

Narrative review of mental illness in cricket with recommendations for mental health support

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ABSTRACT

Introduction Epidemiology reporting within the cricketing medical literature has emerged over the past 2 years, with a focus on physical injuries. Despite mental health in elite sport gaining increasing recognition, few studies have addressed mental health symptoms and disorders within cricket. Recently, cricketers have been prominent in the mainstream media describing their lived experiences of mental illness. As a result, some have withdrawn from competition and suggested there is an unmet need for mental health services within the sport.

Objectives (i) To appraise the existing evidence on mental health symptoms and disorders amongst cricketers. (ii) To provide guidance on shaping mental health research and services within cricket.

Design A narrative review of the literature from inception of available databases until 26 July 2019, with analysis and recommendations.

Results Five studies were included in this narrative review. Studies covered a range of mental health symptoms and disorders, including distress, anxiety, depression, sleep disturbance, suicide, adverse alcohol use, illicit drug use, eating disorders and bipolar disorder. Results indicated that cricketers are at high risk for distress, anxiety, depression and adverse alcohol use. When compared with the general population, cricketers are more likely to experience anxiety and depressive symptoms. Rates of suicide were proposed to be high for test cricketers. Overall, studies to date have been of low quality, demonstrating non-rigorous research methods. Some studies have relied on non-validated questionnaires to collect self-reported data on mental health symptoms and disorders, while others have presented biographical data obtained through searches of the media.

Conclusions The results of this narrative review highlight the lack of evidence underpinning mental health services for athletes within cricket. We suggest the following recommendations for future research and practice: (i) normalising mental health symptoms and disorders; (ii) working with and helping vulnerable demographic segments within the target population; (iii) designing and implementing early recognition systems of mental health symptoms and disorders; (iv) addressing the mental health needs of cricketers on a population basis.

INTRODUCTION

Injury epidemiology reporting within the cricket medical literature has emerged over

Summary of new findings

- ▶ For cricketers, existing preventative and responsive mental health services for addressing mental illness in cricketers are not underpinned by research evidence.
- ▶ From the data available, prevalence levels of mental health symptoms and disorders among cricketers are similar to athletes in other sports.
- ▶ The mental health of cricketers appears to be under close media scrutiny.
- ▶ This narrative review provides guidance on designing and implementing mental health prevention and intervention services for cricketers.

the past 2 years with a focus on physical injuries.¹⁻⁴ Cricket researchers have been proactive in standardising the description of physical injuries in order to better define injury cohorts and structure appropriate preventive and responsive services.^{5,6} In contrast, there is a lack of research evidence on the mental health of cricketers, despite this being an area of interest within the wider sporting medical literature.⁷⁻⁹ Such a deficit of evidence has been noted, particularly by the International Olympic Committee in their consensus statement on the mental health of elite athletes.^{9,10} Their statement highlighted the need to collect rigorous evidence in order to design, implement and evaluate sport specific mental health services. This lack of evidence limits the design, implementation and evaluation of both preventive and responsive mental health services for cricketers. From a behavioural epidemiological perspective,¹¹ estimating the prevalence of mental health symptoms and disorders and thus understanding individual and environmental factors associated with them, is necessary to improve evidence-based practice.

In the mainstream media, cricketers have been among the first sportspeople coming forward to describe their mental health symptoms and disorders.¹²⁻¹⁶ Furthermore, some have withdrawn from national team

selection^{17 18} and have gone ‘public’ to describe their experiences, which is not routinely seen in other sports. There has been a television series (*Mind Games*, Sky Sports, UK) as well as a film (*The Edge*), focussing on the mental strain that cricketers experience, particularly when ‘on tour’, at the very highest level of the sport.^{19 20} This anecdotal evidence indicates that there may be an unmet need for mental health provision. It is interesting to note; however, that most of the cricketers featured in the media discussing mental health difficulties have retired from the game.

OBJECTIVES

The purpose of this paper was twofold: (i) to appraise the existing evidence on mental health symptoms and disorders among cricketers and (ii) to provide guidance on shaping mental health research and services within cricket.

METHODS

A narrative review of the literature was conducted to identify relevant studies. Literature describing mental health symptoms and disorders in cricket was identified by searching MEDLINE, EMBASE, CINAHL, PsycINFO and SPORTDiscus from inception until 26 July 2019. This was carried out by a medical librarian. Key words searched included ‘cricket’ AND ‘chronic stress’ OR ‘Depression’ OR ‘Anxiety’ OR ‘Generalised anxiety disorder’ OR ‘Recurrent depression’ OR ‘Agitated depression’ OR ‘Mixed anxiety’ OR ‘Chronic depression’ OR ‘Panic’ OR ‘Insomnia’ OR ‘Drinking behaviour’ OR ‘Alcoholism’ OR ‘Addiction’ OR ‘Suicide’ OR ‘Suicide attempt’ OR ‘Self harm’ OR ‘Eating disorder’ OR ‘Anorexia nervosa’ OR ‘Bulimia’ OR ‘ADHD’ OR ‘Post traumatic stress disorder’ OR ‘PTSD’. A manual search of reference lists of relevant studies was also conducted.

