

Impact of Covid-19 outbreak on stress and depression among Indian football players

Impacto del brote de Covid-19 en el estrés y la depresión de futbolistas indios

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ABSTRACT

The Coronavirus-19 (COVID-19) pandemic restricted our normal life activities for the past several months, continuing its impact. Its repercussions led many countries to remain locked down and closed institutions and workplaces. The closure severely impacted the sporting industry and hindered performing its normal activities. Sports and exercise are generally considered the best facilitator for embedding a healthy and active lifestyle and were not adequately advocated during the pandemic. This study aimed to examine the level of stress and depression among football players during the peak time of the Covid-19 outbreak. Furthermore, it measured whether the socio-demographic information, such as gender, region, and level of participation influenced participants' stress and depression during that time. A total of 204 football players recruited from different parts of India participated in this study. Participants' responses to stress and depression were measured through the Perceived Stress Scale (PSS) and the Patient Health Questionnaire (PHQ-9). Stress and depression

showed a significant correlation among the footballers. Socio-demographic variables (except region, level of participation, and age), did not present any significant relationship. Footballers who experienced stress and depression during the Covid-19 pandemic showed positive correlations between the two constructs. Athletes from India's Southern region perceived higher stress levels than those from the Western part of India. The level of participation and age had no significant effect on the participants' perceived stress and depression.

KEYWORDS

Perceived stress; Depression; Covid-19; Football players.

RESUMEN

La pandemia del Coronavirus-19 (COVID-19) restringió nuestras actividades de la vida normal durante los últimos meses, continuando con su impacto. Sus repercusiones llevaron a muchos países a permanecer confinados y cerrar instituciones y lugares de trabajo. El cierre afectó gravemente a la industria del deporte y dificultó el desempeño de sus actividades normales. Los deportes y el ejercicio generalmente se consideran el mejor facilitador para incorporar un estilo de vida saludable y activo y no se recomendaron adecuadamente durante la pandemia. Este estudio tuvo como objetivo examinar el nivel de estrés y depresión entre los jugadores de fútbol durante el pico del brote de Covid-19. Además, midió si la información sociodemográfica como el género, la región y el nivel de participación influyeron en el estrés y la depresión de los participantes durante ese tiempo. Un total de 204 jugadores de fútbol reclutados de diferentes partes de la India participaron en este estudio. Las respuestas de los participantes al estrés y la depresión se midieron a través de la Escala de Estrés Percibido (PSS) y el Cuestionario de Salud del Paciente (PHQ-9). El estrés y la depresión mostraron una correlación significativa entre los futbolistas. Las variables sociodemográficas (excepto región, nivel de participación y edad), no presentaron relación significativa. Los futbolistas que experimentaron estrés y depresión durante la pandemia de Covid-19 mostraron correlaciones positivas entre los dos constructos. Los atletas de la región sur de la India percibieron niveles de estrés más altos que los de la parte occidental de la India. El nivel de participación y la edad no tuvieron un efecto significativo sobre el estrés y la depresión percibidos por los participantes.

PALABRAS CLAVE

Estrés percibido; Depresión; COVID-19; Jugadores de fútbol.

1. INTRODUCTION

The COVID-19 caused by the acute respiratory syndrome coronavirus 2 (SARS-CoV2), was first found in December 2019 in Wuhan, China, and has been linked to an increase in acute respiratory sickness cases (Huang et al., 2020). The severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) is the virus that causes the highly transmissible chronic infection (Lu et al., 2020). The WHO classified the COVID-19 outbreak as a global pandemic on March 11th, 2020. The number of sickness cases and nations affected continues to grow significantly, with over 127 million cases documented in 216 countries worldwide (WHO, 2021). This indicates that the transmission rate of COVID-19 has substantially increased compared to the SARS outbreak around two decades earlier. It resulted in the suspension or postponing of several sporting events during the pandemic period. For example, the International Olympic Committee (IOC) and the Japanese government announced on March 30th, 2020, that the 2020 Tokyo Olympics would be rescheduled for July 2021. However, the name would remain the same (IOC, 2020).

