Incidence and prevalence of injury in adolescent female cricketers

Incidencia y prevalencia de lesiones en criqueteras adolescentes

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Received: 05-09-25
Accepted: 15-10-25

How to cite in APA

Letsholo, T. C., Dawood, M. A., Boby, F. A., & Mabena-Segoe, I. N. (2026). Incidence and prevalence of injury in adolescent female cricketers. *Retos, 74*, 383-394. https://doi.org/10.47197/retos.v74.117537

Abstract

Background: Sustaining an injury as an adolescent cricketer can lead to poor performance, an increased risk of injury recurrence, and premature retirement from sports. The incidence and prevalence rate of injuries in adolescent male cricketers from South Africa range from 27% to 81%. However, the injury rate in adolescent female cricketers is unknown.
Objectives: This non-experimental survey aimed to determine the incidence and prevalence of injury in adolescent female cricketers in a high school league in the Gauteng province of South Africa.
Methods: There were 25 participants aged between 14 and 17 years (mean 15.9 ±1.2). The demographics and injury history were recorded using a questionnaire. The incidence and prevalence of injury per 100 match days were calculated.
Results: Twenty-four injuries were recorded (14 new and 10 recurrent injuries). The overall incidence was 0.30 injuries per 100 match days. There were 0.24 non-time-loss injuries and 0.05 time-loss injuries per 100 match days. The injury prevalence was 3.5%. Injuries to the hand (0.06 injuries per 100 match days) and thigh (0.05 injuries per 100 match days) were the most common.
Conclusion: The incidence and prevalence of injury in adolescent female cricketers were consistent with international research on elite female cricketers, with the hand and lower limbs remaining at significant risk of injury. It is recommended that future studies focus on investigating prevention strategies for hand and lower limb injuries in female cricketers.

Keywords

Injuries, teenage, women, cricket.

Resumen

Antecedentes: Sufrir una lesión como jugadora adolescente de críquet puede conducir a un bajo rendimiento, un mayor riesgo de recurrencia de la lesión y a una retirada prematura del deporte. La incidencia y prevalencia de lesiones en jugadores adolescentes masculinos de críquet en Sudáfrica oscila entre el 27% y el 81%. Sin embargo, se desconoce la tasa de lesiones en jugadoras adolescentes de críquet.
Objetivos: Esta encuesta no experimental tuvo como objetivo determinar la incidencia y prevalencia de lesiones en jugadoras adolescentes de críquet que participan en una liga escolar en la provincia de Gauteng, Sudáfrica.
Métodos: Participaron 25 jugadoras con edades comprendidas entre 14 y 17 años (media 15,9 ± 1,2). Los datos demográficos y el historial de lesiones se registraron mediante un cuestionario. Se calcularon la incidencia y la prevalencia de lesiones por cada 100 días de partido.
Resultados: Se registraron veinticuatro lesiones (14 nuevas y 10 recurrentes). La incidencia general fue de 0,30 lesiones por cada 100 días de partido. Se observaron 0,24 lesiones sin pérdida de tiempo y 0,05 lesiones con pérdida de tiempo por cada 100 días de partido. La prevalencia de lesiones fue del 3,5%. Las lesiones en la mano (0,06 por cada 100 días de partido) y en el muslo (0,05 por cada 100 días de partido) fueron las más frecuentes.
Conclusión: La incidencia y prevalencia de lesiones en jugadoras adolescentes de críquet fueron consistentes con la investigación internacional sobre jugadoras de críquet de élite, siendo la mano y los miembros inferiores las zonas con mayor riesgo de lesión. Se recomienda que estudios futuros se centren en investigar estrategias de prevención de lesiones en la mano y en los miembros inferiores en jugadoras de críquet.

Palabras clave

Lesiones; adolescentes; mujeres; croquet.

Introduction

Cricket is typically considered a non-contact sport, but it still carries a risk of injury (Jacobs et al., 2022). When participating in the sport at high school level, the primary focus is on enjoyment and general well-being (Eapen, 2014). However, this perception underestimates the repetitive, high-impact physical demands placed on the body through activities such as bowling, batting, and fielding (Duffield et al., 2009; Jo-Anne, 2012; Noakes & Durandt, 2000). These demands expose players to significant risk of both acute and overuse injuries, particularly when training loads are not well-managed (White et al., 2011). However, as adolescent athletes become more competitive, they tend to train and play more aggressively, increasing their risk of sports injuries (Beck & Drysdale, 2021; Keylock et al., 2022). A demanding activity with repeated hard motions, cricket can strain several areas of the body and increase cricketer injury risk. Maintaining an injury can negatively impact a cricketer's performance and raise their likelihood of reoccurring injuries, hence perhaps leading to early sport dropout (Goggins et al., 2021; Larruskain et al., 2022; Williams et al., 2024).

