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PUBLISHED PAPERS

The Prevalence of Symptoms of Common Mental Disorders Among Professional Golfers

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This study assessed; (i) the prevalence of symptoms of mental health disorders among a cohort of professional golfers and (ii) players' views on the mental health support services available to them.

The 2020 Challenge Tour players were sent a questionnaire which assessed symptoms of depression, distress, anxiety, sleep disturbance, and obsessive-compulsive disorder.

The two-week symptom prevalence was 10.3% for depression, 51.7% for distress, 8.6% for anxiety, 10.3% for sleep disturbance, 13.8% for obsessive thoughts and 27.6% for compulsive behaviour. 67% of players who had experienced a mental health issue did not seek professional help at the time and 61% of players did not think sufficient support was available to them.

Following discussion of this study, the European Tour Group now provide a 24/7 mental health crisis hotline for players and have educated staff-members on how to identify players with mental health issues and signpost them to the appropriate support.

Introduction

Mental health problems are one of the leading causes of disability worldwide; with an estimated 792 million people affected annually (Ritchie, 2020; Vos et al., 2015). It is said that one in four adults will develop a mental health disorder (MHD) at some point during their lifetime, and professional athletes are by no means exempt from this statistic (Steel et al., 2014).

Recent studies have shown the prevalence of MHDs among professional athletes to be generally comparable to, or, even higher than that of the general population (Gouttebauge et al., 2017; Rice et al., 2016). This is perhaps unsurprising, given the significant physical and psychological demands of elite-level sports competition. Elite athletes are additionally exposed to stressors that are often not experienced by the general population, including: critical media exposure, the physical and mental effects of travel and training, coping with public expectations and loss of earning potential and premature retirement due to injury (Hughes & Leavey, 2012).

As a result of these unique stressors, it is hypothesised that athletes may experience mental health issues, and exhibit symptoms, in a manner that is different to that of the general population. As a result, the value of comparing the prevalence of MHD symptoms among elite athletes with those of the general population has been debated and the mental health of elite athletes is now becoming an increasingly recognised priority and research area in its own right (Rice et al., 2016; Schinke et al., 2018).

In clinical settings, structured interviews are frequently used to determine the prevalence of MHDs, however these are used less frequently in research. To facilitate data comparison and larger sample sizes, studies more commonly utilise validated questionnaires, such as the Patient Health Questionnaire 9 and the Generalised Anxiety Disorder 7, to assess the prevalence of symptoms of MHDs, as opposed to clinically diagnosed disorders. A recent meta-analysis demonstrated a symptom prevalence of 34% for anxiety/ depression among current elite athletes (Gouttebauge et al., 2019). Twenty-two studies were analysed in total; involving professional and Olympic athletes from a combination of both team sports (e.g. cricket, rugby and hockey) and individual sports (e.g. boxing, swimming and rowing) (Gouttebauge et al., 2019).

Studies commonly assess the prevalence of symptoms of anxiety, depression, distress and sleep disturbance, however, to date there is a paucity of research on the prevalence of symptoms of obsessive-compulsive disorder (OCD). This is surprising given that elite athletes and their coaches perceive OCD to be one of the most prevalent mental health problems affecting this population (Biggin et al., 2017).

To date, there are no reports of MHD symptom prevalence among professional golfers. To address this gap in the literature, the aims of this study were to assess (i) the two-week prevalence of a range of symptoms of MHDs, including OCD; and (ii) to assess players' views on the mental health support resources that are currently available to them.

Methods

Participants

The Challenge Tour is operated by the PGA European Tour Group. It is the second-tier Tour, below the DP World Tour. All players with 2020 Challenge Tour membership were invited to take part in the survey (n=261). All the participants were male and over the age of 18.

Survey

The survey was designed to assess a range of MHD symptoms, whilst taking no longer than ten minutes to complete. Validated questionnaires that have been used consistently in peer-reviewed studies were utilised, due to their high reliability and validity scores. Symptoms experienced over the preceding two weeks were assessed as this is the validated time frame for each of the questionnaires.

Depression. Symptoms of depression were assessed using the nine-item Patient Health Questionnaire (PHQ-9). For each golfer, the maximum score was 27, with a score over nine indicating moderate depression and a score over 14 indicating severe depression. This questionnaire has a sensitivity and specificity of 0.88, Cronbach's alpha of 0.89, test-retest reliability of 0.84 and area under the receiver operating curve (ROC) of 0.95 (Kroenke et al., 2001).

