but worldwide.
- To enable such practice it is important that the therapists develop the habit of viewing research articles right from their student days.
- CME (Continued Medical Education) is an important means of upgrading ones professional knowledge, to keep up with the newer developments in the fields. So that our practicing skills do not become obsolete and are always in tune with the times.
- A central council is much desirable to ensure such practices as mentioned above in the field of physiotherapy for efficient management of our patients and upliftment of physiotherapy as a field.

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