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TO COMPARE PHYSICAL PERFORMANCE AMONG RURAL AND URBAN POPULATION ON INDIVIDUALS WITH OA KNEE - A COMPARATIVE STUDY

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ABSTRACT

Background: Osteoarthritis (OA) is the most common form of arthritis, typically seen with increasing age affecting all joints. Osteoarthritis (OA) is one of the most prevalent articular disorders affecting humankind and a major cause of disability and socioeconomic burden. OA is a chronic degenerative disorder of multi-factorial etiology, including acute and/or chronic insults from normal wear and tear, age, obesity, and joint injury.

Method: Total 23 participants were assessed for OA knee from rural population and 24 participants were assessed for OA knee from urban population having knee pain. Out of total 47 participants 30 were selected according to the inclusion criteria. Each participant was then asked to sign the written consent form and were assessed for the physical performance on the basis of KOOS. The final data was recorded and analyzed to establish the hypothesis.

Result: The results of the paired samples test reveal a statistically significant difference between "Group A KOOS score and "Group B KOOS score. The negative mean difference of -29.67, along with the 95% confidence interval (-39.01 to -20.34), suggests a significant decrease in the variable "KOOS" from Group A to Group B. The t-value of -6.817 and the low p-value (.000) provide strong evidence to reject the null hypothesis.

Conclusion: The study concludes that the physical performance among rural population was more hampered compared to the urban population based on KOOS.

Keywords: KOOS, Osteoarthritis, Physical function, Prevalence of OA

INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis, typically seen with increasing age affecting all joints. The majority of people over 60 years of age show evidence of osteoarthritis in at least one joint, with radiological evidence presenting in 70% of hips or knees of those older than 65 years **[1]**. Osteoarthritis (OA) is one of the most prevalent articular disorders affecting humankind and a major cause of disability and socioeconomic burden. OA is a chronic degenerative disorder of multi-factorial aetiology, including acute and/or chronic insults from normal wear and tear, age, obesity, and joint injury **[2]**.

Prevalence: Urban population in Gujarat is 29.6% and rural population is 57% among them the osteoarthritis of knee patient in urban area are 70.8% and in rural area are 29.2% between age of

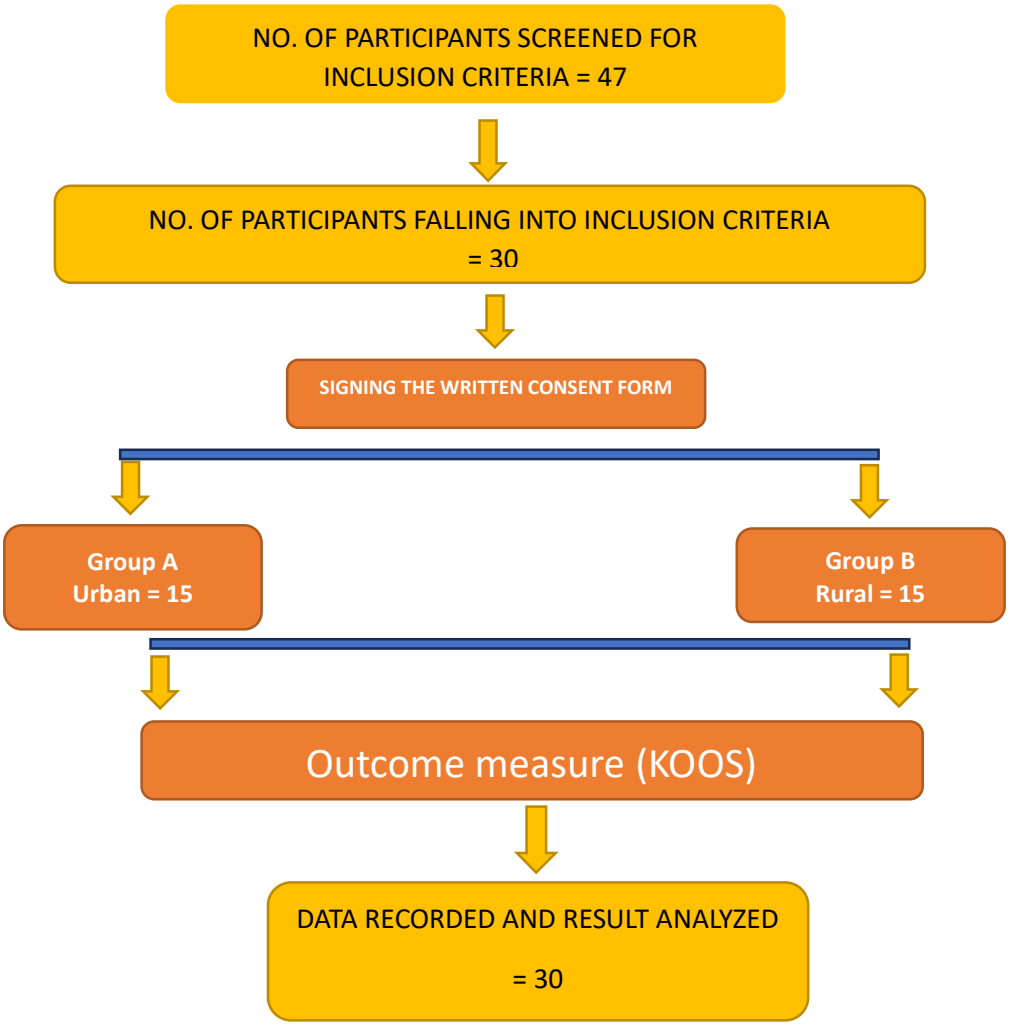
40-60 years, as the ratio of osteoarthritis is significant that is why the study is focusing to find out the difference in key features among urban and rural population **[5]**.

