

prevalence of knee OA rises with age, a longer lifespan, and higher population average weight, especially in obese women. In comparison to women, men have a decreased prevalence of knee OA. This was demonstrated in a Meta analysis of males and females, which revealed that the incidence of knee OA was lower in males under the age of 55 than in females^{3,4}. The risk of knee OA is increased by prior knee injury. OA is influenced by a number of factors, including advanced age, female gender, overweight and obesity, knee injury, repeated motion of the joints, bone density, muscle weakness, and joint laxity⁴.

There are two stages of osteoarthritis. Most often occurring in postmenopausal women, primary osteoarthritis can be localized or generalized. Secondary osteoarthritis has an underlying aetiology, such as trauma, obesity, Paget's disease, or inflammatory arthritis. The majority of patients, who are typically over 50, report pain and stiffness in the damaged joint or joints, which are exacerbated by activity and eased by rest. The typical duration of morning stiffness is shorter than 30 minutes. Joint discomfort and crepitus during movement are possible side effects.⁵

NEED OF THE STUDY

Knee osteoarthritis (OA) is a most common type of degenerative joint disorder that affects more than 80% of the elderly population over the age of 55 and is successfully treated in over 2/3 of patients through rehabilitation protocols designed to reduce pain and return function.

physical therapy seems to be effective in treating OA knee patients.

Thus the need for the study is to check the comparative study of vmo and seated clams along with isometric exercise vs isometric exercise in oa knee patients.

GENERAL OBJECTIVES:

To know comparative study of vmo and seated clams along with isometric exercise vs isometric exercise in OA knee patients.

SPECIFIC OBJECTIVES:

- To find out which exercise will have more progressive result in OA Knee patients.
- To find out the effect of isometric exercise in OA knee patients in reducing pain

METHODOLOGY:-

The study design is experimental study

The study was conducted in DR.BR. Ambedkar College of physiotherapy with 30 samples by getting their consent who met inclusion criteria and exclusion criteria. 30 patients were divided

into two groups Group A and Group B. Group A has treated with conventional method I.e; ultrasound therapy after that isometric exercise. and for Group B modified protocol I.e ultrasound therapy with isometric exercise and seated clams along with vmo strengthening followed by WOMAC [Western Ontario Mc Master university of osteoarthritis index] and active knee flexion range of motion using goniometry were used as outcome measure pre and post treatment to know AROM of knee flexion in the patients.

INCLUSION CRITERIA

1. Aged between 40-60yrs
2. Female and Male [unilateral side]
3. OA knee with phase 1.
4. Complain of knee pain.
5. Duration of symptoms between 4-12 months.

EXCLUSION CRITERIA

1. Recent trauma.
2. Knee joint infection.
3. Skin allergy.
4. Recent surgery (TKR, THR)

REVIEW OF LITERATURE:

1. Rufus Adedoyin et al. 2003, Twenty-seven patients clinically diagnosed with osteoarthritis (OA) and knee pain were specifically selected for this study. Two investigators (physiotherapists) independently assessed the pain while standing on the affected leg with the knee slightly flexed while weighing the patient for several days. VAS and modified VRS (MVRS) were used to assess pain in each patient. In the same testers (Tester 1 and Tester 2), there was a significant correlation between VAS and MVRS ($r = 0.92$, $p < 0.05$; deletion $r = 0.91$, $p > 0.01$). According to this study, two knee OA pain rating scales are reliable.
2. Debra Kushion¹, Jessica Rheume¹, Kim Kopchitz¹, Stephen Glass^{*,2}, Gordon Alderink¹ and Jann-Huei Jinn. The purpose of this study was to compare four common rehabilitation exercises used in physical therapy clinics for activating the vastus medialis oblique (VMO) and vastus lateralis (VL). Thirty-four subjects, aged 22-28 years, without patellofemoral pain

syndrome (PFPS) (18 females and 16 males) were recruited. Subjects performed four exercises—straight leg raise with neutral and externally rotated hip positions (SLRN, SLRER), and short arc quad with neutral and externally rotated hip positions (SAQN, SAQER)

PROCEDURE:

Thirty osteoarthritis knee patients were assessed using WOMAC scale and knee AROM measured with goniometer and consent was taken before treatment from each patients, Treatment protocol includes to give 8 minutes of [USG] Ultrasound Therapy with isometric exercise for group "A" and VMO along with seated clams And isometric exercise For patient of group "B". For acute OA cases time will be 8 min of ultrasound then exercise for 6 days. and for chronic cases time Will be 10 minutes, days will be 12 days, and exercise should be given as seven repetitions of three sets.