Adolescence is a pivotal era in physical development marked by fast growth, hormonal changes, and growing sports-related specialism. All of which contribute to injury risk, these physiological shifts can greatly affect biomechanical performance, neuromuscular control, and general movement patterns (Brown et al., 2017; Haraldsdottir & Watson, 2021; Towlson et al., 2021). Technical flaws, overuse, and poor training load management during this phase could cause injuries that not only hinder athletic development but also help to cause long-term musculoskeletal disorders or early dropout from sport (Eapen, 2014; Jacobs et al., 2022).

Cricket-related injuries among elite-level adult players have been the subject of extensive epidemiological study (Boby & Shara, 2025). Because fast bowlers repeatedly strain the lumbar spine, shoulder, and lower limbs, injury incidence among elite male cricket players is extremely high (Keylock et al., 2022). Elite female cricket players' injury surveillance statistics also point to high rates, especially in the upper limbs and lower back, generally connected to fielding and overuse problems (Warren et al., 2019a). Depending on the study methodology, setting, and injury definition utilised, injury frequency has been recorded in top female cricket to vary from 7.7% to 93.3% (Jacobs et al., 2022). Match forms like T20, which stress intensity and brief recovery times, can increase injury risks for both male and female players (Orchard, 2010; Perera et al., 2019; Williams et al., 2024). At the juvenile level, several studies have looked at injuries in adolescent male cricketers. With bowling being the most dangerous activity, Stretch (2015) conducted a five-year research on top South African schoolboy cricketers and discovered that the most frequent injuries were the lumbar spine and knees (Stretch, 2014). With overuse and biomechanical dysfunction as major causes, Milson et al. (2007) and Noorbhai et al. (2012) also noted high seasonal injury rates among schoolboys in KwaZulu-Natal and other South African provinces (Milson et al., 2007; Noorbhai et al., 2012). These results support the theory that teenage cricket players have distinct risk profiles that need for age-specific preventative measures, therefore they are not only smaller versions of adults.

By comparison, there is still a great scarcity of studies on injury incidence and prevalence among teenage female cricketers. Given girls' growing involvement in cricket both throughout Africa and internationally, this disparity is especially troubling. Development of suitable preventive plans, educational programs, or medical guidelines becomes challenging without empirical data from this population. Most injury statistics on female cricket players come from elite adult athletes, like in research by Perera et al. (2019) and Goggins et al. (2020), which revealed that elite women often suffer with upper limb and fielding-related injuries (Goggins et al., 2020; Perera et al., 2019). These findings, however, cannot be taken to apply to teenage girls whose physical development, injury causes, and sport exposures vary greatly.

Furthermore deserving of special notice are physiological and anatomical variations between male and female athletes. Generally speaking, women have distinct hormonal profiles, broader pelves, and higher Q-angles that all affect joint stability and movement mechanics. Studies have indicated that among teenage girls, these elements increase their risk of lower limb injuries especially to the knees and hips (Ericksen & Gribble, 2012; Gant et al., 2024; Powers, 2010). For example, Ericksen and Gribble (2012) observed that changing oestrogen levels might cause ligament laxity, therefore influencing joint stability

and proprioception (Ericksen & Gribble, 2012). Powers (2010) further underlined the importance aberrant hip mechanics play in knee problems, especially for female athletes (Powers, 2010). These results imply that teenage female cricket players could be at distinct injury risk than their male colleagues.

Another problem that worries female athletes especially in adolescence is relative energy deficiency in sport (RED-S). Red-S can have broad implications on immunological function, hormone balance, and bone health depending on insufficient calories consumed in relation to energy expenditure. Mountjoy et al. (2014) underlined that RED-S can aggravate long-term musculoskeletal problems, slow down recovery, and raise the risk of stress fractures (Mountjoy et al., 2014). In cricket, which requires extended play times and heavy training loads, RED-S could subtly but greatly raise injury vulnerability among teenage girls.

