



Comparison of Psychological Dimensions in Rural Population with Various Joint Degenerative Arthritis

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ABSTRACT

Background & purpose: Osteoarthritis patients often suffer from anxiety which can affect the disease prognosis. This study is aimed at assessing the various psychological dimensions in different joint arthritic subjects of the rural population and find the most common joint arthritis that can lead to anxiety in the rural population. **Material and methods:** A total of 252 subjects satisfied the inclusion criteria and were recruited for the study after written informed consent and were asked to fill in the GPS online through Google forms. The “feelings” subscale assesses the patient's psychological stress due to pain and disease. The psychological dimensions of sub-section feelings of GPS were analyzed by 1-way ANOVA to assess whether there is a difference on average in the scores among the three groups at a $p < 0.05$ significant level. Tukey HSD was used for post hoc pair-wise comparisons. **Results:** One-way ANOVA results showed that there was no statistically significant difference between the groups for fear, level of anxiety, depression, stress, and fatigue. Tukey HSD post hoc comparison revealed that the results were statistically significant for Fear ($Q=3.35, p=0.04$), fatigue levels ($Q=3.69, p=0.02$). The Tukey HSD post hoc comparison for levels of anxiety, depression, and stress was not statistically significant. **Conclusion:** From this study, we conclude that anxiety, fatigue, and fear are highly prevalent in Hip osteoarthritis. Anxiety is associated with all joint osteoarthritis and can result in poor quality of living. We recommend physicians emphasize psychological dimensions and address them at an early stage in order to achieve a better prognosis in degenerative joint diseases.

Keywords: Anxiety, Global pain scale, Osteoarthritis,

INTRODUCTION

Degenerative joint disease, also known as osteoarthritis, is the most prevalent musculoskeletal condition. It is characterized by gradual loss of cartilage in freely movable joints such as the hip, knee, ankle, spine, and hands (Williams et al., 2018).

Osteoarthritis (O.A) pathogenesis includes progressive destruction of articular cartilage, thickening of the subchondral bone, osteophytes, synovial inflammation and thickening, degeneration of ligaments, and hypertrophy of the joint capsule (Loeser et al., 2012).

Worldwide about 10–15% of all adults aged over 60 have some degree of OA. While the global prevalence of knee & hip O.A was 3.8% Worldwide about 10-15% of all adults aged over 60 have some degree of Osteoarthritis (WHO). Global prevalence of knee and hip OA was 3.8% and 0.85% respectively. Osteoarthritis of the knee and spine is highly prevalent in India, while OA hip is uncommon. Community survey data in rural and urban areas of India shows a wide range

of prevalence of OA among elderly >65 years (17-60.6%) with point prevalence in rural areas higher than urban (Chopra, 2015).

From the previous researches it was found that increasing age, female sex, obesity, sedentary lifestyle, , improper dietary patterns can lead to early osteoarthritis (Joshi & Chopra, 2009).

Apart from pain, patients with chronic arthritis report anxiety and depression as comorbidities that alter the pain threshold levels. Chronic pain disorders can cause or aggravate anxiety and depression where a vicious cycle begins, and can significantly impact the course and management. There were researches correlating anxiety with arthritis, but no or a few relevant studies were found on the comparison of levels of anxiety in various joints affected by osteoarthritis. This study is aimed at assessing the various psychological dimensions in different joint arthritic subjects of the rural population and find the most common joint arthritis that can lead to anxiety in the rural population.

MATERIAL AND METHODS

Enrolment & Recruitment: This study was conducted during February to May 2021, at the Department of Orthopaedics in association with the Physiotherapy department of the university hospital. It was a cross-sectional study. A total of 385 patients were screened, 252 subjects satisfied the inclusion criteria and were recruited for the study after written informed consent. The

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inclusion criteria were patients with a confirmed diagnosis of degenerative arthritis of either Hip, Knee, or ankle, both females and males, older than 35 years, conscious, and coherent. Patients with polyarthritis, pain less than 3 weeks, Charcot's disease were excluded from this study. The subjects were grouped according to the joint affected. The subjects with ankle joint osteoarthritis were grouped in Group A (n=21), Hip joint OA in Group B (n=21) and Knee joint OA in Group C (n=210).

