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Influence of Non-Pharmacological Approach in Patients with Knee Arthritis in a Tertiary Care Hospital

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ABSTRACT

Arthritis is a very common condition that affects people of all ages and from all stages of life, including children and arthritis affects mostly between the 30-50 age groups. This is a prospective interventional study aimed in monitoring the influence of non-pharmacological approach in patients with knee arthritis. The study was conducted for a time period of 11 months from March 2017 to January 2018 and approved by the institutional ethical committee to conduct in hospital out-patient setting in a tertiary care hospital. A total of 100 members were included in the study, 13 members were excluded from the study as the patients did not respond properly. Among 87 members 44 patients were set as Test and the remaining 43 members were set as control. Most of the subjects who are suffering knee arthritis are in mild-moderate stage. The counseling about non-pharmacological approach which includes dietary modification, life style modifications and exercises through this counseling, the subjects who are in the moderate to severe category, got shifted to mild-moderate stage. Subjects who are in mild-moderate stage were moved to satisfactory knee score in which they can do their normal activities somewhat better when compared to the previous. So finally, we conclude that counseling about non-pharmacological approach in subjects with knee arthritis, brought about statistically significant improvement among the test group when compared with control group.

Keywords: Knee arthritis, Non-pharmacological approach, Counseling and Knee score.

INTRODUCTION

Arthritis is a very serious and extremely debilitating disease. Mostly it will affect seniors and it can also affect any age group. There are numerous types of arthritis and the treatment depends on the type of arthritis present. So before prescribing medications one should clearly identify the type of arthritis present. Doctors diagnose arthritis based on laboratory tests, X-ray and asking questionnaires. Arthritis can be treated by using medications and making modifications in life style. Life style modifications include dietary changes and physical exercises. If the arthritis is severe then the patient has to undergo surgery i.e., total knee replacement. According to us national library of medicine, arthritis can be defined as having trouble moving around or feel pain and stiffness in the body [1]. Generally arthritis can be inflammation of joints in one or more areas of the body [2]. It can be also generally defined as inflammation of joints due to infectious, metabolic or constitutional causes [3].

METHODOLOGY

This is a prospective interventional study aimed in monitoring the influence of non-pharmacological approach in patients with knee arthritis. The study was conducted for a time period of 11 months from March 2017 to January 2018. This study was approved by the institutional ethical committee to conduct in hospital out-patient setting in a tertiary care hospital. Study population was selected irrespective of age and gender with the consent to participate in the study. Patients with arthritis alone or arthritis with blood pressure people were selected in the study group. And the patients who were suffering with other diseases have been excluded from the study. The study population was categorized into two groups as control and test. A total of 100 members were included in the study, 13 members were excluded from the study as the patients did not respond properly. Among 87 members 44 patients were set as Test and the remaining 43 members were set as control.

The patient's demographics such as name of the patient, age, sex and phone numbers were obtained and then we interacted with patients enquiring about their symptoms, all the patients were asked the questions based on Oxford knee score. People who are in test group were provided with Patient information leaflets, and the Patients who are in control group were just asked questionnaire then the patients were called on telephone and again questioned based on questionnaire. In the case of test population the patients were asked about their dietary modifications and life style modifications. Almost all the people in the test group followed the modifications which are mentioned in the leaflets. And then control group was also called and asked to answer the questionnaire. Then calculations were done based on the knee score and then results were obtained by comparing control with test. Results were analyzed by using mean, variance and paired T test using statistical software [4-10].

RESULTS AND DISCUSSION

Osteoarthritis is a chronic inflammatory disease, which affects in one or more joints and causes pain, swelling and stiffness; these are particularly common in the knee joints. It can make it hard to do many everyday activities, such as walking or climbing stairs. It is a major cause of lost work time and a serious disability for many people. This study was conducted to improve the disease status of the patients by assessing their knee function and by providing counseling about non-pharmacological treatment of the disease. A total of 100 subjects were selected in the study, but out of 100, 87 subjects have participated in the study and remaining 13 subjects were excluded from study due to their unwillingness to participate in the study. The subjects were classified into two groups: Test group (n = 44) and control group (n = 43). All the subjects received pharmacological treatment from their medical practitioner [11-15].