Contextual and environmental elements augment these physical difficulties. School-level female cricket initiatives might have restricted access to licensed coaches, strength and conditioning experts, and medical staff members. This absence of infrastructure raises the possibility of unnoticed or improperly handled injuries. Athletes who return to sport prematurely run great risk for both recurrent and subsequent injuries, which could arise at different anatomical sites than the initial trauma, according to Finch et al. (2017). In school environments, adolescent girls may continue to practice or compete while not being physically competent without appropriate rehabilitation and supervision, therefore causing chronic injuries or performance drop.

Furthermore, a good number of cricket injuries are categorised as non-time-loss injuries—those that might still affect performance or raise the risk of more severe damage but do not stop participation. Particularly among teenagers who might dread being taken off from play or failing their coaches or peers, these injuries sometimes go unreported or untreated. Research by Perera et al. (2019) and Warren et al. (2019) found that 80% to 93% of all recorded injuries among elite female cricket players are non-time-loss injuries (Perera et al., 2019; Warren et al., 2019). Though data are limited, this pattern most certainly exists in teenage female cricket as well.

These factors make thorough injury tracking in teenage female cricketers desperately needed. Developing focused treatments in this community depends on an awareness of the incidence, frequency, kind, and causes of damage there. Nevertheless, despite the sport's rising appeal among girls in schools and provincial leagues, no published research to date have looked at this problem in South Africa.

The present study aims to address this critical gap in the literature by determining the incidence and prevalence of injuries in adolescent female cricketers participating in a high school league in the Gauteng province of South Africa. Specifically, the study investigates both time-loss and non-time-loss injuries, their anatomical locations, mechanisms, onset patterns (sudden vs. gradual), and recurrence. The study adopts standard definitions from the 2016 International Consensus Statement on injury surveillance in cricket to ensure methodological rigor and comparability with existing research (Orchard et al., 2016).

By contributing novel data on an underrepresented population, this research has the potential to influence multiple stakeholders—including coaches, physiotherapists, sport scientists, and policy-makers—by guiding the development of age- and gender-specific injury prevention strategies. It also provides a foundation for future longitudinal studies and intervention programs that promote athlete health, reduce injury risk, and enhance long-term engagement in sport among adolescent girls.

Ultimately, this study aims not only to fill a void in the literature but also to advocate for greater inclusion of female athletes in injury research. As women's cricket continues to expand at both grassroots and elite levels, the development of safe and supportive environments for adolescent players will be crucial to the sport's sustained growth and success.

Method

Study Design and Setting

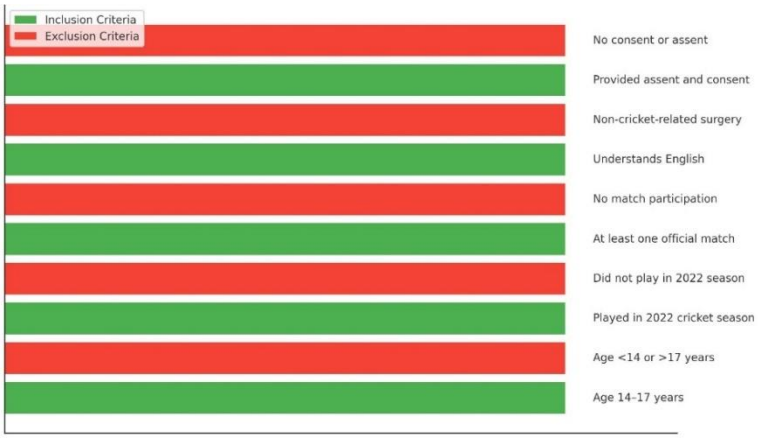
This study employed a retrospective, cross-sectional observational design to investigate the incidence and prevalence of injuries among adolescent female cricketers in South Africa. It was conducted in 2023

at two public high schools located in Gauteng Province. Data were collected through a self-administered questionnaire completed during supervised classroom sessions. The study focused on injuries sustained during the 2022 school cricket season, from January to December. While this design allowed for the collection of season-long data, its retrospective nature made it vulnerable to recall bias.

Participants

The study population comprised adolescent female cricketers aged between 14 and 17 years. Eligible participants were those who had played in at least one official high school league match during the 2022 season, were enrolled in a school cricket program, could read and respond to an English-language questionnaire, and provided informed assent and written parental or guardian consent. Exclusion criteria included being outside the age range, not participating in the 2022 season, not playing any formal matches, undergoing surgery due to non-cricket-related injuries, or being unable to provide consent or assent. A total of 25 participants met the eligibility criteria and were included in the final sample. A visual summary of the inclusion and exclusion criteria is provided in Figure 1.

