**Comparison of Health related quality of life in the patients of knee osteoarthritis of two urban cities**

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**Abstract:**

**Background**

Osteoarthritis is the chronic disease of the joint in which bone and joint cartilage are breakdown Osteoarthritis is the common type of disease of the joint in which elderly people are affected worldwide. In developing and developed country in which major cause of disability on health and activity of daily living. In which symptoms are included: stiffness and pain.

**Objective**

To find out the heath related quality of life in the patients of knee osteoarthritis between Lahore and Sialkot.

**Method**

Cross sectional comparative study data collected from 158 patient female and male with age limit between 35 years to onward according to inclusion criteria taken from Government and private hospital and clinics of Lahore and Sialkot. SF12 questionnaire used for collection and convenient sampling was used.

**Result**

There is no difference in result in the related quality of life between Sialkot and Lahore. The p value is 0.57

**Conclusion**

There is no difference in the health related quality of life in patients of Knee OA from Lahore and Sialkot and participants from both cities were having same health related quality of life

**Key Words:** Osteoarthritis, Daily activity of livings ( DAL), Health related quality of life

1. **INTRODUCTION:**
	1. **Overview**

 Osteoarthritis (OA) is the chronic disease of the joint in which bone and joint cartilage are breakdown.[[1](#_ENREF_1)] OA is the common type of joint disease in which elderly people are affected worldwide. In developing and developed country in which major cause of disability on health and activity of daily living. In which symptoms are included: stiffness, pain, debilitating and accounting significant disability, poor performance in physical and social task as well function level of the person also decrease. Problem in walking, squatting and stair climbing are common. The elder people who have diagnosed OA difficulty in his or her life they are used long term pharmacological medicine and physical therapy treatment.[[2](#_ENREF_2), [3](#_ENREF_3)]

The OA prevalence range between 10-20 % in elder population.it has more effect on women and elderly people as compare to men age between 45 to 65 years.[[4](#_ENREF_4)] In many study shows that the prevalence of OA is increasing day by day and some study also shows that OA of knee is higher than hip OA and this is more marked in people of Asian. In 2020 it could be 7th most prevalent disease. Some study describe that 23% pain increases of 55 years people and 39% of 65 years.[[5](#_ENREF_5)] Some study describe about the prevalence of OA 14.7% in women and 10.5% in men.[[6](#_ENREF_6)] another shows that OA of knee 11% in women and 7% in men and one study show that the incidence increase 40% in 2025.[[7-9](#_ENREF_7)]

The major causes of knee OA young population age between 25-35 years are knee trauma. Poor nutrition, prolonged knee bending and the ligamentous injury are the major cause of knee OA. Obesity is the major cause of bilateral knee OA [[10-12](#_ENREF_10)]

Health related quality of life improve the patient by better assessment early diagnosis of OA. [[13](#_ENREF_13)] physical activity improve the quality of life in the patient of knee OA regular exercises decrease the risk of many disease like diabetes, osteoporosis, hypertension, obesity and key role of manage the knee arthritis, maintaining regular basis exercises is challenge for patient of OA. Early diagnose of arthritis also control the disease better as compare to later stage of the disease. Patient education and behavior intervention is great help to decrease the progression of the arthritis.[[14-17](#_ENREF_14)]

* 1. **OBJECTIVE:**

To find out the heath related quality of life in the patients of knee osteoarthritis between Lahore and Sialkot.

* 1. **RATIONALE:**

Degenerative joint disease is very commonly affect weight bearing joints specially knee joint which disturbs the quality of life of the patients due to lack of awareness about the disease process and modification of life styles. So this study will help to educate general population about knee osteoarthritis and in this way to improve the quality of life.

**1.4. HYPOTHESIS:**

**NULL HYPOTHESIS:**

There was no difference between the quality of life in patients of knee OA in Sialkot and Lahore

**ALTERNATIVE HYPOTHESIS:**

There was difference between the quality of life in patients of knee OA in Sialkot and Lahore

* 1. **OPERATIONAL DEFINITION:**

**SF-12V2** questionnaire contain 12 item of question include the 4 points (general health, mental stress, disturbance in activity of daily living and social activity) SF-12 v2 is the short form of SF-36 questionnaire. Questionnaire scoring individual by using the formula

Transformation of score = Actual raw score – lowest possible raw score \* 100

 **/** Possible raw score

Validity/reliability of SF-12v2 is **0.93–0.96**

* 1. **ETHICAL ISSUE**

First permission from MS of the hospital and department

Consent form sign first and hidden the information

During The whole the period of study the ethics was kept in consideration.

