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Effects of Self-Management program on Self-Efficacy of Clients with Osteoarthritis

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***Abstract*:**

PURPOSE: This study is undertaken to assess the Effects of Self-Management program on Self-Efficacy of Clients with Osteoarthritis.

METHODS:

Patients diagnosed to have Osteoarthritis of knee (OA) attending outpatient department at Poigai primary health centre were purposively selected and randomly allotted to experiment group (n=200) and control group (n=200). The scientific design adopted in this study was true experimental pretest and Posttest control group design. The research study was done in the outpatient department at Poigai Primary health centre, Vellore District, India. Self-Management education program consisting of instructions on weight control measures, home remedies to manage symptoms of OA, and exercises was administered to experiment group. Self-efficacy of patients was measured using arthritis self- efficacy scale at baseline, with reinforcement at 3rd month and follow-up at 6th month. The control group received the routine treatment until 6 months.

Results:

Out of 400 patient's majority of them were in the age group of 51 to 60years (31%) in experiment and 30 % in the control group. Women were more 65% in study group and 63% in control group than men. Overall self-efficacy score in pre-test of experiment group was 76.66 and control group score was 75.44. Pain mean score difference was statistically significant between pre-test, 3rd and 6th month (17.94, 26.88 and34.41) in experiment group (p=0.001). In post- test about 21% had low self-efficacy, 35% moderate self-efficacy and 44 % had high self-efficacy in experimental group. In control group, 90% had low level self-efficacy, the overall self-efficacy mean score in study group was 130 and control group was 77.69, difference in mean score is highly significant (P=0.001).

Conclusion:

The results of the study show that self-management program is more effective in improving the self-efficacy of patients compared to the routine treatment. It is the responsibility of the health care professional to plan and implement self-management education programs to reduce dependency and improve the quality of life in people with OA.

***Index Terms* – Determine, Effects, self-Management Program, Self-Efficacy, Clients/Patients, Osteoarthritis.**

1.0 INTRODUCTION

"Nobody can take away your pain, but don't let pain take away your happiness"

Stephanie Walters.

Osteoarthritis (OA) is a degenerative ailment of the joint and it occurs due to damage caused to cartilage of joint and bones beneath it. It is progressive and results in loss of function, activeness, and loss in quality of life, which in turn also cost health care and societal burden [1]. By 2050 it is expected that elderly aged over sixty years will account for > 20% of the world's population. So worldwide one hundred and thirty million people will be affected by OA. By the year 2050, 40 million people will be extremely incapacitated due to Osteoarthritis. [2]. Epidemiological statistics from Oxford college has documented that India registers more than 10 million cases of osteoarthritis every year. OA of knee remains the commonest of all specific rheumatic disorders in many communities [3]. The parts affected in OA knee includes the cartilage, and the synovium around it. The main symptoms of knee OA are joint pain, joint stiffness, and disabilities [4]. In woman osteoarthritis of knee is reported to increase during premenopausal age and remains high during menopause [4]. The commonly affected age group among the women (25.7%) by OA of knee are between forty to eighty years. According to the 2011 census of India the elderly population has increased to 8.6% with life expectancy of 68.2 years [5]. So Indian female tend to live with this problem of osteoarthritis for long time as compared to women in other nations. Utilization of needed skills and expertise knowledge of health- care professional to provide specific education in self-management program will provide a suitable environment to bring the needed modification in the behaviour that cannot be achieved by any other means.