Study inclusion

Two independent reviewers (GW and AP) screened titles and abstracts for eligibility. Studies must have met the following inclusion criteria:

1. Elite level cricketers, where elite was defined as competing at the national, international or professional level.
2. Quantitative data on mental health symptoms and disorders.
3. Written in English.

Studies were excluded from the review if they met the following criteria:

1. Papers with a primary focus on performance related aspects of game play.
2. Book chapters.
3. Conference abstracts or
4. Full text of the article was not available.

RESULTS

In total, 24 studies were identified by the search strategy. After reviewing the identified studies, 5 studies were

included in the narrative review.^{21–25} Papers were excluded for the following reasons: conference abstract (n=2); book chapters (n=2) and not mental health focused (n=15).

The five studies included were published between 2007 and 2018 and involved samples of current and retired professional cricketers from Australia (n=3), England (n=2), New Zealand (n=1) and South Africa (n=2). Other nationalities may have been included within Jones *et al* cohort.²³ Various methods were used to collect data, including cross-sectional designs,^{21 23} an observational prospective cohort design,²⁴ a review of biographical data²⁵ and a narrative review.²² Three studies focused exclusively on men,^{22 23 25} while two studies were inclusive of women.^{21 24} Studies covered a range of mental health symptoms and disorders, including: distress symptoms^{21 24}; anxiety symptoms^{21–24}; depressive symptoms^{21–24}; sleep disturbance²⁴; suicide^{22 25}; alcohol use^{23 24}; illicit drug use²²; eating disorder symptoms²¹ and bipolar disorder.²²

Main findings

Of the two studies that focused on distress,^{21 24} only the results of Schuring and colleagues provided information that was exclusive to cricketers. The results from Gulliver *et al* pertained to a group of professional Australian athletes, where results were aggregated and of which cricketers made up the largest sport sampled. However, it was not possible to extract data that was exclusive to cricketers. Overall, results obtained through the use of the Kessler 10²⁶ indicated that 15.7% (SD=6.0%) of athletes experienced distress symptoms, with women (16.7%, SD=5.7%) appearing more likely than men (14.6%, SD=6.1%) to indicate such symptoms. From the findings of Schuring and colleagues, prevalence rates of distress symptoms were 38.4% (95% CI 28.0% to 49.8%) among current South African cricketers and 26.3% (95% CI 14.8% to 42.2%) for retired cricketers. Results were obtained using the Distress Screener.²⁷ Increased distress was significantly associated with a higher level of career dissatisfaction (OR=0.8, 95% CI 0.7 to 0.9) and increased number of surgeries (OR=1.8, 95% CI 1.1 to 3.1).

Regarding anxiety and depressive symptoms, four studies provided insight.^{21–24} Again, as with distress symptoms, data obtained by Gulliver and colleagues did not pertain exclusively to cricketers, but rather the entire sample of professional Australian athletes. Overall, results obtained through the use of the Generalised Anxiety Disorder 7 scale²⁸ indicated that 4.1% (SD=3.9%) of athletes experienced anxiety symptoms, while results obtained through the use of the Centre for Epidemiologic Studies Depression scale²⁹ indicated that 11.6% (SD=9.31%) of athletes experienced depressive symptoms. For both anxiety and depressive symptoms, higher prevalence values appeared to be in the female than male groups (anxiety symptoms, 4.8% vs 3.3%; depressive symptoms, 12.6% vs 10.3%). The work of Hundertmark presented information anecdotally on a number of Australian cricketers who

experienced anxiety and depressive symptoms and how such symptoms impacted their personal and professional lives.²² Some cricketers experienced hardship as a result of moving clubs, while some were later housed within psychiatric facilities. The experiences of anxiety and depressive symptoms were also documented to be associated with suicide. Jones and colleagues indicated that both current and retired English cricketers were more likely than members of the general public to experience anxiety and depressive symptoms.²³ Among the cricketers sampled, the prevalence for anxiety symptoms was 10.3% (95% CI 6.5% to 16.0%) and 6.7% for depressive symptoms (95% CI 3.7% to 11.7%). Rates of anxiety (12.4%, 95% CI 7.4% to 20.0%) and depressive (8.8%, 95% CI 4.8% to 15.8%) symptoms were higher among cricketers over the age of 50 years than the entire sample of cricketers. The results of Schuring and colleagues provided the most comprehensive data on anxiety and depressive symptoms among cricketers from the studies included in this review.²⁴ In their study, the General Health Questionnaire 12³⁰ was used to collect data on both anxiety and depressive symptoms. Overall, prevalence rates of anxiety and depressive symptoms were 37.0% (95% CI 26.8% to 49.1%) for current cricketers and 24.3% (95% CI 13.2% to 40.3%) for retired cricketers. Adverse life events (OR=1.3, 95% CI 1.0 to 1.8) and career dissatisfaction (OR=0.8, 95% CI 0.7 to 0.9) were significantly associated with anxiety and depressive symptoms among current cricketers.

