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WORK RELATED MUSCULOSKELETAL DISORDER AMONG RECREATIONAL CRICKET PLAYERS: - A CROSS-SECTIONAL STUDY

Physiotherapy & Rehabilitation

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ABSTRACT

Background: This research focuses on assessing work-related musculoskeletal disorder among recreational cricket players using modified Nordic musculoskeletal questionnaire. Using MNMQs, the aim is to gather detailed information on the prevalence, severity and location of musculoskeletal problems experienced by recreational cricket players during their participation in the sport. **Methods:** A Cross sectional study was carried out on 105 recreational cricket players using Modified Nordic Musculoskeletal Questionnaire to find the prevalence of work-related Musculoskeletal disorder among recreational cricket players. **Results:** Out of 105 cricket players 73 (69.5%) players experienced work-related musculoskeletal problem in last 12 months. Shoulder, low back and Hips/thighs were the most common areas of problem in last 12 months. Hips/thighs, low back were the most common areas of problem in last 12 months in Batsmen. Shoulder and Ankles/feet were the most common areas of problem in last 12 months in bowlers. Low back, shoulders were the most common area of problem in last 12 months in All-rounders. Sprain (38%) and Strain (33%) were the most common type of injury among recreational cricket players. **Conclusion:** This study concludes that the work-related musculoskeletal disorder in recreational cricket players were more. Shoulders and Lower back were the most common injured body parts followed by Hips/thighs, Ankles/Feet and Knees. According to role of cricket, Bowlers were more affected than Batsmen and All-rounder. The study conclude that Hips/thighs and low back are the common site of injury in batsmen. Shoulder and Ankles/feet are the common site of injury in bowlers and Low back and shoulder were the most common site of injury in All-rounders. The study also concludes that due to the Low back Injury or pain players had affected from doing their daily activity of living in last 12 months. This research findings indicate that sprain and strains rank as the predominant injuries experienced by cricket players.

KEYWORDS

Work-related musculoskeletal disorder, Modified Nordic Musculoskeletal Questionnaire, recreational cricket players.

INTRODUCTION

Work-related injuries pose a significant burden on individuals, organizations, and society at large, with musculoskeletal disorders (MSDs) being one of the primary causes and contributors to workers' compensation claims. The lack of specific data on work-related musculoskeletal diseases in developing nations complicates efforts to identify prevalent issues and occupations at high risk, though occupations requiring heavy physical exertion, such as construction, stone work, mining, and cleaning, are likely the most vulnerable. Additionally, musculoskeletal disorders (MSDs) are defined as soft tissue disorders not resulting from sudden events, and are deemed work-related when the work environment significantly contributes to their development. [1]

Cricket is a major international sport played in more than 60 countries. The laws of cricket were drawn up by the London Club in 1944 formalizing a game that had been played for a hundred of years ago. [2] Cricket is regarded as a leisurely, gentlemen's game.[3] In cricket, bowlers deliver a hard ball at a high speed directly to the batsman.[4] Now cricket is played in more than sixty countries and regarded as major international team sport. Cricket also played in many commonwealth countries as popular sport. Cricket is the most popular team sport in Indian subcontinent that consists India, Pakistan, Afghanistan, Bangladesh, Sri Lanka. The popularity for cricket in India was started after its success in 1983 world cup in which it was the champion; this led to a greater number of people participating in cricket. There are various clubs and centres with skilful coaches to train them. Injuries are inevitable when one player is training and compete. There are numerous studies available at international level, but in India there is a lack of research in cricket.[5]

The ICC Trophies Won by India:

