



# A study on dysfunction among Osteo-arthritis patients attending physiotherapy clinic

Dr. P. Ramasamy, M.A (S.W)., M.A(Soc)., M.Phil., Ph.D.,  
Director, SNEHA Foundation, Madurai  
pramasamy2k2@gmail.com, Cell: 9865337685

## Abstract:

The study was conducted with the aim of investigating the dysfunction experienced by osteo-arthritis patients. 102 patients suffering from osteo arthritis knee were included in the study. The study was conducted in the Clinical Department of Physiotherapy, run by a charitable trust..The patients residing within the radius of 40 kilometers from study site and the patients without fracture or any other major health problem limiting their movements at the time of study were selected. Socio-demographic factors, and the dysfunction of patients relating to social adjustment, vocational adjustment, personal adjustment and family adjustment of the patients were studied. The data were analysed using correlation, t test and F test. It was found that socio-demographic factors did not have any influence over the dysfunction of patients. Personal dysfunction was found to have correlation with social, vocational and family dysfunction.

## Introduction

Osteo-arthritis knee is a degenerative disorder. It is resulting in pain, fatigue, functional limitations, increased health care utilization and high economic costs to society (Litwic.A.et al 2013).It is affecting the mobility of the patients. Quadri strength deficits have been reported in 20-70% of patients with knee OA.Any improvement in muscle strength or peak power of the lower extremities with increased levels of particular pain may be important and is a strong predictor of functional ability(Tsai.C.C.et al 2014).The impact of Osteo-arthritis regarding suffering, function loss and use of social health resources. Also it worsen well being and health related quality of life in its physical, emotional and social aspects(Quintero.M.et al 2010).It is essential to know the impact of Osteo-arthritis on health related quality of life in order to make therapeutic decisions in the context of health policies related to the efficiency and sustainability of the health system(Morkowitz.RW

2009). Mobility is an essential activity needed for effective social life. It is often associated with social activities of individuals. Disturbances in mobility lead to dysfunction in social life.

Dysfunction is a natural result of any illness. In the present study dysfunction of osteoarthritis in various spheres of social life were taken into account as outcome measures. Dysfunction was measured by Dysfunction Analysis Questionnaire, (DAQ) which includes five areas of measures of adjustment. This questionnaire was developed by Pershad et al (1983). They defined dysfunction as a psycho-social concept which takes into consideration the present level of functioning in comparison with the pre-morbid level. Psycho-social dysfunction is sub classified into social adjustment, vocational adjustment, personal adjustment, family adjustment and cognitive adjustment

Osteoarthritis knee is not a serious health problem. Those who suffer from this problem face hardships in their mobility and functional ability. Patients of Osteoarthritis knee are silent sufferers. Most of them are left with pain, and moderate emotional sufferings. Their activities involving locomotion and movements are disturbed. Especially they are likely to suffer from more difficulties with regard to their occupation. Patients in lower economic status mostly involve in hard physical labour and so this group suffers more. This study tries to understand the dysfunction suffered by osteoarthritis knee patients. Due importance is given to understanding the role of socio-demographic factors in determining the dysfunction of the patients. The study tries to throw light on intrinsic disturbances and extrinsic dysfunctions of the patients.

### **METHODOLOGY**

The research design applied for the present study was exploratory in nature. Studies on dysfunction of osteoarthritis are extremely sparse. The present study tries to explore the above aspect. The study was carried out with the objective to investigate the social, vocational, personal and family dysfunction of Osteoarthritis knee patients. The study was conducted in the Clinical Department of Physiotherapy, run by a charitable trust. The patients residing within the radius of 40 kilometers from study site and those without fracture or any other major health problem limiting the movements of the patients at the time of study were selected. Thus there were 102 cases. The data were collected using 1). Schedule for socio-demographic factors and 2). Dysfunction Analysis Questionnaire (Pershad et al. 1985). The patients were interviewed personally in a congenial atmosphere in a separate room. The researcher explained the respondent about the purpose of research, established rapport and data were collected. The data were analysed using t test, F test and correlation with the help of SPSS.