With sleep disturbance, Schuring and colleagues²⁴ used the PROMIS (short form)³¹ and found that 38.4% (95% CI 28.0% to 49.8%) of current cricketers while 21.1% (95% CI 10.8% to 36.6%) of retired cricketers experienced sleep disturbance. Sleep disturbance was significantly associated with career dissatisfaction (OR=0.9, 95% CI 0.8 to 1.0).

Suicide was examined by two studies.^{22 25} Hundertmark focused on the effects of anxiety and depressive symptoms and how they were associated with various personal and professional challenges which resulted in suicide for a number of cases presented. Shah and colleagues collected biographical data on 2794 test cricketers from various media sources, including David Firth's book, *Silence of the Heart: Cricketing Suicides*.³² Overall, they noted 20 test cricketers had died by suicide, a rate of 715.4 per 100 000 for the period 1877–2014. Most suicides occurred in retirement (n=17), to those who experienced physical health issues (n=14), other mental health symptoms and disorders (n=14) and financial problems (n=10).

With adverse alcohol use, two studies provided data.^{22 24} Hundertmark noted the influence of alcohol on various anxiety and depressive symptoms and the role it played in coping with the demands of the sport. They noted high levels of drinking among various cricket clubs across the state of Victoria, Australia. Schuring and colleagues collected data using the AUDIT-C³³ and found that 26.0% (95% CI 17.3% to 37.2%) of current cricketers and 22.2% (95% CI 11.5% to 38.3%) of retired

cricketers experienced symptoms of adverse alcohol use. Neither significant injuries, surgeries, adverse life events or career dissatisfaction were significantly associated with adverse alcohol use. Full details on the included studies, including results pertaining to illicit drug use,²² eating disorder symptoms²¹ and bipolar disorder²² can be found in table 1.

DISCUSSION

The existing epidemiology research base of cricket populations gives only partial insight into the prevalence of mental health symptoms and disorders and longer-term outcomes of participation in the sport at an elite level. Comparisons between mental health symptomology, suicide and the general population have been made but with significant methodological limitations apparent. The studies included suggest that despite retired cricketers experiencing anxiety and depressive symptoms at a higher rate than other common chronic illness, they look back on their careers favourably.²³ Added to this, rates of mental health symptomology in cricketers still playing, suggest similar rates than other areas of elite team sport.^{34–39} The studies included in this review do not offer information on current management strategies for mental illness or outcomes resulting from periods of mental ill-health. In particular, suicide rates of cricketers with comparison to the general population should be treated with caution, given the relatively small cohort of cases reported over many decades, with varying attitudes towards mental health symptoms and disorders within this time. One must also consider how epidemiological reporting of mortality in differing continents may have influenced this further.

Despite the lack of definitive data around mental ill-health in cricketers, this is a topic which should not be ignored by the wider cricket multidisciplinary team. One should not assume that due to a lack of established medical data that an unmet need does not exist with regards to mental health provision in cricket. Elite cricketers continue to tell of the mental health difficulties they face, although through the media. Unfortunately, stigma within the game and barriers to disclosure still exist.

Given the multifactorial aspects of mental health symptoms and disorders and the suggested unique influences that cricket places on players, it is important for administrators to provide provision and pathways to care alongside psycho-education programmes to reduce the risk in later or post careers, as proposed by Hundertmark.²² This to date, has not been standardised across countries and the different playing levels of the game. The cricket medical literature has been a front runner in attempting to standardise reporting of physical injury outcomes^{5 6} but this literature now needs to address mental health symptoms and disorders and further develop the International Olympic Committee statement on mental health in elite athletes.⁹

Table 1 Summary of included studies

Study, country	Study type	Characteristics	Mental health questionnaire	Prevalence
Gulliver <i>et al</i> , Australia ²¹	Cross-sectional	Male (n=44) Female (n=21)	Kessler 10 scale (K-10), Center for Epidemiologic Studies Depression Scale (CES-D), Generalised Anxiety Disorder 7 scale (GAD-7), Social Phobia Inventory (SPIN), Panic Disorder Severity Scale (PDSS-SR), SCOFF questionnaire (SCOFF), prior counselling measure of the General Help-Seeking Questionnaire (GHSQ).	Results not specific to cricketers. The study explored symptoms of depressive symptoms (27.2%), eating disordered symptoms (22.8%), general psychological distress (16.5%), social anxiety symptoms (14.7%), anxiety symptoms (7.1%) and panic disorder symptoms (4.5%). Overall results, 46.4% of athletes experienced at least one of the mental health symptoms explored.
Hundertmark, Australia ²²	Narrative review	All cases male	None provided.	Mental health symptoms and disorders included alcohol use, illicit drug use, mood disorders, suicide, bipolar disorder. Cases presented on individual male cricketers.
Jones <i>et al</i> , England ²³	Cross-sectional	Age: mean 57.2 years (SD=14.2) Male (n=165)	Assessed through self-report questionnaire. Questionnaire designed specifically for the study. Questionnaire based on questions from the English Longitudinal Study of Ageing.	Prevalence of anxiety symptoms was 10.3% and depressive symptoms was 6.7%.
Schuring <i>et al</i> , South Africa ²⁴	Observational prospective cohort study with follow-up	Current: Age: mean 27 years (SD=5) Male (n=68) Female (n=10) Retired: Mean 36 years (SD=6) Male (n=38)	Questionnaires included: Distress Screener; the General Health Questionnaire (GHQ-12) PROMIS and the Audit-C.	Prevalence rates-current cricketers included distress (38.4%), sleep disturbance (38.4%), anxiety/depression (37%) and adverse alcohol use (26%). Prevalence rates-retired cricketers included distress (26.3%), anxiety/depression (24.3%), adverse alcohol use (22.2%) and sleep disturbance (21.1%).
Shah <i>et al</i> , Australia, England, New Zealand, South Africa ²⁵	Review of biographical review	Age: median age at death 50 years (range 28–67). Male (n=2794).	Data on suicide extracted from two books (Firth 1991, Firth 2001) and the obituary of the Wisden Cricketers Almanack (1988–2015).	A total of 20 suicides were recorded for the total sample of test cricketers between 1877 and 2014.

