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A Prevalence Study On Anterior Knee Pain Among Western And Folk Dancers In Puducherry

S.Santhosh , S.Varshaa, M.Nagarajan
Assistant Professor[1], Bpt Intern[2], Clinical Tutor[3]
(Department Of Orthopaedics, Sri Venkateshwaraa Medical College And Research Centre/ Pondicherry University,India)

Abstract:
Background*: Anterior knee pain has been a primary cause for many musculoskeletal problems as well as other orthopaedic conditions.Due to over strain and stretch of muscles; overuse of lower limb in case of athelets and sportsperson the threat of pain is more common..Professional Dancers are one such group following the symptoms and signs of pain which may deteriorate in later stages. Studies have shown that there is a higher prevalence of Kneepain and injuries among atheletes, Football players, ballet dancers and non-professional dancers.This study aims in concentrating the prevalence of Anterior knee pain among Western and Folk dancers.Outcome measures includes NPRS(Numeric Pain Rating Scale) and Kujala Anterior Knee pain Scoring(AKPS).*
Purpose*: To find out the Prevalence of Anterior Knee pain among Western and Folk dancers in Puducherry.*
Study design*: Prevalence Study*
Method*: The Convenient sampling method was used for the collection of sample based on selection criteria.. Data from 60 samples were collected among 18-30 years of age group.Using NPRS scale and Kujala Anterior Knee pain scoring the outcome measures were noted.The severity of pain were assessed using NPRS and the Specific anterior knee pain and symptoms were assessed using Kujala Anterior Knee pain scoring.Further results were concluded through Statistical analysis.*
Result*: Among 60 members who were responded,77% of Professional dancers were noted with Anterior knee pain and 14% experiencing no symptoms and signs of pain.The mean and S.D of NPRS was 5.33±1.58 following The mean and S.D of AKP was 66.74±11.81.*
Conclusion*: Hence, the study concluded the higher prevalence of Anterior Knee pain among Western and folk dancers in Puducherry.*
Keywords*: Anterior Knee pain,Western and Folk Dancers,NPRS(Numerical pain rating scale),Kujala Anterior Knee pain Scoring(AKPS).*

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I.Introduction

Anterior knee pain is a common complain in all ages athletes. It may be caused by a large variety of injuries. Dance often involves a complex sequence of movements and high physical demands of strength, stability, and flexibility. Due to intricate choreography and challenging performance schedules dancers are potentially at risk for injury. These physical requirements of dance, which include prolonged bouts of training and explicit physical control of their body, make physiologic training just as important as skill development for injury prevention(1). In a survey of 324 professional dancers, almost 50% reported missing between one and twenty-one days of exercise due to injury each year. Koutedakis and Jamuris reported that 90% of injuries in dancers involve the low back, pelvis, legs, knees, or feet. Prolonged bouts of training with inadequate rest, unsuitable floors, difficult choreography, and insufficient warm-ups are among the factors that contribute to dance injuries. In their paper, Koutedakis and Jamuris reviewed studies on male and female dancers, which suggested that supplementary exercise training, beyond that of dance training, can lead to improvements in muscle balance and strength(3). As many as 60% to 90% of dancers are injured during their careers, and most of their injuries affect the lower extremities and back(5). Uniquely in dancers, adductor injury occurs concurrently with hamstring injuries in approximately one-third of cases(7). nine female Irish dancers, ages 8 to 23 years, sustained 217 recorded injuries. The top injuries included stress fractures (29.9%), patellofemoral pain syndrome (11.1%). The number of injuries per dancer increased as the dancer's level increased(9).

II. Materials and Methods

Methodology
Study design : Prevalence Study.
Study setting : Dance Academies in Puducherry-605003. Study population : Dance professionals.
Sample technique : Convenient sampling. Study size : 60 Samples.
Study duration : 6 Months.
Outcome measures : Numerical Pain Rating Scale ,
Kujala Anterior Knee Pain Scoring Questionnaire
Materials used : Face Mask, Sanitizer, Pens, Consent form, Assessment form, Goniometer, Anterior knee pain questionnaire, Digital camera.

Inclusion criteria:

Dancers between age group of 18 - 30. Both Male and female dancers.
Dancers who are experienced for about 3-5 years. Dancers who are still in active participation.