1. **LITERATURE REVIEW:**

 Fausto Salaffi 2005 et al conducted cross sectional study in which they assess the quality of life patient of knee osteoarthritis and elder population in this study they used the questionnaire of WOMAC and SF-36. They took 244 patient (145 female and 99 male) age more than 50 years. They concluded that the difficulty in health related quality of life linked with radiographic changes.[[18](#_ENREF_18)]

A study conducted in 2009 by Azman A Baker et al in which they investigate quality of life among knee O.A patient in primary clinics they took 151 patient ages between 65-75 years. They used the questionnaire of SF-36(SF-12 is the short form of SF-36). The cross sectional study show that O.A patient who attend in primary care clinics were poor quality of life in activity of daily living and less impact on mental health.[[2](#_ENREF_2)]

A cohort study conducted by Jones CA, et al 2000 in which they took 276 patient with severe knee O.A and 228 of hip O.A after one month of knee and hip replacement they used WOMAC questionnaire for measure the pain and stiffness. This study shows that the pain and stiffness of the knee and hip are reduced and improve the quality of life after the replacement. [[19](#_ENREF_19)]

[Jack Farr II](https://www.ncbi.nlm.nih.gov/pubmed/?term=Farr%20II%20J%5BAuthor%5D&cauthor=true&cauthor_uid=24285987), et al in 2013 conducted the study in which they assess the quality of life in O.A patient. They wanted to improve the health of knee arthritis patient. They assess that the arthritic patient bear the large burden of the disease by economically. The arthritis substantial adverse influence on health of elder people. The cross sectional studies conclude that better treatment and exercise improve the patient social, physical and psychological status.[[8](#_ENREF_8)]

The sample size of the study is 93 patient who diagnose of arthritis study is conducted in 2012-2013(December – May) non probability sampling were recruited age between 40-70 years age for evaluation chi square use and for measurement SF-36 questionnaire. Luis Andrade Araujo, et al January 21, 2016 conducted Cross sectional analytic study concluded that the activity of daily living improves by the treatment the strong relation between these two variables also determines that Functional independence positively affects quality of life. Higher the functional independence and higher will be the quality Of life. [[9](#_ENREF_9)]

YA Murillo et al 2013 conducted the comparative cross sectional study in which they compare the osteoarthritis and comorbidity like diabetes, hypertension and end stage of renal condition with health. They took 290 patients which diagnosed osteoarthritis by X-rays and have other comorbidity. They concluded that arthritis needs more consideration as compare to other disease it great impact on heath of the elder. [[20](#_ENREF_20)]

Health related quality of life in the patient of severe osteoarthritis cross sectional study conducted in 2007 by M Nunez et al they measured the quality of life with WOMAC and SF-36 scale the study show that the anatomy of the joint is disturb. It is progressive disease it worsens in later stage and has no cure.[[21](#_ENREF_21)]

 Randomized control trail study conducted by M Nunez et al in 2006. They took 100 patient age between 50-86 years the study took 9 month to complete in which the diagnose patient of osteoarthritis( who is waited for replacement of joint) they divided into two group one group received both pharmacological and  therapeutic education and functional re adaptation (TEFR) and one group received the pharmacological treatment only. They concluded that negative impact of osteoarthritis is reduced by this study.[[22](#_ENREF_22)]

1. **METHODOLOGY**
	1. **STUDY DESIGN:** Comparative cross-sectionalstudy
	2. **SETTING:** Government Sardar Baigum Hospital, Govt Khawaja Safdar Hospital Sialkot and CMATRH and Saeed Orhopedic medical complex Lahore.
	3. **STUDY DURATION:** Study was completed in 6 months duration from Nov 2018 to April 2019 .
	4. **SAPLE SIZE:**

158 patients selected, out of which 53 were Male and 105 were female

* 1. **SAMPLING TECHNIQUE:** Data was calculated by using convenience sampling method.
	2. **ELIGIBILITY CRITERIA:**
1. **INCLUSION CRITERIA:**

Diagnosed patient of knee O.A

1. **EXCLUSION CRITERIA:**

Any history of systemic disorder e.g. R.A

History of any Malignancy

History of Trauma

* 1. **DATA COLLECTION TOOL:**

 SF-12 questionnaire

* 1. **DATA COLLECTION PROCEDURE**:

A comparative cross-sectional study in which olderage female and male with age limit between 35 years to onward according to inclusion criteria taken from Government and private hospital and clinics of Lahore and Sialkot. Convenient sampling was used. The identity of the researcher kept anonymous. All measures collected during a single session. After taking informed consent patients were requested to fill questionnaire. Health related SF-12 V2 questionnaire was used for health related quality of life measure.