Anxiety. Symptoms of anxiety over the preceding two weeks were assessed using the seven-item Generalised Anxiety Disorder (GAD-7) Questionnaire. This questionnaire has sensitivity and specificity values of 0.89 and 0.82 respectively, Cronbach's alpha of 0.92, test-retest reliability of 0.83 and area under ROC curve of 0.91 (Spitzer et al., 2006). The maximum obtainable score for this questionnaire was 21, with scores above nine indicating the presence of moderate anxiety and scores over 14 indicating severe anxiety.

Sleep Disturbance. Symptoms of sleep disturbance were assessed using the six-item Patient Reported Outcomes Measurement Information System (PROMIS) Short Form 8a (Cronbach's alpha 0.90; construct validity, product moment correlation 0.96) (Buysse et al., 2010; Yu et al., 2011). Raw scores were calculated out of 30 and then converted into T scores. A T score above 60 indicated the presence of moderate sleep disturbance and scores above 70 indicated severe sleep disturbance. The Athlete Sleep Screening Questionnaire has now been validated in athletic populations and is increasingly being used, however, at the time of writing, most existing studies utilised the PROMIS Short Form Questionnaire (Samuels et al., 2016). This questionnaire was therefore chosen to enable reliable comparison with previously published studies.

Distress. Symptoms of distress experienced during the preceding two weeks were measured using the distress screener, which is based off the 4-Dimensional Symptoms Questionnaire (4DSQ). This validated questionnaire has test-retest reliability of 0.76, Cronbach's alpha of 0.88, area under the ROC curve of 0.79, 0.71 sensitivity and 0.72 specificity (Terluin et al., 2006). An athlete-validated distress questionnaire has since been developed; however, this was not available at the time of questionnaire distribution (Rice et al., 2020).

Obsessive Thoughts and Compulsive Behaviours. The above symptoms were assessed using questions taken from the Mini-International Neuropsychiatric interview: sensitivity 0.62; specificity 0.98; inter-rater reliability 1.00, and test-retest reliability 0.85 (Sheehan et al., 1998).

Additional Questions. A series of free response questions were included to assess players' opinions on the current mental health support measures on offer and to also scope which improvements to services would be well-received. Players who had reported previous issues with their mental wellbeing were also prompted to provide details as to how they coped with the issue at the time.

Procedure

An anonymous electronic survey was created using Online Surveys and was emailed to the Challenge Tour players on 10/12/19, during their off-season period. A follow-up email was sent out on the 19/12/19 to increase response rates.

Statistical Analysis

Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 25. 95% confidence intervals for prevalence were calculated using the adjusted Wald method (sample size <150). Descriptive data

Table 1. Prevalence and Associated Confidence Intervals of Symptoms of MHDs

Symptom	Total Responses	Number with Symptoms	Prevalence (95% CI)
Depression total	58	6 ^a	10.3 (4.5-21.1)
Mild		25	43.1
Moderate		5	8.6
Moderately Severe		1	1.7
Distress	58	30	51.7 (39.2-64.1)
Anxiety total	58	5 ^b	8.6 (3.3-19.1)
Mild		18	31.0
Moderate		3	5.2
Severe		2	3.4
Sleep disturbance total	58	6	10.3 (4.5-21.1)
Mild		2	3.5
Moderate		3	5.2
Severe		1	1.7
Obsessive thoughts	58	8	13.8 (6.9-25.2)
Compulsive behaviour	58	16	27.6 (17.8-40.3)
Thoughts of suicide or self-harm	58	2	3.4

Note. CI: Confidence Intervals

^{a,b} Players only displaying mild symptoms of depression and anxiety were not included in the totals, as specified by the questionnaires (Kroenke et al., 2001; Spitzer et al., 2006)

analyses on all variables were also performed (mean, standard deviation, range and frequency). Incomplete questionnaires were discarded and not included in the statistical analysis.

Results

Participant Demographics

In total, 63 players responded to the survey (24%). Incomplete questionnaires were disregarded, resulting in a sample size of 58 athletes (22%). The mean age of the participants was 29 ± 4 years. Their mean duration of golfing career was 13 ± 7 years.

Prevalence of MHD Symptoms

Symptom prevalence was found to be 10.3% for depression, 51.7% for distress, 8.6% for anxiety, 10.3% for sleep disturbance, 13.8% for obsessive thoughts and 27.6% for compulsive behaviour (see [Table 1](#)).