2.0 NEED FOR THE STUDY

Our lives are made up of group of movements that we often do voluntarily without much thinking such as walking, sitting, standing, lifting, pulling, and pushing. Whereas certain debleating disorders like osteoarthritis (OA) steals our capability to do these movements unburdened and without pain. It does affect the independence, work, relationships, family life the things we rightly expect and have all the rights to lead a quality life. People with arthritis refrain from talking about their experience as they feel much cannot be done about it and others would feel they are complaining persistently about their illness. The predominant barriers in treatment of OA, is reluctance to approach healthcare. The disability developed by people with arthritis not only affect their job but has great influences on the economic conditions of the individual very badly [6]. By 2025 India can also become the capital for osteoarthritis with exceeding 60 million cases in the world. Osteoarthritis remains the frequently occurring form of arthritis in India with over 15 million people each year [7]. Although the prevalence and burden of OA in India is high, there is little literature posted on epidemiology and the anticipated therapy results of the subcontinent. There is very scarce information about the utilization of health facilities by people with OA. This study aims to increase the benefits of physical activity and enhance self- efficacy which is the strongest and most steady indicator of change in behaviour, physical activity and over its long- term maintenance. Treating and caring for adults with osteoarthritis to be considered a priority health need of the society. The environment they live in such as homes, working area and community need to be designed inclusively so that people surviving with osteoarthritis are not separated from society. People with osteoarthritis to be given every opportunity to remain independent in their daily activities if possible [7]. In this study the researcher HAS used package of interventions that focusses on weight reduction, Nutrition supplements, home remedies to manage pain and reduce inflammation, measures to protect joints and exercises. Moreover, the researcher having worked with orthopaedic patients suffering from osteoarthritis who suffer a major disability and depend on care givers for carrying out their daily routines the researcher developed the felt need of planning self- management program that would really enhance the quality of the client's life in turn to a greater extent. Constant motivation, good awareness and inculcating adequate knowledge will enhance positive attitude and help clients modify their life.

3.0 OPERATIONAL DEFINITION

Determine

It refers to assessment of the impact produced by self-management program on self-efficacy of patients with OA knee.

Effects

In this study effects refer to the improvement occurred in self- efficacy of patients in performing day to day activities and managing of symptoms of OA which will be evaluated by the difference in the pre-test and post-test scores.

Self- Management Program

Self-Management Program consists of techniques that the clients with OA will utilize to deal such as management of OA manifestations like pain, adaptation to lifestyle modifications like weight reduction measures, intake of nutritional supplements that strengthen the joints and reduce inflammation, use of home remedial measures to manage OA, joint protection tips and performance of exercises regularly.

Self- Efficacy

Self-Efficacy is "the potentiality to manage the manifestations, therapy, physical and psychosocial consequences, and life-style changes inherent in dwelling with arthritis".

Clients/ Patients

Refers to the people (Male and Female) attending the outpatient department at Primary health centre for the management of osteoarthritis of knee.

Osteoarthritis

It is a degenerative and debilitating chronic illness that affects any joint in the body most commonly the weight bearing joints accompanied by pain, stiffness and swelling. In this study the focus of the researcher is on clients with osteoarthritis (OA) of knee.

4.0 OBJECTIVES

To assess the pre-test self-efficacy of clients with osteoarthritis.
To compare the post- test scores of self-efficacies between the experiment and control group
To assess the effectiveness of self-management program on self-efficacy of clients with OA
To associate post- test self- efficacy score with selected demographic and clinical variables.

5.0 HYPOTHESIS OF THE STUDY

There will be a difference between self-efficacy in pain before and after self-management program.
There will be a difference between self- efficacy in function of clients before and after self- Management program.
There will be a difference between self- efficacy in other symptoms of clients before and after self- management program.
There will be a difference between overall self- efficacy in clients before and after self- management program.

6.0 ASSUMPTIONS

Patients with OA knee may have less self-efficacy with routine treatment.
Patients with OA knee may lack awareness regarding self-management programs to manage symptoms of OA.
Self-management programs will promote the self-efficacy of patients with OA knee in experiment group.

7.0 DELIMITATIONS

This study will be confined to the patients with osteoarthritis.