Recommendations and future directions for mental health support in cricket

Given a limited evidence base found within the literature within this review, we have extrapolated the information available and incorporated with recommendations based on the work of Reardon and colleagues.⁹

Thorough mental health epidemiology studies in cricketers are needed in order to understand the scale of the problem, which is not accurately known at present. The most common mental health symptoms (with the exception of disordered eating⁴⁰) are estimated to be at a similar prevalence to or slightly higher in elite athletes when compared with the general population.⁴¹ The unique culture and demands in cricket, proposed by Hundertmark²² and Shah *et al*,²⁵ may produce differing results in mental health presentations than that seen in wider sport populations thus far. In particular, there has been no studies considering only female cricketers. Replication of

results produced elsewhere about the unique demands and pressures on female sport competitors could provide a framework for enhanced care.

In order to facilitate the true impact of mental health, where possible, researchers should aim to report mental illness in keeping with the International consensus statement on injury in cricket,⁶ using ‘match time-loss’ injuries (or illness) as a way of quantifying the issue. This may help in providing parity for psychological issues, valuing mental health equally with or as a comorbid factor alongside physical health, although in a sport with increased openness. Nevertheless, further research is needed to understand the extent in cricket that mental health symptoms and disorders carry an unwelcome stigma and where barriers for help seeking behaviour exist.⁴²

Physical injury and surgical intervention have been suggested as being risk factors for mental symptoms and disorders in other sports.^{43 44} To date, this has not been

replicated in cricket populations.^{21–24} However, when natural human reactions, such as ‘disappointment’ and ‘fear of further injury’, are most likely to progress to a mental illness is less well understood. Alongside basic pain control⁴⁵ and other psychosocial interventions, medics should consider when the optimal time is to assess mental state and formulate psychological wellness. Furthermore, formalised psychological support embedded within a return to play programme should become commonplace. Mental health symptoms and disorders should be considered if there is any noticeable deviation in the expected injury recovery period. Fast bowlers with stress fractures could be a subset of cricketers to focus on for any proposed intervention, given the relative availability of research in this area and well documented recovery phases.^{1, 46–47}

Cricket is played across a wide variety of countries and cultures. As such, the understanding, stigma and resources to support mental healthcare provision varies significantly. However, cricket has a unique opportunity, in light of the cultural importance and open culture in some countries, to provide research opportunities that can overcome unhelpful barriers and provide valuable insights, both within and outside sport. Thus, while financial investment in mental health may not be seen as a priority in some cricketing organisations, the International Cricket Council (ICC) should ensure minimal standards of care for mental health and work towards parity for all elite level cricketers regardless of geographical location but with sensitivity and respect toward cultural beliefs, as suggested by the International Olympic Committee consensus statement.⁹

Head injuries, including sports-related concussion, and its linkage with mental health is a particular area of focus within contact sports literature at present.⁴⁸ Data from professional soccer cohorts who have been exposed, in part, to repeated minor head trauma through heading of the football, suggests poorer neurocognitive long-term outcomes when compared with the general population.⁴⁹ This has contributed to rule changes and guidance on how children learn core skills in sport, in order to proactively minimise the risk of adverse longer term outcomes.^{50–51} Cricket has an opportunity to document all helmet strikes as unique events, often with video evidence,⁵² thus robust data on head injuries in batsmen will emerge in the coming years. Helmets are used extensively throughout cricket by batsmen, wicketkeepers, some umpires and close in fielders, but wearing helmets has however, not been proven to reduce rates of concussion in sport.⁵³ Investigating long term mental health and neurocognitive outcomes after a head injury in cricket, with comparison to those unaffected, should be achievable, with historical and new assessments of cognition being available for elite level cricketers. Furthermore, data within a non-contact sport such as cricket, will go some way to informing debate with regards causation of neurodegenerative diagnosis in sporting populations. Hence, surveillance of these cricketers, with a focus

on mood or affective symptoms should be an aim for researchers.