India's cricket legacy began with the 1983 ICC Cricket World Cup victory, where Kapil Dev's team triumphed against the odds, defeating Clive Lloyd's West Indies, marking India's first ICC trophy. Until then, the Indian cricket team held little significance in the sporting world, but this underdog victory transformed the perception of cricket in India. The 2002 Champions Trophy stands as a unique event in ICC history, being the solitary tournament where a definitive champion wasn't determined, resulting in Sri Lanka and India being declared joint winners. This marked a significant milestone, breaking a nearly two-decade drought for India in ICC trophy victories. Sri Lanka, considered pre-tournament favourites, secured their spot in the final through dominant performances in the group stage, culminating in a convincing seven-wicket win over Ricky Ponting's formidable Australian team. Conversely, India, fielding a relatively youthful squad, earned their place in the final after a hard-fought 10-run victory against South Africa. However, unforeseen rain disruptions plagued the finals, forcing two washouts and ultimately leading to both Asian cricket powerhouses sharing the trophy. The inaugural ICC T20 World Cup introduced both a new competition and a fresh captain, sparking apprehension over India's performance. With MS Dhoni, then 26 years old, assuming leadership, following Rahul Dravid, Sourav Ganguly, and Sachin Tendulkar's self-exclusion from T20I cricket's premier event in 2007, the team faced the challenge with a predominantly inexperienced roster. As a result, the burden fell on Dhoni, hailing from Ranchi, to orchestrate a remarkable feat. India's 28-year wait for another ICC Cricket World Cup ended in 2011, with MS Dhoni's iconic six in the final against Sri Lanka, while Yuvraj Singh's stellar performance anchored the victorious campaign, marking a fitting farewell for cricket legends Sachin Tendulkar and Virender Sehwag. The 2013 edition of the ICC Champions Trophy, India beat England in finals and MS Dhoni becomes only captain in world cricket to will all three ICC trophies. Currently the men's Indian cricket team is ranked 1st in test cricket, 1st in one-day international and 1st in T20 (as of 26/03/2024 - ICC rankings). There is a lot of crazes for cricket in India. Many children here like or even play cricket. There is a big cricket player in every street here. People love cricket a lot. Cricket is not just a sport but an emotion for the children of India. There is no shortage of talent in India, there is a dangerous player in every street regarding cricket. Every child here dreams of becoming a successful cricketer and playing for his country.[6]

Cricket, characterized by its dynamism, encompasses a plethora of abstract skills and movements. To refine these intricacies, many players prioritize maintaining peak physical fitness and strength. The game's three distinct facets (bowling, batting, and fielding) each pose unique injury risks. [7,8,9] Musculoskeletal discomfort may manifest in diverse scenarios during cricket matches, including impacts from balls or bats, swift rotational actions, sliding and diving maneuvers, collisions with fellow players, and the cumulative effects of overuse. [10,11,12,13]

Running is a common thing in cricket, whether it is batting or bowling or fielding, running has to be done by all, hence lower limb is more

affected in cricket. After that, the second task is to throw the ball because all the players do field and hence upper limb injuries also occur. After that, injuries to the upper and lower trunk occur, due to twisting or overstretch of the trunk.

The stance of a batsman while batting is somewhat like this, it can be differed from batsmen to batsmen. This is a normal stance of the batsman, after that the bowler bowls the ball and the batsman hits the stroke according to the ball. The posture of batsmen is different in every stroke, sometimes extra force is applied on the body or if the body gets twisted too much than the injury can occur. And also, when the batsmen take run, he will run fast so the batsmen have chances to get injured while running. That's why batsmen suffer more injuries to their back and hips.

The ideal bowling action of the player. While bowling, a bowler runs, then makes a jump, rotates his arm in a circular motion and delivers the ball. And experts believe that while delivering the ball, 7 to 8 times more force is applied to the bowler's ankles/feet and the repetitive movement of the shoulder is happens while bowling. That's why bowlers suffer more ankle/feet and shoulder injuries.

Fielding is another role in cricket. So, while doing this, a player gives extra efforts to save runs for the team. During this, his chances of getting injured are increased because he runs, slides, dives, throws and catches the ball and players even collide with each other. Therefore, fielders are at greater risk of hip/thigh injuries, knee injuries, low back and shoulder injuries.