Figure 1. Inclusion and Exclusion Criteria for the study Participation



Variables

The primary variables collected were demographic (age, playing role), participation (match involvement), and injury-related (type, anatomical site, activity during injury, mode of onset, new or recurrent). Injuries were classified based on internationally accepted definitions outlined in the 2016 International Consensus Statement on Injury Surveillance in Cricket.

Data Sources and Measurement

All data were obtained via a structured, self-administered questionnaire, pilot-tested for clarity and relevance. Participants were asked to report injuries sustained during the 2022 cricket season and provide details about each injury's type, severity, body part affected, mechanism (e.g., ball impact, overuse), and the context in which it occurred (e.g., batting, bowling). Injuries were recorded as either time-loss or non-time-loss. Time-loss injuries were defined as those that resulted in missed match participation, whereas non-time-loss injuries required medical attention but did not prevent play.

Total time-loss and non-time-loss injury incidence and prevalence were calculated for each age group, skill group, activity at the time of injury, region of the body, and mode of injury onset. The number of player match days was used to calculate the injury incidence. The match injury incidence was presented as the number of injuries per 100 player match days. The following formulas were used to calculate injury incidence sub-types:

Match injury incidence (all) $= \frac{Number\ of\ injuries}{Player\ match\ days} \times 100$

Non-time-loss injury incidence $= \frac{Number\ of\ non-time-loss\ injuries}{Player\ match\ days} \times 100$

$$\text{Time-loss injury incidence} = \frac{Number\ of\ time-loss\ injuries}{Player\ match\ days} \text{ x } 100$$

Match injury prevalence was the percentage of participants considered injured and unavailable for any given match day. The following formula was used to calculate match injury prevalence:

$$\text{Match injury prevalence} = \frac{Missed\ player\ match\ days}{Player\ match\ days\ x\ Number\ of\ squad\ members} \text{ x } 100$$

Bias

Several efforts were made to reduce bias during data collection. Questionnaires were completed in the presence of the researcher, allowing participants to ask questions and receive clarification. Despite these precautions, the study remains subject to recall bias, as participants were required to remember events from the previous season. Social desirability bias may also have led to underreporting of injuries perceived as minor. Additionally, the method used for estimating match exposure may introduce measurement bias, as it assumes equal playing time among all squad members.

Study Size

A total of 25 participants were included in the final sample, representing all eligible adolescent female cricketers from the two participating schools. The sample size was primarily determined by the total available population.

A post hoc power analysis was conducted using G*Power 3.1 to evaluate the adequacy of this sample size for detecting moderate effects (Cohen's d = 0.5) with α = 0.05 and power (1–β) = 0.80 in a one-sample context. The analysis indicated that a minimum of 34 participants would be required to achieve adequate power. Thus, the present sample (n = 25) yielded approximately 70% power, which is acceptable for exploratory epidemiological research in previously unstudied populations.

Given these constraints, this investigation was designed as an exploratory pilot study to provide baseline injury incidence and prevalence data for adolescent female cricketers. The findings can therefore inform sample size estimations for future multi-site, prospective research.

Exposure Measurement

Exposure to cricket was calculated by multiplying the number of all participants in each squad by the number of matches played. The following equation was used to calculate the player match days:

Player match days = squad size x number of match days

This provided a season-level estimate of match exposure. While practical in settings without individualized tracking systems, this approach assumes equal participation across players and does not account for absences due to injury, rotation, or other factors.

Outcome Measures

The primary outcome measures were injury incidence, defined as the number of injuries per 100 player match days, and injury prevalence, calculated as the percentage of players unavailable for selection on any given match day due to injury. Secondary analyses examined injury patterns by age group, playing role, anatomical site, activity during injury, and injury onset type.

Statistical Methods

All data were entered into Microsoft Excel 365 and analyzed using IBM SPSS Statistics version 29.0. Descriptive statistics were used to summarize demographic characteristics and injury data. Frequencies and percentages were reported for categorical variables, while injury incidence and prevalence were presented as standardized rates. A post hoc power analysis was performed using G*Power 3.1 to evaluate the adequacy of the sample size. The analysis indicated that approximately 34 participants would be required to achieve 80% power for detecting moderate effects (Cohen's d = 0.5) at an alpha level of 0.05. With 25 participants, the achieved power was approximately 70%, supporting the exploratory and descriptive nature of the study. Therefore, no inferential statistical analyses or confidence intervals were performed, as the sample size was insufficient for robust hypothesis testing. The purpose of the analysis was exploratory—to identify baseline injury trends and provide preliminary data to inform future, adequately powered prospective studies.

