

Research Article

Osteoarthritis of knee joint - role of quadriceps exercises

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ABSTRACT

Background: Osteoarthritis of knee joint is a common clinical condition among patients attending orthopaedics outpatient department. The role of quadriceps exercises in its management is not effectively stressed. Hence this study was carried out to assess the role of Quadriceps exercises in management of Osteoarthritis of Knee and reduce the morbidity associated with it.

Methods: A total of one hundred patients in the age group of 40-65 years and suffering from mild to moderate Osteoarthritis of the knee joint were included in the study. Subjects were divided into two groups, Group I receiving drug therapy only and Group II receiving physiotherapy also, in the form of quadriceps exercises. Data was recorded on a proforma designed to assess symptomatic relief after two weeks.

Results: Participants in group II with exercise program had improvements in physical function and symptom relief, decrease in knee pain and increase in range of motion, more than that of participants in group I. It was observed that majority of the study subjects, 39 (78%) had excellent result in group II, whereas 12 (24%) patients from group I had poor result.

Conclusions: There is relationship between age, sex and quadriceps exercise with osteoarthritis of knee. Moderate quadriceps exercise is a safe and effective prevention and therapy for Osteoarthritis of knee.

Keywords: Age, Osteoarthritis, Quadriceps exercises, Knee pain

INTRODUCTION

Osteoarthritis (OA) is a chronic degenerative joint disease with progressive destruction of articular cartilage and decrease of synovial fluid that lubricates those joints. It progresses slowly with usual signs and symptoms being pain and limitation of the range of motion.¹ It is the commonest form of arthritis. Its prevalence in India is (22% to 39%).² It is also a leading cause of disability affecting 60-70% of the population older than 60 years. It usually affects large weight bearing joints, often the knee.

The worldwide prevalence estimate for symptomatic OA is 9.6% among men and 18% among women. It accounts for the decrease in activities of daily living (ADL) in elderly dependent population in the community. High risk population includes female gender, old age and

overweight. Among females, the prevalence of OA is said to increase during menopausal age. Many studies have shown that loss of oestrogen at the time of menopause increases the women's risk of getting osteoarthritis.

A hospital based study was carried out with a purpose to assess the effectiveness of quadriceps exercises in management of OA among the study population.

METHODS

A hospital based study was carried out for a period of six months at our hospital and all the patients in the age group of 40-65 years attending Orthopaedics outpatient department, and suffering from mild to moderate Osteoarthritis (OA) of the knee joint, which was diagnosed from symptoms, clinical examinations and

radiographic findings were included in the study. Patients below the age of 40 years and above the age of 65 years and also patients with knee deformity or history of recent trauma were excluded. After obtaining informed consent, study subjects were alternatively divided into two groups, one group (Group I) receiving drug therapy alone in the form of non-steroidal anti-inflammatory drugs and the other (Group II) receiving physiotherapy in the form of quadriceps exercises as well along with drug therapy. Physical therapy was performed with Isometric static quadriceps contraction in supine position with knee extended. It was repeated for around 10min and for two sittings every day. In general the goals of physical therapy are to maximize quadriceps strength while minimizing the joint reaction force and stress,^{3,4} thereby reducing degeneration of joint.

Data was recorded on a proforma designed to assess symptomatic relief after two weeks. Questionnaire focused on pain, swelling and range of motion. The results were compared and analyzed.

RESULTS

A total of one hundred subjects were enrolled in the study of whom 34 (34%) were males and 66 (66%) were females. Age and sex distribution shows that majority of them, 41 (41%) were in the age group of >60 years. Most of the women were homemakers while majority of the men in the study were unskilled workers with moderate to strenuous physical activity (Table 1) (Figure 1). After 2 weeks, the participants in group II with exercise program had improvements in physical function and symptom relief, decrease in knee pain and increase in range of motion, more than that of participants in group I.

Table 1: Age and sex distribution.