Moreover, after reports of professional athletes being tested positive, the Union of European Football Associations (UEFA) officially announced the delay of top-tier UEFA Champions League matches and related games to March 23rd, 2020 (UEFA, 2020). Professional sports are among the most impacted during this covid pandemic. The whole concept of competition has been missed in several events (UEFA Soccer CUP, World Championships in all modes have been canceled) (González-Hernández et al., 2021). It also canceled many other sports competitions and events (Guerrero-Calderón, 2020; Fuentes-García et al., 2020).

The diathesis-stress theory on depression explains how stressful life events and circumstances trigger depression, depending on the cognitive and biological vulnerabilities of an individual's personal and interpersonal characteristics (Hammen, 2009; Chen et al, 2020). Devastating life events such as losing a family member or getting unemployed cause depression, hopelessness, or even tend toward a family member. Getting unemployed causes depression, hopelessness, or suicidal thoughts (Stein et al., 2016). Stress causes hypersecretion of CRH (Corticotropin-releasing hormone), which enhances the level of stress hormone named cortisol. This leads to a dysfunctional feedback mechanism in the hypothalamus-pituitary-adrenal axis (HPA) which is highly associated with depressive symptoms (Murison, 2016).

Perceived stress denotes a person's feelings or beliefs about the amount of stress they have at any specific moment or for a certain period (Phillips, 2013). COVID-19 has consequences in various aspects, specifically mental health, because of variations in the athletes' day-to-day schedules and

training routines (Mon-López et al., 2020). The athletes who halted their regular structured training abruptly also underwent added pressure. The other factors that adversely impacted their mental health were at-home seclusion, decreased physical activity, separation from the team members and sports community, and absence of social support (Mehrsafar et al., 2020). Studies found that the lack of training decreased the performance of the soccer players in the Yo-Yo intermittent fitness assessment (Thomassen et al., 2010; Christensen et al., 2011). Pre-to-post COVID-19 period of social distancing, quarantine, and other restrictions upset the performance of the soccer players, which leads to perceived stress (Castillo et al., 2019; Póvoas et al., 2020). Results indicate that perceived stress increased significantly in over 1000 athletes in Italy (di Fronso et al., 2020). During the lockdown, the perceived stress will be more for athletes who undergo a difference in motivation than for athletes who do not experience it (Tingaz, 2020).

The lessons learned from natural disasters and hazards have shown that psychological effects extend for a lengthier period than the episode itself, with an intensely higher economic effect. Because of this, scientists are incredibly apprehensive about people's physical and psychological health (Zhou et al., 2020). A severe decrease in physical activity reduces the athletes' physiological and neuromuscular adaptation and even intensifies the risk of injury, leading to stress (Eirale, 2020). Stress is widespread in competitive sports, and elite athletes face several stressors (Mellalieu, 2009). Stress levels might upsurge (Pfefferbaum & North, 2020; Qiu et al., 2020; Sun et al., 2021) due to direct reasons such as anxiety of getting the infection and depression after exposure to the virus (Rajkumar, 2020). During periods of isolation and inactive sport, there is a tendency for psychological disorders (Reardon et al., 2019). Other aspects like duration of the quarantine, fear of contracting the infection, insufficient provisions, and frustration could be the main stressors that cause perceived stress (Brooks et al., 2020).

Consequently, in periods of isolation, the advancement and improvement of inherent motivation levels become crucial to reducing stress and anxiety (Castro-Sánchez et al., 2018). The students involved in dynamic physical activity have improved mental health and decreased perceived stress in inactive students (VanKim & Nelson, 2013, Ahmed et al., 2017). Increased life stress is related to unhealthy eating (Greeno & Wing, 1994; Ball & Lee, 2000), and such people are inclined towards food higher in fats, energy, and sugars (Steptoe et al., 1998; Wardle et al., 2000). Therefore, hectic changes and limitations to day-to-day life are expected to cause unhealthy eating habits in athletes. Moreover, systematic physical activity is considered vital for athletes to avert severe difficulties in any impending pandemic viral disease similar to COVID-19 (Jakobsson et al., 2020).