8.0 METHODOLOGY

The current research study adopted quantitative research approach to accomplish the objectives quoted in this study. It is a true experimental study with pretest and Posttest control group design. The target population for the study is patients diagnosed with osteoarthritis of knee attending the outpatient clinic in primary health centre, Vellore district, Tamil Nadu, South India. All patients who are undergoing treatment in the outpatient department for OA knee and had fulfilled the inclusion criteria were randomly allotted to experiment and control group by lot method. The sample size of this study was 400 patients with OA of knee who were equally divided as 200 for experimental group and 200 for control group. The research was conducted in three phases. In Phase I Pre-test was conducted by interviewing the patients using the demographic questionnaire and Arthritis Self-Efficacy Scale. 15 minutes was taken to complete both the questionnaire. On the same day the first and second part of the comprehensive self-management program as group teaching cum discussion regarding weight reduction measures, dietary supplements, home remedies and demonstration on exercises was done and the booklet containing the same information was distributed. The session included a group of 10 members. The whole session lasted for 35 minutes whereas patients in the control group continued the routine treatment with no intervention. In Phase II the first post-test was done on the 3rdth month. Interview was conducted with the patients of the experimental and control group using the self-efficacy scale. Anthropometric measurements were taken. As part of reinforcement of the same interventions were done on the 3rd month visit with the use of poster. In phase III the second post-test was done on the sixth month. After the interview for the control group self-management education was discussed and pamphlets were distributed. Data were analyzed based on the objectives and the testing of hypothesis using descriptive and inferential statistics.

9.0 RESULTS

Out of 400 patient's majority of them were in the age group of 51 to 60years (31%) in experiment and 30 % in the control group, followed by 41 to 50 years both in the experiment group (56%) and 53% in control group. In this study Females were more with OA knee than males, 65.50% in experimental group and 63% in control group. About less than fifty percent (45%-49%) of the samples in both the groups have completed primary school and middle school.26 to 27% of people in the study group are either unemployed or unskilled workers

More than half of the patients (55% to 61%) were Hindus. The dietary pattern of the samples show that 90- 91% of the samples consume both vegetarian and non-vegetarian diet The type of osteoarthritis commonly prevailing in both the groups is primary arthritis with study group representing 95% and control group 92%. Only about 5% in the study group and 8% in the control group who suffered knee OA for about 7 to 8years. About 73% in study group and 70% in experimental group rely on medication for pain relief. Majority of individuals (63%) in study group and 66% in control group did not use any alternative measures for their condition. Almost 40% of individuals in both the groups have hypertension, few have diabetes (20 to 27%) and the remaining (20 to 25%%) have both hypertension and diabetes mellitus in association with knee OA. The mean BMI of patients in pre-test is 26.36 compared to post-test value 25.51 with P value 0.002 for weight and 0.01 for BMI. The pre -test score in experimental group is17.95 and control group have 18.06. Function self-efficacy score of experiment group is 35.24 and control group have a score of 34.79. Other symptom self-efficacy score in experiment group is 23.47 whereas control group clients have 22. Overall self-efficacy score in pre-test of experiment group was of 76.66 and control group score is 75.44. Pain mean score difference was statistically significant between pre-test, 3^{rd,} and 6th month (17.94, 26.88 and34.41) in experiment group (p=0.001). There was a significant difference between experiment group pre-test, 3rd month and 6th month function score (35.25, 46.38, 56.24) and p=0.001. Other symptoms score difference is statistically significant

between pre-test, 3rd, and 6th month (23.47, 33.68, 39.66) and p=0.001. There is no significant difference between control group pre-test, 3rd month and 6th month symptoms score.