### **Results and discussion**

Osteo-arthritis is one of the diseases with highest impact regarding the functional disability and one which greatly affects the personal autonomy of patients (Fernandez-cuadros M.E et al 2016). Incidence of osteo-arthritis increases with age and it affects more than 33% of people over 70 years in Spain (Moreno Palacios.J.A 2009). Fernandez-Cuadros et al (2016) also recorded average age of 70 years of their patients who were admitted for surgery.

**Table-1: Correlation between age and dysfunction of osteoarthritis patients**

Areas of adjustment	r. value	df	Statistical significance
Social adjustment	0.33	100	P < 0.001
Vocational adjustment	0.10	67	P < 0.05
Personal adjustment	0.20	100	P < 0.05
Family adjustment	0.09	100	P > 0.05

Table shows that there was a significant correlation between age and dysfunction of patients with regard to social, vocational and personal adjustment areas. But there was no correlation between age and dysfunction in the area of family adjustment. Age is an indicator of health. Old age is frequently associated with degenerative diseases. Osteo-arthritis is a degenerative disability and multi-factorial disease with a high prevalence that increases exponentially with age (Roigescofet D 2002, Quintero et al 2010 and Casals Sanchez .JL2011).Osteo arthritis knee is more disabling than any other orthopedic and muscular skeletal disorder (Quintero M et al 2010). The age was found to be associated with the dysfunction of the patients in the areas of social, vocational and personal adjustment. Personal dysfunction is the secondary indicator of physical health and it explains how far the patient is able to physically adjust with himself. Personal dysfunction is the intrinsic aspect of adjustment.

Social, vocational and family dysfunction is external aspects of maladjustment. They are the tertiary aspect of the outcome which are very much depending on personal dysfunction. With the increasing age, patients suffered from more degeneration and experienced more difficulties. So, age was correlated with social, vocational and personal dysfunction. But age was not correlated with family dysfunction. It might be due to the fact that family adjustment might not require much effort and also due to the co-operative endeavours of the family members.

Incidence of osteo-arthritis is more among women(Fernandez-cuadros M.E 2016). Many other studies also have found out the incidence among women more than men (Pages E et al 2001, Quintana J.M et al 2006, Moreno Palacios J.A et al 2009, O.Brian S 2002 and Dachneier CJM et al 2001). In the present study also there were more number of women.

**Table – 2: Dysfunction according to gender of osteoarthritis patients**

Areas of adjustment		Male	Female	Statistical Significance
Social adjustment	N	34	68	t:0.46
	Mean	50.15	50.85	df:100
	SD	8.32	6.74	p> 0.05
Vocational adjustment	N	32	37	t:0.29
	Mean	62.38	63.08	df:67
	SD	10.57	9.89	p> 0.05
Personal adjustment	N	34	68	t:.45
	Mean	51.82	51.24	df:100
	SD	7.03	5.90	p> 0.05
Family adjustment	N	34	68	t:-.78
	Mean	49.50	50.65	df:100
	SD	5.73	7.57	p> 0.05

Table shows that male and female patients suffered similar level of dysfunction in the areas of social adjustment, vocational adjustment, personal adjustment and family adjustment. There was no statistically significant difference between male and female patients in dysfunction. Osteoarthritis Knee affects both males and females similarly with regard to their functional ability. There was no difference in dysfunction between male and female patients in various areas of adjustment.