Age wise distribution

Among test group subjects (Table 1 and Figure 1), 5 subjects (BMKS-44 ± 6.69 and AMKS-48.2 ± 6.6) are in between 30-40 years, 5 subjects (BMKS-41.4 ± 11.98 and AMKS-50.8 ± 5.44)) are in between 41-50 years, 18 subjects (BMKS-36.5 ± 7.83 and AMKS-45.3 ± 7.13) were in between 51-60 years, 9 subjects (BMKS-36.3 ± 6.40 and AMKS-47.9 ± 4.70)) were in between 61-70 years. 4 subjects (BMKS-36 ± 2 and AMKS-48 ± 2.44) were in between 71-80 years, 2 subjects (BMKS-33 ± 5.65 and AMKS-44 ± 4.24) were in between 81-90 years. From this data we determined that most of the subjects fell in 41-60 years age group [16,17].

Table 1: Age wise distribution among test population.

S. No	Age (years)	Test Results	
		Before	After
		(Mean ± SD)	(Mean ± SD)
1	30-40	5 (44 ± 6.69)	5 (48.2 ± 6.68)
2	41-50	5 (41.4 ± 11.98)	5 (50.8 ± 5.44)
3	51-60	18 (36.5 ± 7.83)	18 (45.3 ± 7.13)
4	61-70	9 (36.3 ± 6.40)	9 (47.9 ± 4.70)
5	71-80	4 (36 ± 2)	4 (48 ± 2.44)
6	81-90	2 (33 ± 5.65)	2 (44 ± 4.24)

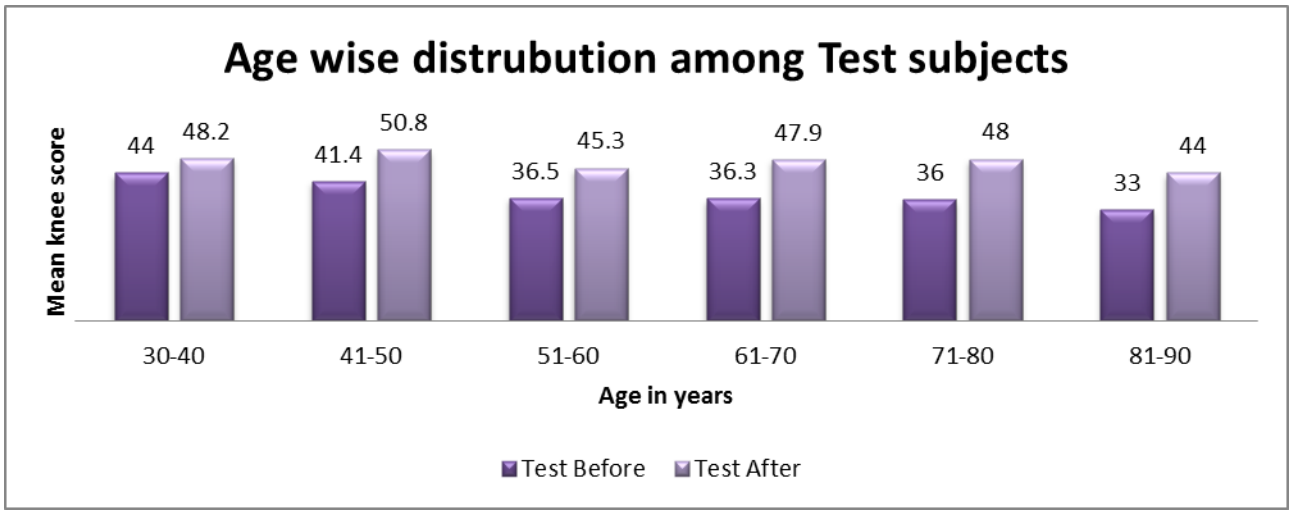

Figure 1: Age wise distribution among test subject.

