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Prevalence Of Patellofemoral Pain Syndrome In Asha Workers

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ABSTRACT

Background Asha workers are frontline community health worker who has to be the inhabitants of the village, ideally between the ages of 25 to 45. Syndrome of Patellofemoral Pain is described as aching behind or around the patella that escalates after at least a single activity that strains the patella after bearing weight with the knee bent. It aims to investigate the prevalence of PFPS in ASHA employees.

Method ASHA workers having anterior knee pain underwent evaluation by using NPRS, Clarke's sign and Kujala knee pain Score. Data on age, years of experience and duration of work was taking in consideration. participants with patellar instability, lower limb fracture and previous knee surgery were excluded.

Result in this study 73 participants were included out of which 52 participants had positive Clarke's sign and 22 had negative clarke's sign. Most of the participants They ranged among the ages of 25 and 40, having a mean age around 33.85(±4.74) years with experience of 5 or more years. there was significant correlation between kujala akps and clarke's sign.

Conclusion this study predicts the susceptibility of pfps in asha workers. asha worker are more prone for pfps which suggests high risk of injury. asha worker's severe workload has a substantial influence on their ability to provide quality healthcare services to the community as well as their own health. knee joint is weight bearing joint and so it is more prone injuries.

Keywords: *ASHA worker, PFPS, Kujala AKPS, Clarke's Sign.*

1. INTRODUCTION

Dysplasia in the extensor muscle can trigger PF symptoms, as even minor differences might disrupt the muscle group that affects PF biomechanics. Tension in the lateral retinaculum generates pressure Along the lateral patellar facet, causing misalignment as well as instability [(1)].

The active contraction of the quadriceps causes the patella to move during tibiofemoral motion, An extendable nature of the tissue surrounding, and the patella and trochlear groove geometry. The patellofemoral joint reaction force is determined with knee joint angle as well as muscular tension and acts as a compression force on the joint. Joint stress is calculated as force per unit area, is obtained by calculating the PFJRF into the patellar joint's contact area. Increased contact between the patellar surface and femur reduces stress on the joint. Excessive patellofemoral joint stress and reduce contact area can destroy joint cartilage. Poor patellar placement might lead to increased stress [(2)].

As muscle function to generate hypertrophy declines, patellofemoral dysfunction may progress, necessitate controlled situations of the quadriceps through knee ranges with minimized pain [(3)].

Patients with PFP may experience loss of movement control due to changes in hip and knee muscle activation. These changes are thought to be caused by protective and stabilizing processes, which can cause overload and pain in the patellofemoral joint [(4)].

Individuals with PFPS have altered gait biomechanics, leading to greater stress on the patellofemoral joint. Abnormal patellar tracking. Lateral Mal tracking occurs when the patella tilts or shifts laterally during knee flexion and extension. Increase Lateral Force: Extra pressure on the lateral aspect of the patella can cause pain and cartilage deterioration.

Joint Kinematics Reduced Knee Flexion: Limited knee bending during the stance phase reduces shock absorption and increases patellofemoral joint stress. Delayed Heel-Off: Extended contact with the ground might aggravate patellar compression [5]. Kinetics of the Patellofemoral Joint Patellofemoral joint kinematics refers to the patella's relative motion in relation to the femoral groove (the trochlea), which occurs largely during knee flexion and extension.

Key components of the kinematics are:

Translation (the sliding Movement).

The patella slides in the femoral groove when the knee rotates.

Vertical Translation: During knee motion, the patella travels along the femur in both superior (upward) and inferior (downward) directions. In fully extended position, the patella is toward the top of the femur groove, and when the knee flexes, it moves downwards.

Medial-Lateral Translation: This is also some minor medial-lateral motion. During knee flexion, the patella usually moves somewhat medially (towards the body's midline).

Rotation (Tilt/Spin) The ball of the patella tilts and spins with knee movement. Tilt: The cap of the patella can tilt laterally or medially around its transverse axis. During complete extension, the patella is normally neutral or just slightly lateral in tilt. As the knee bends, the patella tilts medially.

Spin (or Internal/External Rotation): The patella additionally undergoes rotational movement, which is sometimes referred to as "spin." The direction of this rotation can be clockwise or anticlockwise, and it is linked to knee flexion and extension. In this case, the patella may rotate slightly external

during knee extension and internal while knee bends. The prevalence of musculoskeletal discomfort ranges from forty percent to 69.3 percent. Musculoskeletal pain is common in working individual [6]. The incidence of anterior knee discomfort among females aged from eighteen to thirty-five is twenty-five percent [7].