Depressive disorder denotes an illness where a person has persistent and extreme feelings of sadness for a prolonged period; it can be a mood disorder or the absence of interest in activities, leading to severe impairment in daily life. Athletes are just as vulnerable to the adverse psychological effects of COVID-19 as the general public (Mehrsafar et al., 2020). The weight of exercise altered the subjective perception of well-being (Saw, 2016). The decreased physical activity caused an upsurge in the higher severity of the depressive disorder (Reardon et al., 2019). The research highlighted that exercise enhances long-term psychological benefits and mood. For example, data from 611,583 adult participants in genome-wide association studies show that physical activity is a protective factor against the development of the depressive disorder (Choi et al., 2019). As for adolescents, this situation in the phase of Covid-19 has brought variations in their psychological traits and adversely affected their mental health (Liang et al., 2020).

During the pandemic, many people, especially males, started to practice physical activity despite the quarantine and the restriction of movement. This was done to fortify their immune system, improve mental health and reduce the adverse psychological effect of the measures implemented (Jiménez-Pavón et al., 2020; Rajesh et al., 2021). The reduction in physical activity caused by COVID-19 could decrease sports performance, sleep, and mood, affected by detraining periods (Altena et al., 2020; Calleja-González et al., 2018). Physical exercise positively impacts mood (Maugeri, 2020) and the welfare of the athlete (Mon-López et al., 2019), also for those in non-specific training, recuperating from injury, or those in the off-season period (Gabbett et al., 2014). The degree of damage inflicted on athletes' performance has been significant because of COVID-19's isolation (Cheval et al., 2020; Li et al., 2020). It also harmed physically active people before confinement. It has hindered their regular sports practice, in some cases adjusting such training at home, and in the worst scenario, abandoning the practice till the detraining happens (Ammar et al., 2020; Tison et al., 2020; Woods et al., 2020). Restraining from regular training and competitions further leads to an inactive lifestyle accompanied by increased psychological vulnerability (Ferreira-Júnior et al., 2020). A recent study reviewed that the COVID-19 pandemic has shaped numerous new stressors for elite athletes, and they suffer from several mental health symptoms and disorders (Reardon et al., 2020). Furthermore, regular physical exercise is an important component in preventing serious consequences from potential pandemic viruses such as COVID-19 (Jakobsson et al., 2020).

This study aimed to determine the relationship between perceived stress and depression among football players during the Covid-19 outbreak. The Covid-19 pandemic psychologically affected individuals adversely. The current study closely examined the perceived stress among football

players related to the pandemic. The study also helps understand the level of depression among the players. Since the study involved athletes from different parts of India, it will help understand the perceptual differences in the athletes' psychological construct. Besides, the study also helps in comprehending whether the gender of the participants and level of their participation has any effect on the study variables. It was hypothesized that perceived stress increases with an increase in depression among football athletes. Furthermore, there would be a significant difference in perceived stress and depression among study participants based on gender, region, and level of participation.

2. METHODS

2.1. Participants

Two hundred and four football players (*international* $n = 24$, *national* $n = 83$, and *university* $n = 77$) were recruited for an online survey from different regions of India (south $n = 81$, west $n = 44$, north $n = 42$, and east $n = 37$) for this study. Of the total participants, $n=59$ men and $n=45$ were women, with a mean age of 22.48 ($SD = 3.16$) years. The participants were given an outline of the research and the option to respond or not through a consent form attached to the top of the questionnaire.