Among the control group subjects (Table 2 and Figure 2), 6 subjects (BMKS-48.33 ± 8.47 and AMKS-47.16 ± 7.67) were in between 30-40 years,8 subjects (BMKS-28.62 ± 6.27 andAMKS-35.5 ± 6) were in between 41-50 years, 10 subjects (BMKS-35.5 ± 6 and AMKS-44.9 ± 5.97) were in between 51-60 years, 14 subjects (BMKS-34.71 ± 9.40 and AMKS-38.92 ± 6.83) were in between 61-70

years, 5 subjects (BMKS-34.2 ± 4.76 and AMKS- 38.6 ± 2.30) were in between 71-80 years and '0' subjects were in between 81-90 years. In the control group also we found that most of the subjects were in 41-60 years age group.

Table 2: Age wise distribution among control.

S. No	Age (years)	Control Results	
		Before	After
		(Mean ± SD)	(Mean ± SD)
1	30-40	6 (48.33 ± 8.47)	6 (47.16 ± 7.67)
2	41-50	8 (28.62 ± 6.27)	8 (35.5 ± 6)
3	51-60	10 (40.6 ± 4.40)	10 (44.9 ± 5.97)
4	61-70	14 (34.71 ± 9.40)	14 (38.92 ± 6.83)
5	71-80	5 (34.2 ± 4.76)	5 (38.6 ± 2.30)
6	81-90	0	0

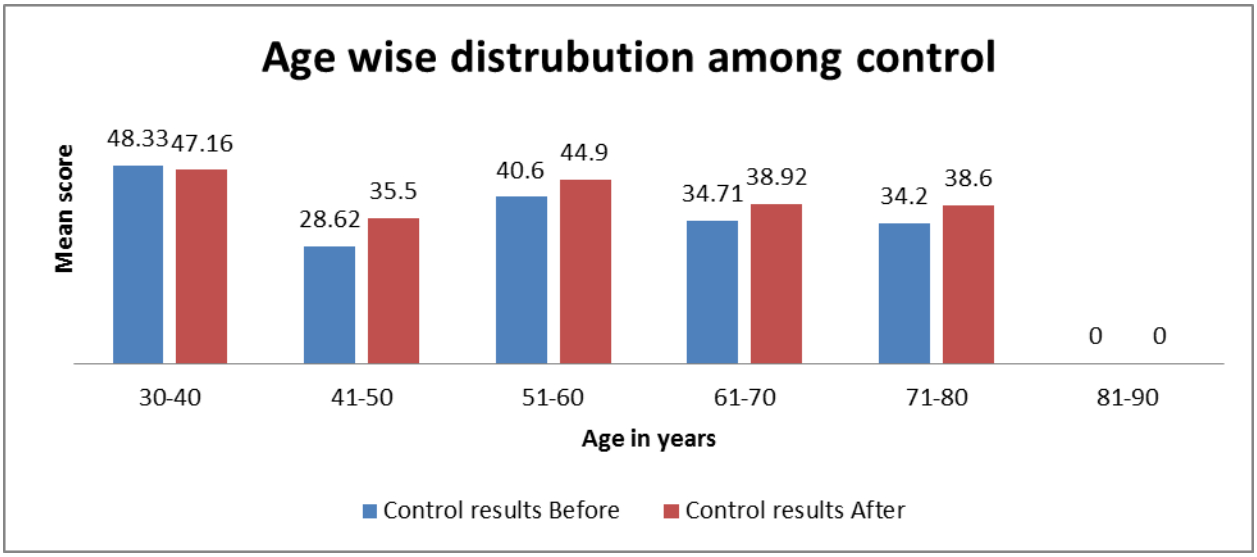

Figure 2: Age wise distribution among control subjects.

Gender wise distribution

Among the test group subjects (n=44) (Table 3 and Figure 3); 12 subjects (BMKS-39.75 ± 6.63and AMKS -48.88 ± 5.32) were male and 32 subjects (BMKS-36.87 ± 7.93 and AMKS-46.40 ± 6.20) were females. Among the control group subjects (n=43); 9 subjects (BMKS-35.44 ± 11.44 and AMKS-39.22 ± 9.14) were male and 34 subjects (BMKS-36.35 ± 7.87 and AMKS-41.20 ± 6.86) were female.

Table 3: Gender wise distribution.

