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ASSESSMENT OF THE KNEE PAIN AND FUNCTIONAL STATUS AMONG WOMEN IN SELECTED RURAL COMMUNITY AT MANGALURU

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ABSTRACT

Knee pain is one of the most common musculoskeletal complaints that bring people to their doctor. With today's increasingly active society, the number of knee problems is increasing. Most people have had a minor knee problem at one time or another. Knee pain is the single most important cause of disability in elderly people. Aim of the study is to assess the knee pain and functional status of women in selected rural community at Mangalore. Descriptive survey design was adapted to this study. Purposive sampling techniques were adopted to select 100 samples. The data was obtained from the study subjects were analyzed and interpreted in terms of the objectives and hypothesis of the study. Descriptive and inferential statistics were used for the data analysis and the level set at 0.05. Result of the study revealed that, The mean functional performance score of symptoms, pain, activities of daily living, sports and recreation and quality of life were 56.35, 61.44, 59.57, 62.55, 51.68 respectively. The study showed that there was no significant association of pain and functional status with demographic variables. But it was found that there is a negative correlation in the pain and functional status: KOOS symptoms (r= -0.483), KOOS pain (r= -0.474), KOOS activities of daily living (r= -0.430), KOOS sports and recreation (r= -0.424), KOOS quality of life (.299). These findings show that when intensity of the pain increases functional status of the women reduce.

INTRODUCTION

Successful aging is defined as the avoidance of diseases and disabilities (Rowe and Kahn). This definition has since been expanded and now includes the ability to maintain three key behaviours or characteristics: avoiding disease; maintaining high cognitive and physical function; and remaining engaged with life [1]. There are many health problems that can develop after forty years. This is because many people start living unhealthy life style, and their immune system also starts to weaken. As age grows many physical problems begin to appear like muscle pain, arthritis, bowel syndrome, gout, prostate enlargement, heart problems, hypertension, overweight, asthma, bone fragility, foot problems, dementia, diabetes, sleep disturbances, sight, hearing and speaking difficulties [2] .

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Need for the study

The maintenance and promotion of health is achieved through different combination of physical, mental and social wellbeing, together sometimes referred to as the health triangle. Health is not just a state, but also a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. There are many health problems that can develop during old age this is because many old people start living an unhealthy lifestyle and their immune system also start to weaken [3].

Knee pain is a major cause of disability and is especially prevalent in those aged over 50. Much of this knee pain is caused by osteoarthritis, the most common form of joint disease and a leading cause of lower limb disability in older people. A systematic review of knee pain in older adults reported that during this period, a quarter of people aged over 55 have an episode of persistent knee pain, around half of whom report associated disability [2].

Osteoarthritis is the most common musculoskeletal condition affecting the quality of life of older adults. A recent survey in India reported that the prevalence of osteoarthritis in older adults more than 65 years of age was 32.6% in the rural population and 60.3% in the urban population. Knee osteoarthritis is likely to become the most important cause of disability in women according to the World Health Organisation report on Global burden of disease[3]. Three major physical impairments, such as knee pain, stiffness and decreased quadriceps strength, are highly associated with knee osteoarthritis and are believed to contribute to physical disability and progression of the disease [4].

Osteoarthritis is the most prevalent form of arthritis and the leading cause of disability in India affects over 15 million Indians each year. About 20 years ago, osteoarthritis was known as a disease of the elderly affecting those above the age of 65 years. However, orthopaedicians are increasingly diagnosing younger people in the age group of 35-55. Several reasons can be attributed to this trend globally and in India including growing obesity, sedentary life style, dependence on unhealthy and junk food and a vitamin D deficiency. According to researchers at the Harvard Medical School, walking in high heels put 25 percent greater force on the knee than walking barefoot making prolonged use of high heels a risk factor for osteoarthritis in women. Research also shows that athletes who play high contact sports such as football are more common to knee osteoarthritis due to their aggressive training schedule. According to Dr. Shreedhar Archik, consultant orthopaedic surgeon, Lilavati hospital, Mumbai "India has the second largest knee osteoarthritis patient base around the world [5].

A cross-sectional analysis to investigate the influence of pain severity, knee extensor muscle weakness, obesity, depression and activity on the association between recent knee pain and limitation of usual and fast paced walking and ability to rise from a chair revealed that the prevalence of recent knee pain was 53%. One third of the women with pain reported it to be severe. In general, knee pain was only significantly associated with limited mobility if severe. The multidimensional nature of the experience of pain in arthritis has not been well defined [6].