According to Sathya et al., 61% of players encountered musculoskeletal issues linked to cricket. Stretch et al.'s findings indicated that South African cricketers predominantly suffered lower limb injuries (50%), followed by upper limb (23%) and back/trunk injuries (23%). [14] Musculoskeletal pain (Injury) is defined as 'A sensation of agony that inhibits the individual from participating in cricket or practice for a minimum of 24 hours'[15]

There are many studies available at domestic and international level on injuries faced by cricket players. Thus, the purpose of the study is to find the work-related musculoskeletal disorder among recreational cricket players.

Methodology

Study Place

Tanman Cricket Ground, Galaxy Cricket Ground, Samarpan Cricket Ground, Norada 108 Cricket Ground.

Sampling Design

Convenience sampling

Study Design

A cross-sectional survey studies.

Duration of Study

6 months

Sample Size: 105

Inclusion Criteria

- Male cricket players of age 19-27 years
- Playing experience of minimum 3-4 years with regular practices

Exclusion Criteria

- Recent fracture or injury.
- Any recent cardiovascular surgery.
- Any Neurological condition.
- Alter mental illness.
- Players who do not play regularly

Materials Required

- Consent form
- Assessment form
- Modified Nordic Musculoskeletal Questionnaire (MNMQ)
- Pen

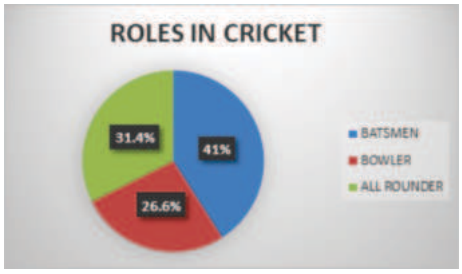
Method

- A sample of cricket players was taken in this survey from various cricket ground located in Ahmedabad.
- All players who meet the inclusion criteria were eligible to participate in the study.
- The data collection was done involving the questionnaire is based on MNMQs.
- Firstly, players were made aware about the purpose of the study. Each component of Modified Nordic Musculoskeletal Questionnaire was explained to each and every player. And consent of each player was taken.
- Then, General demographic data was taken Name, age, gender, occupation, role they play in cricket from the player and asked them to recall their injuries from last one year from April 2023 to March 2024.
- Afterward, the questionnaire content six component.
- The questionnaire content binary questions and player have to fill the answers respectively.
- Then data was collected from 105 player and analyzed in simple percentage and graphs.

RESULTS

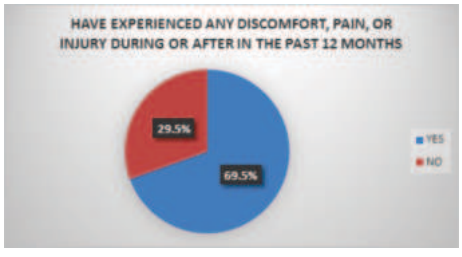
- The analysis was done using excel.
- Total 105 player are taken for the study

A. The above graph shows, out of 105 players 43(41%) were batsmen, 28(26.6%) were bowler, 34(31.4%) were all-rounder.



Graph 1

B. The above graph shows, out of 105 players, 73(69.5%) players had experienced any discomfort, pain, or injury during or after cricket activities in the past 12 months.

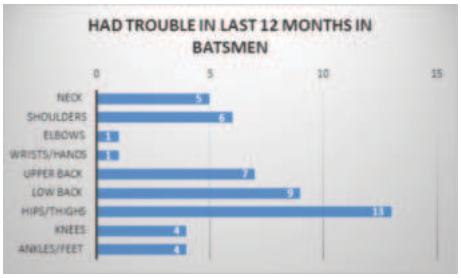


Graph 2

C. The above Graph show the trouble held to cricket players during the last 12 months according to anatomical site. The commonest site for pain or injury among the players is Shoulder and low back (41%) followed by Upper back and Hips/thighs (35%), Ankles/feet (31%), Neck (23%), Wrists/hands (16%), Knees (15%), Elbows (11%).