 **3.9. STATISTICAL PROCEDURE:**

SPSS used for data analysis

Chi square test for result

Sample t test

1. **Result**

Table 1 Socio-demographic Profile (Qualitative Variables)

|  |  |  |
| --- | --- | --- |
|  **Variable** | **Frequency** | **Percentage** |
| **Gender** | **Male** | 53 | 33.5 |
| **Female** | 105 | 66.5 |
| **City** | **Lahore** | 79 | 50.0 |
| **Sialkot** | 79 | 50.0 |

Table 2 Socio-demographic Profile (Quantitative Variables)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age** | **Minimum** | **Maximum** | **Mean** | **SD** |
| 41.00 | 80.00 | 48.53 | 10.36 |

A total of 158 patients with knee OA participated in the study. Out of total 53 were males and 105 were females. Participants were equally selected from Lahore and Sialkot (150 from each city). The mean age of the participants was 48.53

Table 3 Comparison of responses about general health

|  |  |  |
| --- | --- | --- |
| **General** **Health** | **In general, would you say your health is** | **p-value** |
| **Excellent** | **Very good** | **Good** | **Fair** | **Poor** |
| **Lahoren=79** | 6(7.6%) | 12(15.2%) | 26(32.9%) | 26(32.9%) | 9(11.4%) | 0.57 |
| **Sialkotn=79** | 3(3.8%) | 10(12.7%) | 23(29.1%) | 28(35.4%) | 15(19%) |
| **Totaln=158** | 9(5.7%) | 22(13.9%) | 49(31%) | 54(34.2%) | 24(15.2%) |

Table 4 Comparison of responses about activities of daily livings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ADLs** | **Limited A lot** | **Limited A Little** | **Not Limited** | **p-value** |
| **Limitation in moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf** |
| **Lahoren=79** | 24(30.4%) | 43(54.4%) | 12(15.2%) | 0.53 |
| **Sialkotn=79** | 22(27.8%) | 49(62%) | 8(10.1%) |
| **Totaln=158** | 46(29.1%) | 92(58.2%) | 20(12.7%) |
| **Limitation in climbing several flights of stairs** |
| **Lahoren=79** | 24(30.4%) | 37(46.8%) | 18(22.8%) | 0.58 |
| **Sialkotn=79** | 32(40.5%) | 39(49.4%) | 8(10.1%) |
| **Totaln=158** | 56(35.4%) | 76(48.1%) | 26(16.5%) |