The data was collected using a Google Forms-based questionnaire sent via email and cloud-based messaging apps (i.e., WhatsApp, Telegram, Messenger, *etc.*). It took around two months to garner the participants' responses. $N= 500$ football players were invited (May 2020) to participate in this study. Of the total invitation, only $N=220$ footballers responded. After the final screening, $N=204$ participants were identified who have responded to all the items in the questionnaire. Hence, these responses were used for the final analysis. Participants provided signed informed consent via an online questionnaire before participating. It was explained to them that their responses would be treated with confidentiality. The researcher addressed their questions and concerns about the research. The research committee of the Department of Physical Education at the University of Calicut approved all procedures involving the research work, which followed the Declaration of Helsinki guidelines.

2.2. Study design

Data were collected through a cross-sectional and correlational design with simple random sampling techniques using structured questionnaires and circulated from May 1st to June 31st, 2020, during the coronavirus disease outbreak.

2.3. Measurers

2.3.1. Demographic information

Participants provided details about their age, gender, region of residence, and level of participation.

2.3.2. Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire (PHQ-9) is a nine-item depression component that is well-validated and commonly used as a brief assessment and severity scale (Spitzer, 1999; Löwe et al., 2004; Martin et al., 2006; Kocalevent et al., 2013). With ratings of 0, 1, 2, and 3, participants indicated whether they experienced each of the nine depressive symptoms "not at all", "several days," "more than half the days," and "nearly every day" in the previous two weeks. The scale item such as "Little interest or pleasure in doing things", "Feeling down, depressed, or hopeless", "Trouble falling or staying asleep, or sleeping too much", etc.

2.3.3. Perceived Stress Scale (PSS)

The Perceived Stress Scale (Cohen et al., 1983) is the most widely used psychological tool for assessing stress perception (Roberti et al., 2006; Taylor, 2015). It is a measure of how stressful situations in one's life are perceived to be. The ten-question scale is used to evaluate the participants' experiences of stress over the previous month. The item statements such as "In the last month, how often have you been upset because of something that happened unexpectedly?", "In the last month, how often have you felt that you were on top of things?." etc., are responded to on a five-point Likert scale, Never = 0, Almost Never = 1, Sometimes = 2, Fairly Often = 3, and Very Often = 4 are the scores for the ten items. PSS scores are calculated by reversing responses to the four positively specified items (items 4, 5, 7, and 8) and then summing through all scale items (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0). The PSS 10-item scale's questions 2, 4, 5, and 10 can be combined to create a short four-item scale.

2.4. Statistical analysis

SPSS statistical software (Version 23; SPSS, Chicago, IL, USA) was used to analyze, with a significance level of .05. Pearson product-moment correlation was done to identify the association between variables under study, and simple regression was used to determine whether the variables' understudy has any predictive value. The *t*-test was used to find out the gender difference in the study. One-way ANOVA was carried out to know the mean difference in the variables with participants of different regions and levels of participation.

3. RESULTS

Of the participants, 77.9% were males, and 22.1% were females. Participants were from different regions of India, 18.1 % from the east, 21.6 % from the west, 20.6 % from the north, and 39.7% from the south. Also, there are three categories in the level of participation, out of which 47.5% were university-level participants, 40.7% were national level, and 11.8% were international level participants (table 1).

Table 1. Demographic information

Socio-demographic information		Frequency	Percentage
Gender	Male	159	77.9
	Female	45	22.1
Region	East	37	18.1
	West	44	21.6
	North	42	20.6
	South	81	39.7
Level of participation	University	97	47.5
	National	83	40.7
	International	24	11.8

Table 2. Mean and standard deviation of age, depression, and perceived stress of study participants

Variables	Mean	Standard Deviation
Age	22.48	3.62
Depression	9.34	3.90
Perceived stress	23.24	4.90

T-test did not identify any significant mean difference in perceived stress ($t(202) = -.177, p > 0.05$, 95% CI for mean difference -1.79 to 1.49) and depression ($t(202) = -.716, p > 0.05$, 95% CI for mean difference -1.77 to .827) among male and female study participants (Table 3).

