

Medical Attention Injuries in Cricket: A Systematic Review of Case Reports

Abstract

Background: Cricket, classified as noncontact game, has been shown to be associated with increased incidence of injury. Further the recent consensus update in cricket injury surveillance have updated the injury definitions which includes “Medical Attention” injuries. The purpose of this review was to systematically review the various case reports and studies reporting injuries in the game of cricket that fall under the gambit of medical attention injuries. **Materials and Methods:** A systematic review was conducted online using PubMed and Google Scholar, as per Preferred Reporting Items for Systematic reviews and Metaanalyses guidelines. Predefined eligibility criteria were applied, and the data thus compiled were analysed. **Results:** A total of 32 studies reporting 43 players including 42 males and 1 female were included in the review. Bowling injuries were the most commonly reported injury. Impact injury was the most common mode with acute presentation in batting and fielding injury, whereas it was gradual onset mode with chronic presentation in bowling injuries. Head and neck injuries were the most common in batting injuries while extremity injuries were common in fielding and bowling injuries. No injuries were reported in umpires. **Conclusion:** The evidence provided, although not sufficient for any recommendation, it should alert the physicians and those concerned with the primary care of the cricketers to be vigilant of the eccentricity and severity of the injuries, their atypical presentation, mode, mechanism and trend, thereby being prepared for the unexpected presentations.

Keywords: *Batting, bowling, cricket, fielding, injuries, review*

MeSH terms: *Athletes, athletic injuries, athletic performance*

**Akilesh Anand
Prakash**

*Department of Sports Medicine,
ACSMC, Coimbatore,
Tamil Nadu, India*

Introduction

Cricket is one of the sports that have shown all the signs of modernisation with the format getting abridged as time evolves. Cricket is largely considered a noncontact,¹ low intensity² sport while few consider it as vigorous sport.³ There has been an increase in incidence of injury and rate of injury⁴⁻⁸ in cricket, forming the basis for the injury and injury surveillance definition update.⁹ Further the injuries have been reported with varied rates based on competition^{10,11} and playing level,¹² associated with various risk factors,^{13,14} demanding proper protection and equipment.^{12,15}

In the most recent consensus statement update, cricket injuries are defined as match time-loss injuries, general time-loss injuries, medical attention injuries, player reported injuries, and imaging abnormality injury.⁹ The purpose of the current review is to compile the spectrum of medical attention injuries from the published case studies reporting the same in the game of

cricket and to analyse their clinical trend, as case reports have been shown to bridge the gap between evidence based spectrum and the unexpected atypical in primary care.¹⁶ Although a single case report is of limited generalizability, a systematic review of case reports identifies unique or rare presentation of musculoskeletal injuries and may help provide leads for further research.

Materials and Methods

Computerised literature searches were performed for articles published in English using PubMed and Google Scholar, from inception through June 2016. The search terms used were “cricket*,” “bowl*,” “bats*,” “case,” “report,” “injur*,” “field*,” “spin*,” “wicket,*” and “umpire.” The bibliographies of all located articles were also searched. All published case reports reporting medical diagnosis of injuries due to cricket either while playing or training, were included in the study. Further studies reporting not more than five cases were included, as suggested across studies.^{17,18} Case series, letters and

Address for correspondence:

*Dr. Akilesh Anand Prakash,
5A, Sir C V Raman Road, R.S.
Puram, Coimbatore - 641 002,
Tamil Nadu, India.
E-mail: akilesh.dr@gmail.com*

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commentaries were excluded from the study. Search was done between April 1, 2016 and June 30, 2016.

Study selection

The study design was developed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines [Figure 1].¹⁹ An independent screening of all eligible publications were carried out for titles, abstracts, full text, and bibliographies.

Data extraction

Data extracted included country and year of publication, player demographics, injury profile, injury mechanism and mode, chronicity, associated injuries, definitive management, and return to play (RTP) time. The overall data were compiled and the data were compared between batting, bowling, and fielding injuries.