Table 5 Comparison of responses about mental stress and Social Activity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Mental Stress and Social Activity** | **All of the time** | **Most of the time** | **Some of the time** | **A little of the time** | **None of the time** |   |
| **During the past 4 weeks, Do you accomplished less than you would like due to physical health?** |
| **Lahoren=79** | 9(11.4%) | 32(40.5%) | 29(36.7%) | 6(7.6%) | 3(3.8%) | 0.48 |
| **Sialkotn=79** | 9(11.4%) | 30(38%) | 34(43%) | 6(7.6%) | 0(0%) |
| **Totaln=158** | 18(11.4%) | 62(39.2%) | 63(39.9%) | 12(7.6%) | 3(1.9%) |
| **During the past 4 weeks, Were you limited in the kind of work or other activities due to physical health?** |
| **Lahoren=79** | 10(12.7%) | 27(34.2%) | 26(32.9%) | 11(13.9%) | 5(6.3%) | 0.11 |
| **Sialkotn=79** | 5(6.3%) | 39(49.4%) | 27(34.2%) | 7(8.9%) | 1(1.3%) |
| **Totaln=158** | 15(9.5%) | 66(41.8%) | 53(33.5%) | 18(11.4%) | 6(3.8%) |
| **During the past 4 weeks, Do you accomplished less than you would like due to emotional problem?** |
| **Lahoren=79** | 12(15.2%) | 29(36.7%) | 23(29.1%) | 14(17.7%) | 1(1.3%) | 0.86 |
| **Sialkotn=79** | 9(11.4%) | 30(38%) | 28(35.4%) | 11(13.9%) | 1(1.3%) |
| **Totaln=158** | 21(13.3%) | 59(37.3%) | 51(32.3%) | 25(15.8%) | 2(1.3%) |
| **During the past 4 weeks, Did your work or activity less carefully due to emotional problem?** |
| **Lahoren=79** | 10(12.7%) | 25(31.6%) | 28(35.4%) | 15(19%) | 1(1.3%) | 0.19 |
| **Sialkotn=79** | 8(10.1%) | 39(49.4%) | 21(26.6%) | 9(11.4%) | 2(2.5%) |
| **Totaln=158** | 18(11.4%) | 64(40.5%) | 49(31%) | 24(15.2%) | 3(1.9%) |
| **During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework?** |
| **Lahoren=79** | 5(6.3%) | 13(16.5%) | 37(46.8%) | 10(12.7%) | 14(17.7%) | 0.11 |
| **Sialkotn=79** | 7(8.9%) | 19(24.1%) | 21(26.6%) | 17(21.5%) | 15(19%) |
| **Totaln=158** | 12(7.6%) | 32(20.3%) | 58(36.7%) | 27(17.1%) | 29(18.4%) |
| During the past 4 weeks, Have you felt calm and peaceful? |
| **Lahoren=79** | 6(7.6%) | 19(24.1%) | 31(39.2%) | 21(26.6%) | 2(2.5%) | 0.18 |
| **Sialkotn=79** | 2(2.5%) | 16(20.3%) | 30(38%) | 31(39.2%) | 0(0%) |
| **Totaln=158** | 8(5.1%) | 35(22.2%) | 61(38.6%) | 52(32.9%) | 2(1.3%) |
| During the past 4 weeks, Did you have a lot of energy?? |
| **Lahoren=79** | 6(7.6%) | 17(21.5%) | 26(32.9%) | 24(30.4%) | 6(7.6%) | 0.43 |
| **Sialkotn=79** | 2(2.5%) | 14(17.7%) | 27(34.2%) | 32(40.5%) | 4(5.1%) |
| **Totaln=158** | 8(5.1%) | 31(19.6%) | 53(33.5%) | 56(35.4%) | 10(6.3%) |
| During the past 4 weeks, Have you felt downhearted and depressed? |
| **Lahoren=79** | 8(10.1%) | 22(27.8%) | 24(30.4%) | 15(19%) | 10(12.7%) | 0.83 |
| **Sialkotn=79** | 11(13.9%) | 26(32.9%) | 26(32.9%) | 15(19%) | 1(1.3%) |
| **Totaln=158** | 19(12%) | 48(30.4%) | 50(31.6%) | 30(19%) | 11(7%) |
| During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities? |
| **Lahoren=79** | 14(17.7%) | 21(26.6%) | 29(36.7%) | 11(13.9%) | 4(5.1%) | 0.83 |
| **Sialkotn=79** | 13(16.5%) | 24(30.4%) | 26(32.9%) | 14(17.7%) | 2(2.5%) |
| **Totaln=158** | 27(17.1%) | 45(28.5%) | 55(34.8%) | 25(15.8%) | 6(3.8%) |

About general health, from Lahore 5(7.6%) participants responded excellent, 23(15.2%) said very well, 26(32.9%) good, 26(32.9%) reported fair, and 9(11.4%) reported poor whereas from Sialkot 6(3.8%) participants reported excellent, 10(12.7 %)said very good, 23(29.1%) said good, 56(35.4%) reported fair, and 15(19%) reported poor. About limitation in moderate activities, from Lahore 23(30.4%) participants reported limited a lot, 43(54.4%) reported limited a little, and 11(15.2%) reported not limited whereas from Sialkot, 22(27.8%) reported limited a lot, 90(62%) said limited a little, and 8(10.1%) reported not limited. About limitation in climbing several flights of stairs, from Lahore 24(30.4%) participants reported limited a lot, 67(46.8%) reported limited a little, and 18(22.8%) reported not limited whereas from Sialkot, 62(40.5%) reported limited a lot, 39(49.4%) said limited a little, and 8(10.1%) reported not limited