Table1: DESCRIPTION OF DISEASE RELATED VARIABLES

		Group			
		Experiment(n=200)		Control(n=200)	
		n	%	n	%
Type of Osteoarthritis	Primary	190	95.00%	184	92.00%
	Secondary	10	5.00%	16	8.00%
Duration of the Disease	0 - 2 years	52	26.00%	47	23.50%
	3 - 4 years	92	46.00%	89	44.50%
	5 - 6 years	45	22.50%	49	24.50%
	7 - 8 years	11	5.50%	15	7.50%
Location of Pain	Right knee	2	1.00%	2	1.00%
	Left knee	3	1.50%	4	2.00%
	Both knees	195	97.50%	194	97.00%
Pain relief measures	Medication	146	73.00%	139	69.50%
	Exercise	34	17.00%	43	21.50%
	Special Diet	20	10.00%	18	9.00%
Alternative Therapy	Mud pack therapy	29	14.50%	20	10.00%
	Yoga	33	16.50%	34	17.00%
	TENS	13	6.50%	14	7.00%
	None	125	62.50%	132	66.00%
Co-Morbidity	Diabetes Mellitus	40	20.00%	55	27.50%
	Hypertension	81	40.50%	74	37.00%
	Both a & b	50	25.00%	41	20.50%
	None	29	14.50%	30	15.00%

Table 2 shows the Disease related information of osteoarthritis clients those who have participated in this study. The type of osteoarthritis commonly prevailing in both the groups is primary arthritis with study group representing 95% and control group 92%. The samples duration of the disease is only about 5% in the study group and 8% in the control group who suffered knee OA for about 7 to 8years and this reflects the chronicity of the condition. Less than fifty percentage of participants in both the groups suffered from knee OA for 3-4 years. About 73% in study group and 70% in experimental group rely on medication for pain relief and others have reported that exercise and diet also is used for management of pain. Almost 40% of individuals in both the groups have hypertension, few have diabetes (20 to 27%) and the remaining (20 to 25%%) have both hypertension and diabetes mellitus in association with knee OA. Only 15% of samples in both the group's report absence of comorbidity.

Table 2: PERCENTAGE OF PRETEST OVERALL SELF EFFICACY SCALE SCORE

Sub scales of Self efficacy	Maximum score	Group			
		Experiment		Control	
		Mean	%	Mean	%
Pain self-efficacy	50	17.94	35.88%	18.06	36.12%
Function self-efficacy	90	35.25	39.17%	34.80	38.67%
Other symptom self-efficacy	60	23.47	39.12%	22.58	37.63%
TOTAL	200	76.66	38.33%	75.44	37.72%

Table 2 depicts pretest scores of control group and experimental group with osteoarthritis of knee. The percentage of self-efficacy score is more in function self- efficacy (39.17) scale and other symptoms self-efficacy scale than in pain self -efficacy score (35.88%) in both experiment and control group. This reveals that all patients experience more pain compared to other associated problems of OA knee which corelates with lot of literature reviews where pain is the predominant symptom in OA.