For the purpose of the review, injury classification (role played by player at the time of injury) and injury mode (sudden, impact, gradual or insidious) were defined as per the 2016 consensus statement in cricket injury⁹ while chronicity was defined based on the method of presentation.²⁰ Further spin bowling and fast bowling

injuries were included under bowling, while wicket keeping injury fell under fielding category.

Quality assessment

The 2016 version of CARE guidelines²¹ was used for quality appraisal of case reports. The CARE guidelines includes a 14-item checklist subdivided in 29 individual items and are considered quintessential for reporting a case report.

Data analysis

Data were summarized using descriptive statistics, with means and standard deviations for continuous variables and frequencies and percentages for categorical variables.

Results

Thirty-two articles reporting 43 players were found eligible and were included in the current review [Figure 1 and Table 1]²²⁻⁵³ with 62% of studies published in the past decade. Seventy-one percent of the case studies were reported from the UK and India [Figures 2 and 3]. One study involving West Indian bowlers,³⁹ despite reporting injuries in six players, as opposed to the inclusion criteria restriction of five, was also included in the current analysis.

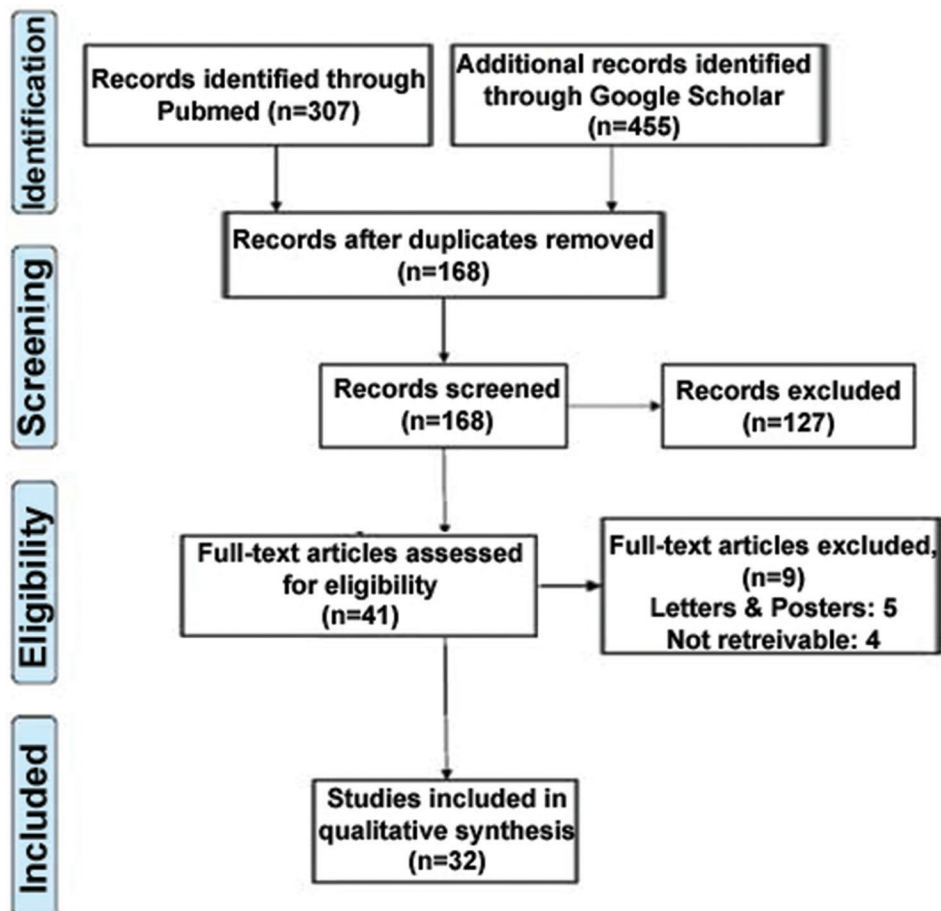


Figure 1: Study selection flowchart

The mean age of the players was 26 years. Bowling injuries were the most common type reported accounting for 42%, followed by batting (26%) and fielding (23%) injuries. In 9% of cases, player's role were not defined. Of the 43 player injuries, only one injury was reported in a female player.⁴⁰