Table 3. T-test for analyzing gender difference

Variables	Male (n=159)		Female (n=45)		t(202)	p	Cohen's d
	M	SD	M	SD			
Depression	9.23	3.87	9.71	4.00	-.716	.860	0.12
Perceived stress	23.2	5.00	23.35	4.73	-.177	.475	0.03

Note. N = 203, *p = .05

One-way ANOVA was computed to analyze the mean difference between participant's region and level of participation with depression and perceived stress. The analysis provided significant mean differences between the region of participants with their depression ($F_{3,200} = 3.604$, $p = .014$, $\eta^2 = 0.44$) and perceived stress ($F_{3,200} = 2.937$, $p = .034$, $\eta^2 = 0.45$) (Table 4). The Post Hoc analysis (Tukey) highlighted a significant difference in the perceived stress among study participants who are living in the east and south regions (mean difference = 2.447, $p < 0.05$). Table 5 shows the analysis of variance between depression ($F_{2,201} = 0.000$, $p = 1.000$) and perceived stress ($F_{2,201} = 2.142$, $p = 0.120$) with the level of participation of study participants, and there was no significant mean difference between the variables.

Table 4. Summary of analysis of variance between regions with perceived stress and depression

Variables	North (n=42)		South (n=81)		West (n=44)		East (n=37)		F (3,200)	p	η^2
	M	SD	M	SD	M	SD	M	SD			
Depression	10.40	4.26	8.81	3.57	8.36	3.64	10.45	4.03	3.604*	.034	.44
Perceived stress	23.71	5.50	24.19	4.34	21.75	5.51	22.37	4.34	2.937*	.014	.45

Note. N = 203, *p = .05

Table 5. Summary of analysis of variance between the level of participation with depression and perceived stress

Variables	International (n=24)		National (n=83)		University (n=97)		F (2,201)	p	η^2
	M	SD	M	SD	M	SD			
Depression	9.33	3.57	9.33	4.02	9.35	3.90	0.010	1.000	.005
Perceived stress	24.95	3.99	23.39	4.89	22.68	5.11	2.142	.120	.328

Note. N = 203, *p = .05

The Pearson correlation coefficient was analyzed in Table 6, and it was found that depression and perceived stress are significantly positively correlated ($r = 0.352$, $p < 0.01$) among study participants. Also, there is no statistically significant correlation between the age of the participants with depression and perceived stress in the present study. Pearson correlation highlighted whether age and perceived stress of the participants have any predictive value over their depression. The result showed that perceived stress significantly positively predicts 12.4 % of depression among study participants ($p < 0.01$). Therefore, depression is increased with an increase in perceived stress.

Table 6. Summary of correlation matrix of study variables

Variables	1	2	3
1. Depression	1		
2. Perceived stress	0.352**	1	
3. Age	-.096	0.042	1

Note: **. Correlation is significant at the 0.01 level (2-tailed)

Table 7. Stepwise regression on depression

Predictor(s)	R	R square	B	β	F change	p
Perceived stress	.352	.124	.278	.352	28.641	.000

4. DISCUSSION

This study aimed to determine the relationship between perceived stress and depression among footballers during the *Covid-19* crisis. The pandemic significantly disrupts athletes' careers, and their coping strategies to the increasing level of anxiety, stress appraisal, and reduced social support (Pété et al., 2021).

Our study provided a significant positive correlation between perceived stress and depression in footballers. It highlighted that the inducement of stress significantly enhances depression. This finding supports our first hypothesis. The study of Kilic et al. (2017) well supported our finding and stated that a greater number of severe injuries and recent adverse life events can significantly contribute to the development of the common mental disorder (anxiety/depression) in both current and retired professional football and handball players. The frequency of injuries and their severity augment tension and anxiety among footballers (Lavallée & Flint, 1996). Similarly, Yang et al.'s (2014) study also highlighted the elevation of depression with the increase of injury among footballers. Furthermore, athletic culture and environmental factors significantly impact mental health among competitive athletes (Chang et al., 2019; Ahmed et al., 2020). For example, the pressure of a coach on an athlete can lead to burnout (Kania et al., 2009; Ahmed et al., 2016;

Ahmed et al, 2015). As such, the present study highlighted the negative impact of the *Covid-19* epidemic on the mental health of football players.