Exclusion criteria:

Beginners and recreational dancers. Dancers with orthopaedic conditions.
Freestyle dancers

Procedure methodology

Instructions to the participants:

- The participants who fulfilled the selection criteria were included in this study.
- The participants were instructed regarding the need and the purpose of this study.
- Required consent forms were given to be read and signed.

Sampling method

From the 60 samples who were given the consent form and the Assessment form for Anterior knee pain , only 46 were selected and thus a total of 46 samples were categorised according to their Gender (Male and Female), Age group (18-30) , Category of dance (Western or Folk) ,Knee function and severity of pain.

The intensity of the Knee (Pain) was assessed using the NPRS scale. The Participants were asked to mark the scale rating from 0-10 depending upon the severity of the pain they have been experiencing.

Fig.0.1 Numerical pain rating scale

This is the 10 point scale with: 0 - representing no pain
1-3 - mild pain (occurring only during hardy knee activities)
4-6 - Moderate pain (occurs during actively and freestyle dancing)
7-10 - Severe pain (pain occurs during both on and off phases of dancing)

The NPRS can be administered verbally or graphically by self completion.As mentioned above, the respondent is asked to indicate the numeric value on the segmented scale that best describes their pain intensity.

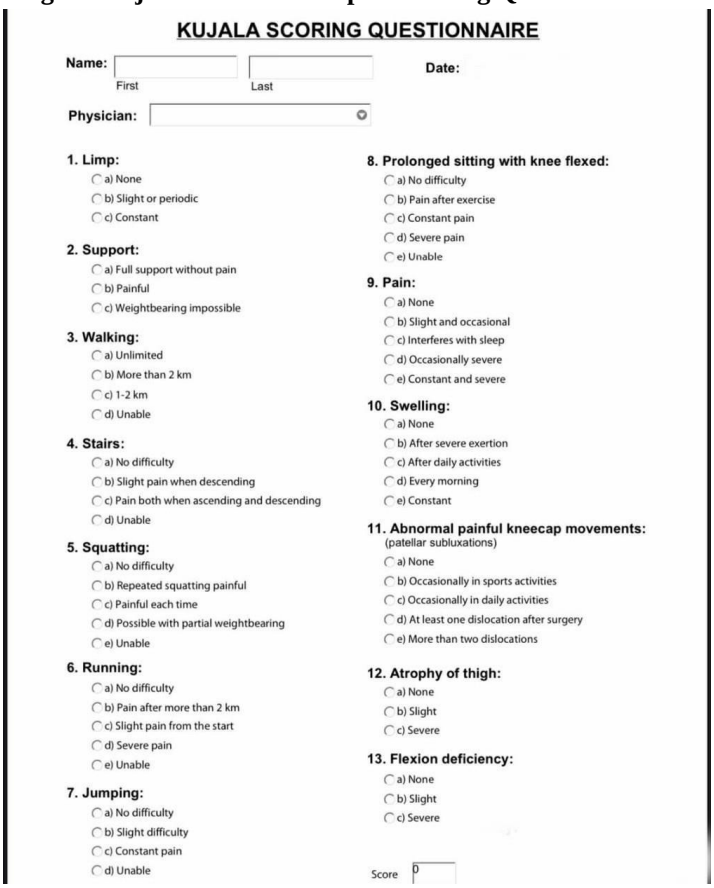
Scoring and interpretation: Scores range from 0-10 points, with higher scores indicating greater pain intensity.The 11-point numeric scale ranges from '0' representing “no pain” to '10' representing “pain as bad as one can imagine” or “worst pain imaginable”.

Range of motion:
The knee range of motion were assessed using goniometer for all the participants for the normal values.

Kujala anterior knee pain scoring:

The participants were given the Kujala anterior knee pain scoring which contains certain questions related to knee function. The questions are easy to understand and self analysing by the participant. The scale is composed of 13 items that evaluate subjective symptoms and functional limitations.The Minimum score is 0 points and maximum score is 100 points. Participants with no sign of anterior knee pain would have a score of 100. All the subjects with a positive AKPS score less than 100 and underwent pain.