Features of osteoarthritis: History: Pain, swelling, stiffness, heat, limp, reduced activity. Examination findings: Heat, pain, swelling, flexion deformity, weakness, restricted movement. Radiographic changes: Osteophytes, subchondral sclerosis, subchondral cysts, joint space narrowing, deformity, soft tissue calcification, effusion. Osteoarthritis has a significant socio-economic cost and therefore essential research is aimed at all levels of intervention and pathogenesis. It is accepted that clinical function and radiological findings do not always parallel symptoms. For acute cases, management predominantly involves pain control, restoration of range of motion and swelling management **[3]**.

Knee Injury and Osteoarthritis Outcome Score (KOOS): is a PROM intended for young, middle-aged and elderly adults with knee injury and/or knee osteoarthritis (OA), and can be used to monitor disease course and outcomes following surgical, pharmacological and other interventions **[4]**. KOOS holds five subscales: (1) Pain (9 items); (2) other Symptoms (7 items); (3) Activities of Daily Living (ADL, 17 items); (4) Sport and Recreation function (Sport/Rec, 5 items); and (5) knee-related Quality of Life (QoL, 4 items). Each subscale is scored separately

from zero (extreme knee problems) to 100 (no knee problems). The KOOS Physical function Short form (KOOS-PS, 7 items) was later derived from the ADL and Sport/Rec subscales via Rasch analysis **[5]**. The clinical and research utility of KOOS is highlighted by large international patient datasets (>100,000 unique patient records) and frequent use in scientific publications. Importantly, KOOS has international accessibility, being free of charge and translated into >45 different language versions 6. To provide clinicians and researchers with a single reference regarding KOOS measurement properties, we performed a systematic review and meta-analysis to evaluate the measurement properties of KOOS in people with knee injuries and/or OA **[6]**.

METHODOLOGY:



Total 23 participants were assessed for OA knee from rural population and 24 participants were assessed for OA knee from urban population having knee pain. Out of total 47 participants 30 were selected according to the inclusion criteria with the clinical diagnosis for Osteoarthritis.

Each participant was then asked to sign the written consent form and were assessed for physical performance and pain on the basis of KOOS. The final data was recorded and analyzed to establish the hypothesis.