- Duration of the treatment given was 6 days for acute and 12 days for chronic.
- Patient position: supine lying with hip and knee extended
- Therapist position: walk standing position to affected side of the patient.

Ultrasound therapy was given on knee joint, after sterilizing the treatment area, coupling media was applied over the affected side and the transducer head. The transducer head was moved in circular

pattern. The frequency of 1MHz, in pulsed mode and intensity of 0.5-0.8 w/cm² was employed. The duration of treatment was for 8 Minutes for 6 days for acute OA knee.

Patient specific exercises Like VMO and seated clams along with isometrics strengthening exercises for hamstrings and quadriceps and 1/3 times per day with 10 RM. These exercises were carried out by the patients throughout the duration of study.

RESULTS:

Table 1: Pre post comparison of WOMAC in group A

| | Mean | Std. Deviation | Mean difference | t value | P value |
|------|---------|----------------|-----------------|---------|---------|
| Pre | 46.8000 | 13.78509 | 24.0 | 7.700 | P<0.001 |
| Post | 22.8000 | 10.92311 | | | |

The average WOMAC score in group A was 46.8 ± 13.78 and post was 22.8 ± 10.923 . The average difference from pre to post was 24.0 with t value 7.7000 and $p < 0.001$. The analysis shows significant decrement in WOMAC score from pre to post.

Figure 1: Representation of mean Pre and post WOMAC score in group A

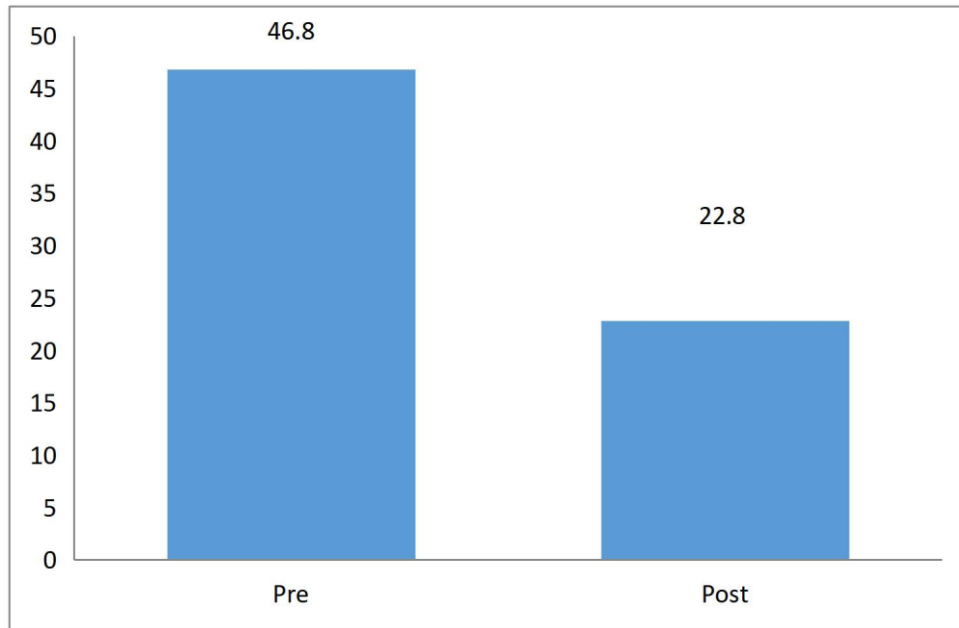


Table 2 :Pre post comparison of WOMAC in group B

| | Mean | Std. Deviation | Mean difference | t value | P value |
|------|---------|----------------|-----------------|---------|---------|
| Pre | 57.0667 | 5.25715 | 42.8 | 7.25 | P<0.001 |
| Post | 14.2667 | 9.30028 | | | |



The average WOMAC score in group B was 57.066 ± 5.257 and post was 14.26 ± 9.3 . The average difference from pre to post was 42.8 with t value 7.25 and $p < 0.001$. The analysis shows significant decrement in WOMAC score from pre to post.