S. No.	Sex	Results (Mean ± SD)			
		Test		Control	
		Before	After	Before	After
1	Male	12 (39.75 ± 6.63)	12 (48.88 ± 5.32)	9 (35.44 ± 11.44)	9 (39.22 ± 9.14)
2	Female	32 (36.87 ± 7.93)	32 (46.40 ± 6.20)	34 (36.35 ± 7.87)	34 (41.20 ± 6.86)

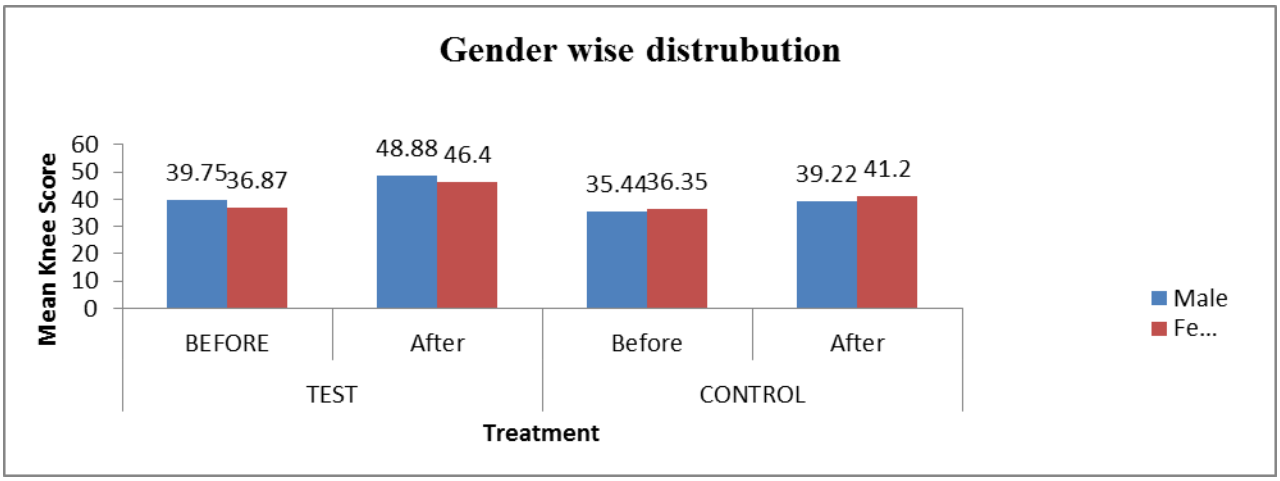

Figure 3: Gender wise distribution.

Based on disease state

Among the test group subject (Table 4 and Figure 4); 5 subjects (BMKS-51.4 ± 3.36) were found to have normal knee function before counseling and after counseling 19 patients (AMKS-52.21 ± 2.57) were found as normal. 10 Subjects (BMKS-43.3 ± 2.79) were found to have satisfactory knee function before counseling but after counseling 20 subjects (AMKS-45.05 ± 2.76) were found as satisfactory. 21 subjects (BMKS-35.61 ± 2.76) were found to have mild-moderate knee arthritis before counseling, but after counseling 5 subjects (AMKS-35.6 ± 3.50) only reported with mild-moderate knee arthritis. 8 subjects (BMKS-27.37 ± 2.44) have reported moderate-severe knee arthritis before counseling, after counseling there were no subjects with moderate- severe knee arthritis. Here most of the subject's disease state was well improved by using pharmacological and non- Pharmacological approach. Before counseling there were 21 subjects in mild-moderate arthritis category, but after counseling their number was changed and even it didn't get worst in one case also. So it was proved through non-pharmacological approach there is a definite improvement in disease state of the subject.

Table 4: Disease status among test population.

S. No	Disease status	Test (Mean ± SD)	
		Before	After
1	Normal knee function (49-60)	5 (51.4 ± 3.36)	19 (52.21 ± 2.57)
2	Satisfactory Knee function (40-48)	10 (43.3 ± 2.79)	20 (45.05 ± 2.76)
3	Mild-Moderate knee arthritis (30-39)	21 (35.61 ± 2.76)	5 (35.6 ± 3.50)
4	Moderate-Severe knee arthritis (20-29)	8 (27.37 ± 2.44)	0
5	Severe arthritis (0-19)	0	0