**Table – 3: Dysfunction according to domicile of osteoarthritis patients**

Areas of adjustment		Rural	Urban	Statistical Significance
Social adjustment	N	81	21	t :1.46
	Mean	51.15	48.57	df :100
	SD	7.13	7.63	p >0.05
Vocational adjustment	N	59	10	t :3.52
	Mean	64.39	53.10	df : 67
	SD	9.54	8.36	p <0.05
Personal adjustment	N	81	21	t :.63
	Mean	51.63	50.67	df : 100
	SD	6.27	6.38	p >0.05
Family adjustment	N	81	21	t :1.25
	Mean	50.70	48.57	df : 100
	SD	6.83	7.54	p >0.05

Osteoarthritis patients hailing from rural areas suffered more in the area of vocational adjustment than urban patients. There was a statistically significant difference between the groups. The mean score shows that in other areas of dysfunction also rural patients suffered more though there was no statistically significant



difference between the groups. Rural patients suffered more than urban patients in the area of vocational adjustment and the difference was statistically significant. The reason might be that rural patients had to do much physical labour and the physical hardship might be less for urban patients. The mean scores show that in other areas of adjustment viz. social adjustment, personal adjustment and family adjustment there was more dysfunction but the difference was not statistically significant. The above results reveal that rural domicile was associated with more dysfunction.

**Table– 4: Dysfunction according to educational status of osteoarthritis patients**

Areas of adjustment		Illiterate	Patients with primary education	Patients with secondary and above education	Statistical Significance
Social adjustment	N	23	52	27	F :3.37
	Mean	54.00	49.67	49.56	df :2,99
	SD	6.38	7.36	7.19	p > 0.005
Vocational adjustment	N	16	32	21	F :1.25
	Mean	65.56	62.97	60.29	df :2,66
	SD	10.53	10.20	9.62	p > 0.05
Personal adjustment	N	23	52	27	F :1.29
	Mean	53.22	51.11	50.52	df :2,99
	SD	6.60	6.30	5.83	p > 0.05
Family adjustment	N	23	52	27	F :1.64
	Mean	52.56	49.48	49.81	df :2,99
	SD	5.82	7.03	7.65	p > 0.05

It was found that patients with different levels of education suffered from similar level of dysfunction in various areas of adjustment. However the mean scores of illiterate patients were considerably more which shows the trend of more suffering. Educational status did not have significant influence on the adjustment of O.A. knee patients. However the mean scores of illiterate patients regarding dysfunction were apparently higher than other two groups. This indicates that illiterate patients suffered from more dysfunction. This might be due to the fact they had to move actively and involve in hard physical labour in order to manage their life. So they experienced more dysfunction. The other two groups did not show much difference in mean scores between themselves.

**Table – 5: Dysfunction according to marital status of osteoarthritis patients**

Areas of adjustment		Married	Single / widowed	Statistical Significance
Social adjustment	N	90	12	t : .692
	Mean	50.80	49.25	df : 100
	SD	7.30	7.19	p >0.05
Vocational adjustment	N	63	6	t : 1.34
	Mean	63.25	57.50	df : 67
	SD	10.03	10.78	p >0.05
Personal adjustment	N	90	12	t : .497
	Mean	51.54	50.58	df : 100
	SD	6.09	7.75	p >0.05
Family adjustment	N	90	12	t : .620
	Mean	50.42	49.08	df : 100
	SD	6.81	8.54	p >0.05

Table shows that married and single patients suffered from similar level of dysfunction in various areas of adjustment. There was no statistically significant difference between the groups. Marital status did not have significant influence on dysfunction. Married and single/ widowed categories suffered from similar level of dysfunction

**.Table – 6: Dysfunction according to occupational status of osteoarthritis patients**

Areas of adjustment		Unskilled workers (N=52)	Skilled Workers (N=17)	House wives/Unemployed (N=33)	Statistical Significance
Social adjustment	N	52	17	33	F:1.26
	Mean	51.67	48.76	49.91	df : 2,99
	SD	7.00	6.91	7.79	p > 0.05
Vocational adjustment	N	52	17		t > .64
	Mean	63.29	61.12		df:67
	SD	10.26	9.90		p > 0.05
Personal adjustment	N	52	17	33	F :1.15
	Mean	52.12	49.47	51.36	df : 2,99
	SD	6.52	6.73	5.55	p > 0.05
Family adjustment	N	52	17	33	F :0.38
	Mean	50.44	51.24	49.48	df : 2,99
	SD	6.58	7.82	7.34	p > 0.05