Adults and teenagers under the age of sixty-five who experience knee discomfort frequently have patellofemoral pain syndrome (PFPS) [8].

We found a link between knee discomfort and the sum of expressed physical exposures involving heavy lifting, kneeling, and squatting, quick continuous physical activity, and uncomfortable postures.

Previous research has linked knee disorders to a combination of physical exposures that increase the biomechanical strain on the knee [9]. Accredited Social Health Activist (ASHA) ought to being a resident of the community (married, widowed, or divorced), ideally in the age institution of twenty-five to forty-five years with an official education up to 8th standard, spoken communication skills, and control tendencies. Proper depiction from poor population organizations will ensure that such organizations receive better service.

The generally accepted norm of preference is 1 ASHA for a 1000 population in the tribal, a hilly one or desert places, the norm might be comfortable to at least 1 ASHA consistent with dwelling [10]. In the year 2011, the Ministry of Healthcare and Welfare investigated the ASHA program in eight Indian states, including Andhra Pradesh, Assam, Bihar, Jharkhand, Kerala, Orissa, Rajasthan, and West Bengal [11].

Role and obligations of ASHA [10] ASHA might be a health activist inside the network who will create consciousness on health. Her duties may be as follows: - ASHA will take steps to create reputation, and provide the community with information about fitness determinants such as nutrients, basic sanitation and hygiene practices, healthy living, and running conditions. Statistics about current medical services, plus a need for punctual utilization to fitness with the circle of relatives' welfare offerings. She will counsel ladies beginning preparedness, significance of secure shipping, the act of breastfeeding and supplemental feeding, vaccination, contraception, and avoidance of common diseases together with reproductive systems contamination, infections that are sexually transmitted, especially youthful childcare. The ASHA will organize community members to help them obtain access to fitness and fitness-related services available at Anganwadi/subcenters/primary health centers, such as vaccination and prenatal check-ups. Postnatal test-up. Added nutrients, cleanliness other additional amenities are provided using funds from the government.

ASHA will collaborate with the regional medical and cleanliness commission of the gram panchayat in order to improve overall village well-being. ASHA will set up to escort/accompanies pregnant women and children who require treatment/admission to the closest pre-diagnosed health center, such as a primary medical center, network health center, or First Referral Unit.

She will provide number one health services for small diseases at the side of diarrhea, fevers, and number one- useful resource for small accidents. The woman may serve as an educator of immediately discovered medication quick-route (DOTS) under the new national anti-TB program.

ASHA may also serve to act as depot keeping for essential supplies rendered ready to each household, such as an oral rehydration remedy, ferrous folic acid tablet, chloroquine, biodegradable maternity kits, medicinal products and hormonal contraceptives, and so on. A medicine bundle might get delivered to every ASHA. The items inside of the kit may be solely based upon the suggestions of the professional consulting organization established by the Indian authorities and may include both the AYUSH and conventional preparations. The position she plays as supplier may be particularly suitable in the end. States can investigate the prospect of scaled education of women in order to provide new care for kids and handle a variety of common disorders, notably childhood ailments.

They must notify the sub centre /number one health institution of any new arrivals or deaths in the hometown, as well as any unusual medical conditions or illness outbreaks in the network. ASHA is going to encourage the creation in household lavatories as part of its complete cleanliness promotion. Typically, they need to visit the centers twice a day, which is not practicable. Employees must be available for meetings outside of work hours. They expressed anxiety about having to remain at the centers beyond 1 pm to complete reports. Another problem involved entering the same data many times in multiple forms. Employees are often released late and return residence by 3pm, resulting in additional effort beyond their pay hours. One concern is that employees are required to respond to calls at any time, including during crises, without extra wages or extra.[12]

ASHA is a significant measure of the National Rural Health Mission's performance across India. They dedicated their heart and soul to offering the supplied healthcare services to the general population in rural India [13].

Tracking of the patella Tracking is the path the patella takes within the femoral trochlea. During typical knee action, the patella should move smoothly along the groove. Improper patellar tracking, known as patellar maltracking, can cause pain, especially in the anterior knee. Patellar instability and patellofemoral pain syndrome are common outcomes of aberrant tracking, which can be caused by muscle imbalances, alignment difficulties, or anatomical anomalies. Kinematics in Function Knee Extension: The patella moves laterally and superiorly during extension, and it may spin and shift somewhat laterally when the knee reaches complete extension. Knee Flexion: The patella moves medially and inferiorly as the knee joint bends. The top part of the knee travels farther down to femoral notch at greater flexion (above 90 °), and because of the smaller area of contact with the femur, it may encounter greater stresses. Distribution of Forces The patella serves as a physical lever to increase the quads' ability to extend the knee. Running, crouching, and jumping all involve the transmission of compressive pressures through the patellofemoral joint.