Touring is an important characteristic of the elite game resulting in prolonged time away from home and consequent dislocation from many individuals’ normal support mechanisms.^{22–25} Players may develop pathological defence mechanisms when faced with stress outside of traditional social supports and environment.⁵⁴ A recent narrative review⁵⁵ focused on mental health emergencies in elite athletes and suggested an ‘emergency action plan’ is essential for sport stakeholders to implement. The review goes further to describe the most common psychiatric ‘crisis’ presentations and suggests management strategies, with emphasis on early intervention. Anecdotally, responsibility for overall management, especially when on tour, would lie with the team medic/physician and this may raise the possibility of expansion of training needs for sport medicine physicians, with recent changes to the sports and exercise medicine doctor curriculum reflecting this.⁵⁶ High standards of care, alongside early intervention, are important aspects in order to minimise the risk of poorer longer-term outcomes in mental health and perhaps ‘save’ careers. Learning resulting from these clinical cases can be challenging and is perhaps best placed for ‘debriefs’, which sports physicians should play a central role in.

Administrators, management, cricketing law makers and medical teams should consider working towards best practice to assist with addiction in cricket, be that from alcohol, recreational drugs or betting. Anecdotally, alcohol and cricket have had long associations. This is reflected to some extent in research—originally by Hundertmark²² and also in a cohort of current elite cricketers, were adverse alcohol use was estimated to be at 26%.²⁴ Gambling is a very sensitive subject in cricket worldwide and violations carry heavy penalties for individuals. A recent systematic review of gambling addition in sport was undertaken,⁷ providing guidance on the topic. The ICC Anti-Corruption Code of Conduct is clear with regards requirements of elite cricketers and assists with upholding the integrity of the game.⁵⁷ The England and Wales Cricket Board Recreational Drug Use Policy is similarly unambiguous with regards expectations of cricketers with regards drugs, such as cocaine or cannabis.⁵⁸ Several countries have welfare directed recreational drug detection and gambling detection programmes. Any form of addiction can have catastrophic consequences on careers and life in general and are almost impossible for players or coaches to disclose given the consequences of ‘being caught’. Therefore, any player ‘caught’ with banned drugs or betting violations should be offered a comprehensive assessment and support with bio-psycho-social formulation⁹ with consideration of safeguards for the future. This is already available to some but not all. An alternative option is for cricketers to be able to anonymously self-refer for assessment and treatment of these issues. Reintegration for individuals troubled with addiction issues, particularly which of gambling, is a sensitive topic within the sport and one the wider cricketing community has not widely accepted.



The Athlete Psychological Strain Questionnaire (APSQ) has emerged as an acceptable screening tool for use in male and female elite athletes.⁵⁹ Cricketers experiencing subthreshold symptoms could be responsive to early intervention as a result of identification from a screening tool designed for sporting cohorts. Timing of screening must be carefully considered, given that risks such as those that occur with physical injury, may fluctuate at various times throughout an elite athlete's career. Traditionally 'team medicals' are carried out during pre-season and utilisation of a screening programme for mental illness alongside other screening tests, such as cardiac screening, could contribute to normalisation of mental distress. Thus, the APSQ could be undertaken with athletes in pre-season, with this score being compared with certain high-risk periods, for example, periods of injury or intense competition. Furthermore, in addition to the APSQ, the IOC have proposed Sports Mental Health Assessment (SMHAT-1) and Recognition Tool to follow on from wider screening.⁶⁰ The paper suggests embedding The SMHAT-1 into the precompetition period (ie, ideally a few weeks after the start of sport training), as well as within the mid-season, end-season period and also at periods of high stress such as after a major competition.

Competition, travel and training have been proposed as risk factors for disrupted sleep within sporting cohorts.⁶¹ Indeed, disturbed sleep is part of the diagnostic criteria for depressive disorder.⁶² The National Institute of Care and Excellence recommend sleep hygiene as a first line intervention on those suffering with subthreshold symptoms⁶³ and indeed is included in the management for many mental illnesses. Thus, environment and timings of training and matches, especially early on during a tour, should be arranged and optimised to improve sleep in order to minimise impact on well-being and mental health as well as on physical performance.

Consideration of delivery and effectiveness of prevention strategies, such as those proposed within the literature search,^{21 22} for mental ill-health in cricket is needed. Some sporting administrations advocate the wider topic as a medical issue; others view the topic within the overall well-being of their employees.⁶⁴ Cricketing authorities should review, reflect and optimise services used to tackle the issue on a population basis. Work rooted in mental health literacy, provides individual and environmental programming designed to help athletes better understand mental health symptoms and disorders, address stigma and set intentions to seek support.⁶⁵ Indeed, the Professional Cricketers' Association (PCA)⁶⁶ is an organisation providing support and welfare programmes for professional cricketers within England and Wales. Alongside the England and Wales Cricket Board, they have been proactive in creating avenues of help for those in need of psychiatric expertise. The PCA commissioned an unpublished extensive independent review of their approach to mental health provision in 2019. This allowed synthesis of resources, cost effective use of mental health providers, consideration of need at various levels within the professional game and demonstrated treatment models being used and over what period of time. Overall cricketers using

the service benefitted from the expertise they received and the ease with which they accessed care. These pathways now need further embedding within English and Welsh cricket as well as similar strategies employed in the other cricketing countries.