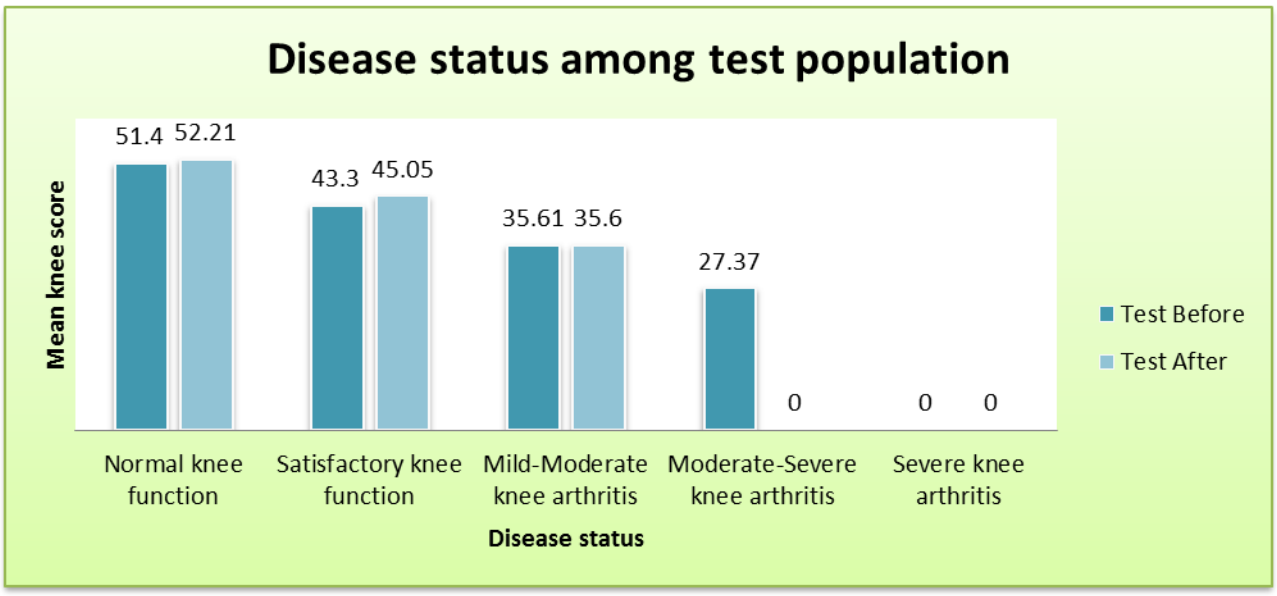

Figure 4: Disease status among test population.

Among the control group (Table 5 and Figure 5); 4 subjects (BMKS-52.5 ± 1) have reported normal knee function before Medical treatment, and their number has increased to 6 (52.83 ± 4.07) after a month later. 10 Subjects (BMKS-43.8 ± 2.29) reported ~~as~~ satisfactory knee function before treatment, after follow up their number has risen to 16 (AMKS-44.06 ± 2.82). 18 Subjects (BMKS-34.5 ± 2.57) reported mild-moderate knee arthritis before medical treatment, and their number was changed to 19 (AMKS-35.63 ± 2.36) after follow up. 11 Subjects (BMKS-26 ± 3.19) were reported moderate to severe knee arthritis before pharmacological treatment and their number came down to 2 (AMKS-27.5 ± 0.70) after month later. The above data reveals that there was no much difference in the disease status of subjects.

Table 5: Disease status among control population.

S. No	Disease status	Control (Mean ± SD)	
		Before treatment	**After treatment**
1	Normal Knee function	4 (52.5 ± 1)	6 (52.83 ± 4.07)
2	Satisfactory Knee function	10 (43.8 ± 2.29)	16 (44.06 ± 2.82)
3	Mild-Moderate knee arthritis	18 (34.5 ± 2.57)	19 (35.63 ± 2.36)
4	Moderate-Severe knee arthritis	11 (26 ± 3.19)	2 (27.5 ± 0.70)
5	Severe knee arthritis	0	0