As the knee flexes, the patellar contact area expands, spreading the stresses covering a bigger surface area while lowering risk for injury or harm to the joint's cartilage [14].

2. METHODOLOGY

Materials Numeric Pain rating scale, kujala Scale Questionnaire

An Observational Cross-sectional study conducted at Kolhapur City using Convenience Sampling method for a duration of 6 months with Sample Size 73

Inclusion criteria Female ASHA worker with >5 years work experience, Age Group 25-40 years. Exclusion criteria Previous Knee Surgeries, patellar Dislocation, lower limb Fractures. This study was an observational study with selection of ASHA workers, inclusion and exclusion criteria were considered. The study protocol was presented for approval in front of institutional ethical committee and protocol committee of D. Y. Patil Education Society, deemed to be university Kolhapur and D.Y. Patil College of Physiotherapy, Kolhapur and Ethical approval was granted by the committee. The observational study titled "To study prevalence of Patellofemoral Pain Syndrome in ASHA workers" was conducted in the Kolhapur region. Potential subjects were approached and provided with an explanation of the study's purpose. Written consent was obtained from those willing to participate. Participates for the study were recruited from several PHC's across the Kolhapur region. Only female participates were included with experience of 5 or more years, between the age group of 25-40 years. They underwent assessments using the AKPS and NPRS. AKPS was explained to Participants and was filled my me.

Fig. 1 Outlining of Anterior Knee Pain Questionnaire

The study excluded ASHA worker with history of Previous knee injuries, Patellar dislocation and lower limb fractures.

After learning about the study's goal, all of the subjects provided written consent. A standardized data collection sheet was used to gather demographic information such as name, age, and gender. The NPRS and AKPS was recorded under Data Collection sheet of 73 ASHA participants and subsequently a master chart was prepared containing participants number age, gender, duration of work and experience of work. Clarke's Sign: This test is a part of knee examination that might be utilized for checking of knee cap pain. It is not a general part of the knee exam but is used to diagnose anterior knee pain. This test determines whether there is an issue with the articulation between the femoral condyles' articular surfaces and the patella's articular surface. The individual being examined is lying flat with his knee outstretched in front of the examiner, apply pressure with web space on upper pole of Patella. Next, as the examiner applies pressure, the patient is instructed to flex their quadriceps muscles. The test is deemed unsuccessful if the patient is able to perform and sustain the contraction without experiencing any pain. The test is deemed successful if the patient has retropatellar pain and is unable to maintain a contraction.

Fig. 2 Assessment of Clarke's Sign/Test

The statistical analysis utilized appropriate biostatistical tools and was conducted using the master chart data. This analysis aimed to calculate the prevalence of Patellofemoral Pain Syndrome. Correlation between Clarkes Sign and Kujala Anterior Knee Pain Questionnaire.

3. RESULT

A cross-sectional study was done through a convivence sampling where 73 participants were included with age group of 25-40 years. With mean age 33.85 (±4.74). The participants having history of Patellar dislocation, lower limb fracture, Previous knee surgeries. In this study, the Numerical Pain Rating Scale was utilized to quantify the degree of pain during movement and pain during rest. Patellofemoral pain was assessed using the Kujala Anterior Knee Pain questionnaire. Clarke's Sign, a

particular test, was used to assess anterior knee pain.

Age group of participants were 25-40years with mean age 33.85 Kujala Score Mean and Standard Deviation

TABLE 1

Kujala Score	
Mean	**83.29**
S.D.	**12.18**

TABLE: 2 Correlation of Kujala Score interpretation and Clarke's Sign

Clarke's Test/Sign * Interpretation Crosstabulation							
		Count					
		Interpretation				Total	P-value
		Excellent	Fair	Good	Poor		
Clarke's Test/Sign	Negative	16	0	6	0	22	< 0.0001*
	Positive	2	24	22	3	51	
Total		18	24	28	3	73	

(* indicate p value (<0.05) is significant)

Result: There is an association/relationship between Clarke's Test/Sign and Kujala Score Interpretation with p value <0.0001

