EVALUATION OF ANXIETY AND DEPRESSION SYMPTOMS AMONG U-20 SOCCER ATHLETES IN RECIFE-PE: A CROSS-SECTIONAL STUDY

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AVALIAÇÃO DE SINTOMAS DE ANSIEDADE E DEPRESSÃO EM ATLETAS DE FUTEBOL DA CATEGORIA SUB-20 EM RECIFE-PE: UM ESTUDO TRANSVERSAL

EVALUACIÓN DE LOS SÍNTOMAS DE ANSIEDAD Y DEPRESIÓN EN DEPORTISTAS DE FÚTBOL DE LA CATEGORÍA SUB-20 EN RECIFE-PE: UN ESTUDIO TRANSVERSAL

André Furtado de Ayalla Rodrigues[1]
(Psychiatrist)
Leopoldo Nelson Fernandes Barbosa[2]
(Psychologist)
Paulo Cesar dos Santos Gomes[3]
(Psychologist)
Filipe Albuquerque Fernandes Nóbrega[4]
(Student)

1. Faculdade Pernambucana de Saúde (FPS), Medical School Faculty Member, Recife, Pernambuco, Brazil.
2. Faculdade Pernambucana de Saúde, Master's Program in Health Psychology, Recife, Pernambuco, Brazil.
3. Professor Fernando Figueira Integral Medicine Institute (IMIP), Recife, Pernambuco, Brazil.
4. Undergraduate Program in Medicine at Faculdade Pernambucana de Saúde, Recife, Pernambuco, Brazil.

Correspondence:
André Furtado de Ayalla Rodrigues
Av. Mal. Mascarenhas de Morais, 4861, Recife-PE, Brazil. 51150-000.
andre_ayalla@hotmail.com.

ABSTRACT

Introduction: Being a soccer player is one of the dreams most present in the popular imagination of Brazilian children. However, the path to professionalization is arduous and several reasons can be pointed out for this difficulty: a very competitive environment, few chances, and poor career counseling, among others. In competitive soccer, the athlete must be ready for all the demands that will be made, as well as accept the demand for the best possible performance. Furthermore, athletes from the youth system are still adolescents and youths in development, usually up to 21 years of age, who are often forced to choose soccer and its demands, at the expense of their studies and family lives, to become professional players. In this scenario, a still little-debated topic is mental health among soccer players. Objectives: To verify the frequency of anxiety and depression symptoms among soccer players of the under-20 youth categories of Pernambuco clubs and to assess its association with sociodemographic, athletic, and health data. Methods: The Hospital Anxiety and Depression Scale (HADS) was applied and socio-demographic, athletic, and health data were collected. A marginal descriptive analysis was conducted, as well as categorical and numerical assessments of anxiety- and depression-related variables. Finally, a linear regression study of the anxiety and depression scores was conducted. Results: A statistically significant association was found between income received and an increase in anxiety symptoms. An increase in depressive symptoms as income decreased was also identified. Conclusion: Further research with larger numbers of participants is needed, as well as with a greater variety of clubs, to better understand the relationship observed. ***Level of Evidence II; Prognostic study – Investigation of the effect of a patient characteristic on the outcome of their illness.***

Keywords: Mental health; Sports psychology; Soccer; Depression; Anxiety; Athletes.

RESUMO

Introdução: Ser jogador de futebol é um dos sonhos mais presentes no imaginário popular da criança brasileira. Entretanto, o caminho para a profissionalização é árduo, e diversos motivos podem ser apontados para essa dificuldade: ambiente muito acirrado, poucas chances, aconselhamento insatisfatório na carreira, entre outros. No futebol competitivo, o atleta deve estar pronto para todas as cobranças que vierem a ser feitas, assim como aceitar a exigência da melhor performance possível. Aliado a isso, atletas da categoria de base ainda são adolescentes e jovens em formação, normalmente até os 21 anos, que são muitas vezes obrigados a escolher o futebol e suas exigências, em detrimento do estudo e do convívio familiar, para se tornarem jogadores profissionais. Nesse cenário, um motivo ainda pouco debatido é a saúde mental entre jogadores de futebol. Objetivos: Verificar a frequência de sintomas de ansiedade e depressão entre jogadores de futebol das categorias de base sub-20 dos clubes pernambucanos e avaliar sua associação a dados sociodemográficos, atléticos e de saúde. Métodos: Aplicou-se a Escala Hospitalar de Ansiedade e Depressão (HAD), assim como foram colhidos dados sociodemográficos, atléticos e de saúde. Realizou-se uma análise descritiva marginal, assim como avaliação categórica e numérica das variáveis relacionadas com ansiedade e depressão. Por fim, foi feito um estudo de regressão linear para os escores de ansiedade e depressão. Resultado: Verificou-se associação estatisticamente significativa entre renda recebida e aumento de sintomas de ansiedade. Também foi identificado aumento de sintomas de depressão com a diminuição da renda recebida. Conclusão: Mostra-se necessário a realização de mais pesquisas, com um número maior de participantes, assim como maior variabilidade de clubes, para melhor entender a relação encontrada. ***Nível de Evidência: II; Estudo prognóstico – Investigação do efeito de característica de um paciente sobre o desfecho da doença.***