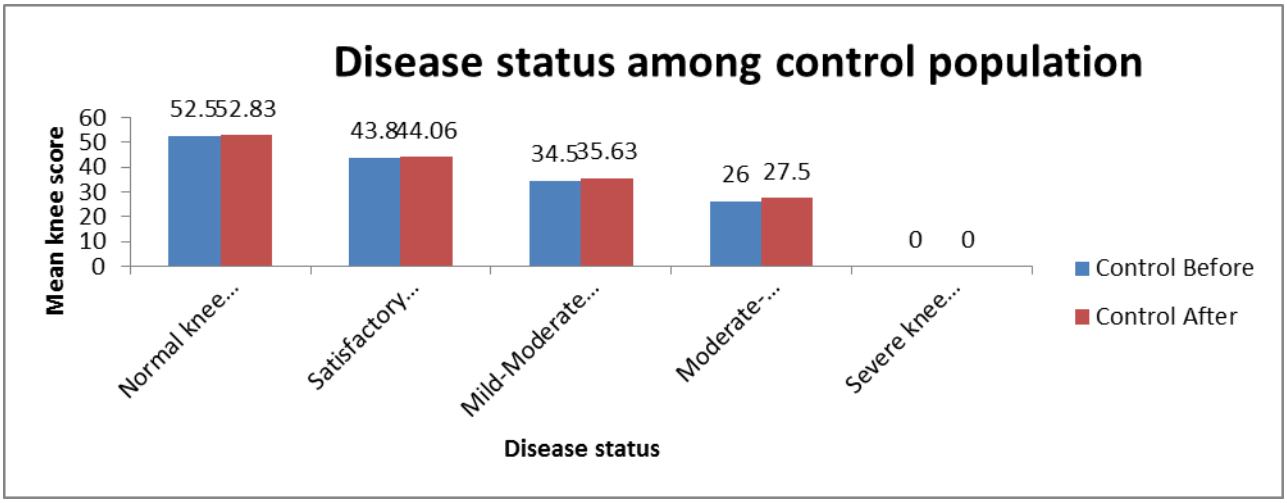

Figure 5: Disease status among control population.

Impact of non-pharmacological approach

Table 6 and Figure 6 shows about influence of non-pharmacological approach in patients with knee arthritis. Through our study we found that both control and test group obtained significant change in their disease state. But after providing counseling it was found to be there was more significant change in the disease state in the test group when compared to control group.

Dietary modifications

Foods that were followed

Among the study population out of 44 (100%) test subjects (Table 6 and Figure 6):

1. Pine apple intake was found as 54.54%
2. Cabbage intact was identified as 59.09%
3. Carrot input was determined as 65.9%

4. Cauliflower included diet was detected as 52.27%
5. Intake of radish was found to be 45.45%
6. Consumption of ginger was revealed as 34.09%
7. Intake of fish was recognized as 50%
8. Habit of taking egg was found to be 68.18%

Table 6: Diets that are taken during the study.

S. No	Diet taken	Sample mean
1	Pine apple	54.54%
2	Cabbage	59.09%
3	Carrot	65.90%
4	Cauliflower	52.27%
5	Radish	45.45%
6	Ginger	34.09%
7	Fish	50%
8	Eggs	68.18%