Graph 3

D. The above graph shows the trouble held to Batsmen during last 12 months according to anatomical site. Out of 43 batsmen 24 (55%) experienced pain or discomfort during or after cricket in last 12 months. The commonest site for batsmen is Hips/Thighs (54%), followed by low back (37%), upper back (29%), shoulder (25%), Neck (20%), Knees and Ankles/Feet (16%), Elbow and Wrists/Hands (4%).



Graph 4

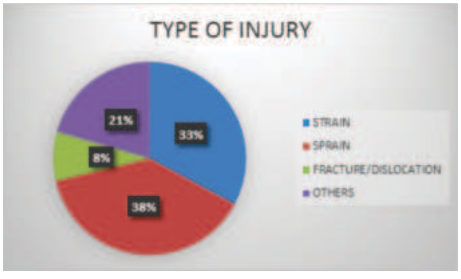
E. The above graph shows the trouble held to Bowler during last 12 months according to anatomical site. Out of 28 bowlers 23 (82%) experienced pain or discomfort during or after cricket in last 12 months. The commonest site for bowler is Shoulders and Ankles/Feet (60%) followed by Wrists/Hand (30%), Hips/Thighs (26%), Neck (21%), Elbows and Kness (17%), Low back (13%), Upper back (8%)

Graph 5

F. The above graph shows the trouble held to All-rounder during last 12 months according to anatomical site. Out of 34 all-rounder 25 (73%) experienced pain or discomfort during or after cricket in last 12 months. The commonest site for all-rounder is Low back (72%), followed by Shoulder (48%), Upper back (36%), Neck and Hips/Thighs (28%), Ankles/feet (20%), Wrists/Hands (16%), Elbows (12%), Knees (8%).

Graph 6

G. The above graph shows types of injuries in cricket players. Out of 105 players investigated 73 (69.5%) experienced work-related musculoskeletal problem within last 12 months. Out of 73 players 28 (38%) had Sprain, 24 (33%) had strain, 15 (21%) had other injuries and 6 (8%) had fracture/dislocation.



Graph 7

DISCUSSION

The study was done on 105 recreational cricket players (males) of age group of 19-27 years with minimum experience of 3-4 years. The Aim and objective of the study was to find work-related musculoskeletal disorder among recreational cricket player. Modified Nordic Musculoskeletal Questionnaire was used to find the work-related musculoskeletal problem in recreational cricket players in last one year. Out of 105 players 73 (69.5%) experienced work -related musculoskeletal problem. According to Graph -3, the most common site of injury or pain is in shoulders and low back (41%), followed by Ankles/feet, upper back, hips/thighs. Because of repetitive movement of shoulder and trunk. Fielder throws the ball, bowler runs and deliver the ball with maximum effort so the movement of shoulder is much more that's why the risk of shoulder injuries is more on other hand repetitive hyperextension, rotation of trunk while batting or deliver the ball by bowlers.

The Graph-4 shows the prevalence of work-related musculoskeletal problem in last 12 months in Batsmen. Out of 43 batsmen 24 (55%) experienced musculoskeletal problem. Hips/thighs, low back, upper back these 4 sites are most commonly affected in batsmen because more use of trunk and lower extremities is there. That's why trunk and lower limb is most commonly affected. The Graph-5 shows the prevalence of work-related musculoskeletal problem in last 12 months in Bowler. Out of 28 bowler 23 (82%) experienced musculoskeletal problem. Shoulder, Ankles/Feet these 3 sites are most commonly affected in bowler because of repetitive movement of shoulder for delivering the ball and also when the bowler delivers the ball, the whole weight of the body came to ankles/feet. Hence shoulder, ankles/feet are most commonly affected. The Graph-6 shows the prevalence of work-related musculoskeletal problem in last 12 months in All-rounder. Out of 34 All-rounder 25 (73%) experienced musculoskeletal problem. Low back, Shoulder, Upper back, Hips/thighs these 4 are the most common site of injury or pain in all-rounder because they have to play all the roles in cricket (Batting, Bowling and Fielding).