Descritores: *Saúde mental; Psicologia do esporte; Futebol; Depressão; Ansiedade; Atletas.*

RESUMEN

Introducción: Ser jugador de fútbol es uno de los sueños más presentes en el imaginario popular de los niños brasileños. Sin embargo, el camino hacia la profesionalización es arduo y se pueden señalar varias razones para esta dificultad: un entorno muy competitivo, pocas oportunidades, asesoramiento insatisfactorio en la carrera, entre otras.

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En el fútbol de competición, el deportista debe estar preparado para todas las exigencias que se le planteen, así como para aceptar la demanda de un excelente desempeño . Junto a ello, los deportistas de la categoría de base son todavía adolescentes y jóvenes en formación, normalmente hasta los 21 años, que muchas veces se ven obligados a elegir el fútbol y sus exigencias, en detrimento del estudio y el entorno familiar, para convertirse en jugadores profesionales. En este escenario, un tema aún poco debatido *es la salud mental entre los futbolistas. Objetivos: Verificar la frecuencia de los síntomas de ansiedad y depresión entre los futbolistas de las categorías sub-20 de los clubes de Pernambuco y evaluar su asociación con datos sociodemográficos, deportivos y de salud. Métodos: Se aplicó la Escala de Ansiedad y Depresión Hospitalaria (HAD), y se recopilaron datos sociodemográficos, deportivos y de salud. Se realizó un análisis descriptivo marginal, así como una evaluación categórica y numérica de las variables relacionadas con la ansiedad y la depresión. Por último, se realizó un estudio de regresión lineal para las puntuaciones de ansiedad y depresión. Resultados: Hubo una asociación estadísticamente significativa entre los ingresos recibidos y el aumento de los síntomas de ansiedad. También se identificó un aumento de los síntomas de depresión con la disminución de la renta recibida. Conclusión: Es necesario realizar más investigaciones, con un mayor número de participantes, así como una mayor variabilidad de clubes, para entender mejor la relación encontrada.* ***Nivel de Evidencia: II; Estudio pronóstico – Investigación del efecto de una característica del paciente en el resultado de la enfermedad.***

Descriptores*: Salud mental; Psicología del deporte; Fútbol; Depresión; Ansiedad; Atletas.*

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INTRODUCTION

Today, mental health is a serious health issue. Depressive disorders and anxiety disorders stand out among the various psychological pathologies. Between 1990 and 2019, they became the non-transmittable chronic illnesses with the second and third highest number of years of life lost, adjusted for disability, among people between 10 and 24 years of age, with depression causing a loss of 3.7 years and anxiety of 3.2 years.[1] In these same groups, in Brazil, these numbers are even higher, at approximately 4.6 years lost for both depression and anxiety.[2] These lost years also are reflected in the economy. In 2010, the World Economic Forum estimated that mental illness will be responsible for a loss of up to 16 trillion dollars by 2033.[3] In terms of prevalence, anxiety affects around 5.14% of men if this age, while depression affects 2.45%.[2]

Given this situation, it is necessary to know which sociodemographic factors influence the risks and prognoses of these illnesses. Being a male, single, young adult, with anxiety as a comorbidity negatively influence depression. On the other hand, having solid friendships during adolescence and good socio-occupational functioning in the last five years, in addition to a stable nuclear family, are protective factors. Anxiety seems to start from the age of 12, appearing in people with low socioeconomic status and education level, low self-esteem, an unstable homelife, and a previous history of depression.[4,5] Thus, it is noted that there are different risk factors for mental illness that make a large portion of the population susceptible, including high-level athletes.[6,7] In 2021, the mental health aspect of athletes was evidenced at the Tokyo Olympics in the withdrawals and eliminations of gymnast Simone Biles and tennis player Naomi Osaka.[8]

We can observe some determinants of anxiety and depression in these athletes, such as failure to perform at a high level, multiple concussions, their younger age, competing at less competitive levels, among others.[9,10] Among the different analysis groups in this population, soccer players may be at the mercy of a neglected mental illness, since few studies have been conducted on this subgroup.[11–14]

Therefore, the objective of the present study was to describe the levels of anxiety and depression and evaluate possible determinants of the appearance of these symptoms in soccer players in the under-20 category in clubs in Recife-PE.