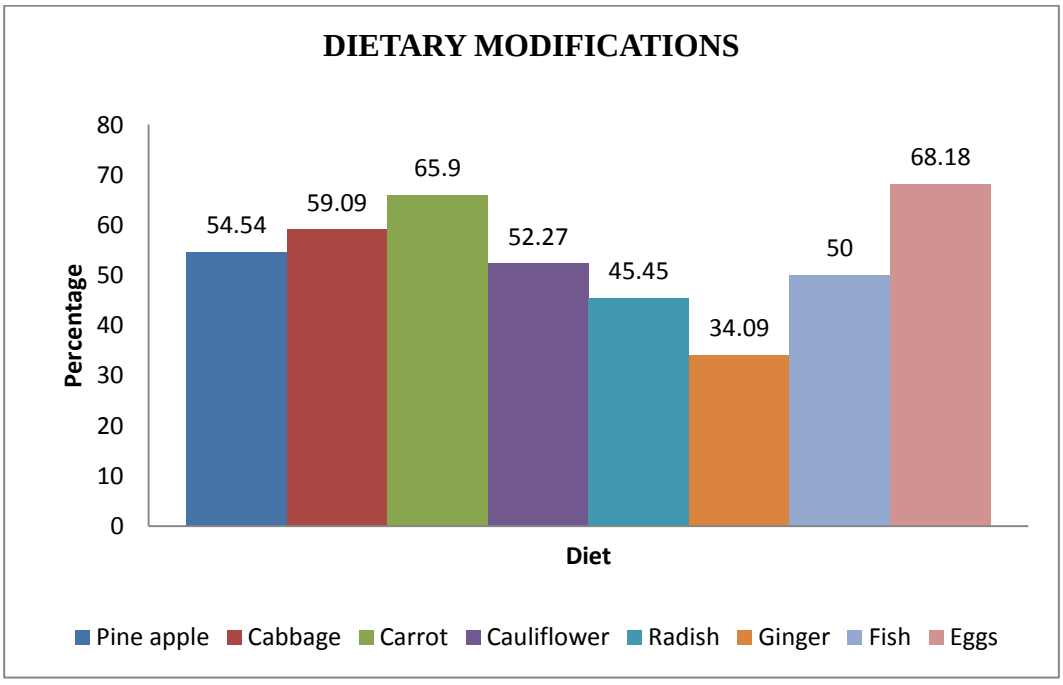

Figure 6: Diet modification graph.

Foods that were avoided

Through (Table 7 and Figure 7)

- % of subjects who stayed away from potato was found to be 88.63
- % of subjects skipped eggplant was recognized as 56.8
- % of subjects excluded tomato was detected as 54.55
- % of subjects avoided fries was determined as 54.54
- Reduction of salt intake was found as 56.81%
- Reduction of sugar intake was found as 54.54%
- % of subjects avoided consumption of cold drinks was 52.27%
- Baked/oily food intake was reduced by 52.27

Table 7: Diet that has been avoided.

S. No	Foods that are avoided	Sample mean
1	Potato	88.63%
2	Eggplant (Brinjal)	56.81%
3	Tomato	54.54%
4	Fries	54.54%
5	Salt	56.81
6	Sugar	54.54%
7	Cold drinks	52.27
8	Baked/Oily food	52.27%

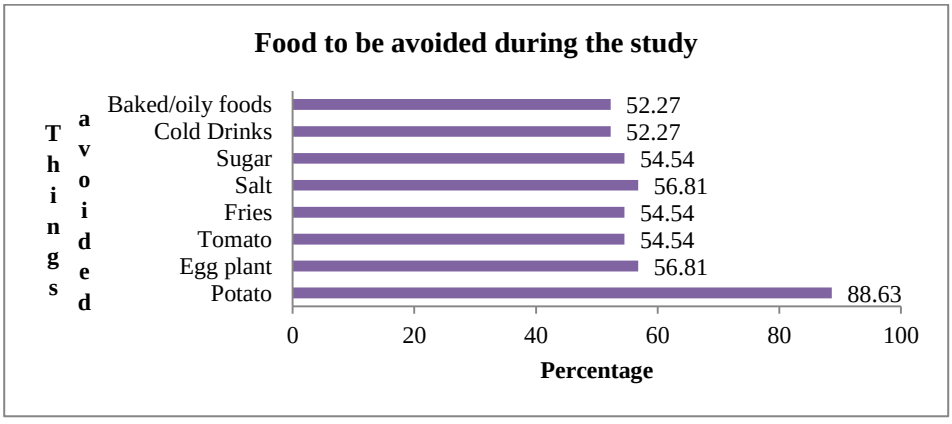

Figure 7: Food to be avoided during study.

Life style modifications that were followed

Through (Table 8 and Figure 8) it was found that 25% of the subjects were doing cycling after giving counseling, 15.9% of the subjects were doing weight lifting exercises which were instructed by their practitioner, 36.36% of subjects were using sandals in the home, 15.9% of subjects were on diet to reduce their weight, 38.63% reduced their work load either at home or work-place and 22.72% consulted physiotherapists and they were doing some physical exercises (Figure 9).

Table 8: Exercises followed during the study.