Figure 2: Representation of mean Pre and post WOMAC score in group A

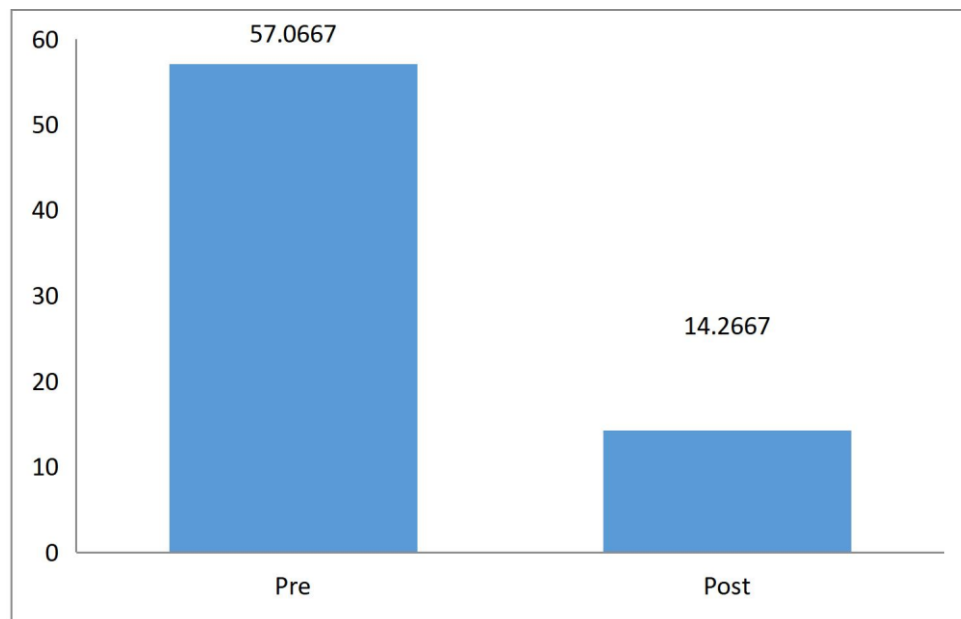


Table 3: Pre post comparison of KNEE ROM in group A

| | Mean | Std. Deviation | Mean difference | t value | P value |
|------|--------|----------------|-----------------|---------|-------------|
| Pre | 101.00 | 11.832 | 17.3 | 7.036 | $P < 0.001$ |
| Post | 118.33 | 11.751 | | | |

The average KNEE pre ROM was 101.0 ± 11.832 degree and post was 118.33 ± 11.751 degree. The average difference from pre to post was 17.3 with t value 11.67.036 and $p < 0.001$. The analysis shows significant increment in angle from pre to post.

Figure 3:Representation of Pre and post KNEE ROM in group A

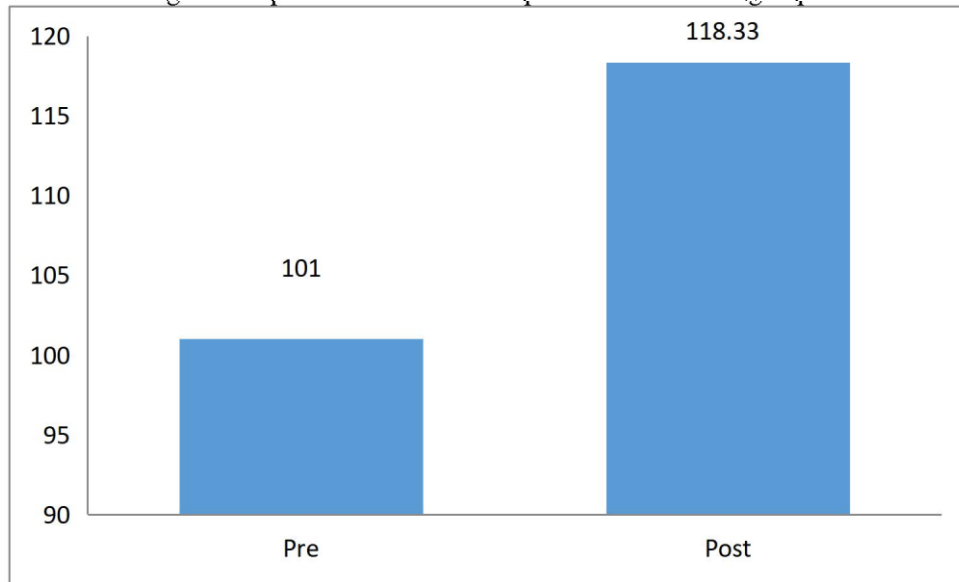


Table 4 :Pre post comparison of KNEE ROM in group B

| | Mean | Std. Deviation | Mean difference | t value | P value |
|------|---------|----------------|-----------------|---------|---------|
| Pre | 99.6667 | 11.09483 | 27 | 9.811 | P<0.001 |
| Post | 126.666 | 11.44344 | | | |