Fig.0.2 Kujala Anterior knee pain Scoring Questionnaire



KUJALA SCORING QUESTIONNAIRE

Name: First Last Date:

Physician:

1. Limp:
- a) None
- b) Slight or periodic
- c) Constant

2. Support:
- a) Full support without pain
- b) Painful
- c) Weightbearing impossible

3. Walking:
- a) Unlimited
- b) More than 2 km
- c) 1-2 km
- d) Unable

4. Stairs:
- a) No difficulty
- b) Slight pain when descending
- c) Pain both when ascending and descending
- d) Unable

5. Squatting:
- a) No difficulty
- b) Repeated squatting painful
- c) Painful each time
- d) Possible with partial weightbearing
- e) Unable

6. Running:
- a) No difficulty
- b) Pain after more than 2 km
- c) Slight pain from the start
- d) Severe pain
- e) Unable

7. Jumping:
- a) No difficulty
- b) Slight difficulty
- c) Constant pain
- d) Unable

8. Prolonged sitting with knee flexed:
- a) No difficulty
- b) Pain after exercise
- c) Constant pain
- d) Severe pain
- e) Unable

9. Pain:
- a) None
- b) Slight and occasional
- c) Interferes with sleep
- d) Occasionally severe
- e) Constant and severe

10. Swelling:
- a) None
- b) After severe exertion
- c) After daily activities
- d) Every morning
- e) Constant

11. Abnormal painful kneecap movements: (patellar subluxations)
- a) None
- b) Occasionally in sports activities
- c) Occasionally in daily activities
- d) At least one dislocation after surgery
- e) More than two dislocations

12. Atrophy of thigh:
- a) None
- b) Slight
- c) Severe

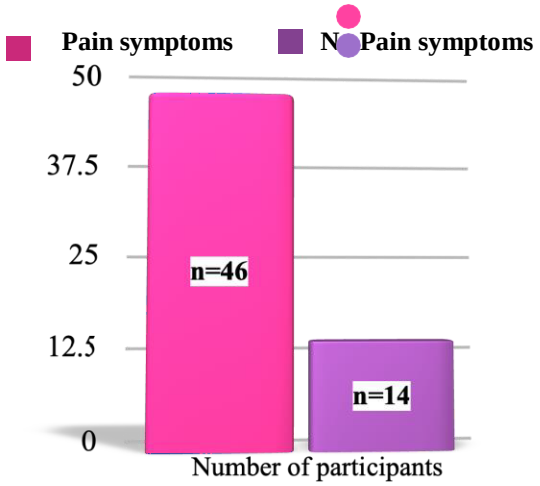
13. Flexion deficiency:
- a) None
- b) Slight
- c) Severe

Score 0

Calculation of results: The results of the Kujala scoring is obtained by summing up the entire points from the 13 items and through NPRS the severity of pain is noted. The activities are gauged on various levels of difficulties present in the questionnaire and different scores are assigned to each response.

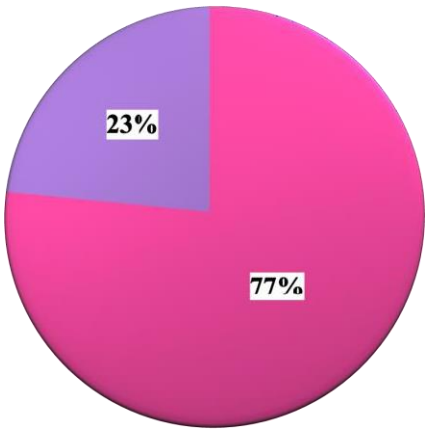
Statistical analysis:

- All the data were fed into the excel sheet for analysis. The scores obtained to NPRS and AKP Questionnaire were added to get the results of anterior knee pain Among Western and Folk Dancers.
- Then the data analysis were done for each dancers based upon the values of the questionnaire and scores that were evaluated for having anterior knee pain.
- Overall scores were obtained by using diagrammatic representation of data. The pie chart representation was used to determine the outcome variables of Age, Gender, category of dance, severity of pain and knee function of each individual.
- The below representation Graph.1.0 and Graph.1.1 shows the number and percentage of participants with pain and no pain symptoms.