Comorbidity of MHD Symptoms

Several players reported symptoms of multiple disorders; 22.4% reporting two, 5.2% reporting three, and 1.7% of players reporting more than three symptoms (see [Table 2](#)).

Coping Behaviours

Despite 82.8% of players reporting symptoms of at least one MHD during the preceding two weeks, when asked, only 22.4% felt that they were or had ever suffered from mental health problems. Of these players, 33% sought help from a mental health professional, 25% stopped playing golf for a period of time, or played less frequently and 25% did nothing to directly deal with the issue.

Table 2. Comorbidity of Mental Health Disorder Symptoms

Number of Disorders	Number of Players (%)
0	10 (17.2)
1	31 (1.7)
2	13 (22.4)
3	3 (5.2)
4	0 (0.0)
5	1 (1.7)

Perceptions on the Support Available to Tour Players

The professional golfer will typically build their own performance team. However, at the Challenge Tour level, where earnings for >90% are <£100,000 per year, many will rely on services offered through their national federation, or through event organisers such as the Challenge Tour.

It was found that 61% of respondents did not think that suitable mental health support measures were in place. 74% of respondents thought the Tour should provide mental health first aid training for staff members and 69% of players would see benefit in having a 24/7 mental health crisis hotline. Players also placed particular emphasis on the importance of being able to discuss mental health issues with trained professionals rather than Tour staff members. One player also implied that the mental wellbeing of players fluctuates significantly throughout the year, and suggested conducting another survey in peak season, when the pressure placed on players, “is nearly too much to handle”.

Discussion

To our knowledge, this was the first study to assess the prevalence of MHD symptoms among professional golfers. Symptom prevalence was found to range from 8.6% for anxiety, to 51.7% for distress. For context, we will compare these results with values reported among the general population, as well as in other populations of elite athletes. It is important to note that prevalence values will vary depending on the questionnaires, the cut-off thresholds used, and also the time at which the surveys were administered (out of season, during training, during competition, etc.). The comparisons below have therefore been made with studies that have utilised the same questionnaires, unless stated.

Comparison with the General Population

Compared to normative data from general populations, the prevalence of anxiety, distress and OCD symptoms is higher in this cohort of Challenge Tour golfers. Symptoms of distress are over three times more prevalent, and symptoms of anxiety are over twice as prevalent (see [Table 3](#)). On the other hand, the prevalence of depression and sleep disturbance symptoms appear to be lower among the Challenge Tour players than the general population.

Table 3. The Prevalence of Symptoms among Elite Athlete Cohorts

Symptom	Prevalence of Symptoms (%)								
	Challenge Tour Players	General Population	Dutch Athletes	Ice Hockey	Rugby ^a	Gaelic Athletes	Football	Cricket	Football and Handball
Anxiety	8.6	3.35-4.06	-	-	10	-	15.5	-	-
Depression	10.3	21.6	-	-	10	-	-	-	-
Obsessive Thoughts		6.0	-	-	-	-	-	-	-
Compulsive Behaviours		1.6	-	-	-	-	-	-	-
Distress	51.7	17	26.6	13.4	20	38.3	11.4 - 18.2	38.4	14.7-19.8
Sleep Disturbance	10.3	29.2	22.3	15.0	12	33.0	18.8 - 32.9	38.4	15.8-22.0
Comorbidity:									
2 symptoms	22.4	-	16.6	17.6	13	23.7	-	-	-
3 symptoms	5.2	-	13.9	8.8	5	16.4	-	-	-
4 symptoms	0.0	-	6.4	-	1	7.9	-	-	-
5 symptoms	1.7	-	-	-	-	-	-	-	-

Note. Data for the general population (Hinz et al., 2017; Iverson et al., 2021; Kocalevent et al., 2013). Data for Dutch athletes (Gouttebarga et al., 2017). Data for ice hockey players (Gouttebarga & Kerkhoffs, 2017). Data for rugby players (Gouttebarga et al., 2018). Data for Gaelic athletes (Gouttebarga et al., 2016). Data for cricket players (Schuring et al., 2017). Data for football players (Gouttebarga et al., 2015). Data for football and handball players (Kilic et al., 2017)

^a The study by Gouttebarga et al. (2018) reported prevalence values to the nearest 1%