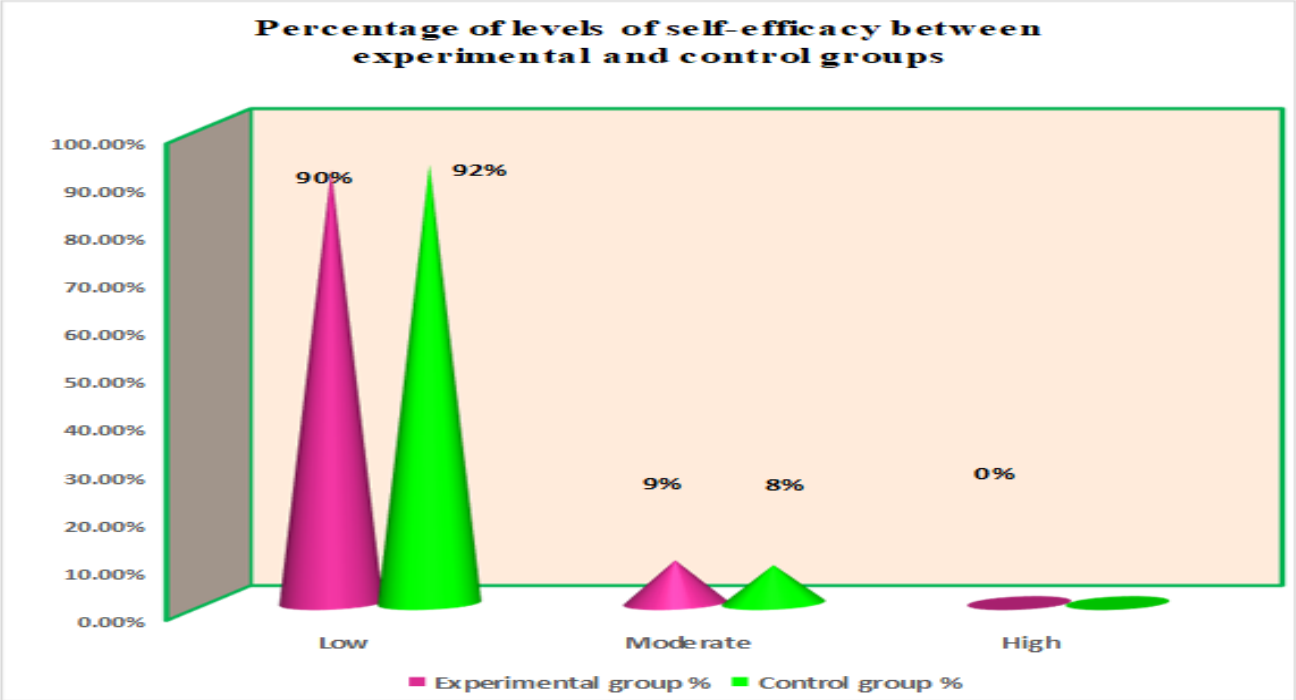

Fig 1: Percentage of pre-test level of self- efficacy among experiment and control group

Figure 1 shows the comparison of pre-test level self-efficacy score between both the groups. In experiment group 91% and 92% in control group have low level self- efficacy. Moderate level of self-efficacy is reported by 9% in experimental and 8 % in control group and none of them had high level self-efficacy. Statistically there is no significant difference between experiment and control group. Statistical significance was calculated using chi square test.