Ethical Considerations

Ethical approval was obtained from the Sefako Makgatho Health Sciences University Research Ethics Committee (Reference number: SMUREC/H/121/2023:PG). Written informed consent was obtained from parents or guardians, and assent was obtained from each participant. Confidentiality was ensured by assigning unique codes to each participant and securing all data in password-protected files.

Limitations

This study has several limitations. The small sample size, drawn from only two schools, limits the generalizability of findings and reduces the study's statistical power. A post hoc power analysis conducted using G*Power 3.1 indicated that approximately 34 participants would be required to achieve 80% power for detecting moderate effects (Cohen's d = 0.5) at an alpha level of 0.05. Therefore, the achieved power in this study (n = 25) was approximately 70%, which supports its interpretation as an exploratory pilot investigation. The retrospective and self-reported nature of data collection is also prone to recall bias, particularly for injuries not resulting in time-loss. Although questionnaires were completed under researcher supervision to minimize misinterpretation, recall and social desirability bias may still have influenced responses. The exposure estimate assumed equal participation among players, which may not reflect actual match attendance. Moreover, the study did not account for potential confounding variables such as training load, strength and conditioning practices, or access to medical support. Despite these limitations, this study fills an important gap in the literature by providing the first descriptive data on injury patterns among adolescent female cricketers in South Africa. These findings provide a foundation for future multi-site, prospective research with larger, statistically powered samples designed to validate and expand upon these preliminary observations.

Results

Of the 25 participants, 19 (76%) sustained at least one injury during the 2022 season, resulting in a total of 24 reported injuries. This value represents the individual-season injury prevalence (percentage of players injured at least once). In contrast, the match-day prevalence—the proportion of players unavailable for selection due to injury—was 3.5%. Of the 24 injuries, four (17%) were time-loss and 20 (83%) were non–time-loss injuries, corresponding to 0.05 time-loss injuries (95% CI: 0.01–0.09) and 0.24 non–time-loss injuries (95% CI: 0.14–0.35) per 100 match days. Fourteen injuries (58%) were new and 10 (42%) were recurrent, with respective incidences of 0.17 (95% CI: 0.09–0.26) and 0.12 (95% CI: 0.05–0.20) injuries per 100 match days.

The greatest injury incidence occurred among participants aged 17 years (0.10 injuries per 100 match days; 95% CI: 0.05–0.17) and 15 years (0.08 injuries per 100 match days; 95% CI: 0.03–0.13), with time-loss injuries being more prevalent in the 15-year age group (2%; see Table 1). The highest overall incidence (0.12 injuries per 100 match days; 95% CI: 0.06–0.19) and the most time-loss injuries (2%) were observed in all-rounders, who also represented the largest proportion of participants (Table 2).

Table 1. Incidence and prevalence of injury by age group

Age group	% of all injuries	Incidence (per 100 match days)	Prevalence for injured and unavailable
17	33	0.10	1%
16	17	0.05	0.5%
15	29	0.08	2%
14	21	0.06	0%

Table 2. Incidence and prevalence of injury by skill group

Skill group	% of all injuries	Incidence (per 100 match days)	Prevalence for injured and unavailable
All-rounder	42	0.12	2%
Wicketkeepers	25	0.07	1.5%
Batters	21	0.06	0%
Bowlers	13	0.04	0%

Batting-related injuries had the highest overall injury incidence (0.10 injuries per 100 match days). The highest time-loss prevalence was from wicket-keeping-related injuries with 1.5% of participants unavailable at any given time. Concerning specific activity, the highest injury incidence occurred in ball impact during batting (0.07 injuries per 100 match days), running during fielding (0.04 injuries per 100 match days), the delivery stride of fast bowling (0.04 injuries per 100 match days), and wicket-keeping catching (0.04 injuries per 100 match days). Running, diving, and delivery stride injuries caused the most time lost with each activity resulting in 1% of participants being unavailable at any given time (Table 3).