Comparison with Elite Athlete Cohorts

The prevalence of symptoms of anxiety in this study (8.6%) is more than twice the value that has been reported among male Australian elite athletes (3.8%) (Gulliver et al., 2015). Conversely, the prevalence of depressive symptoms found in this study (10.3%) is lower than the values reported among male Australian elite athletes (23.6%) and professional German athletes (15.0%) (Gulliver et al., 2015; Nixdorf et al., 2013). Distress symptoms were found to be much higher in this study (51.7%), than in other elite athlete populations (11.4% – 38.4%) (Schuring et al., 2017). On the other hand, the symptom prevalence of sleep disturbance among elite golfers (10.3%) lies just below the range reported in other elite sports (12.0% – 38.4%), although for golfers, sleep disturbance prevalence will be heavily dependent on competition schedule which can include frequent long haul flights, and issues with ‘jet lag’ (Gouttebauge et al., 2018; Schuring et al., 2017).

A study by Cromer, Kaier, Davis, Stunk, and Stewart (2017), found the prevalence of self-reported symptoms of obsessive-compulsive disorder among Division 1 College athletes to be 5.2%. The present study found prevalence rates to be 27.6% for compulsive behaviour and 13.8% for obsessive thoughts, however, comparison between the two papers is limited by the utilisation of different questionnaires.

The percentage of players reporting symptoms of two MHDs in this study was 22.4%, which is towards the higher end of values reported among other elite athlete populations (13% - 24%) (Gouttebauge et al., 2016, 2018) (see [Table 3](#) for full details).

Potential Explanation of Prevalence Values

This research suggests that the prevalence of anxiety and distress symptoms are higher among Challenge Tour players than other elite athlete cohorts. This may be due to the fact that golf is an individual sport; it has been specifically found that, due to a lack of a collective team effort, athletes competing in individual sports are more likely to attribute failure internally and hold themselves solely responsible (Hanrahan & Cerin, 2009). Internal attribution of failure has been shown to be associated with negative emotions such as guilt and shame; mental states which may increase distress and anxiety (Tracy & Robins, 2006). Due to a lack of teammates with whom to ‘share the blame’, individual athletes may therefore be more inclined to adopt maladaptive coping strategies.

This study also suggests that the prevalence of symptoms of OCD is higher among Challenge Tour players than among males in the general population. OCD prevalence in elite athletes has not been widely studied, however it is recognised that manifestations of OCD, including performance rituals and perfectionism are commonly found in this population (Dömötör, Ruíz-Barquín, & Szabo, 2016). It is hypothesised that perfectionism can be experienced in both adaptive and maladaptive ways; maladaptive perfectionism has been associated with many mental health disorders including depression, anxiety and eating disorders, in addition to OCD (Stoeber et al., 2007). Due to

a lack of data, further research is needed on the OCD prevalence in elite athlete populations. There is also a need for athlete-specific OCD questionnaires to be developed, as symptoms may manifest themselves differently in this population, due to character traits commonly found among athletes and the tendency toward routine and overly repetitive practises (Reardon et al., 2019).

Coping Behaviours

Our results revealed that 82.8% players reported that they had suffered from symptoms of at least one MHD over the preceding two weeks. Despite this, only 22.4% of players felt that they were currently, or had ever been, affected by a mental health problem. This finding suggests that the majority of players struggle to identify the symptoms associated with mental health disorders.

Of those players who did recognise that they had experienced a mental health issue, only 33% sought help from a mental health professional. Research has shown that elite athletes are less likely to seek help for mental health issues than non-athletes and a commonly cited barrier is the stigma surrounding mental health disorders in elite sport (Gulliver et al., 2015). The perceived risk that disclosure of MHD will result in exclusion from sport, can further disincentivize players from actively seek help from their supporting organisation (Bauman, 2016). This may explain why Challenge Tour players are not currently accessing the support made available through the European Tour Group, or National Federations or their own networks.