METHODS

Sample population and inclusion and exclusion criteria

We tracked 79 players from the squads of 3 Recife clubs that belonged to the first three Brazilian soccer divisions at the time of data collection. All the athletes on the teams were listed for participation in the study and selection was made by convenience sampling. Of these, 4 were younger than 18 years of age, 1 was older than 20, and 12 refused to participate or did not meet with the interviewers, resulting in 62 athletes in the under-20 category, with 21, 23, and 19 athletes, respectively, from each club. The mean age of the eligible study participants was 18.8 ± 0.76. Data collection was conducted from July to December of 2019. During this period, the data for two of the clubs was collected during the qualifying phase of the state championship of the category, while the collection for the other club was conducted during the preparatory phase for competition in the São Paulo Youth Soccer Cup, a competition of national importance. This number yielded a test power of 87%, considering a statistical significance of 5% and an effect size of 0.8. All the athletes included in the study were between 18 and 20 years of age and male. Athletes with less than 3 months of training in the youth system categories and those who had never participated in an official under-20 competition were excluded.

Data collection instruments and questionnaire application

The Hospital Anxiety and Depression Scale (HADS), developed by Zigmond and Snaith in 1983, validated and adapted for Brazilian Portuguese by Botega et al. in 1995, has been applied in out-of-hospital environments, including to groups of athletes.[15–18] It is composed of two subscales, for anxiety (HADS-A) and for depression (HADS-D) and evaluates the intensity of these symptoms in the two weeks prior to the interview. The values from the validation study in Brazil were used. In order to achieve maximum sensitivity and specificity, a HADS-A score equal to or greater than 8 defined the presence of anxiety symptoms and HADS-D scores above 9 defined symptoms of depression.[15] The subscales were evaluated separately. The researchers developed a questionnaire that included sociodemographic, athletic, and health questions to better characterize the sample.

Data analysis

A descriptive analysis of the study variables included in the sociodemographic, athletic, and health questionnaire was conducted. These variables were defined to cover possible risk factors related to the development of symptoms of anxiety and/or depression. In relation to HADS, two analyses were performed: one, categorical, to study the presence or absence of anxiety symptoms and the other, numerical, using the previously defined standards.

Fisher's exact test was used to confirm the existence of an association between the categorical variables. After that, an analysis was conducted to determine which sociodemographic variables were associated with the numerical HADS scores. This analysis was done to pre-select the variables to be included in the linear regression model and application of the Shapiro-Wilk Normality Test verified that neither of the scores had normal distribution at a statistical level of 1% ($p < 0.01$).

Ethical aspects

This study was prepared following the rules and guidelines proposed by CONEP Resolution 510/16 and only started after approval by the Human Research Ethics Committee of the Health Sciences Education Association, under opinion number 3.316.234 and CAAE: 12320119.1.0000.5569.

RESULTS

Our sample was composed of athletes with a mean age of 18.8 years, most of them Black, single, with no children, with a monthly income of up to one minimum wage (MW - approximately USD 256 at the time of data collection), and from Pernambuco. These athletes shared either a clubhouse room or a residential room with 4 or more people (Table 1).

The sample of athletes was separated into goalkeepers, defenders, backs, defensive midfielders, attacking midfielders, and forwards. If the athletes played more than one position, they were assigned to the position that they played most during team matches. Half of the players started and had played for 2 or more clubs. There was no predominance in the way the athletes joined the club, represented by "arrival at the club" (Table 2).

Only 5 of the participants were injured at the time of the interview. In addition, only 3 athletes had had a psychiatric illness previously confirmed by a psychiatrist. After applying the questionnaire and the scales, the anxiety and depression domain were separately analyzed and it was found that 9 athletes had symptoms suggestive of anxiety and 4 had symptoms suggestive of depression (Table 3).

When analyzed as categorical variables to verify any association, a statistically significant relationship was found between monthly income and the appearance of anxiety symptoms ($p = 0.046$) (Table 4).