Impact injuries were the most common injury mode in batting (91%) and fielding (70%) while the gradual onset type was the most common in bowlers (72%). Head and neck injuries were the most common site injured when batting (55%), lower extremity was the most common site injured in bowlers (39%), and upper extremity injuries were the most common in fielders (60%). The most common form of presentation was acute in batting (91%) and fielding (60%) injuries while in bowling injuries it was chronic (94%).

History of previous or recurrent musculoskeletal injuries were reported in 9 players, 7 of whom were fast bowlers having bowling injuries.

The mode of treatment was not reported in 9% of cases. Of those reported, conservative approach was the reported approach overall (54%) and in bowling-related injuries (67%), while surgical approach was reported in fielding injuries (56%). RTP data was mentioned in only

60% of the players. Of those reported, 73% of players returned to play with an average RTP time of 19 weeks.

Study quality/completeness of reporting

The words "case report" and area of focus was reported in the title in 25% cases, with none of the study included "case report" as key word. Player information were reported for 88% to 100% of cases. Reporting regarding "diagnostic assessment" ranged between 6% and 94% of cases. None of the cases reported player's perspective on the experience while only 22% cases published obtaining of player's informed consent [Figure 4].

Discussion

The present review offers an insight into the "Medical Attention" Injuries,⁹ providing for a clinical tendency of

Table 1: Descriptive summary of the cases included in the review

Characteristic	Batting	Bowling	Fielding	Overall*
Sample size (n)	11	18 [†]	10 [‡]	43 [§]
Age, mean (SD)	32 (14)	22 (6.5)	23 (8.5)	26 (11)
Mode of injury				
Impact injury	10	0	7	20
Gradual onset	1	13	2	16
Insidious onset	0	5	1	7
Site of injury				
Head and neck	6	0	2	10
Upper extremity	1	6	6	13
Chest	2	2	0	4
Abdomen	2	0	0	2
Lower extremity	0	7	2	11
Spine	0	3	0	3
Chronicity				
Acute	10	1	6	20
Chronic	1	17	4	23
Treatment				
Conservative	4	12	4	21
Surgery	4	6	5	18
Not reported	3	0	1	4
RTP				
Conservative	1	8	3	12
Surgery	-	5	1	7
No return	5	0	2	7
No data	5	5	4	17

*In four players role wasn't defined, [†]17 fast bowling and one spin bowling injury, [‡]Two wicket keeping injury, [§]42 males and 1 female, ^{||}Age not mentioned in two bowling and one fielding injury player. RTP=Return to play, SD=Standard deviation