Table shows that Osteoarthritis patients belonging to different occupational categories suffered from similar level of burden. There was no statistically significant difference in dysfunction among the groups. As housewife / unemployment category did not have occupation no score was available for vocational adjustment area. So for vocational adjustment two groups were compared using 't' test. Occupational status of the patients did not influence the dysfunction of the patients. Patients with different occupational status did not differ

significantly in their dysfunction. However the mean scores of unskilled workers were little more than other groups showing the increased trend of dysfunction.

**Table -7: Correlation between income and dysfunction of osteoarthritis patients**

Areas of adjustment	r. value	df	Statistical significance
Social adjustment	<b>0.08</b>	<b>100</b>	<b>p &gt; 0.05</b>
Vocational adjustment	<b>0.36</b>	<b>67</b>	<b>p &lt; 0.01</b>
Personal adjustment	<b>0.16</b>	<b>100</b>	<b>p &gt; 0.05</b>
Family adjustment	<b>0.16</b>	<b>100</b>	<b>p &gt; 0.05</b>

Table shows that there was a significant correlation between income level and vocational dysfunction of osteoarthritis patients. There was no significant level of correlation between income and other areas of adjustment. The study reveals that there was a correlation between income level and vocational dysfunction. Occupation is the source of income. Level of vocational dysfunction determined the level of income and so there was a correlation between them. As the other areas of dysfunction were not the determinants of income there was no correlation.

**Table –8: Dysfunction according to family typology of osteoarthritis patients**

Areas of adjustment		Nuclear family	Extended Nuclear family	Joint family	Statistical Significance
Social adjustment	N	54	35	13	F :.857
	Mean	50.19	50.37	53.08	df :2,99
	SD	7.68	6.49	7.59	p > 0.05
Vocational adjustment	N	33	27	9	F :0.78
	Mean	61.21	63.85	65.11	df : 2,66
	SD	11.28	9.71	6.29	p > 0.05
Personal adjustment	N	54	35	13	F :.034
	Mean	51.31	51.66	51.31	df : 2,99
	SD	6.47	6.58	4.79	p > 0.05
Family adjustment	N	54	35	13	F :1.222
	Mean	50.39	49.17	52.69	df : 2,99
	SD	7.83	5.71	6.29	p> 0.05

Table shows that patients belonging to different types of family suffered from similar level of dysfunction in various areas of adjustment. There was no statistically significant difference among groups regarding adjustment. Patients belonging to different types of family suffered from similar level of dysfunction. Generally joint families render better support to the individuals and they are capable of bearing the burden without much difficulty. But the present study does not support these ideas. The reason might be that the patients were suffering from mild dysfunction. In such a condition it might be difficult to understand the influence of family typology. Further, supporting nature of people in rural and semi urban areas were compensating for mild difficulties. This support might be inadequate when the problems are more at the level of patients and their families.

**Table-9: Dysfunction according to caste background of osteoarthritis patients**

Areas of adjustment		Scheduled caste	Most backward caste	Backward caste	Forward caste	Statistical Significance
Social adjustment	N	15	32	45	10	F :.092
	Mean	49.93	50.69	50.60	51.50	df :3,98
	SD	7.81	6.91	7.15	9.07	p >0.05
Vocational adjustment	N	10	24	29	6	F :0.58
	Mean	61.90	64.88	61.24	63.00	df :3,65
	SD	6.03	8.76	10.69	17.45	p >0.05
Personal adjustment	N	15	32	45	10	F :.816
	Mean	49.80	51.56	51.36	53.80	df :3,98
	SD	4.54	5.29	6.63	9.34	p >0.05
Family adjustment	N	15	32	45	10	F :.918
	Mean	48.40	51.19	50.71	48.10	df :3,98
	SD	6.43	7.61	6.59	7.67	p >0.05