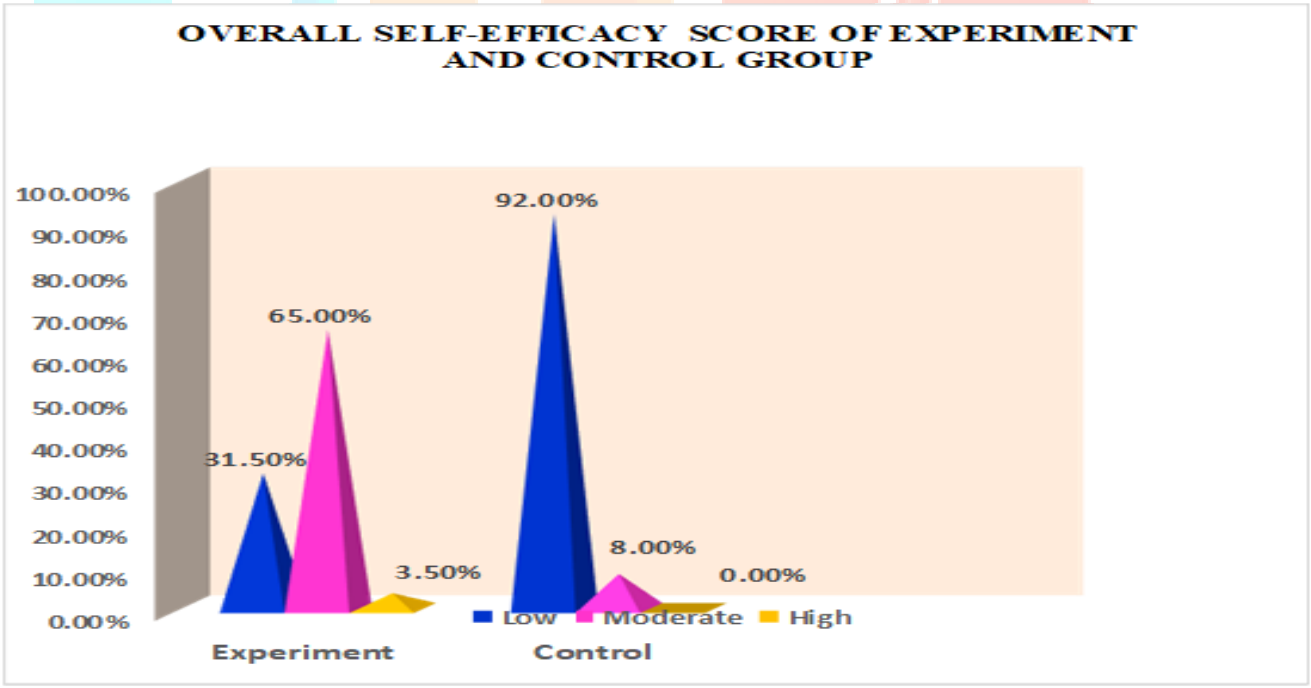

Fig.2 Percentage of Post- test 1 Overall level of self-efficacy in experiment and control group

Figure 2 interprets overall level of self-efficacy scores in experiment and control group. In experiment group, 31.50% of them have low level of score, 65.00% of them have moderate level self-efficacy and 3.50% of them had high level self-efficacy. In control group, 92.00% of them have low level self-efficacy score, 8.00% of them had moderate level and none of them have high level efficacy score. The difference is statistically larger and highly significant between experiment and control group ($\chi 2=155.28$ P=0.001).

Table 2: COMPARISON OF POSTTEST-2 LEVEL OF SELF EFFICACY BETWEEN EXPERMENT AND CONTROL GROUP

	Self- efficacy	Experiment group		Control group		Chi square test
		n	%	n	%	
Pain	Low	45	22.50%	184	92.00%	
	Moderate	56	28.00%	16	8.00%	**χ^2=205.59**
	High	99	49.50%	0	0.00%	**P=0.001***(S)**
	Total	200	100.0%	200	100.0%	
Function	Low	51	25.50%	177	88.50%	
	Moderate	63	31.50%	23	11.50%	**χ^2=174.23**
	High	86	43.00%	0	0.00%	**P=0.001***(S)**
	Total	200	100.0%	200	100.0%	
Other symptoms	Low	47	23.50%	179	89.50%	
	Moderate	71	35.50%	21	10.50%	**χ^2=186.27**
	High	82	41.00%	0	0.00%	**P=0.001***(S)**
	Total	200	100.0%	200	100.0%	
Overall	Low	42	21.00%	180	90.00%	
	Moderate	70	35.00%	20	10.00%	**χ^2=201.56**
	High	88	44.00%	0	0.00%	**P=0.001***(S)**
	Total	200	100.0%	200	100.0%	

P<0.001 very high significant NS= not significant

Table 2 assess the level of self-efficacy score in experiment and control group in post-test 2

Considering level of pain self- efficacy score in experiment group, 22.50% of them are having low level of score, 28% are in moderate level and 49.50% of them achieved high level score. nearly 50% of the participants have high mean score that indicates acquisition of high self-efficacy because of the intervention. In control group, 92% have low level self- efficacy pain score, 8% have moderate level and none have high level of score. Statistically there is a significant difference between experiment and control group. Statistical significance was calculated using chi square test (χ2=205.59 P=0.001**).**