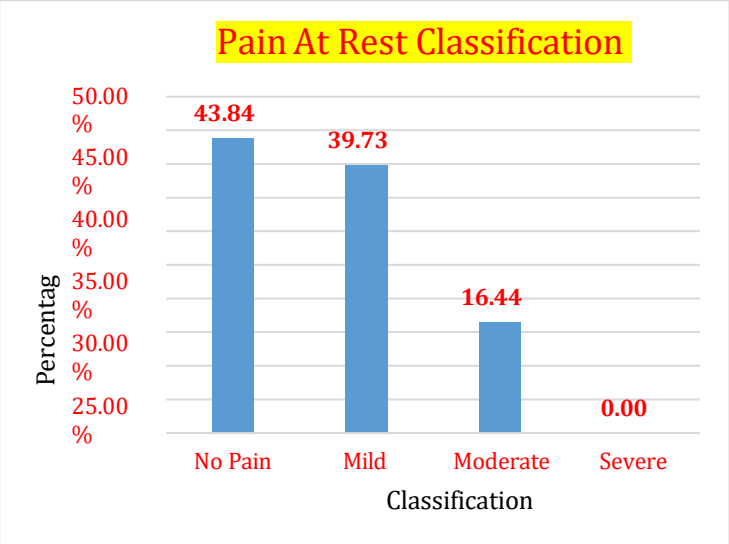
TABLE: 3 Numerical Pain Rating Scale On Movement

On Movement		
Classification	Frequency	Percentage
No Pain	14	19.18%
Mild	4	5.48%
Moderate	29	39.73%
Severe	26	35.62%
Total	73	100.00%

By assessment of Patellofemoral Pain on Movement According to Numerical Pain Rating Scale 29 Participants had moderate pain i.e 39.73%, 26 participants had severe pain i.e 35.62%, 14 participants had no pain i.e 19.18%, 4 participants had mild pain i.e 5.48%.

Numerical Pain Rating Scale at Rest

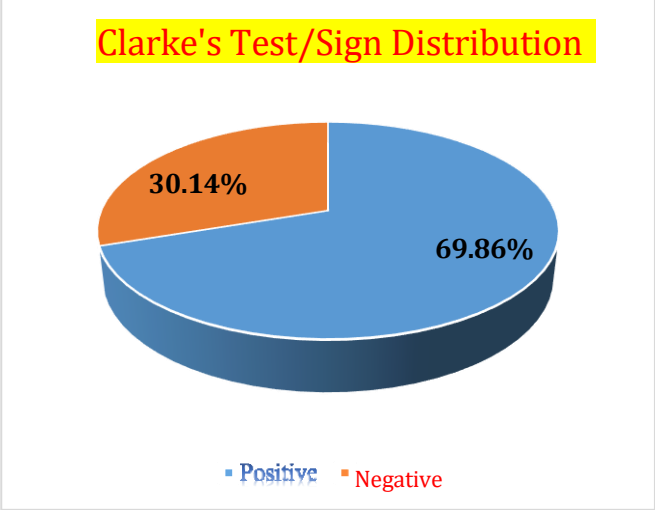
Graph: 1 Bar graph representing Pain at Rest and its classification



By assessment of Patellofemoral Pain on Movement According to Numerical Pain Rating Scale 32 participant had no pain i.e 43.84%, 29 participants had mild pain i.e 39.73%, 12 Participants had Moderate pain i.e 16.44% and 0 participant's had severe pain.

Clarke's Sign/Test Distribution

Graph: 3 Pie Chart Clarke's Sign Distribution



According to above Pie Chart 51 participants had positive Clarke's Sign with 69.86% and 22 participants had negative Clarke's Sign with 30.14%.

Prevalence = 69.86 %

4. DISCUSSION

According to Author Abdulmonem A Abdulmonem A, et. knee cap pain is a frequent ailment that causes discomfort in the front or rear of the kneecap (patella). This form in Knee pain frequently happens throughout activities that contain bending the knee, consisting of walking, running, squatting, or climbing stairs [15]. Diffuse anterior knee discomfort is the primary symptom of patellofemoral pain (PFP), which is commonly felt during activities including sitting down, jogging, and getting up and down stairs [16]. Incidence of anterior knee discomfort among young female from the age group of 18-35 is 25% by author Roush JR et.al [7]. In our study we targeted the similar age group from the age of 25 to 40 years to find out prevalence

of Patellofemoral pain syndrome in ASHA worker.

PFPS appears as discomfort near or behind the joint known as the patella that is exacerbated by a minimum a single task which strains the knee while bearing load with the knee bent. [8]. Due to increase work load on ASHA worker some reports of discomfort may be explained by periarticular issues and minor injuries, especially in people who continue to work in physically demanding jobs.