Table 3. Incidence and prevalence of injury by activity at time of injury

Skill group	Activity	% of all injuries	Incidence (per 100 match days)	Prevalence for injured and unavailable
Batting	Hit by ball	25	0.07	0%
	Playing a shot	4	0.02	0%
	Running between the wickets	4	0.01	0%
	Total	33	0.10	0%
Fielding	Running	13	0.04	1%
	Catching	8	0.02	0%
	Diving	4	0.01	0%
	Total	25	0.07	1%
Bowling	Delivery stride	13	0.04	1%
	Follow through	4	0.01	0%
	Run up	4	0.01	0%
	Total	21	0.06	1%
Wicket-keeping	Catching	13	0.04	0.5%
	Diving	8	0.02	1%
	Total	21	0.06	1.5%

The overall injury incidence and prevalence by region of the body can be found in Table 4. The greatest injury incidence occurred in the hand (0.06 injuries per 100 match days), thigh (0.05 injuries per 100 match days), knee (0.04 injuries per 100 match days), and lower back (0.04 injuries per 100 match days). The highest time-loss prevalence occurred in the knee (1%), lower back (1%) and hip (1%). All head and face injuries were non-time-loss and occurred when attempting to catch a ball during fielding and ball trauma during batting.

Table 4. Incidence and prevalence of injury by region of the body

Body region	% of all injuries	Incidence (per 100 match days)	Prevalence for injured and unavailable
Hand	21	0.06	0.5%
Thigh	17	0.05	0%
Knee	13	0.04	1%
Lower back	13	0.04	1%
Hip	8	0.03	1%
Ankle	8	0.02	0%
Head and face	8	0.02	0%
Elbow	4	0.01	0%
Leg	4	0.01	0%
Shoulder	4	0.01	0%

Sudden onset injuries had the highest overall incidence (0.12 injuries per 100 match days). Gradual onset injuries caused the most time lost with 2% of participants unavailable at any given time due to a gradual onset injury (Table 5).

Table 5. Injury incidence and prevalence by mode of injury onset

Mode of onset	% of all injuries	Incidence (per 100 match days)	Prevalence for injured and unavailable
Sudden onset	42	0.12	1%
Gradual onset	33	0.10	2%
Impact/traumatic injury	17	0.05	0%
Insidious onset	8	0.02	0.5%

Discussion

In elite female cricket, catching and throwing cause significant injuries (Warren et al., 2019). In South African adolescent male cricket, lower back injuries, accounted for a significant proportion of match days lost (Stretch, 2014). This non-experimental survey study determined the injury incidence and in elite female cricket, catching and throwing cause significant injuries (Warren et al., 2019). In South African adolescent male cricket, lower back injuries accounted for a significant proportion of match days lost (Stretch, 2014). This non-experimental survey study determined the injury incidence and prevalence in South African adolescent female cricketers, as data on this cohort were previously unknown. Results showed that most adolescent female cricketers in a Gauteng high school league (January–December 2022) experienced injuries, with an incidence of 0.30 injuries per 100 match days and a prevalence of 3.5%. Most participants (76%) sustained injuries, similar to previous studies on elite Australian female cricketers (93%) (Perera et al., 2019). This similarity stems from using standardized injury definitions from the 2016 consensus statement (Orchard et al., 2016). However, comparisons with elite male cricketers should be interpreted with caution, as differences in physical maturity, hormonal profile, match exposure, and workload influence injury mechanisms and prevalence (Ericksen & Gribble, 2012; Keylock et al., 2022). Thus, the results of this study are best contextualized within the literature on female cricket rather than extrapolated from elite male data.

Non–time-loss injuries comprised 83% of reported injuries, aligning with elite female cricket research (80%–93%) (Perera et al., 2019; Warren et al., 2019). This suggests that cricketers often continue playing despite injuries, which can later lead to time-loss injuries (Jacobs et al., 2022; Ranson & Gregory, 2008). The high proportion of non–time-loss injuries may also reflect the injury definition used in this study, which includes all medical-attention injuries regardless of absence from play. Furthermore, self-reported data may have led to underreporting or misclassification of minor injuries. This finding highlights the need for prospective surveillance systems with medical verification to more accurately capture both acute and overuse injuries. Time-loss injuries accounted for 17%, consistent with previous literature (8%–20% in elite female cricketers) but lower than in male counterparts (27%–34%) (Perera et al., 2019; Stretch, 2014; Trella, 2012; Warren et al., 2019). Male cricketers may have higher time-loss injuries due to greater participation in cricket-related activities (Warren et al., 2019).