Despite the enormous impact worldwide, musculoskeletal diseases do not receive the attention due to participation that musculoskeletal diseases are less serious and unlike cardiovascular diseases, other neurological diseases, AIDS and cancer, which are largely considered fatal, the MSDS are considered, non-fatal and chronic and are tend to be seen as a consequence of ageing. Further, in the absence of continuous web enabled hospital registration and continuous surveillance system in the country it is indeed a daunting task to provide realistic estimates of disease burden of any disease condition, more so of MSD which are accepted as part and parcel of attaining maturity and old age. Knee pain is an illness that can be managed like any other chronic illness like diabetes or hypertension, if diagnosed early [7]. Health education and health promotion programs can only be developed based on a specific understanding of intensity of pain and functional status. So the investigator is interested to identify the level of pain and functional status among women in selected rural community.

Objectives

- To identify the level of knee pain of women.
- To determine the functional status of women.
- To find out the relationship between level of knee pain and functional status of the women.
- To identify the association of level of knee pain of women with selected demographic variables.
- To identify the association of functional status of women with selected demographic variables.

Hypothesis

H_1: There is a significant relationship between knee pain and functional status of the women.

H_2: There is a significant association of level of knee pain of women with selected baseline variables.

H_3: There is a significant association of functional status of women with selected baseline variables.

METHODOLOGY

Research approach: non-experimental, survey approach was adopted to assess the knee pain and functional status of women in selected rural community at Mangalore.

Research design: Descriptive survey design was used to assess the knee pain and functional status of women in selected rural community

Setting: The study was conducted in Swamilapadavu, Tarikambala, Konchar MRPL colony, Konchar and Sidharthanagar of Bajpe at Mangaluru.

Population: In this study, target population comprised of women aged between 40-60 years with moderate to severe level of knee pain.

Sample: The sample comprised of 100 rural women of Bajpe, Mangaluru.

Sample Techniques: Purposive sampling technique was used to select the subjects for the study.

Sampling Criteria:-

Women who are,

1. having moderate to severe level of knee pain.
2. between 40-60 years of age.
3. are willing to participate in study.
4. can read, understand and respond in Kannada or English.
5. available during period of data collection.

Exclusion criteria

Women who are, in debilitating condition with fracture of leg.

RESULT

The highest percentage (41%) of the sample were in the age group 48-54 years, whereas least percentage (21%) of the sample were in the age group of 40-47 years. Majority of subjects (72%) were Hindus. Highest percentage (88%) of the women had primary school education whereas the lowest percentage (12%) were had secondary school education. Majority (93%) were housewives. Highest percentage (53%) of the women had their annual income 10,000-50,000, whereas the least percentage (3%) had income of Rs. > 1 Lakh. Majority (87%) were attained menopause. Among the sample, forty nine percentage of the women were not doing exercises, two percentage were doing exercise once a week. Sixty-seven women (67%) were not taking medications, thirty two (32%) were on pain killers and only a women was taking calcium supplements. Among the sample, ninety one women (91%) were having diabetes mellitus, six percentage were having hypertension and two percentage were having cardiac problems.

The data presented in Table 2 shows that highest percentage of the sample (51%) had severe knee pain and 49% of women had moderate pain.

The data in Table 3 shows the mean, mean percentage, range and standard deviation of functional status scores of women. KOOS Symptom subscale (15.78, 56.35, 5-24, 3.85), KOOS Pain subscale (22.12, 61.44, 14-31, 4.86), KOOS Functions of daily living (40.51, 59.57, 28-53, 9.37), KOOS Sports and Recreation (12.51,62.55, 5-18, 3.07) and KOOS Quality of life (8.27,51.68, 6-16, 2.39).

The data in Table 5 shows that there is no significant association between level of knee pain and demographic variables such as age, religion, education, occupation, income, menopause, exercise, medication and history of other diseases**.**

Data presented in Table 5 shows that there is no significant association between functional status of women with demographic variables such as age, religion, education, occupation, income, attainment of menopause, exercise, medication and history of other diseases.

Scatter diagram shows the relationship between pain and functional status of women; Karl pearson's correlation coefficient 'r" value for KOOS symptom subscale is (-0.483), pain (-0.474), functions of daily living (-0.430), sports and recreation (-0.424), quality of life (0.299), which shows that there is a negative correlation between pain and functional status of women, i.e., when pain increases functional performance decreases when pain reduces, functional performance improves.