Graph.1.0 Graphical representation of participants with pain and no pain symptoms

Percentage of participants with pain Percentage of participants without pain



Graph.1.1 The pie chart shows the percentage of participants with pain and without pain

Result Descriptive Statistics Table.1.0 : Age (%) distribution

VALID AGE	FREQUENCY
18-22	17
23-26	16
27-30	13
TOTAL	46

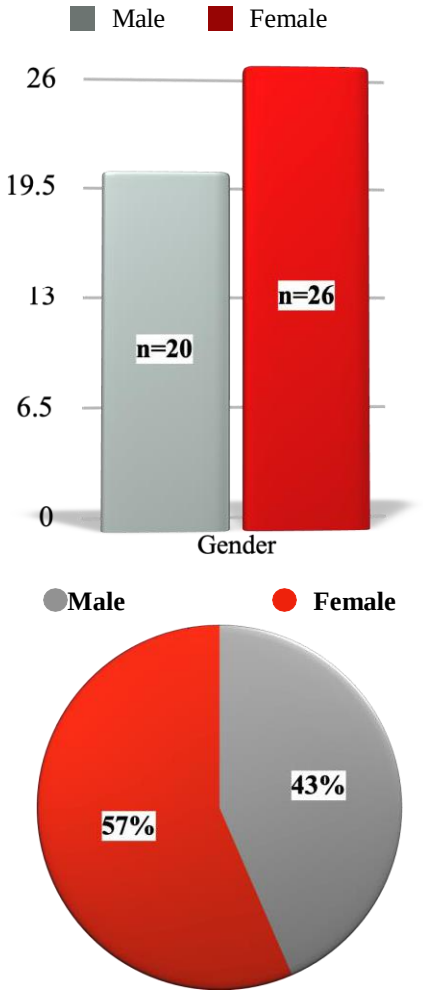
This table shows the age frequency of the Western and Folk Dancers who have been evaluated for the anterior knee pain.

Table.1.1: Gender (%) distribution

GENDER	FREQUENCY
MALE	20
FEMALE	26
TOTAL	46

This table shows the gender frequency of the subjects evaluated.

Participants based on gender



Graph.1.3: The pie chart shows the Gender percentage of subjects evaluated.

Table 1.2: Category (%) distribution

CATEGORY	FREQUENCY
WESTERN	17
FOLK	29
TOTAL	46

This table shows the frequency of western and folk dancers that have been evaluated.

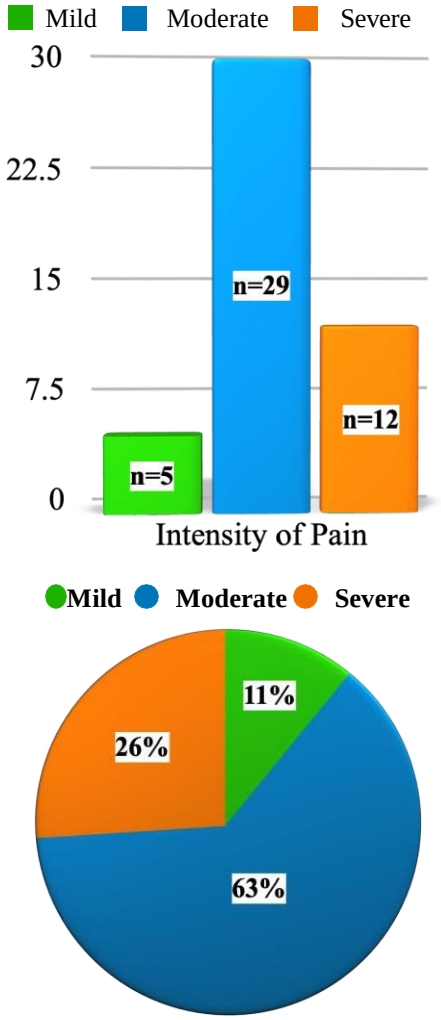
Values of NPRS

Table 1.3: Values,Mean and Standard deviation of Pain (NPRS)

S.NO	VALUE OF PAIN (NPRS)	N
1	MILD	5
2	MODERATE	29
3	SEVERE	12
4	MEAN	5.33
5	STANDARD DEVIATION	1.58

The above table shows the Mean and standard deviation of individuals with pain evaluated using NPRS

Participants based on percentage of pain using NPRS



Graph.1.5: The pie chart shows the percentage of pain among individuals using NPRS

Values of AKP

Table 1.4: Values,Mean and Standard deviation of Anterior Knee pain using Kujala (AKP) Questionnaire

S.NO	VALUES OF AKP	N
1	GOOD	8
2	FAIR	23
3	POOR	15
4	MEAN	66.74
5	STANDARD DEVIATION	11.81

The above table shows the Mean and Standard deviation of individuals with Knee function using Kujala (AKP) Questionnaire.