Table 3: EFFECTIVENESS SELF MANAGEMANT PROGRAM AND GENERALIZATION OF SELF EFFICACY GAIN SCORE

	Group	Maximum score	Test	Mean score	% of Mean score	Mean self-efficacy gain score with 95% Confidence interval	Percentage of Mean self-efficacy gain score with 95% CI
Pain	Experiment	50	Pre-test	**17.95**	35.90%	**↑16.46(15.31 – 17.60)**	**↑32.90% (13.47 – 30.62)**
		50	Post-test	**34.41**	68.82%		
	Control	50	Pre-test	**18.06**	36.12%	**↑0.20(-0.16 – 0.56)**	**↑0.40% (-0.32 – 1.12)**
		50	Post-test	**18.26**	36.52%		
Function	Experiment	90	Pre-test	**35.24**	39.16%	**↑21.00(18.02 – 23.95)**	**↑23.33% (20.08 – 26.61)**
		90	Post-test	**56.24**	62.49%		
	Control	90	Pre-test	**34.79**	38.66%	**↑1.64(-0.06 – 3.37)**	**↑1.82% (-0.07 – 3.74)**
		90	Post-test	**36.45**	40.50%		
Symptom	Experiment	60	Pre-test	**23.47**	39.12%	**↑16.18(14.43 – 17.93)**	**↑26.96% (-24.05 – 29.88)**
		60	Post-test	**39.66**	66.10%		
	Control	60	Pre-test	**22.58**	37.63%	**↑0.41(-0.06 – 0.88)**	**↑0.68% (-0.10 – 1.47)**
		60	Post-test	**22.99**	38.32%		
Overall	Experiment	200	Pre-test	**76.66**	38.33%	**↑53.64(49.13 – 58.13)**	**↑26.82% (24.56 – 29.06)**
		200	Post-test	**130.30**	65.15%		
	Control	200	Pre-test	**75.44**	37.72%	**↑2.25(-0.20 – 4.70)**	**↑1.12% (-0.10 – 2.35)**
		200	Post-test	**77.69**	38.85%		

Table No 3 shows the effectiveness of self-management program on self-efficacy. Considering Pain self-efficacy score experiment group gained 32.90 pain score after self- management program whereas control group gained only 0.40% after routine care. Difference of gain score between experiment and control group shows the effectiveness of the study. In function self-efficacy score experiment group gained 23.33% function score after self-management program whereas control group gained only 1.82 after routine care. Difference of gain score between experiment and control group shows the effectives of the study.

In other symptom self-efficacy score experiment group gained 26.96% function score after self-management program whereas control group gained only 0.68 after routine care. Considering overall self-efficacy score experiment group gained 26.82% function score after self-management program whereas control group gained only 1.12 after routine care. Difference of gain score between experiment and control group shows the effectives of the study.

10.0 Discussion:

The pre-test self- efficacy results revealed that about 91% of patients in experiment group and 92% patients in control group have low level self- efficacy. Moderate level of self-efficacy is reported by 9% in experimental and 8 % in control group and none of the groups have high level self-efficacy. Statistically there is no significant difference between experiment and control group. The cause for the low mean score among the groups could be because of lack of knowledge group did not use any alternative measures for their condition. Thus, people in both the experiment and control groups had low self- efficacy score with the routine treatment. The mean BMI of patients in pre-test is 26.36 in experimental group and 26.04 in control group, the difference was meagre and statistically not significant. The patients in both the groups fall under overweight category based on the WHO criteria for obesity 2019. BMI can also be attributed as one of the causes for low self-efficacy in both the groups. The first assumption of the study is thereby accepted since majority of patients in both the groups have low self-efficacy with routine treatment.

Similar Study on occurrence of knee osteoarthritis and related factors in India revealed OA knee increased with increase in BMI. OA knee was low in underweight people 28% (P = 0.007) as compared to normal weight and obese individuals (33%). Occurrence was more in people who are overweight and obese [8].

Post- test 1 was done at 3rd month and post-test 2 was done at 6th month for the experiment and control group to find the difference in mean scores in self-efficacy pain scale, function scale and other symptoms scale. Considering pain score in experiment group, repeated measures ANOVA F- test shows that, pain difference is statistically significant between pre-test, 3rd and 6th month (17.94, 26.88 and34.41), F value was 185.22 and p=0.001. There is a significant difference between experiment group pre-test, 3rd month and 6th month pain score. Therefore, self-management program on self-efficacy effectively improved Pain efficacy score of osteoarthritis patients.