Finally, cricketers have been proposed to be at greater risk of death by suicide.²⁵ However, this narrative was purported many years ago, and calculations of numbers of cricketers taking their own life (as well as that to which they were compared) does not appear to have clear statistical validity. Suicide is a complex phenomenon and has multifactorial causation. Calculating data resulting from these tragic events are complicated by relatively small numbers and reporting inconsistency. Added to this, learning from cases is limited by multiple biases and largely reliant on secondhand accounts of circumstances leading up to death. Therefore, in light of the anecdotal nature of this book's findings³² and the significant reputational impact on a sport that has been suggested to have higher than expected rates, further evidence in this area would be welcome. Regardless of the extent of suicide as an issue, cricket does carry a number of risk factors and improvements in already existing prevention practices and strategies in cricket should continue to be expanded on.^{64 66}

These prevention practices and strategies could include:

- ▶ Identification and management of mental illness, particularly in early stages.
- ▶ Creation of a psychologically aware and welcoming environment.
- ▶ Responding to patients' needs in a timely manner when in crisis.
- ▶ Robust risk assessment and safety planning.
- ▶ Provision of easily accessible information and mental health expertise.

Strengths and weaknesses

The strengths of this paper are:

1. It is the first of its type to synthesise existing mental health literature within cricket.
2. We provide a framework for those working within cricket to improve mental health services and respond to the growing concern of unmet need.
3. The review focuses on mental health in cricket, at a time when health and sport practitioners are particularly seeking guidance in this area within sports and exercise medicine.

The potential limitations of this paper are:

1. Lack of quality studies to include in the review to form more concrete conclusions on the mental health of cricketers.
2. Cricket lends itself to literature from individuals with vast experience in the game and knowledge. Much of this insight, which was included in books and commercial publications, was not considered within this paper.

CONCLUSION

This is the first review of the mental health literature in cricket. Interest in the overall topic remains high within the

wider sporting community. The review highlights the lack of quality evidence underpinning any identification or intervention strategy already in existence for mental health issues. Thus, we propose ways to address this within a cricket population, including cultivation of a psychologically friendly environment and with targeting of 'at risk' groups. These interventions provide a basic framework for expansion of already embedded knowledge and clinical expertise within the medical provision for cricket.