When analyzed numerically, we observed a relationship between monthly income and the onset of depressive symptoms ($p = 0.05$). However, the existence of an outlier in this association, which, when removed, makes the relationship statistically significant, should be noted.

Finally, the sample was studied, also numerically, using linear regression models for the anxiety and depression scores. We see in Table 5 that, at a statistical significance of 5%, the mean score of the players with no income (reference category) is equal to the mean score of players with income up to 1 MW ($p = 0.507$). On the other hand, the mean score of the players whose income is between 1 and 3 MWs is 2.940 points (CI (95%) = [0.871, 5.009]) greater than that of the players without any income. We concluded from the above analyses that players with higher income tend to have higher anxiety.

Table 6 shows that, at a statistical significance of 5%, the mean score of the players without income (reference category) is equal to the mean score of the players with income between 1 and 3 MWs ($p = 0.21$). On the other hand, the mean score of the players with income up to 1 MS is 1.622 points (CI (95%) = [0.09, 3.14]) less than that of players with no income. In the group of players with income between 1 and 3 MWs there

Table 1. Sociodemographic data of Under-20 Category athletes on the Pernambuco teams.

Variables	n = 62 athletes	%
Color/Race		
White	10	16.1
Black	52	83.9
Marital status		
Single	59	95.2
Married/Civil union	3	4.8
Number of children		
None	53	85.5
1 child	8	12.9
Not reported	1	1.6
Number of roommates		
2	9	14.5
3	16	25.8
4 or more	32	51.6
Not reported	5	8.1
Place of birth		
Pernambuco	40	64.5
Other locations	22	35.5
Age	18.8 ± 0.76	18.0 – 20.0

Table 2. Sport-related information of the Under-20 Category athletes of the Pernambuco teams.

Variables	n = 62 athletes	%
Position on the team		
Goalkeeper	5	8.1
Defender	12	19.4
Back	9	14.5
Defensive midfielder	10	16.1
Attacking midfielder	9	14.5
Forward	17	27.4
Starting players		
Yes	31	50.0
No	30	48.4
Not reported	1	1.6
Arrival at the club		
School	8	12.9
Trials	7	11.3
Coach referral	13	21.0
Entrepreneur	16	25.8
Others	18	29.0
Number of clubs		
One	13	21.0
Two	20	32.3
Three	15	24.2
Four or more	13	21.0
Not reported	1	1.6

Table 3. Clinical and mental health history and the Hospital Anxiety and Depression Scale (HADS) results.

Variables	n = 62 athletes	%
Current injury		
Yes	5	8.1
No	57	91.9
Previous psychiatric illness		
Yes	3	4.8
No	59	95.2
Diagnosis		
Anxiety	3	4.8
No prior diagnosis	59	95.2
HADS-A		
With symptoms	9	14.5
Without symptoms	53	85.5
HADS-D		
With symptoms	4	6.5
Without symptoms	58	93.5

Table 4. Profile of the sample and symptoms of anxiety and depression in Under-20 soccer athletes.

	HADS-A			HADS-D		
Variables	**With symptoms**	**Normal**	**p-value**	**With symptoms**	**Normal**	**p-value**
	n (%)	**n (%)**		**n (%)**	**n (%)**	
Monthly income						
No income	0 (0.0)	21 (100.0)	0.046 *	2 (9.5)	19 (90.5)	0.526 *
Up to 1 MW	6 (20.7)	23 (79.3)		1 (3.4)	28 (93.3)	
Between 1 and 3 MWs	3 (25.0)	9 (75.0)		1 (8.3)	11 (91.7)	
Place of birth						
Pernambuco	6 (15.0)	34 (85.0)	1.000 *	2 (5)	38 (95)	0.61 *
Other locations	3 (13.6)	19 (86.4)		2 (9.1)	20 (90.9)	
Number of roommates[+]						
2	0 (0)	9 (100)	0.229 *	1 (11.1)	8 (88.9)	0.264 *
3	4 (25)	12 (75)		2 (12.5)	14 (87.5)	
4 or more	3 (9.6)	29 (90.6)		1 (3.1)	31 (96.9)	
Position on the team						
Goalkeeper	0 (0.0)	5 (100.0)	0.263 *	0 (0)	5 (100.0)	0.798 *
Defender	1 (11.1)	8 (88.9)		0 (0)	9 (100)	
Back	1 (8.3)	11 (91.7)		0 (0)	12 (100)	
Defensive midfielder	3 (30)	7 (70)		1 (10)	9 (90)	
Attacking midfielder	3 (33.3)	6 (66.7)		1 (11.1)	8 (11.1)	
Forward	1 (5.9)	16 (94.1)		2 (11.8)	15 (88.2)	
Starting players						
Yes	6 (19.4)	25 (80.6)	0.473 *	2 (6.5)	29 (93.5)	1.000 *
No	3 (10)	27 (90)		2 (6.7)	28 (93.3)	
Not reported						
Arrival at the club	2 (25.0)	6 (75.0)	0.787 *	0 (0.0)	8 (100.0)	0.089 *
School	1 (12.5)	7 (87.5)		1 (14.3)	6 (85.7)	
Trials	2 (15.4)	11 (84.6)		0 (0)	13 (100)	
Entrepreneur				3 (18.8)	13 (81.2)	
Others	4 (11.8)	30 (88.2)		0 (0)	18 (100)	