The average KNEE pre ROM was 99.667 ± 11.094 degree and post was 126.66 ± 11.443 degree. The average difference from pre to post was 27 with t value 9.811 and $p < 0.001$. The analysis shows significant increment in angle from pre to post.

Figure 4:Representation of Pre and post KNEE ROM in group B

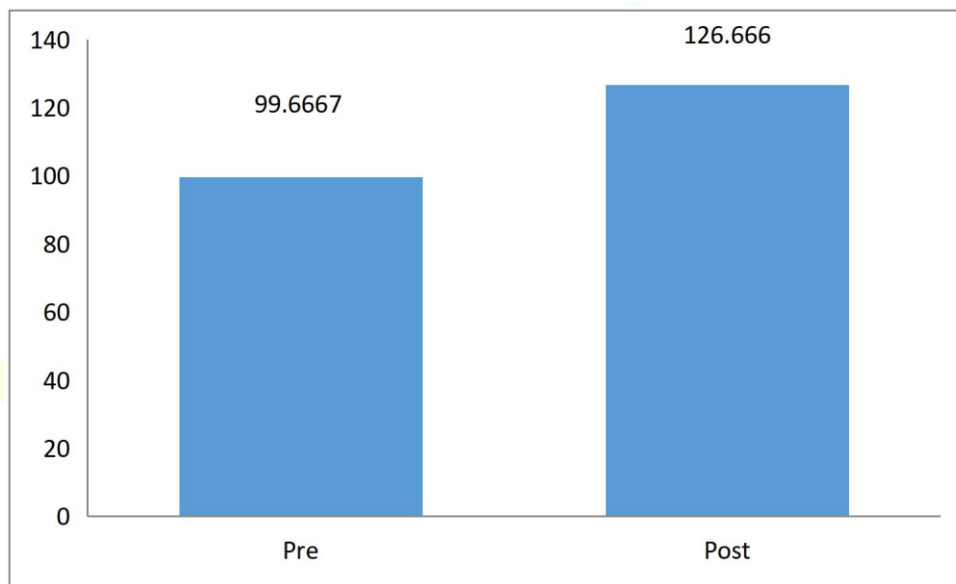


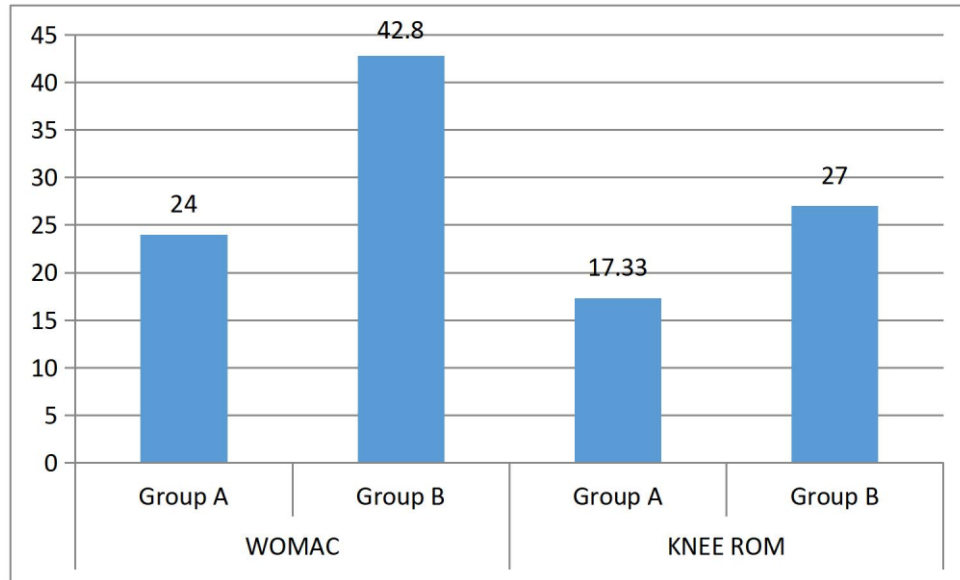
Table 5 : Comparison of right and left angles between group A and group B

| | Group | N | Mean | t value | P value |
|----------|---------|----|-------|---------|---------|
| WOMAC | Group A | 15 | 24.00 | 2.818 | 0.009 |
| | Group B | 15 | 42.80 | | |
| KNEE ROM | Group A | 15 | 17.33 | 2.739 | 0.010 |
| | Group B | 15 | 27.00 | | |