Player who prevented from doing normal work in the last 12 months due to work-related musculoskeletal problem: The most common site for preventing from doing normal work during last 12 months are Low back and Upper back followed by Shoulder. Player who had trouble at any time during last 7 days: The most common site causing trouble in last 7 days are Hips/Thighs followed by Upper back and Low back. Out of 105 players only 18 (17%) players had ever hurt themselves body part in an accident. Shoulder and Ankle/feet are hurt more in an accident followed by Hips/thighs and Knees. When the players were asked about the total length of time that had trouble during the last 12 months. The most common answered was 1-7 days followed by 8-30 days and very few were for more than 30 days. The last component of the MNMQs was about the type of the Injury. As the Graph 7 shows, 28 players were affected with Sprain, 24 Players were affected with Strain and 21 players were affected with Other and Fracture/dislocation.

Chandrasekhar Bodanki et al. conducted a study on Prevalence of cricket-related musculoskeletal pain among Indian junior club cricketers and finds that CIPP should be implemented and strictly followed from the early stages of sports life. Pre-training warm-up and post-training cool-down sessions into their regular training regimen is essential. It's crucial to steer clear of overuse, such as prolonged play beyond scheduled times, and to refrain from disregarding any pain experienced during practice or matches. A supervised training and regular screening of players by orthopaedician or sports physician will keep them fit to play with full potential.[16]

P. Sathya et al. conducted a study on Prevalence of Musculoskeletal Problems in Cricket Players and finds that the findings revealed a 61% prevalence of musculoskeletal problems among cricket players. The lower back emerged as the most frequently affected area, followed by ankles/feet, knees, and hips/thighs. Musculoskeletal problems were more prevalent among all-rounders than batsmen and bowlers. Specifically, ankles/feet were frequently affected in all-rounders, while bowlers and batsmen commonly experienced issues in the low back area, alongside other regions. Furthermore, strain and sprain were identified as the predominant types of injuries among cricket players, regardless of their specific role in the game. [14]

Sumit Kumar et al. conducted a study on One year prevalence of musculoskeletal disorder among cricket Players in Haryana: A retrospective study: - Injury data was gathered using a modified Nordic Musculoskeletal Injury Questionnaire. Frequency of musculoskeletal injuries is more among cricket players. Conditioning by coaches and early rehabilitation by physiotherapists are essential to reduce the

injury rate in this population. [5]

Present study was conducted on 105 recreational cricket player and the prevalence of Musculoskeletal problem was 69.5% and shoulder and Low back (41%) were the most commonly injured body part followed by Ankles/feet, upper back, hips/thighs.

CONCLUSION

This study concludes that the work-related musculoskeletal disorder in recreational cricket players were more. Shoulders and Lower back were the most common injured body parts followed by Hips/thighs, Ankles/Feet and Knees. According to role of cricket, Bowlers were more affected than Batsmen and All-rounder. The study conclude that Hips/thighs and low back are the common site of injury in batsmen. Shoulder and Ankles/feet are the common site of injury in bowlers and Low back and shoulder were the most common site of injury in All-rounders. The study also concludes that due to the Low back Injury or pain players had affected from doing their daily activity of living in last 12 months. This research findings indicate that sprain and strains rank as the predominant injuries experienced by cricket players.

Limitations

- Collecting accurate data in recreational cricket player is difficult due to factors such as player recall bias on injuries and the absence of official records or statistics.
- This study is only conducted on male cricket players.

Future Recommendation

- Future studies can be done with a larger sample size to get the more appropriate result.
- The study should be conduct specially for professional cricket players.
- Explore the use of technology, such as mobile applications, to collect real-time data on recreational cricket gameplay.
- The study can be done on another sports like football, volley ball, Tennis, etc.
- The study can be conducted on Female cricket players.

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