In response to question, "During the past 4 weeks, do you accomplished less than you would

like due to physical health", from 9(11.4%) participants responded, all of the time, 32(40.5%) responded most of the time, 29(36.7%) said some of the time, 6(7.6%) reported a little of the time, and 3(3.8%) reported none of the time whereas from Sialkot, 9(11.4%) all of the time, 30(38%) responded most of the time, 34(43%) said some of the time, 6(7.6%) reported a little of the time, and 0(0%) reported none of the time. In response to question, "During the past 4 weeks, were you limited in the kind of work or other activities due to physical health", from 10(12.7%) participants responded, all of the time, 27(34.2%) responded most of the time, 26(32.9%) said some of the time, 11(13.9%) reported a little of the time, and 5(6.3%) reported none of the time whereas from Sialkot, 5(6.3%) all of the time, 39(49.4%) responded most of the time, 27(34.2%) said some of the time, 7(8.9%) reported a little of the time, and 1(1.3%) reported none of the time. In response to question, "During the past 4 weeks, do you accomplished less than you would like due to emotional problem", from 12(15.2%) participants responded, all of the time, 29(36.7%) responded most of the time, 23(29.1%) said some of the time, 14(17.7%) reported a little of the time, and 1(1.3%) reported none of the time whereas from Sialkot, 9(11.4%) all of the time, 30(38%) responded most of the time, 28(35.4%) said some of the time, 11(13.9%) reported a little of the time, and 1(1.3%) reported none of the time. In response to question, "During the past 4 weeks, did your work or activity less carefully due to emotional problem", from 10(12.7%) participants responded, all of the time, 25(31.6%) responded most of the time, 28(35.4%) said some of the time, 15(19%) reported a little of the time, and 1(1.3%) reported none of the time whereas from Sialkot, 8(10.1%) all of the time, 39(49.4%) responded most of the time, 21(26.6%) said some of the time, 9(11.4%) reported a little of the time, and 2(2.5%) reported none of the time. In response to question, "During the past 4 weeks, how much did pain interfere with your normal work?", from 5(6.3%) participants responded, all of the time, 13(16.5%) responded most of the time, 37(46.8%) said some of the time, 10(12.7%) reported a little of the time, and 14(17.7%) reported none of the time whereas from Sialkot, 7(8.9%) all of the time, 19(24.1%) responded most of the time, 21(26.6%) said some of the time, 17(21.5%) reported a little of the time, and 15(19%) reported none of the time. In response to question, "During the past 4 weeks, have you felt calm and peaceful?", from 6(7.6%) participants responded, all of the time, 19(24.1%) responded most of the time, 31(39.2%) said some of the time, 21(26.6%) reported a little of the time, and 2(2.5%) reported none of the time whereas from Sialkot, 2(2.5%) all of the time, 16(20.3%) responded most of the time, 30(38%) said some of the time, 31(39.2%) reported a little of the time, and 0(0%) reported none of the time. In response to question, "During the past 4 weeks, did you have a lot of energy?", from 6(7.6%) participants responded, all of the time, 17(21.5%) responded most of the time, 26(32.9%) said some of the time, 24(30.4%) reported a little of the time, and 6(7.6%) reported none of the time whereas from Sialkot, 7(2.5%) all of the time, 14(17.7%) responded most of the time, 101(34.2%) said some of the time, 121(40.5%) reported a little of the time, and 16(5.1%) reported none of the time. In response to question, "During the past 4 weeks, have you felt downhearted and depressed?", from 8(10.1%) participants responded, all of the time, 82(27.8%) responded most of the time, 24(30.4%) said some of the time, 15(19%) reported a little of the time, and 37(12.7%) reported none of the time whereas from Sialkot, 40(13.9%) all of the time, 26(32.9%) responded most of the time, 26(32.9%) said some of the time, 56(19%) reported a little of the time, and 1(1.3%) reported none of the time. In response to question, "During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities ?", from 14(17.7%) participants responded, all of the time, 78(26.6%) responded most of the time, 29(36.7%) said some of the time, 40(13.9%) reported a little of the time, and 15(5.1%) reported none of the time whereas from Sialkot, 49(16.5%) all of the time, 91(30.4%) responded most of the time, 26(32.9%) said some of the time, 52(17.7%) reported a little of the time, and 2(2.5%) reported none of the time. The p value of all items, calculated through chi square test, (0.57, 0.53, 0.08, 0.48, 0.11, 0.86, 0.19, 0.11, 0.18, 0.43, 0.83, 0.84) show that there is no statistical difference in the quality of life among both groups