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REFERENCES

- Alway P, Brooke-Wavell K, Langley B, *et al*. Incidence and prevalence of lumbar stress fracture in English County cricket fast bowlers, association with bowling workload and seasonal variation. *BMJ Open Sport Exerc Med* 2019;5:e000529.
- McLeod G, O'Connor S, Morgan D, *et al*. Medical-attention injuries in community cricket: a systematic review. *BMJ Open Sport Exerc Med* 2020;6:e000670.
- Kountouris A, Sims K, Beakley D, *et al*. MRI bone marrow oedema precedes lumbar bone stress injury diagnosis in junior elite cricket fast bowlers. *Br J Sports Med* 2019;53:1236–9.
- Panagodage Perera NK, Kountouris A, Kemp JL, *et al*. The incidence, prevalence, nature, severity and mechanisms of injury in elite female cricketers: a prospective cohort study. *J Sci Med Sport* 2019;22:1014–20.
- Orchard JW, Kountouris A, Sims K. Incidence and prevalence of elite male cricket injuries using updated consensus definitions. *Open Access J Sports Med* 2016;7:187–94.
- Orchard JW, Ranson C, Olivier B, *et al*. International consensus statement on injury surveillance in cricket: a 2016 update. *Br J Sports Med* 2016;50:1245–51.
- Derevensky JL, McDuff D, Reardon CL, *et al*. Problem gambling and associated mental health concerns in elite athletes: a narrative review. *Br J Sports Med* 2019;53:761–6.
- Jewett R, Kerr G, Tamminen K. University sport retirement and athlete mental health: a narrative analysis. *Qual Res Sport Exerc Health* 2019;11:416–33.
- Reardon CL, Hainline B, Aron CM, *et al*. Mental health in elite athletes: international Olympic Committee consensus statement (2019). *Br J Sports Med* 2019;53:667–99.
- Gorczyński P, Webb T. Call-to-action: the need for a mental health research agenda for sports match officials. *Manag Sport Leis* 2020;59.
- Sallis JF, Cervero RB, Ascher W, *et al*. An ecological approach to creating active living communities. *Annu Rev Public Health* 2006;27:297–322.
- The Guardian. How the relentless challenges of cricket can impact players' mental health | David Schout [Internet], 2020. Available: <https://www.theguardian.com/sport/2019/nov/19/how-the-relentless-challenges-of-cricket-can-impact-players-mental-health> [Accessed 1 Jul 2020].
- ITV News. Players' mental health becoming major issue in Australian cricket | [Internet], 2020. Available: <https://www.itv.com/news/2019-11-14/players-mental-health-becoming-major-issue-in-australian-cricket/> [Accessed 1 Jul 2020].
- Reuters. Players will need more mental health support, says coach Upton [Internet], 2020. Available: <https://uk.reuters.com/article/uk-health-coronavirus-cricket-upton/players-will-need-more-mental-health-support-says-coach-upton-idUKKBN22V2RK> [Accessed 1 Jul 2020].
- BBC News. Freddie Flintoff's bulimia documentary: 'It gave me a sense of relief'. [online], 2020. Available: <https://www.bbc.co.uk/news/newsbeat-54343453> [Accessed 9 Nov 2020].
- Cricinfo. Does India have a plan for the mental health of its players? 2020. Available: <https://www.thecricnetmonthly.com/story/1233099/does-india-have-a-plan-for-the-mental-health-of-its-players> [Accessed 9 Nov 2020].
- ESPNcricinfo.com. Nic Maddinson withdraws from Australia a team for mental-health reasons, 2020. Available: https://www.espnricinfo.com/story/_/id/28038156/nic-maddinson-withdraws-australia-team-mental-health-reasons [Accessed 1 Jul 2020].
- cricket.com.au. Maxwell withdraws from Aussie team [Internet], 2020. Available: <https://www.cricknet.com.au/news/glenn-maxwell-australia-t20-series-sri-lanka-break-from-cricket-mental-health/2019-10-31> [Accessed 1 Jul 2020].
- Sky Sports. Watch every episode of Mind Games as we examine cricket and sport's mental side [Internet], 2020. Available: <https://www.skysports.com/cricket/news/12123/11456271/mind-games-watch-all-four-episodes-as-we-examine-the-mental-side-of-sport> [Accessed 1 Jul 2020].
- Noahx. The edge. Available: <https://www.theedgefilm.com/>
- Gulliver A, Griffiths KM, Mackinnon A, *et al*. The mental health of Australian elite athletes. *J Sci Med Sport* 2015;18:255–61.
- Hundertmark J. Cricketers and mental health concerns. *Australas Psychiatry* 2007;15:509–12.
- Jones ME, Davies MAM, Leyland KM, *et al*. Osteoarthritis and other long-term health conditions in former elite cricketers. *J Sci Med Sport* 2018;21:558–63.
- Schuring N, Kerkhoffs G, Gray J, *et al*. The mental wellbeing of current and retired professional cricketers: an observational prospective cohort study. *Phys Sportsmed* 2017;45:463–9.
- Shah A, Sava-Shah S, Wijeratne C, *et al*. Are elite cricketers more prone to suicide? A psychological autopsy study of test cricketer suicides. *Australas Psychiatry* 2016;24:295–9.
- Kessler RC, Andrews G, Colpe LJ, *et al*. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;32:959–76.
- Braam C, van Oostrom SH, Terluin B, *et al*. Validation study of a distress screener. *J Occup Rehabil* 2009;19:231–7.
- Spitzer RL, Kroenke K, Williams JBW, *et al*. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006;166:1092–7.
- Herge WM, Landoll RR, La Greca AM. Center for Epidemiologic Studies Depression Scale (CES-D). In: Gellman MD, Turner JR, eds. *Encyclopedia of behavioral medicine*. New York: Springer, 2013.
- Tait RJ, French DJ, Hulse GK. Validity and psychometric properties of the general health Questionnaire-12 in young Australian adolescents. *Aust N Z J Psychiatry* 2003;37:374–81.
- Yu L, Buysse DJ, Germain A, *et al*. Development of short forms from the PROMIS™ sleep disturbance and sleep-related impairment item banks. *Behav Sleep Med* 2011;10:6–24.
- Frith D. *Silence of the heart: cricket suicides*. London: Mainstream Publishing, 2001.
- Bush K, Kivlahan DR, McDonnell MB, *et al*. The audit alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. ambulatory care quality improvement project (ACQUIP). alcohol use disorders identification test. *Arch Intern Med* 1998;158:1789–95.
- Gouttebauge V, Kerkhoffs G, Lambert M. Prevalence and determinants of symptoms of common mental disorders in retired professional rugby union players. *Eur J Sport Sci* 2016;16:595–602.
- Gouttebauge V, Kerkhoffs GMMJ. A prospective cohort study on symptoms of common mental disorders among current and retired professional ice hockey players. *Phys Sportsmed* 2017;45:252–8.