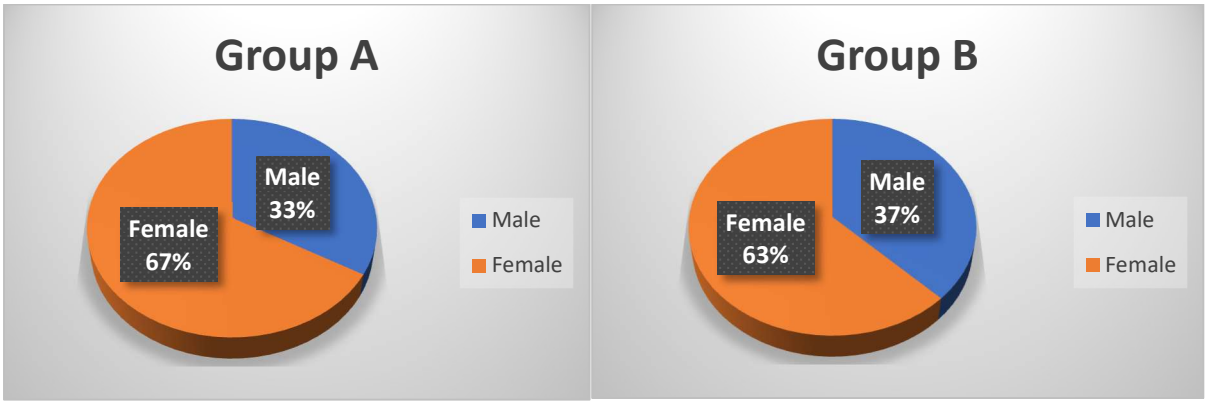
RESULTS

The study included total 30 participants in which according to inclusion criteria the subjects were divided into two groups, the (Group A) Urban and (Group B) Rural group. The KOOS scale was used to find the pain and physical function in both these population with knee pain.

Graph 1 (A, B) show the gender distribution in Group A and B, in which Group A had 5 male and 10 female and Group B had 8 male and 7 female.

The histogram **(Figure 1)** gives the idea about the age distribution of the day in which 10 subjects falls under 40-50 years of age and 20 subjects falls under 51-60 years of age, which says unequal distribution of the data.

The data was entered in excel sheet and descriptive statistics was done for all the baseline data which included mean and standard deviation. The mean and standard deviation age of group A and B was 51.27+_4.74 and 50.87+_5.28, and for KOOS value was 42.26+_11.56 and 71.94_+8.90 respectively **(Table 1, Figure 2)**.



Graph 1

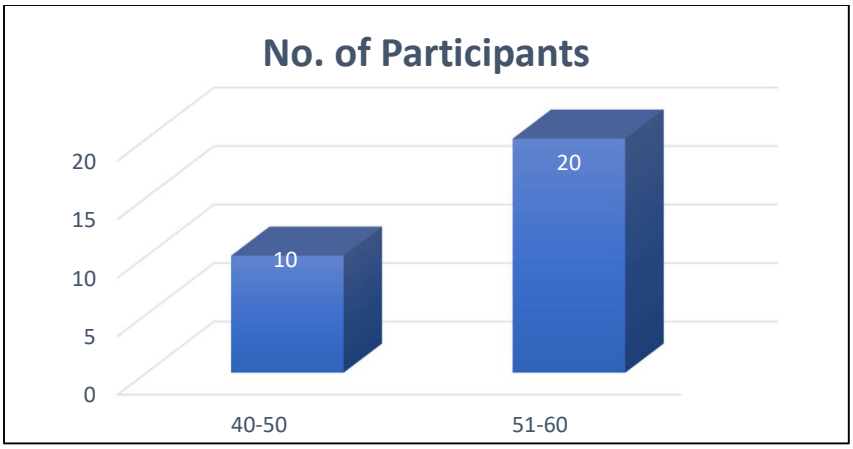


Figure 1

Table 1

Descriptive Statistics		
	Mean	**Std. Deviation**
Group A Age	**51.27**	**4.74**
Group B Age	**50.87**	**5.28**
Group A KOOS	**42.26**	**11.56**
Group B KOOS	**71.94**	**8.90**