Considering overall score in experiment group, repeated measures ANOVA F- test shows that, overall difference is very highly significant (F= 271.73; p=0.001) between pre-test, 3rd, and 6th month (76.66, 106.94, 130.30). Therefore, self-management program on self-efficacy effectively improved overall efficacy score of osteoarthritis patients. Considering control group, Repeated measures ANOVA F-test shows that, overall efficacy difference is statistically not significant (p=0.08) between pre-test, 3rd, and 6th month (75.44, 76.57, 77.69). The fifth hypothesis as stated in the study that there will be a difference in overall self-efficacy among the clients before and after self-management program is well supported by the results of the study. Experimental study that provided 6-month training program for patients with osteoarthritis found significant improvements in pain, virtues of life and function which was consistent with the current study findings [9].

In experiment group certain demographic variables like elderly patients of age group 51-60years ((**χ2=13.27P=0.03),** 56% of Patients who belong to upper middle-class (**χ2=15.01;P=0.05**), 53.4% of patients living in joint families **(χ2= 7.02;P=0.03)**, 46.92% who take both vegetarian and non-vegetarian diet (**χ2=6.99;P=0.03)** , 44.07% of patients with primary osteoarthritis **(χ2=6.34;P=0.05)**, 54.54 % of patients who practiced yoga alternative therapy **(χ2=18.16;P=0.01)** and 62.07% of clients with no co-morbid conditions **(χ2=16.47;P=0.01)** show strong association with overall self-efficacy post-test score that is similar to the findings of the Study carried out to assess the association of socio-economic status with progression of disability among patients in OA which found that education less than higher secondary school, living in rental house, and poverty are independently associated with progression of impairment in patients with OA [10].

11.0 Implications for Nursing Practice

This study will help the nurse in hospital & community set up to plan holistic care for patients with OA of knee apart from pharmacotherapy to improve the self-efficacy of patients and thereby reducing the burden caused to the family and society. Since Osteoarthritis is a major public health issue this study helps nurse to plan interventions at tertiary level of prevention so that worsening of patient's condition due to the consequences of disease can be prevented. Educational camps providing information needed for the patients can be initiated in service areas for promoting self-management education program for patients diagnosed with OA. The findings of this study will contribute to clinical trial reference data for patients with OA of knee by adding information regarding the effectiveness of combining a self-management strategy with an exercise program.

12.0 Recommendations

Similar study may be conducted on a larger sample considering each variable in depth and for longer duration to see the long -term effect of intervention on OA. Study may be conducted only among women population to help them get benefitted more from interventional studies as OA is more common in women above 40 years.

13.0 Study Limitation

Long term adherence to self-management program couldn't be assessed because of time constraints. Moreover, as data has been collected via questionnaire hence practice couldn't be reliably assessed. To assess practices of the patients reliably, household data need to be collected in this regard preferably observed behavior.

These limitations notwithstanding, the study revealed essential findings relating to OA knee patients' lifestyle change. The strength of this study was that it had a large population-based sample with a comprehensive list of lifestyle intervention package prepared for the patient with OA knee.

14.0 Conclusion:

The present study has proved that self-management program is more effective in improving the self-efficacy of patients compared to the routine treatment. Constant motivation and empowering the patient, by involving them in shared decision making and providing them with positive skills directed at lifestyle changes ensures treatment adherence. It is the responsibility of the health care professional to plan and implement self-management education programs to reduce dependency and improve the quality of life in people with OA. There is no significant difference between control group pre-test, 3rd month and 6th month pain score (p=0.15). The first hypothesis as stated in this study that there will be a difference in self-efficacy pain score among study group before and after intervention is achieved.

Compliance with ethical standards

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