Patients belonging to different caste background suffered from similar level of dysfunction in various areas of adjustment. There was no statistically significant difference among the groups. Caste did not influence the dysfunction of the patients. Patient's level of movements did not differ much among different groups of caste. Their dysfunctions were very less because osteoarthritis did not cause extreme limitations on the functions of the patients. So the influence of caste was not found

**Table -10: Correlation between duration of illness and dysfunction of osteo-arthritis patients**

Areas of adjustment	r. value	df	Statistical significance
Social adjustment	0.17	100	p > 0.05
Vocational adjustment	0.23	67	p < 0.01



Personal adjustment	0.28	100	$p < 0.01$
Family adjustment	0.01	100	$p > 0.05$

Table shows that there was a significant correlation between duration of illness and vocational and personal adjustment. There was no correlation of duration of illness with social adjustment and family adjustment. Duration of illness indicates the duration of strain on the patients as well as their families. In the present study duration of illness was found to have significant correlation with vocational dysfunction and personal dysfunction. These are the areas in which physical movements are much involved. As the illness limits the physical movements they were suffering much in those areas. As osteoarthritis is a degenerative disorder, the degree of degeneration is according to the duration of illness. Hence there was a correlation of duration of illness with personal and vocational dysfunction. But duration of illness was not correlated with social dysfunction and family dysfunction. The result indicates that patients could adjust to some extent with these aspects and on the other hand these aspects did not demand much effort from the patients.

**Table-11: Correlation among different areas of dysfunction of osteoarthritis patients**

Correlating variables	r. value	df	Statistical significance
Social adjustment VS Vocational adjustment	0.52	67	$p < 0.001$
Social adjustment VS Personal adjustment	0.27	100	$p < 0.01$
Social adjustment VS Family adjustment	0.66	100	$p < 0.001$
Vocational adjustment Vs Personal adjustment	0.53	67	$p < 0.001$
Vocational adjustment Vs Family adjustment	0.60	67	$p < 0.001$
Personal adjustment Vs Family adjustment	0.28	100	$p < 0.01$

Table shows that there was a significant correlation among different areas of dysfunction of osteoarthritis patients. Dysfunction is a natural result of any illness. The functional ability of people are disturbed due to any illness. But the degree of dysfunction varies due to the nature of any illness. Osteoarthritis of knee is a condition which poses mild to moderate limitations on the functional ability of the patients very often and very rarely

some of them suffer from sever dysfunction. There are four areas of dysfunction, viz social dysfunction, vocational dysfunction personal dysfunction and family dysfunction, taken into account for the present study. Among these aspects, personal dysfunction indicates the intrinsic aspect of the patients which indicates the ability of the patients to take care of themselves. Social, vocational and family dysfunctions are extrinsic aspects which are related to his interaction with the environment. These areas are found to have significant correlations among themselves. This indicates that osteoarthritis causes personal dysfunction which reflects physical health and this causes dysfunction in other areas.

## Conclusion

Osteo-Arthritis Knee is a major public health issue throughout the world and important cause of chronic disability in older adults (Hafez AR et al 2014). Osteo-arthritis knee has a major effect on function and quality of life (Wolf AD et al 2012). Due to lack of knowledge of Osteo-arthritis knee and its management options, adherence to treatment and consequently affects symptoms and functions and increases health care costs (Mitchel HL and Hurley MV 2008, Loring KR et al 1999). Osteoarthritis is a mobility related orthopedic problem causing dysfunction among patients. The present study shows that patients have suffered mild level of dysfunction in the areas of social, personal and family adjustment. With regard to vocational adjustment patients have suffered from moderate level of dysfunction. Age is a significant factor correlating with dysfunction. Among other factors rural patients seem to suffer more. Personal dysfunction has a role in determining other areas of dysfunction. Innovation in treatment may help patients to reduce their sufferings and improve their level of adjustment.

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