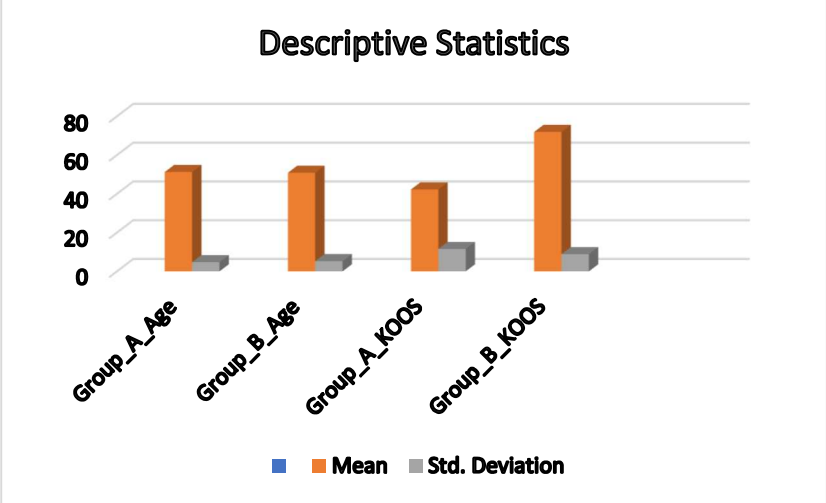


Figure 2

Table 2

Paired Samples Test									
		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Urban-Rural	**Group_A_KOOS - Group_B_KOOS**	**-29.68**	**16.86**	**4.35**	**-39.01**	**-20.34**	**-6.81**	**14**	**0.00**

In the provided **Table 2**, a paired samples test has been conducted to examine the differences between two related groups labeled as "Group_A_KOOS" and "Group_B_KOOS." The results of the paired samples test reveal a statistically significant difference between "Group_A_KOOS score and "Group_B_KOOS score. The negative mean difference of -29.67, along with the 95% confidence interval (-39.01 to -20.34), suggests a significant decrease in the variable "KOOS" from Group A to Group B. The t-value of -6.817 and the low p-value (.000) provide strong evidence to reject the null hypothesis.

Hence, according to the comparison Group B(Rural) group has more score in KOOS score resulting in more pain and difficulty with physical function compare to Group A (Urban).

CONCLUSION

The study concludes that the physical performance among rural population was more hampered compared to the urban population based on KOOS.

DISCUSSION

The aim of the study was to determine the Physical Performance Among Rural and Urban Population in individuals with OA Knee. Total 47 subjects were screened for the study. Based on inclusion and exclusion criteria 30 subjects were selected from both urban and rural population. 15 subjects were selected from urban population and even from rural population 15 subjects were selected. Subjects from both urban and rural population having OA knee were assessed to determine the physical performance using KOOS.

In the previous study Areerat Siripongpan, stated that patients had less severity of osteoarthritis, good quality of life, and no anxiety or depression. Residential areas had no impact on quality of life, but rural patients had less severity of osteoarthritis. Factors correlated to the area of residence were age, the severity of osteoarthritis, and screening of depression. In addition, patients in the age group < 50 years had low severity of osteoarthritis, but they also had lower quality of life. Thus, the rural population are less prone to the degenerative changes compared to urban population **[8]**.

Another study was done by Anitha Bhaskar, "As OA is a degenerative disease it is logical to assume that the prevalence of osteoarthritis increases with increase in age. The slightly lower prevalence in the above 80-year age category could be due to the low number of people in that category. This study also state that the high prevalence of osteoarthritis was among those subjects who had attained menopause. Estrogens influence the biology

of joint tissues by regulating the activity and expression of key signaling molecules in several distinct pathways. Thus, the study showed that OA is more common with increase in the age and has an impact on physical performance of the individual **[7]**.

Previous Study was done by Ewa M Roos, this study states that KOOS is a useful, reliable, valid and responsive instrument for assessment of patient-relevant outcomes in elderly subjects with advanced osteoarthritits. KOOS could be advantageous when assessing younger groups, groups with high expectations of physical activity, interventions with smaller effects or interventions where physical function is the primary outcome, and when assessing long-term outcome. Thus, KOOS is considered as the best assessment tool to measure the physical function among the individuals having OA knee **[1]**.

Recent study focused on the physical performance among individuals having OA knee in rural and urban population. The negative mean difference of -29.67, along with the 95% confidence interval (-39.01 to -20.34), suggests a significant decrease in the variable "KOOS" from Group A to Group B. Group B(Rural) has more score in KOOS resulting in more pain and difficulty with physical function compare to Group A (Urban).

CONCLUSION

The study concludes that the physical performance among rural population was more hampered compared to the urban population based on KOOS.

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