Participants based on percentage of Anterior knee pain scoring

III. Result

Subcomponents	N	Minimum	Maximum	Mean	Standard deviation
NPRS	46	1	8	5.33	1.58
AKP	46	43	89	66.74	11.81

Table.1.5. Mean and Standard deviationof NPRS and Anterior knee pain scoring

- From the NPRS scale and Questionnaire that were given to the participants,77% were responded with anterior knee pain.
- The prevalence of pain using NPRS were subcategorised as 11% of participants with mild pain, 63% of participants with moderate pain and 23% of participants with severe pain. Therefore, The mean and S.D was 5.33 ± 1.58.
- Following using Kujala Anterior Knee pain Scoring Questionnaire, 17% of participants had good status, 50% with fair status and 33% with poor status of pain. Therefore, The mean and S.D was 66.74 ± 11.81.

IV. Discussion

This study was conducted to identify the prevalence of Anterior Knee pain among Western and folk professional dancers in Puducherry region by using NPRS and Kujala Anterior knee pain questionnaire.Several studies concluded that the prevalence rate and high risk of lower extremity conditions are prone among young athelets such as runners and sports players due to their overuse but none of the studies proved the incidence among western and folk dancers. David M. Jenkinson et al.,2001 in his study have explained about the Dancers in routines that have an increased level of jumping may complain of pain at the origin of the patellar tendon and report that it it made worse when leaping.Patellar tendonitis is commonly seen in male classical ballet dancers.The exact nature of this overuse is uncertain; one possibility is a localised rupture of tendon fibres in which repeated trauma lead to inflammation and disability.

Carol c. Teitz et al.,2000 have briefly discussed about the common hip and knee problems seen in dancers ,their aetiologies, clinical presentation, evaluation and recommended treatment strategies. In the student ballet dancer with excessive femoral anteversion , Patellofemoral pain is often due to lack of turnout at the hips and compensatory use of iliotibial band to achieve turnout from the floor upward by externally rotating the tibia. Furthermore, many students contract their quadriceps tightly producing constantly high Patellofemoral compression forces.`

This study by conducting a survey revealed that Anterior knee pain among the young and middle aged dancers are highly prevalent.Among 60n of dancers ,46n were included according to the selection criteria and 14 subjects were excluded with no pain symptoms and 100%-98% scoring in Kujala knee pain scoring. In table.1.0; the valid age group and frequency were noted In that,The age group among 18-22 are more likely to be affected with 37% pain.Young adult dancers are more prone due to their continuous active participation in events and practicing for a longer duration.

In table.1.1; the distribution of participants based on gender, Female dancers have been noted with high rate of anterior knee pain with 57%.

In table 1.2; based on category distribution while screening among western and folk dancers, the folk dancers have been highly rated.Folk dance is a popular dance which includes much stress on the body compared to western dance, its uniqueness falls on the repetitive heavy steps following its high beating music and so these dancers are highly noted with 63% pain.

In table 1.3;The pain levels of mild, moderate and severe has been seen, and 63% are moderated affected with pain and very least people were mildly affected with 11%,

Based on the knee activity and anterior pain ,In table 1.4; according to AKP questionnaire the fairly scored individuals are higher with 50% and very few were scored good with 17% and the mean and S.D have been noted.

V. Conclusion

This study has revealed a prevalence of Anterior knee pain is 77% among the Western and Folk dancers experienced for 3-5 years. Folk dancers are more prevalent with 63% of anterior knee pain compared to western dancers and therefore preventive measures are to be taken among dancers to reduce the pain as it may cause distress in later stages leading to orthopaedic knee conditions.

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