Table 6 Comparison of Health Related Quality

|  |  |  |  |
| --- | --- | --- | --- |
| **Health Related Quality** | **Lahore** | **Sialkot** | **p-value** |
| **SF-12 ScaleScore** | 32.29±4.97 | 31.89±4.6 | 0.57 |

Table 6 is comparing the score of health related quality SF-12 Scale score among participants. The mean score of participants from Lahore was 32.29±4.97 and from Sialkot was 31.89±4.6. The p value (0.57), calculated through independent sample t test shows that there is not any significant difference in the health related quality of life among both groups

1. **Discussion**:

This study aimed to measure health related quality of life in the patient of knee osteoarthritis help the care provider or physical therapist to understand the impact of the disease.

In this study the sample size was evenly divide between Lahore and Sialkot. Lahore is a major urban center whereas Sialkot is an Industrial city and not as urbanized as Lahore. Studies have shown that lifestyle in major urban centers is more sedentary than smaller cities despite this no difference in result was seen among ADL’s of patients of Knee Osteoarthritis of both cities.

Among participants there were a number of patients that had severe Osteoarthritis and fulfilled the criteria for Knee replacement, which has been established as the most effective treatment for Knee Osteoarthritis. But over society did not have money for operation.[[23](#_ENREF_23)]

This study showed that decrease social activity of knee osteoarthritis and previous study also support the result. A study conducted in September 2016 showed decreased ADL’s like stair climbing, in this study 83.5% of patients responded that they had severe or some limitation to climbing stairs, house hold work. In this study 76% of patients of Osteoarthritis feel most of the time depressed or some of the time whereas 26% felt Little to no depression. These result are in line with other studies conducted on patients of Knee Osteoarthritis which showed high percentage of levels of depression the patients of Knee Osteoarthritis.[[24-26](#_ENREF_24)]

The osteoarthritis is the degenerative disease which can affect every old age population. This study shows most limitation in ADL’s of patients suffering from knee osteoarthritis. Most severe limitations were seen in stairs climbing moderate activities such as cleaning the house. This study also showed a significant number of patients due to limitation on ADL also suffered from depression. These patients should be provided the resources to identify and address their concerns. Support groups Rehabilitation physical therapy to cop this situation. The anxiety and pain can depress the patient of knee osteoarthritis.[[27](#_ENREF_27)]

An Orthopaedic surgeon and Physiotherapist can help to improve ADLs of the patient of knee osteoarthritis, pain and swelling can be managed with modification of life styles, medications and physical therapy. All these decrease the impact of disease. Physical therapy can improve the living style; improve quality of life and social behavior.

1. **Conclusion:**

There is no difference in the health related quality of life in patients of Knee OA from Lahore and Sialkot and participants from both cities were having same health related quality of life

1. **Limitation**

Time may be short for study

Patients reluctant to give data

1. **RECOMMENDATION**

Male and female ratio should be equal

Counseling for better compliances and Education about arthritis

Early consultation of Orthopedic surgeon and physical therapy

 Counseling of patients to relief depression due to Osteoarthritis for better quality of life

**DECLARATIONS**

We acknowledge this study to our parents and teachers.

The contribution from both authors almost same.

No financial assistance or fund taken in this research.

There is neither any conflict of interest nor any ethical issue.

Informed consent taken from all participants and data collected on performa. Identity kept secret.

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1. **APPENDIX**

**CONSENT FORM:**

Respected participant, the study you are going to participate is “female and male with and without osteoarthritis” Please give approval of your participation by filling the following form.

* I confirm that I have read and understand the information for the study.
* I understand that taking part is voluntary that I am free to withdraw any time, without giving any reason.
* I agree to take part in this study and researcher having the following personal detail for the purpose of contacting me directly to arrange a research interview.

Name; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gender; \_\_\_\_\_\_\_ Age; \_\_\_\_\_\_\_ Date; \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone no; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hospital name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_