Table 1. Description of demographic variables of the sample

Sl. No.	Variables	Frequency	Percentage
1.	Age (in years)		
a.	40-47	21	21
b.	48-54	41	41
c.	55-60	38	38

Sl. No.	Variables	Frequency	Percentage
2.	Religion		
a.	Hindu	72	72
b.	Christian	14	14
c.	Muslim	14	14
3.	Education		
a.	Primary	88	88
b.	Secondary	12	12
c.	Graduate	-	-
d.	Postgraduate	-	-
4.	Occupation		
a.	Housewife	93	93
b.	Professional	6	6
c.	Non-Professional	1	1
5.	Annual income		
a.	< 10,000	40	40
b.	10,000-50,000	53	53
c.	50,001-1 lakh	3	3
d.	1lakh	4	4
6.	Attainment of menopause		
a.	Yes	13	13
b.	No	87	87
7.	How often do you exercises		
a.	Daily	16	16
b.	3 times a week	9	9
c.	Once in a week	2	2
d.	Twice a week	24	24
e.	No exercises	49	49
8.	Do you take any medication for joint pain		
a.	No	67	67
b.	Pain killers	32	32
c.	Calcium supplements	1	1
d.	Others	-	-
9.	History of other diseases		
a.	Diabetes mellitus	91	91
b.	Hypertension	6	6
c.	Cardiac problems	2	2
d.	Others	1	1

Table 2. Level of knee pain of women

Level of pain	Range of score	Frequency (f)	Percentage(%)
Moderate	4-6	49	49
Severe	7-10	51	51

Table 3. Level of functional status of women

KOOS subscales	Possible range	Actual range	Mean	Mean%	SD
KOOS Symptoms	0-28	5-24	15.7	56.35	3.85
KOOS Pain	0-36	14-31	22.12	61.44	4.86
KOOS Functions, daily living	0-68	28-53	40.51	59.57	9.37
KOOS Sports and Recreation	0-20	5-18	12.51	62.55	3.07
KOOS Quality of life	0-16	6-16	8.27	51.68	2.39

Table 4. Association of level of knee pain among women with selected demographic variables

Sl.No. Variable	χ^2 value	df	P value	Inference
1. Age	4.00	2	.135	Not significant
2. Religion	1.389	2	.499	Not significant
3. Education	.475	1	.491	Not significant
4. Occupation	.200	1	.655	Not significant
5. Annual income	3.228	1	.072	Not significant
6. Attainment of menopause	2.447	1	.118	Not significant
7. Exercise	1.152	3	.765	Not significant
8. Medication	1.819	1	.177	Not significant
9. History of diseases	5.640	2	.060	Not significant

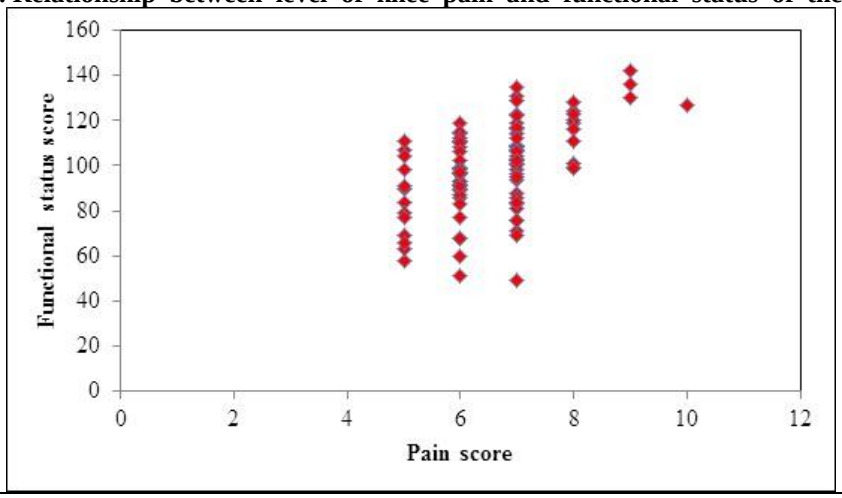
Table value: χ_1^2=3.84, χ_2^2=5.99, χ_3^2=7.81 at 0.05 level of significance

Table 5. Association of functional status of women with selected demographic variables

	KOOS symptom			KOOS pain			KOOS ADL			KOOS Sports			KOOS QOL		
Variable	χ^2	df	p value	χ^2	df	p value	χ^2	df	p value	χ^2	df	p value	χ^2	Df	p value
Age	3.533	4	.473	7.905	4	.059	4.65	4	.325	7.63	4	.106	8.35	4	.080
Religion	1.508	4	.825	3.378	4	.497	3.13	4	.536	13.14	4	.011	3.03	4	.552
Education	1.245	2	.537	.297	2	.862	2.32	2	.313	1.06	2	.588	2.02	2	.363
Occupation	3.226	2	.199	.187	2	.911	4.10	2	.129	2.65	2	.266	4.89	2	.087
Income	2.589	2	.274	1.44	2	.486	.712	2	.700	3.70	2	.157	3.48	2	.175
Menopause	2.551	2	.279	.310	2	.856	12.9	6	.045	1.94	2	.377	2.23	2	.327
Exercise	8.840	6	.183	3.35	6	.763	12.9	2	.002	17.63	6	.007	6.76	6	.344
Medication	3.631	2	.163	3.71	2	.156	3.12	2	.210	3.14	2	.208	8.65	2	.013
Other disease	1.987	4	.738	1.66	4	.797	5.18	4	.269	7.28	4	.122	1.60	4	.808