- 36 Åkesdotter C, Kenttä G, Eloranta S, *et al.* The prevalence of mental health problems in elite athletes. *J Sci Med Sport* 2020;23:329–35.
- 37 Goutteborge V, Aoki H, Kerkhoffs GM. Prevalence and determinants of symptoms related to mental disorders in retired male professional footballers. *J Sports Med Phys Fitness* 2016;56:648–54.
- 38 Goutteborge V, Tol JL, Kerkhoffs GMMJ. Epidemiology of symptoms of common mental disorders among elite Gaelic athletes: a prospective cohort study. *Phys Sportsmed* 2016;44:283–9.
- 39 Goutteborge VHopley P, Kerkhoffs G, Kerkhoffs G, *et al.* A 12-month prospective cohort study of symptoms of common mental disorders among professional rugby players. *Eur J Sport Sci* 2018;18:1004–12.
- 40 Sundgot-Borgen J, Torstveit MK. Prevalence of eating disorders in elite athletes is higher than in the general population. *Clin J Sport Med* 2004;14:25–32.
- 41 Goutteborge V, Castaldelli-Maia JM, Gorczynski P, *et al.* Occurrence of mental health symptoms and disorders in current and former elite athletes: a systematic review and meta-analysis. *Br J Sports Med* 2019;53:700–6.
- 42 Schwenk TL. The stigmatisation and denial of mental illness in athletes. *Br J Sports Med* 2000;34:4–5.
- 43 Prinz B, Dvořák J, Junge A. Symptoms and risk factors of depression during and after the football career of elite female players. *BMJ Open Sport Exerc Med* 2016;2:e000124.
- 44 Souter G, Lewis R, Serrant L. Men, mental health and elite sport: a narrative review. *Sports Med Open* 2018;4:57.
- 45 Hainline B, Turner JA, Caneiro JP, *et al.* Pain in elite athletes—neurophysiological, biomechanical and psychosocial considerations: a narrative review. *Br J Sports Med* 2017;51:1259–64.
- 46 Millson HB, Gray J, Stretch RA, *et al.* Dissociation between back pain and bone stress reaction as measured by CT scan in young cricket fast bowlers. *Br J Sports Med* 2004;38:586–91.
- 47 Stretch RA, Botha T, Chandler S, *et al.* Back injuries in young fast bowlers—a radiological investigation of the healing of spondylolysis and pedicle sclerosis. *S Afr Med J* 2003;93:611–6.
- 48 Rice SM, Parker AG, Rosenbaum S, *et al.* Sport-related concussion and mental health outcomes in elite athletes: a systematic review. *Sports Med* 2018;48:447–65.
- 49 Mackay DF, Russell ER, Stewart K, *et al.* Neurodegenerative disease mortality among former professional soccer players. *N Engl J Med* 2019;381:1801–8.
- 50 Stokes KA, Locke D, Roberts S. Does reducing the height of the tackle through law change in elite men's rugby union (The Championship, England) reduce the incidence of concussion? A controlled study in 126 games. *Br J Sports Med* 2019;50:bjsports-2019-101557.
- 51 The Scottish Football Association Ltd. Scottish FA heading guidelines. Available: <https://www.scottishfa.co.uk/football-development/participation/childrens-youth-football/heading/>
- 52 Ranson C, Peirce N, Young M. Batting head injury in professional cricket: a systematic video analysis of helmet safety characteristics. *Br J Sports Med* 2013;47:644–8.
- 53 Daneshvar DH, Baugh CM, Nowinski CJ, *et al.* Helmets and mouth guards: the role of personal equipment in preventing sport-related concussions. *Clin Sports Med* 2011;30:145–63.
- 54 Nicolas M, Jebrane A. Relationships between coping strategies and defense mechanisms in sport performance. *Psychol Rep* 2008;103:735–44.
- 55 Currie A, McDuff D, Johnston A, *et al.* Management of mental health emergencies in elite athletes: a narrative review. *Br J Sports Med* 2019;53:772–8.
- 56 JRCPTB. Curriculum for sport and exercise medicine training, 2021. Available: <https://www.jrcptb.org.uk/sites/default/files/SEM%20Curriculum%20DRAFT%20070120.pdf>
- 57 The ICC's Anti-Corruption Unit. The International cricket Council Anti-Corruption code for participants, 2018. Available: <https://icc-static-files.s3.amazonaws.com/ICC/document/2018/02/15/1a189c05-072b-4273-8f21-aa3d5a71e06f/2018-ICC-Anti-Corruption-Code-Effective-9-February-2018.pdf>
- 58 ECB. Recreational drugs policy. Available: https://resources.ecb.co.uk/ecb/document/2020/03/05/ef3a4743-6319-43d1-95d1-deebdbf320c4/ECB_Recreational_Drugs_Policy_2020_final.pdf
- 59 Rice S, Olive L, Goutteborge V, *et al.* Mental health screening: severity and cut-off point sensitivity of the athlete psychological strain questionnaire in male and female elite athletes. *BMJ Open Sport Exerc Med* 2020;6:e000712.
- 60 Goutteborge V, Bindra A, Blauwet C, *et al.* International Olympic Committee (IOC) sport mental health assessment tool 1 (SMHAT-1) and sport mental health recognition tool 1 (SMHRT-1): towards better support of athletes' mental health. *Br J Sports Med* 2021;55:30–7.
- 61 Gupta L, Morgan K, Gilchrist S. Does elite sport degrade sleep quality? A systematic review. *Sports Med* 2017;47:1317–33.
- 62 World Health Organization. International classification of diseases for mortality and morbidity statistics (11th revision), 2018. Available: <https://icd.who.int/browse11/l-m/en>
- 63 National Institute of Health and Care Excellence. Depression (NICE guideline CG90), 2009. Available: <https://www.nice.org.uk/guidance/cg90/chapter/1-Guidance>
- 64 Australian Cricketers Association. GamePlan – ACA (Australian cricketers association), 2020. Available: <https://auscricket.com.au/gameplan> [Accessed 14 Sept 2020].
- 65 Gorczynski P, Currie A, Gibson K, *et al.* Developing mental health literacy and cultural competence in elite sport. *J Appl Sport Psychol* 2020;281:1–15.
- 66 The PCA. Health & welfare - The PCA [Internet], 2020. Available: <https://www.thepca.co.uk/health-welfare/> [Accessed 1 Jul 2020].