S. No	Exercises followed	Sample mean
1	Cycling	25%
2	Weight lifting	15.90%
3	Using sandals	36.36%
4	Weight reduction	15.90%
5	Work- load reduction	38.63%
6	Physiotherapy	22.72%

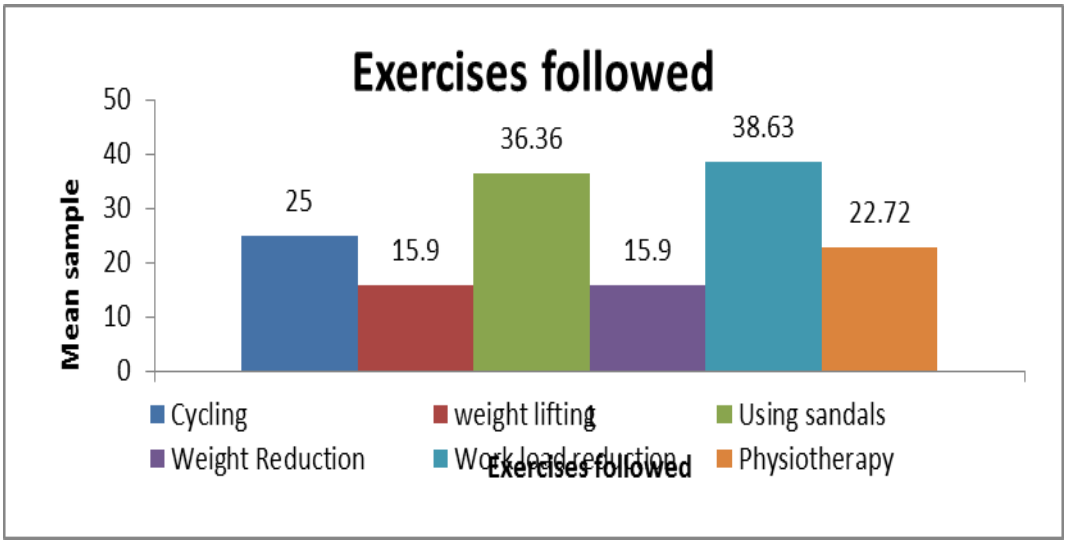

Figure 8: Exercise followed.

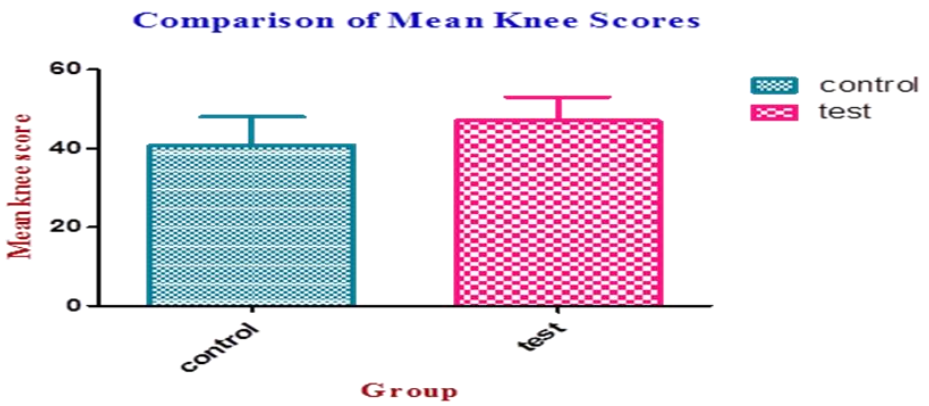

Figure 9: Comparison of mean knee scores.

CONCLUSION

Arthritis is a very common condition that affects people of all ages and from all stages of life, including children. Through the literature we came to know that arthritis affects mostly between the 30-50 age group, from our study we observed that age is directly proportional to disease status. And by increase in age the probability of occurring disease is also increased. Females are more prone to this disease and they are suffering more with this disease. Most of the subjects who are suffering knee arthritis are in mild-moderate stage. The counseling about non-pharmacological approach which includes dietary modification, life style modifications and exercises through this counseling, the subjects who are in the moderate to severe category, got shifted to mild-moderate stage. Subjects who are in mild-moderate stage were moved to satisfactory knee score in which they can do their normal activities somewhat better when compared to the previous. So finally, we conclude that counseling about non-pharmacological approach in subjects with knee arthritis, brought about statistically significant improvement among the test group when compared with control group.

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