Table value of χ_2^2=5.99, χ_4^2=9.49, χ_6^2=12.59 at 0.05 level of significance)

Figure 1. Relationship between level of knee pain and functional status of the women



DISCUSSION

Demographic characteristics of the sample

The demographic characteristics of the present study indicates that the highest percentage of the sample (41%) of the sample were in the age group 48-54years. Similar cohort study conducted in United Kingdom to identify the association between physical examination and self-reported physical function in older adults with knee pain revealed that highest percentage (54%) of the sample were belonged to the age group of 50 years [7].

In the present study highest percentage

(93%) of the women were housewives and 67% of the women were not taking medication for knee pain. These findings are supported by a study conducted in Nottingham to assess the impact of clinical and psychosocial variables on function in knee osteoarthritis and to develop models to account for observed variance in self-reported disability which showed that out of 150 subjects 99% were housewives and 62% were not taking medications [8].

In the present study highest percentage (87%) of the women attained menopause. This finding is supported by a narrative review conducted to discuss case definitions of knee OA for primary care and to summarize the burden of the condition in the community and related use of primary health care in the United Kingdom which showed that out of 120 women 87% were attained menopause [9].

In the present study, (91%) were having diabetes mellitus. This findings is supported by a cross-sectional study conducted at America to evaluate the frequency of co-morbidities in osteoarthritis patients and to measure their impact on pain and physical function of those patients which showed that out of 91 subjects 71% had diabetes mellitus [10].

In the present study highest percentage (88%) of the women had primary school education. This finding is consistent with the finding of the study conducted in African American individual to examine the role of socio-demographic factors and severity of radiographic knee osteoarthritis and knee pain on self reported functional status, which showed the highest percentage (78%) of the women had primary school education [11].

In the present study highest 53% of the women had their annual income Rs. 10,000-50,000 and 49% not doing exercises. These findings are supported by a cross-sectional study conducted to correlate functional ability and quality of life of elderly women with knee osteoarthritis in Nagaland, which showed that highest percentage (50%) of the women had their annual income of Rs: 10,000-50,000 and 60% of the women were not doing exercises [12].

Level of knee pain and functional status of the women

In the present study, majority of subjects (51%) had severe knee pain and remaining 49% had moderate pain. The mean percentage functional performance score of symptoms, pain, activities of daily living, sports and recreation and quality of life were 56.35%, 61.44%, 59.57%, 62.55%, and 51.68%, respectively.

The present study findings are supported by the correlational study conducted to find the relationship between the range of joint motion and disability in patients with osteoarthritis of the knee or hip, which showed that the mean percentage functional performance score of symptoms, pain, activities of daily living, sports and recreation and quality of life were 50%, 51%, 59%, 15% and 25%, respectively [13].

Association of level of pain with selected demographic variables

The present study shows that there is no significant association of level of pain with selected demographic variables like age, education, occupation, income, history of diseases and medication at 0.05 level of significance

The present study findings were supported by an evaluative study to determine the effects of a 12-wk high-intensity knee extensor and flexor resistance training program on strength, pain, and adherence in patients with advanced knee osteoarthritiswhich showed that there is no significant association of level of pain with demographic variables at 0.05 level of significance [14].

Association of level of functional status with selected demographic variables

The present study shows that there is no significant association of functional status with selected demographic variables at 0.05 level of significance

The present study findings were supported by a study conducted to identify the factors associated with functional impairment in symptomatic knee osteoarthritis, which showed that there is no significant association of functional status with demographic variables at 0.05 level of significance [15].

The relationship between knee pain and functional status of the women

The present study result showed a negative correlation between the pain and functional status of women. coefficient correlation (r) for KOOS subscale; symptoms (-0.483), pain (-0.474), activities of daily living (-0.430), sports and recreation (-0.424), quality of life (0.299). It shows that when pain reduces functional status improves.

The present study findings are consistent with the cross-sectional study conducted to find the relationship between pain, functional status and radiographic findings in osteoarthritis of the knee. Which revealed that WOMAC disability scores were significantly associated with WOMAC pain and

WOMAC stiffness ($p<0.01$) and concludes that knee pain, stiffness and duration of disease may affect the level of disability in the patient with knee OA [16].

CONCLUSION

The study concluded that pain and functional status are inversely related. As the knee pain increases functional status of women reduces.

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COMPETING INTERESTS

The authors declare that they have no competing.

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