New injuries (58%) outnumbered recurrent injuries (42%), aligning with research on elite female (73%) and adolescent male cricketers (87%) (Milson et al., 2007; Perera et al., 2019). Recurrent injuries ranged from 24% to 47% in adolescent male cricketers (Trella, 2012). Poorly managed injuries contribute to recurrence, exacerbated by inadequate access to medical professionals in high school cricket teams. Without proper rehabilitation, players risk further injuries, performance decline, and premature retirement (Finch et al., 2017).

Incidence and Prevalence of Injury by Skill Group

The study cohort consisted of all-rounders (40%), batters (24%), wicket-keepers (20%), and bowlers (16%). All-rounders were thought to be more susceptible to injury than bowlers and batters because of the high physical demands and impact placed on their bodies (Stretch, 2014). All-rounders experienced the majority of injuries (42%), consistent with elite female cricket research (38.5%) and adolescent male cricket research (32%) (Noorbhai et al., 2012; Perera et al., 2019). One possible explanation for why all-rounders sustained most of the injuries in the current study could be that there were almost twice as many all-rounders as batters or bowlers. Furthermore, all-rounders in the current study played 84 matches, which was nearly twice as many as the number of matches played by batters (46 matches) and wicket-keepers (40 matches). High exposure to cricket is a recognized risk factor for injuries (Warren et al., 2019). Another reason could be that adolescent female cricketers had fewer structured training sessions and more matches, contributing to inadequate match preparedness, thus increasing injury risk (Perera et al., 2019). All-rounders (2%) and wicket-keepers (2%) experienced the most time-loss injuries. In contrast, previous research showed that pace bowlers sustain the most time-loss injuries (Perera et al., 2019). This difference reinforces that injury profiles in adolescent females may differ from those observed in elite male cricketers.

Incidence and Prevalence of Injury by Activity at the Time of Injury

Batting was the leading cause of injury (33%), with an incidence of 0.10 injuries per 100 match days. Poor batting technique may explain this. In elite female cricket, fielding caused most injuries (46%), and in adolescent male cricket, bowling caused most injuries (51%) (Goggins et al., 2020; Perera et al., 2019; Stretch, 2014; Warren et al., 2019). The high rate of injuries (25%) resulting from ball trauma while batting could suggest that cricketers were not using protective gear, such as batting gloves and thigh guards, to prevent injury. Protective gear should therefore be encouraged across all levels of play to prevent hand and thigh injuries (Jacobs et al., 2022).

Fielding was the second leading cause of injuries, comprising 25% of total cases, with a match injury incidence of 0.07 injuries per 100 match days. The injuries occurred primarily as a result of running (13%). Research on adolescent athletes shows that running—characterized by acceleration, deceleration, and quick directional changes—contributes to lower-limb injuries (Jacobs et al., 2022). Females are more susceptible to these injuries due to wider pelvic structure, greater Q-angle, and hormonal fluctuations that affect ligament integrity during high-impact activities (Ericksen & Gribble, 2012; Landry, 2014; Powers, 2010). These findings suggest that implementing neuromuscular warm-up programs, such as an adapted version of FIFA's 11+, could help reduce injury risk through improved stability, proprioception, and movement control.

Bowling was the third leading cause of injury, accounting for 21% of total injuries reported with an incidence of 0.06 injuries per 100 match days. Bowling was the leading cause of injury in adolescent male cricketers and the second cause of injury in elite female cricketers (Perera et al., 2019; Stretch, 2014; Warren et al., 2019). Bowling injuries occurred during the delivery stride (13%) and follow-through (4%). The relatively low bowling injury rate in this study may be due to the smaller number of bowlers and lower workloads compared to elite cricket. Elite female cricketers also experience lower bowling loads than their male counterparts due to fewer matches per season (Perera et al., 2019). Therefore, risk factors identified in elite male cricket cannot be directly generalized to adolescent female players.

Wicket-keeping, responsible for 21% of injuries, had an incidence of 0.06 injuries per 100 match days. Injuries occurred mainly during catching (13%) and diving (8%). Previous research showed that wicket-keeping had one of the lowest injury rates in elite female cricket (3.4%) (Perera et al., 2019). Protective gear likely contributed to reduced injuries (Jacobs et al., 2022; Stretch, 2014). However, wicket-keeping led to two time-loss injuries in this study, while fielding and bowling each caused one.