Method of Data Collection: All the subjects who were enrolled in this were asked to fill in the GPS (Global Pain Scale). Due to the COVID-19 situation patients were asked to fill in the GPS online through Google forms. The data was recorded and cross-checked telephonically. Clear instructions regarding the study were given along with the link. Patients had to self-record their GPS and submit it. For queries, the email address was provided.

The joints included were ankle, knee, and hip for the age group of people above 35 years. The form was composed of four parts. The first part includes demographic data and pain of more than 3 weeks. The second part consists of informed consent, where only people willing to take part in the study were allowed to fill the next part of the form.

The third part had history of the patient and the family is taken into account along with information such as general appearance, external support, swelling of joints, and other characteristic features of OA such as tenderness, oedema, and range of movements of that particular joint.

The fourth and final section consisted of the GPS. Clear instructions in the form of steps were given to self-report the pain intensity, feelings, clinical outcomes, and functional independence. All of the above data were retrieved and studied.

Outcome Measures: All the demographic characteristics of the subjects were recorded at the time of enrolment and recruitment of subjects. The psychological dimensions, fear, level of anxiety, depression, stress and fatigue were assessed using in the subsection "feelings" in the Global Pain Scale (GPS) at the time of enrolment. All the subjects who were enrolled were asked to fill in the GPS (Global Pain Scale).

The Global Pain Scale (GPS) is a set of 4 self-report scales designed to measure pain, feelings, clinical outcomes and, activity limitation. The global Pain Scale (GPS) is reliable and suitable to assess pain, feelings, clinical outcomes and, activity limitation with good validity and reliability (Gentile et al., 2011). The "feelings" subscale assesses the patient's psychological stress due to pain and disease. It has 5 subsections, Afraid, Depressed, Tired, Anxious, and Stressed.

Statistical Analysis: The demographic characteristics of the groups were checked for normality and homogeneity by the chi-square test and D'Agostino-Pearson Test. The psychological dimensions of sub-section feelings of GPS were analyzed by 1-way ANOVA to assess whether there is a difference on average in the scores among the three groups at a $p < 0.05$ significant level. Tukey HSD was used for post hoc pair-wise comparisons.

RESULTS

In this study to compare various psychological dimensions in a rural population with various joint degenerative arthritis, the demographic data passed the normality tests, and there was no statistical difference among the groups. (Table 1). One-way ANOVA results showed that there was no statistically significant difference between the groups for fear, level of anxiety, depression, stress, and fatigue. (Table 2). Tukey HSD post hoc comparison revealed that the results were statistically significant for Fear ($Q=3.35$, $p=0.04$), fatigue levels ($Q=3.69$, $p=0.02$). The Tukey HSD post hoc comparison for levels of anxiety, depression, and stress was not statistically significant.

Table 1: Base Characteristics of the subjects in Group A, B and C

Characteristics	Group A (Ankle)	Group B (Hip)	Group C (Knee)	P Value
Age (Age Group)*	46-55	46-55	56-65	p>0.05
Gender (Male: Female)	1:2	11:10	67:143	
General Appearance (Lean: Normal: Obese)	1:4:2	7:11:3	5:15:22	
Life Style (Sedentary: Non Sedentary)	19:2	3:1	173:37	
Need of Ambulation	33.33%	9.52%	53.33%	
Pain (VAS Score)**	6.04±2.03	5.35±2.37	6.34±1.94	
Idiomatic language	Hindi	Hindi	Hindi	
Occupations				
Agriculture	1	9	16	
Business	15	5	14	
Teacher	0	0	18	
Home maker	0	0	109	
Other	5	7	53	
Educational status (Literate : Illiterate)	20:1	18:3	187:23	