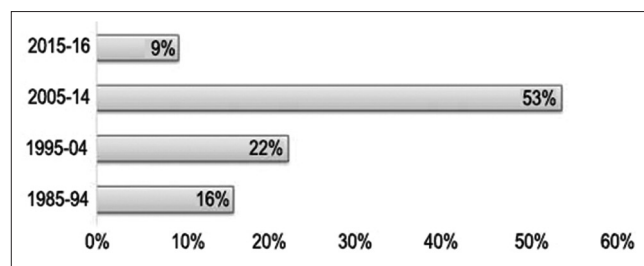


Figure 2: Bar diagram showing distribution of case report publication over time

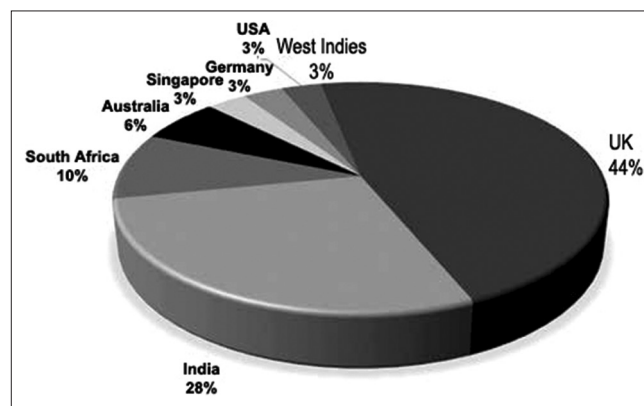


Figure 3: Pie chart showing country based publication distribution

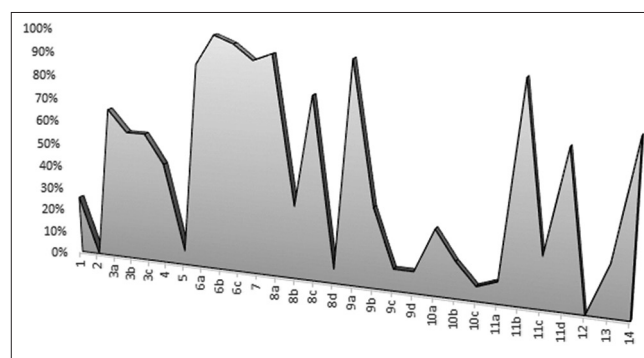


Figure 4: Stacked area chart showing reporting completeness

these injuries. Although various epidemiological studies have been carried out across the various cricketing nations,^{8,10,11,54-56} the case studies in the present review were largely reported from India and the UK.

The quality of studies included in the review lacked uniformity and varied considerably based on the CARE guidelines.²¹ Player information was the only domain that was well reported across studies. Very few case studies mentioned the word case report in the title or keyword, it can be explained to be due to the studies being published under the case report section of various journals.^{22,24,27,29,31,34,36,41,43-46,49,50,52,53} Further, informed consent was mentioned in only 22% of case studies, which again can be explained by the fact that almost all the journals accept case reports with informed consent submitted or mentioned separately during submission.

Bowling injuries were the most common injuries reported in the present review,^{23,24,27-29,31,38,39,43,46,47,50} similar to those reported across epidemiological studies.^{4,8,10,54}

Impact injuries were the most common mode of injury in the present review accounting for 47% of overall injuries.^{22,25,26,30,32,34-37,40,42,45,48,49,51,52} The mode of injury was shown to be role dependent, with impact injury being the most common mode in batting and fielding injuries while gradual onset injuries being the most common mode in bowling injuries. This may explain the injury presentation to be largely acute in batting and fielding injuries while it being chronic in bowling injuries. Although a different definition was used for the mode of injury and chronicity in one epidemiological study, it reported a similar picture.⁸ Further, impact injuries were most commonly reported to be due to rising ball^{22,25,32,34,35,37,42,45,49,52} or fielding technique and skill,^{26,30,48,51} while the gradual onset injuries in bowling^{23,24,27,30,33,38,39,44,46,47} were mainly reported to be due to workload,^{23,27,30,38,39} followed by repetitive or prolonged stress^{24,33,44} and weight training.⁴⁷ Although various factors have been shown to be risk factors^{13,14,50} for injuries in cricketers, there is a lack of reporting of the same in the present review, necessitating further research to establish the same.

Upper extremity injuries^{26-31,33,41,43,44,47,48} were reported to be little higher in the present review, followed by lower extremity^{34,39,40,50-52} and then head and neck,^{22,25,36,37,42,52} unlike that reported across epidemiological studies.^{8,10} Further, head and neck injuries were the most common site of injury in batting while extremity injuries were the most common in bowling and fielding injuries with upper extremities involved more in fielders and lower extremities in bowlers, which again may be explained by the mode and mechanism of injury, and role demand in the current review.