The analysis shows average decrement in WOMAC score of group A was 24.0 and group B was 42.8 with $p < 0.05$, indicated there is significant difference between group A and group B. WOMAC score decrement is significantly more in group B.

The analysis shows average decrement in KNEE ROM of group A was 17.33 and group B was 27.0 with $p < 0.05$, indicated there is significant difference between group A and group B. KNEE ROM increment is significantly more in group B.

Figure 5: Representation of improvement in WOMAC and KNEE ROM



DISCUSSION:

IN GROUP ‘A’

With average age of 47.28.801 years according to my data analysis and T value 1.98 and P value 0.05, in this analysis shows there is no significant difference in age between group ‘A’ group ‘B’.

GROUP ‘B’
The average WOMAC score in group A was 46.8 ± 13.78 and post was $22.8 + 10.923$ average difference from pre to post was 24.0 with T-Value 7.7000 and $P < 0.001$. The analysis shows that decrement in WOMAC score from pre to post.

In Group-B.

The average WOMAC score is Group B was $57.066 + 5.257$ and post was 14.26 ± 9.3 , the averagedifference from pre to post was 42.8 with T value 7.25 and $P < 0.001$.

The Average knee Pre ROM was 101.01 ± 1.832 degree and post was 118.33 ± 1.751 degree, the average difference from pre to post was 17.3 with value 11.67 and $P < 0.001$. The analysis shows significant increment in angel from Pre to post.

The possible physiology of reduction in pain and improve ROM may be due to VMO strengthening and Isometric exercise along with seated clams.

However there is very power studies on the basis of this modified technique on OA Knee patients, this technique tends to enhance joint ROM as per data analysis and pain reduction as well.

Therefore, it is expected that joint range of motion and pain can be reduced by applying modified technique as compared to conventional technique which is being used by

Doctor/Therapist since many years.

CONCLUSION:

The conclusion of this study is based on the pre post mean measures of active knee flexion ROM and WOMAC scale score, between group A and group B which concluded that there is vast difference in overall condition of group B then group A .There was a significant difference seen on the basis of AROM in Group B than in Group A on comparisons of both the groups. As per data analysis and interpretation and clinical improvement, null hypothesis is rejected, and alternate hypothesis is accepted .There was vast difference in terms of pain, active knee flexion ROM amongthe patients in Group B then Group A.

6.1 LIMITATION AND RECOMMENDATIONS: This study was conducted with small sample size and in future, studies with a larger sample size can be conducted for better results. This study showed the Modified treatment has good effect on OA knee patients.

REFERENCES:

- 1 Debra Kushion¹ , Jessica Rheame¹ , Kim Kopchitz¹ , Stephen Glass^{*,2}, Gordon Alderink¹ andJann-Huei Jinn³
- 2..ING FOR KNEE OSTEOARTHRITIS AS COMPARED TO CONVENTIONAL PHYSICALTHERAPY . IJCRR. 2012;4(22): 91-98
Michelle J Lespasio, DNP, JD, ANP; Nicolas S Piuuzzi, MD; M Elaine Husni, MD, MPH; George F Muschler, MD; AJ Guarino, PhD; Michael A Mont, MD .Knee Osteoarthritis: A Primer . the Permanente Journal .2017; 16-183.
3. .Ashraf Ramadan Hafez¹ , Aqeel Mohammed Alenazi², Shaji John , Kachanathu³, Abdulmohsen Meshari Alroumi⁴ and Elham Saed Mohamed⁵ . Knee Osteoarthritis: A Review of Literature . Austin publishing group. 2014 ;1(5). 1-8.
4. I Haq, E Murphy, J Dacre .Osteoarthritis. postgrad med J. 2003; 377-383.
5. .David J Hunter, David T Felson . Osteoarthritis . BMJ .2006;332: 639-642.