(*) Fisher's exact test . (+) The number of roommates with symptoms was n=7, as the other 2 had no information for this variable.

Table 5. Results of the linear regression model for anxiety.

Parameter	Estimate	SE	t	p
Intercept	4.143	0.624	6.644	0
Income up to 1 MS	0.547	0.819	0.668	0.507
Income between 1 and 3 MWs	2.940	1.034	2.844	0.006

Table 6. Results of the linear regression model for anxiety.

Parameter	Estimate	SE	t	p
Intercept	5.138	0.581	9.265	0
Income up to 1 MS	-1.622	0.763	-2.127	0.038
Income between 1 and 3 MWs	-1.214	0.963	-1.261	0.212

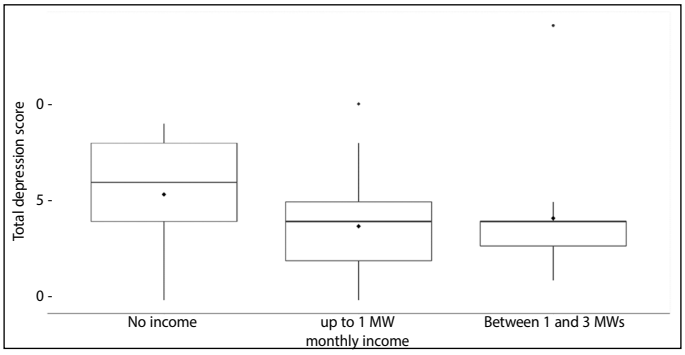

Figura 1. Relação entre renda mensal e sintomas depressivos.

is an outlier (Figure 1), that is, a player with a much higher depression score than the others, which caused the difference between players with income between 1 and 3 MWs to not be statistically significant. It is noteworthy that this outlier is only present in the numerical analysis and is not applicable to the categorical analysis. When we removed the outlier, the relationship between those who have no income and those who have income between 1 and 3 MWs remains statistically relevant ($p = 0.01779$), and we also have a statistically significant lower depression score ($p = 0.01744$) among the players with income between 1 and 3 MWs. We concluded, as in the analyses above, that players with lower incomes tend to have more symptoms of depression.

DISCUSSION

This study aimed to evaluate the frequency of symptoms of anxiety and depression among under-20 soccer players. We also collected additional information in order to determine whether there is any relationship between the symptoms and the specific characteristics of this population.

The literature review yielded little quantitative data about under-20 soccer players but they are prolific in analyses of other population groups.[19–21] Therefore, we used data from studies with similar populations, such as male and female professional soccer players, mainly European, as well as players of other sports, to establish which variables would be investigated.[13,22,23] Compared to the studies above, which focus mainly on sports variables,[11,24,25] we incorporated others into the investigation to better reflect economic and cultural aspects that influence the development of soccer players in Brazil, such as monthly income and number of roommates. Regarding the particularities of the soccer culture, one study of living accommodations in under-17 athletes showed that these athletes go through the experience of being judged, of having to mature rapidly to adapt to the new environment, and of breaking off old social relationships.[25]

A survey conducted by the WHO revealed that Brazil is one of the countries with the highest prevalence of depressive disorders and in first place for anxiety disorders in all age groups, with prevalence of 5.8% and 9.3%, respectively.[26] When we compared our sample to the total Brazilian population, we found an increased prevalence of 14.3% for both symptoms. On the other hand, when we compared our data with those of other studies in soccer players, we found different results.[11,13,19–23]

In a study conducted with active elite soccer players that evaluated both symptoms together, the results were aligned with our findings, despite the difference in the sample populations.[13]