A significant difference between perceived stress and depression has been reported among footballers living in the western and southern regions of the country, which supported the second hypothesis of the study. Furthermore, no difference between males and females was obtained in perceived stress and depression. This finding well supported the results of a previous study conducted by ŞEnişik *et al.* (2020). Their study reported that male and female athletes experienced high levels of depression, anxiety, and stress symptoms during the COVID-19 outbreak. In another study, Olmedilla (2018) examined that stress, anxiety, and depression among male and female players who had suffered some forms of injury. On the contrary, male and female national-level swimmers and field athletes did not report any meaningful difference in depression and anxiety (Yavuz & Oktem, 2012). Female adolescent athletes from low socioeconomic status who participated in team sports reported mental health symptoms, low physical activity, and poor quality of life (McGuine *et al.*, 2021).

The present study reported no significant difference between university, national, and international level participants. These findings contrast with the previous study, which shows that athletes from junior national teams showed a higher risk of depression and lower well-being (Belz et al., 2018; Ahmed et al, 2013). Also, student-athletes without a scholarship showed a greater level of psychological distress (Sullivan et al., 2019). College athletes reported a higher prevalence of depression when compared with the general college population (Wolanin et al., 2016).

Prolonged home stays of footballers lead to anxiety and depression. Regular involvement in physical activity and exercise in a safe home environment can improve mental health (Dönmez et al., 2021, Zayed et al., 2018). Psychological anxiety among athletes affects physiological stress, which negatively affects their performance. Therefore, it is necessary to develop strategies to reduce stress in athletes (Park et al., 2020). High-quality sleep and rest and the use of mood regulators improve the mental health of high school student-athletes, those who are actively participating at different levels of competitions (Brandt et al., 2014). Improving self-efficacy and self-control can reduce depression among athletes at an adequate level (Chen et al., 2020). Perceived stress influences depression among athletes, therefore identification, intervention, and support for perceived stress are very important.

Mental health is a common problem among athletes. More than half of the athletes experience mental health issues throughout their lifetime. Mental health-related symptoms are reported at a younger age, ranging from depressive disorder, eating disorder, and trauma to stress-related disorders (ÅKesdotter *et al.*, 2020).

4.1. Implications of the study

The COVID-19 outbreak affected people globally. Athletes were bound to isolate and break their regular practice during the peak period of COVID-19. It can increase their stress level and causes mental health issues. This present study focuses on how perceived stress causes depression among football players. The present study emphasized the provision of psychological support and stress management intervention for

athletes facing mental health issues during this period. As such, the issue of mental health among athletes needs to be identified and treatment should be provided. It also warrants future research among other athletes and non-athlete groups to examine the prevalence of variation in perceived stress and depression.

4.2. Limitations of the study

There is a high relevance for this present study in the current scenario. However, there are a few limitations that have also been registered too. Firstly, the applied tools to measure perceived stress and depression have not been validated for use in football players, which is considered to be a limitation of this study. Secondly, the sample size of the present study was not adequate, and it may affect the study findings. Thirdly, depression among football players may be caused by other reasons, however, this study only measured their perceived stress. Also, perceived stress can differ from person to person, and it can also be associated with other individual factors. But the present study failed to present those factors, which are subject to future research.

5. CONCLUSIONS

To sum up, the present study examined the role of perceived stress on depression among football players during the Covid-19 pandemic. There was a positive association between perceived stress and depression among athletes and perceived stress predicted depression among players. The gender of the participants and their level of participation did not show any difference in depression and perceived stress. Athletes from India (Eastern and Southern regions) showed a difference in their perceived stress. This study concluded that there is a need for psychological intervention and support for football players foreseeing the pandemics like Covid-19.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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