Very few studies reported a history of previous musculoskeletal injuries in the current review, and they

were largely in the bowlers. This may be significant as previous injuries are known to increase chances of further injury⁵⁶ in sports. The importance of protective wear and its design in cricket has been discussed across studies,^{12,15} which was found to be reiterated by few authors in this review.^{22,36,37,49}

Of the reported injuries, most were managed conservatively, while surgery was mostly done in the case of impact injuries in the current review. Inconsistency was seen with reporting of RTP time, with 19 weeks being the average RTP time in the present review based on the studies reporting the same, unlike that reported in other studies.⁵ Further, of those reported, only 8% returned within 3 weeks, 65% took more than 3 weeks to return, and 27% never returned due to the gravity of injury^{22,34,35,37,45,48} in contrast to that reported.⁸

Various unique and rare injuries were reported in the current review like stress fracture at unique sites,^{23,27,47} rib impingement,²⁴ valgus extension overload syndrome,²⁹ little league shoulder,³¹ and pronator teres tear.⁴⁴ A few studies reiterated the essence of protection and equipment design^{22,36,37,49} while few reported the seriousness and career ending nature of the injuries.^{32,34-37,42,45,48,49} Studies also stressed the importance of awareness and education, among cricketing world at all levels, including proper cricketing technique and appropriate workload,^{50,51} and most importantly bystander cardiopulmonary resuscitation.⁴⁹ Physicians and other medical personnel caring for cricketers were also urged to be vigilant of certain injuries that mimic or pose diagnostic challenge in some studies.^{27,28,40,52}

The present review is limited in sample size, retrospectivity, nature of data and being single reviewer executed, leading to inability to perform data analysis. The studies in the review largely reported male player injuries. Further, the review lacked studies reporting injury in spinners²⁸ and wicket keepers,³⁰ which further limits interpretation. Spinners though are slow paced in comparison to fast bowlers, are prone to injuries due to the work demand, workload and ball gripping (especially in longer version of matches), while wicket-keepers are specialists who like spinners are prone to injuries due to their work demand and nature in any format of the game. Further based on CARE guidelines,²¹ the studies lack consistency in reporting, limiting interpretation of data, due to varied definitions, and also that case reports tend to report unique or rare injuries and its presentations rather than usual. The studies also reported poorly on varying confounding variables including, but not limited to players' level, professional rank, training load, nature of the ground, as these have been shown to predispose players to injury.^{8,10,11,54,57} Finally, unlike in football,⁵⁸ there were no studies found reporting injuries in an umpire, who also form an integral part of the game with their presence on the field more than any individual player.

Nevertheless, both the cricketing world and the medical fraternity caring for them should be aware of the increasing

number of cases being reported in the literature suggesting the uniqueness and clinical path of “Medical Attention” injuries in cricket. The evidence provided, though not sufficient for any recommendation, it should alert the physicians and those concerned with the primary care of the cricketers to be mindful of their sporting need and demand, while also being vigilant of the eccentricity and severity of the injuries, their atypical presentation, mode, mechanism and trend, thereby being prepared for the unexpected presentations.

Conclusion

The aim of this review was to collect and analyze epidemiologic information from previously published case reports of medical attention injuries in cricket. Though there is an increase in reporting of injuries in the game of cricket, the reporting lacks uniformity and standardization. From the mixed data, it may be cautiously concluded that medical attention batting and fielding injuries are due to impact and acute in presentation while bowling injuries are due to gradual or insidious onset and chronic in the presentation. Head and neck in batting and extremities in bowling and fielding are the common sites involved in medical attention injuries. Although the injuries reported are unique in that they were reported for the first time, were rare in occurrence or had unique presentation, these understandably add to the diagnostic challenge and hence further care, requiring the medical world involved in cricketing care to be alert and vigilant.

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Conflicts of interest

There are no conflicts of interest.

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