Kinematics of Patellofemoral joint during function [14] Knee Extension: The patella moves laterally and superiorly during extension, and it may spin and shift somewhat laterally when the knee reaches complete extension. Knee Flexion: The patella moves medially and inferiorly as the knee joint bends. The part of the kneecap travels farther down femoral notch at greater flexion (above 90 °), and because of the smaller area of contact with the femur, it may encounter greater stresses. By Author Federico Alfano et.al Several indicators of patellofemoral injury, such as Clarke's sign etc. are commonly seen in symptomatic patients and are thought to be indicative of PFPS [17]. Clarke's Sign/Test is a special test used to detect Patellofemoral Pain Syndrome. In this test, the patient contracts his quadriceps muscles as the therapist applies pressure onto upper facet of the kneecap with the webspace of his palm. Patient is then instructed to extend the knee. If the patient experiences pain on the anterior aspect of the joint, it is indicative of Patellofemoral Pain Syndrome. Several indicators of patellofemoral injury, such as Clarke's sign, and patellar crepitus, are commonly observed in symptomatic individuals and are considered indicative of PFPS. As stated by the previous studies this test has to be done with other investigations so as to confirm the diagnosis.

In our study we have used numerical pain rating scale (NPRS) to measure the severity of pain among the individuals having Patellofemoral pain syndrome. The pain is graded into four categories: 0 indicates no pain, 1 to 3 represents mild pain, 4 to 6 indicates moderate pain, and 7 to 10 indicates severe pain.

In this study, we used the AKPS for evaluation of Patient's knee. Kujala Anterior Knee Pain Questionnaire consists of 13 components that included limping, assist walking, flights of stairs, kneeling running around, and leaping. Long periods of sitting while keeping your knees bent. The discomfort, dislocation, Dysfunction of thighs Flexibility deficit. Kujala score interpretations was 95-100 means EXCELLENT, 80-94 means GOOD, 60-79 means FAIR, and 0-60 means POOR. Previous studies the overall results were 99.9 for healthy controls, 82.8 for patients with anterior pain in the knee, and 62.2 for patients with patella imbalance. According to this study, ASHA workers are required to work 4-5 hours per day and cover a large region for surveys, vaccinations, health promotion, and so on; they are overburdened with work and must work extra hours. Their regular activities required a high level of physical exertion, such as stair climbing and walking with breaks/rest. This all had a high impact on their body physique particularly on the Patellofemoral joint as it is important in stabilizing the body. In this study, 51 of the 73 ASHA workers exhibited positive Clarke's sign, which resulted in a decreased Kujala Anterior Knee Pain Score. In our study along with the prevalence we have also found out co-relation between Clarke’s sign and Kujala score interpretations. There was a substantial positive correlation between the Clarkes sign and the NPRS, indicating that if the Clarkes sign is positive, the Kujala score interpretations fall between the Fair and Poor categories. Out of the 73 subjects in our study, 51 had a positive Clarke's sign, 24 were in the Fair group, 28 were in the good category, and 3 had a poor interpretation of their Kujala score. Author Nihant Nar et.al has found that PFPS primarily affects young individuals, however the likelihood of developing anterior knee pain grows when flexibility around the knee decreases and physical activity progresses quickly [18]. It is most commonly caused by excessive knee muscle activation over a short period of time. The joint that connects the patellofemoral bones is one of the most stressed joint in the human body.

Prevalence of Patellofemoral Pain Syndrome Among ASHA Worker is 69.86%.

In this study ASHA worker having Patellofemoral Pain were given ergonomic advice and were advised for strengthening exercises and preventive majors.

5. CONCLUSION

The study was conducted among ASHA worker including participants ageing from 25 to 40 years in and around Kolhapur region reveals, ASHA worker are more prone for Patellofemoral Pain syndrome which suggests high risk of injury. This study also identifies the corelation of Clarke’s sign and Kujala Score. There was a substantial positive correlation between the Clarke’s sign and the NPRS, indicating that if the Clarkes sign is positive, the Kujala score interpretations fall between the Fair and Poor categories. ASHA worker’s severe workload has a substantial influence on their ability to provide quality healthcare services to the community as well as their own health. Despite being the backbone of rural healthcare, they confront problems such as long working hours, repetitive data entry jobs, and the expectation to be available beyond their regular duties without additional pay. **So, Prevalence of Patellofemoral Pain Syndrome Among ASHA Worker is 69.86%.**

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