Tour players also spend large amounts of time travelling for competitions without their usual support network of friends and family. Whilst on tour, players spend the majority of their time with their fellow competitors – or on their own. Fry and Bloyce (2017) note that the relationships forged among golfers at tournaments may have tension, as they are all ultimately rivals competing for the same prize money. This competitive atmosphere may act to further disincentivize players from exhibiting weakness or vulnerability around other players if they are struggling with their mental health. One player revealed that if he were to discuss his problems with other players, “half of them would be happy and the other half wouldn’t (sic) care,” (Fry & Bloyce, 2017). This depicts a rather unsympathetic culture amongst elite players, the consequences of which may discourage those suffering from mental health problems from seeking support from professionals, or from discussing their issues with fellow Tour players. Non-disclosure can further exacerbate mental health problems and it is therefore important that help-seeking behaviour is promoted and that appropriate support measures are put in place for players.

Recent consensus statements released by the International Olympic Committee (IOC), International Society of Sport Psychology and European Federation of Sport Psychology all recommend that sporting organisations discuss mental health and wellbeing more openly with players and staff members, in order to raise awareness and help to overcome the stigma surrounding mental health problems (Moesch et al., 2018; Reardon et al., 2019; Schinke et al., 2018). Furthermore, to aid the identification of athletes with mental health issues, the IOC has recently developed the Sport Mental

Health Assessment Tool 1 (SMHAT-1) and Sport Mental Health Recognition Tool 1 (SMHRT-1) (Gouttebauge et al., 2021). These are validated tools which can be employed routinely by non-specialists to comprehensively screen elite athletes and identify those who may be 'at risk' of mental health disorders (Gouttebauge et al., 2021).

In light of the prevalence data from this study and the recent consensus statements, the European Tour has made significant efforts to improve the support measures in place for its players. The European Tour provides a 24/7 mental health crisis hotline and held mental health training workshops for its staff members. In these workshops, attendees were educated on how to spot the signs of mental illness and how to signpost players to the appropriate services. These workshops were run by trained professionals, all of whom have experience of working in elite sport. Mental health resources have been developed and are shared with players and also national federations and their essential support staff. Future follow up studies may be conducted to evaluate the efficacy of this intervention.

Limitations

As previously noted, the prevalence of symptoms of MHDs does not necessarily equate to the prevalence of clinically diagnosed conditions (Reardon et al., 2019). Consequently, there may be participants who display symptoms, whilst not suffering from a diagnosable mental health disorder, however, as stated in the IOC consensus statement; athletes suffering from symptoms (in the absence of clinically diagnosed disorders) should still remain a focus of research (Reardon et al., 2019). This is because symptoms themselves can still be debilitating for elite athletes, and players experiencing subclinical conditions can still benefit from appropriate intervention (Roberts et al., 2016).

The low response rate (22%) and resulting small sample size of this study limits the statistical power of the prevalence calculations. Furthermore, individuals with a personal history or interest in mental health problems may have been more inclined to complete the survey, thus skewing the results. Conversely, due to the taboo surrounding mental health in elite sport, it is also possible that golfers with mental health issues were unwilling to participate in the present study due to the symptoms they had or were currently experiencing (Hainline & Reardon, 2019). This self-selection bias, may have skewed the results, thus limiting the external validity of the findings.

This cross-sectional study only provides data for the time at which the questionnaires were distributed. Longitudinal studies are therefore required to investigate whether the mental health of golfers fluctuates throughout the year with the pressures of competition. Results may or may not be typical of other levels of geographies of male professionals, female golfers, or disability golfers.

Conclusion

The prevalence of symptoms of mental health disorders among the Challenge Tour players ranges from 8.6% for anxiety, to 51.7% for distress. Rates of symptoms of anxiety and distress are twice and three times higher than those found in the general population respectively. The symptom prevalence is also comparable with values reported in other elite sports. Of the players who had experienced a mental health issue at some point in their life, 67% of them did not seek professional help at the time and 61% of players did not think that suitable mental health support measures were available to them. This was the first study to quantitatively assess the mental health of professional golfers and the European Tour Group have used these findings to enhance their mental health support by introducing a 24/7 mental health crisis hotline and educating their staff members on the early identification and appropriate management of mental health issues.

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Application of the Research

Upon completion of this study, participants and other Challenge Tour golfers have been invited to attend Mental Health and well-being workshops. These workshops helped to disseminate the research findings of this paper and aimed to raise the awareness of mental health issues among golfers, as well as highlighting the support measures that are available to players. The European Tour Group also now have a 24/7 mental health crisis hotline available for players and staff-members. Dissemination of the findings of this research project will help to raise awareness of the fact that it is not uncommon for elite golfers to experience mental health problems and will hopefully help to tackle the taboo that often surrounds discussion about mental health issues in elite sport.

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