In a survey of 78 Swiss under-21 soccer athletes, symptoms of anxiety were found in 2.7% of the interviewees. In our sample, the prevalence of anxiety was much higher. This difference must be viewed critically because the questionnaire used in that study assessed specific symptoms of generalized anxiety via the General Anxiety Disorder-7 (GAD-7) questionnaire,[20] while the HADS is a symptom screening scale. Regarding depressive symptoms, the results were in line with ours, even using the Center for Epidemiological Scale – Depression, CES-D.[20] A study conducted with 23 under-20 athletes from the first-division club in the state of São Paulo that used the Beck Anxiety Inventory reported minimum anxiety levels.[21] In a study with 607 professional athletes from Europe, South America, and Asia, the prevalence of anxiety and depression symptoms was higher than in our sample.[23] In addition, a study with female German soccer athletes, most of them in the First Division, reported an incidence of symptoms of depression of 28% and of generalized anxiety of 8.1%.[19]

We found a statistically significant association between symptoms of anxiety and income. The higher the income, the greater the percentage of athletes with anxiety symptoms. It is noteworthy that this relationship was inverted when correlating income to symptoms of depression. In cases where income is received from the club, an entrepreneur, or a sponsor, there already exists an underlying demand for better performance, in addition to the idea that becoming a professional is achievable.[27] In a study that assessed state-trait anxiety, there was no association between remuneration and income.[11]

We must take the uniqueness of our sample, especially regarding socioeconomic characteristics, into account, since assessment of this status can reveal risk factors for the development of mental disorders, such as low income and depression. We studied athletes in the base categories of clubs in Pernambuco, which are in a region of Brazil that is markedly different socioeconomically from the rest of the country, reflected in fewer resources for investment in athlete training and club facilities. The literature generally shows us professional athletes, whether male or female, participating in international games in countries with less economic inequality.[13,19,20,22,23]

Previous studies[13,19,20,22,23] used other scales to measure anxiety and depression levels, so differences in the results are expected. When we compared our results to a study that used the same scale, but applied to a population of younger, elite athletes playing other sports at a place of training excellence, the levels of anxiety were similar and those of depression were lower than those found in our study.[18]

One limitation of our study is the small number of athletes evaluated (n = 62). It is important to note that we lost 20% of the initial sample because 12 of the participants either chose not to participate or did not provide any response to the interviewer. It is also possible that response and non-response biases influenced some of our questions. Salomão observed that, during the professionalization process, base-category athletes alternate between moments of suffering and realizing that they must suffer and overcome difficulties and sadness to go after the goal, in this case becoming a professional.[25] Thus, questions related to anxiety and depression can be framed within this context of overcoming difficulties.

The present study found data to support the hypothesis that under-20 athletes in clubs in Recife who receive some type of income are more liable to develop symptoms of anxiety when classified categorically. In the numeric analysis, while the association with anxiety was consistent, we found higher depressive symptom scores among those who did not receive any income than among those who did. Some data remain unexplained, as we found no research in the scientific literature on the relationship between monthly income and the appearance of symptoms of anxiety and depression. The search for these explanations could be the basis for future qualitative studies for a better understanding of the phenomenon of professionalization and its repercussions for the mental health of athletes still in training. Therefore, we believe that they deserve more in-depth studies to shed light on this situation.

Despite the existing limitations, the study has its positive points. It contributes to the field of mental health in sports, especially Brazilian soccer, which is still little studied. The study was conducted in a poor region of Brazil and had the opportunity to focus on the particularities that present themselves with greater intensity in this region, such as the socioeconomic factor. Finally, the presence of symptoms of anxiety and depression and their relationship with income can be relevant information for club managers when thinking about how this issue can affect athlete development, as well as for the technical committees of the clubs, so they can observe the players more closely.

That said, mental health in sports needs more in-depth exploration. We studied only two mental health aspects of base-category soccer athletes, but left out others such as problems with alcohol, sleep, body dysmorphic disorders, among others that can affect athletes in their entirety.[7] Deepening the relationship between the position played and anxiety and depressive symptoms, expanding the size of the population studied, as well as investigating other levels of soccer athlete training, are important aspects to be studied. We know that in Brazil and around the world, soccer is viewed as a way to achieve social ascension.[28,29] Therefore, it is the duty of science to deepen field studies in sports and exercise mental health and psychiatry so we can make contributions and offer possible solutions so that fewer people suffer alone with mental difficulties and can reach their potentials.

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