Incidence and Prevalence of Injury by Region of the Body

Hand injuries were the most common (21%), with an incidence of 0.06 injuries per 100 match days. These injuries occurred from ball impact during batting (8%), catching during fielding (8%), and diving while wicket-keeping (4%). Previous research indicated that hand injuries comprised 20% to 50% of total injuries (Goggins et al., 2020; Jacobs et al., 2022; Perera et al., 2019). We found that poor fielding, batting, and wicket-keeping techniques were the primary causes of hand injuries, comprising 25% of the total injuries sustained. Improved technique, use of protective equipment, and regular vision screening could help reduce this risk (Jacobs et al., 2022).

Lower-limb injuries ranged from 8% to 17%. The thigh sustained 17% of injuries with an incidence of 0.05 per 100 match days, mainly due to ball impact (13%). The knee accounted for 13% of injuries and a match injury incidence of 0.04 per 100 match days, mainly occurring during the run-up (4%), wicket-keeping dives (4%), and fielding dives (4%). The hip accounted for 8% of injuries with an incidence of 0.03 per 100 match days, mostly from running (4%). As previously discussed, running is a leading cause of lower-limb injuries, and females are more at risk due to anatomical and biomechanical factors (Ericksen & Gribble, 2012; Jacobs et al., 2022). These findings support the implementation of lower-limb strengthening and neuromuscular control programs for adolescent female cricketers.

Lower back injuries, which are common in adolescent male cricketers, were absent in this study (Stretch, 2014). This may reflect lower bowling workloads among female cricketers. However, at higher competitive levels, lumbar stress injuries have been reported among female athletes, suggesting that relative energy deficiency in sport (RED-S) and excessive training loads could increase risk (Mountjoy et al., 2014; Perera et al., 2019).

Head and face injuries accounted for 8% of all reported injuries, with an incidence of 0.02 per 100 match days. These injuries occurred primarily from catching (4%) and ball impact (4%). Research has shown a recent increase in concussion-related injuries, emphasizing the need for education on concussion management protocols for coaches, athletes, and parents (Orchard et al., 2016; Warren et al., 2019).

Incidence and Prevalence of Injury by Mode of Injury Onset

The majority of injuries sustained had a sudden onset (42%), with a match injury incidence of 0.12 per 100 match days. These injuries occurred primarily during fielding (34%), bowling (4%), and batting (4%). Gradual onset injuries comprised 33% of the total reported injuries, with a match injury incidence of 0.10 per 100 match days. These injuries occurred primarily during batting (13%), bowling (13%), and fielding (8%). Traumatic onset injuries accounted for 17% of the total, primarily occurring as a result of batting. The results of this study are consistent with previous research on elite female cricket, which found that most sudden onset injuries occurred during fielding (25%) and traumatic injuries occurred during batting (12%) (Perera et al., 2019). Gradual onset injuries, though fewer, caused the highest time-loss prevalence (2%), suggesting that overuse and insufficient recovery may be key contributors.

Limitations and recommendations for future research

A key limitation was the low sample size. Future studies should conduct a multi-season prospective study design or involve a larger population of adolescent cricketers. The study setting could be the CSA under-19 cricket week. Future research should focus on developing hand injury prevention strategies. Future research should focus on female cricketers' bowling workload and technique to determine risk factors, aetiology, and mechanisms of injuries. The effect of RED-S and high training loads and intensity in female cricketers should be researched.

Conclusions

The results of the study show that the majority of the participants experienced cricket-related injuries. The injury incidence was 0.30 injuries per 100 match days, and the injury prevalence was 3.5%. Most injuries were new and located in the hand. Ball impact while batting was the primary cause of injury. The study found a high rate of non-time-loss injuries, indicating that players continue to play despite being injured, leading to recurrent injuries. Overall, the study highlighted the susceptibility of adolescent female cricketers to both traumatic and overuse injuries.

Table 6. Definitions of terms used in this document

Term	Definition
Match time loss injury	An injury that resulted in a player being unable to bat, bowl or keep wicket during a match if a match was scheduled (Orchard et al., 2016b).
Non-time-loss injury	An injury that sought medical-attention but did not lead to time loss from the sport (Orchard et al., 2016, Jacobs et al., 2022).
Number of match days	The total number of cricket matches played by a cricket team over a specific time period (Orchard et al., 2016).

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