Table2: One-Way ANOVA Results with Post-hoc Comparison of Psychological Dimensions

Factor	Mean ± SD			F value	Q value	P value
	Group A	Group B	Group C			
Fear	4.66±2.83	6.23±2.67	5.36±2.53	2.04	3.35	0.4*
Depression	4.76±2.74	5.38±3.00	5.164±2.63	0.36	1.4	0.58
Fatigue	5.33±2.53	6.85±2.49	6.06±2.23	2.42	3.69	0.02*
Anxiety	5.19±2.25	5.90±2.85	5.78±2.36	0.64	1.65	0.47
Stress	5.85±2.83	5.38±2.32	5.75±2.89	0.32	1.11	0.71

DISCUSSION

In this study, a total of 252 subjects were enrolled, of which ankle osteoarthritis subjects were 21, Hip joint O.A 21, and

knee joint O.A 210 subjects respectively. The data reveals that Knee O.A is the most common degenerative joint disease in the rural population. From the observed data, the results divulged that there was no statistical difference in the levels of anxiety, depression, and stress among Hip, Knee, and Ankle Osteoarthritis in the rural population. However, the results showed that there was a statistical difference in pos hoc comparisons in fear and fatigue levels.

From our data, we found that subjects suffering from Hip osteoarthritis have high levels of fear and fatigue when compared with Knee and Ankle arthritis. The fatigue levels in OA are due to pain, age, low physical activity, and depression (Zautra et al., 2007). The hip joint is a major weight-bearing joint that is surrounded by large muscles which need to generate a large amount of force to move the bony levers for a full range of motion. When there is pain or disease, the number of forces changes, which leads to early fatigue. The pain related fear can result in decreased movement and activity levels. It is also evident that Osteoarthritis patients will be hesitant to initiate movement or engage themselves in exercises. This can result in weight-gain, social isolation, depression and self-avoidance leading to anxiety and depression. All these factors can exacerbate the O.A symptoms.

The results of our study showed that the anxiety levels are high in Hip Osteoarthritis followed by Knee and ankle joint O.A. However, the results were not statistically significant. The reason could be a smaller sample size. The results have also shown that the depressive symptoms are high in Hip O.A followed by knee and ankle (Table 2).

It was found that anxiety has a very strong association with Osteoarthritis. Anxiety can result in poor adherence to self-care regimens and increased symptom burden. These factors exacerbate osteoarthritis progression. In addition, those with anxiety disorder histories appear to experience a lower life quality, higher rates of pain and disability, and a lower ability to recovery. The pain is already very limiting for the patient to carry on with their lives, and the presence of anxiety only worsens it.

Studies have shown that anxiety leads to pain at multiple sites, increases the pain intensity, decreases the quality of life by increasing the severity of the disease (Sale et al., 2008). Anxiety in O.A leads to the frequent requirements of health care providers, dependency on pain-medications (Ozcakir et al., 2011).

Ironically, the traditional method of dealing with Osteoarthritis patients involving alleviating physical symptoms is still followed. However, the psychological dimensions should be well managed in conditions of chronic pain (Sharma et al., 2016).

Timely identification of the psychological symptoms, its pre-evaluation, and educating the patient about the disease will increase the quality of life (QOL) of the patients living (Rosemann et al., 2007).

Thus, implementing self-filled scales by the patient to record their psychological status will identify the people at risk and help in the implementation of the management programs that

are effective not only for the patient but also for the economy (Sale et al., 2008).

From this study, we conclude that anxiety, fatigue, and fear are highly prevalent in Hip osteoarthritis. Anxiety is associated with all joint osteoarthritis and can result in poor quality of living. We recommend physicians emphasize psychological dimensions and address them at an early stage in order to achieve a better prognosis in degenerative joint diseases.

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