Age (yrs)	Male	Female	Total
40-49	06	18	24
50-59	13	22	35
≥60	15	26	41
Total	34	66	100

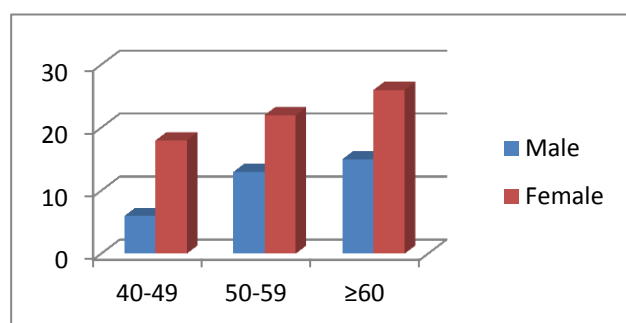


Figure 1: Age and sex distribution.

(Table 2) shows the distribution of results in group I, (Table 3) shows result distribution in group II and (Table 4) shows comparison of results among the two study groups. It was observed that majority of the study subjects, 39 (78%) had excellent result in group II, whereas 12 (24%) patients who had poor result belonged to group I (Figure 2).

Table 2: Distribution of results in Group I.

Group I	Male	Female	Total (%)
Excellent	07	17	24 (48)
Good	06	08	14 (28)
Poor	04	08	12 (24)
Total	17	33	50 (100)

Table 3: Distribution of results in Group II.

Group II	Male	Female	Total (%)
Excellent	13	26	39 (78)
Good	03	05	08 (16)
Poor	01	02	03 (06)
Total	17	33	50 (100)

Table 4: Results of both study groups compared.

Result	Group I No. (%)	Group II No. (%)
Excellent	24 (48)	39 (78)
Good	14 (28)	08 (16)
Poor	12 (24)	03 (06)
Total	50 (100)	50 (100)

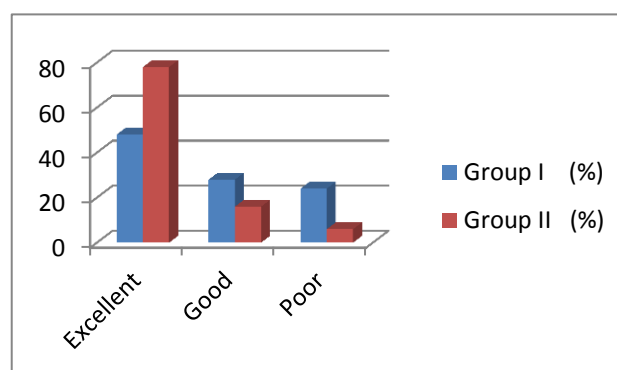


Figure 2: Results in both groups compared.

DISCUSSION

In our study it was observed that the percentage of people with osteoarthritis increased as the age increases. This observation is similar to that in other studies.^{5,6,7} OA was

more in women compared to men in our study (66% vs. 34% respectively). This difference can be possibly due to the lack of physical activity, mobility and higher prevalence of obesity among women in general. A study done by Iqbal MN et al also observed that OA was more in women (74%) compared to men (26%).⁸ A similar observation was also made in a study done by Sharma MK et al⁷ which was 70.1% vs 41.6%. In our study it was observed that women were more in number compared to men for any given age group.

CONCLUSION

Considering that side effects often limit the use of drug therapy and surgical intervention is often ineffective for mild or moderate knee OA, our results give strong support to moderate exercise as a safe, effective therapy for OA of the knee. OA is a major public health problem especially in people after the age of 50 years. In our study we observed that there is relationship between age, sex and quadriceps exercise with Osteoarthritis. The number of people with Osteoarthritis increased as the age increased; hence it is likely that if preventive measures can be taken in the earlier age groups Osteoarthritis of knee can be prevented.

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Conflict of interest: None declared

Ethical approval: Not required

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