

## PREVALENCE OF DEPRESSION AND ANXIETY SYMPTOMS AMONG FEMALE FOOTBALL PLAYERS AND NON-PLAYERS

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### ABSTRACT

**Purpose:** Depression and anxiety are mental illnesses which affect many people worldwide. The purpose of this study is to determine the prevalence of depression and anxiety symptoms among Slovenian female football players and non-players.

**Methods:** The sample consisted of Slovenian female football players playing in the Slovenian 1st female football league or youth league ( $n = 78$ ) and non-player peers ( $n = 120$ ) with an average age of the total sample  $22 \pm 4$  years. The participants filled out a questionnaire including some general questions (age, physical activity levels, participation in competitive sports), Beck Depression Inventory (BDI-II), Beck Anxiety Inventory (BAI), and Depression, Anxiety and Stress Scale (DASS-21).

**Results:** The most commonly observed were normal and mild levels of depression and anxiety. According to the results of depression in BDI-II, 43.6% of athletes experienced moderate to severe depression compared to 15.8% of peers ( $p = 0.001$ ). Results from DASS-21 show that 71.8% of athletes experience normal to mild symptoms of depression and 56.4% experience the same levels of anxiety. Similarly, 75% of peers experience normal to mild depressive symptoms and 56.7% reported normal to mild symptoms of anxiety. No statistical differences were found in these categories.

**Conclusion:** We have gained insight into the current prevalence of depression and anxiety among female football players and their peers but more research needs to be done.

**Keywords:** depression, anxiety, prevalence, female football players, adolescence

## PREVALENCA SIMPTOMOV DEPRESIJE IN ANKSIOZNOSTI MED SLOVENSKIMI NOGOMETNAŠICAMI IN NJIHOVIMI VRSTNICAMI

### IZVLEČEK

**Namen:** Depresivnost in anksioznost sta duševni bolezni, ki prizadeneta večje število ljudi po vsem svetu. Namen raziskave je ugotoviti prevalenco simptomov depresije in anksioznosti med slovenskimi nogometnašicami in njihovimi vrstnicami.

**Metode:** Vzorec predstavlja nogometnašice, ki nastopajo v prvi slovenski ženski nogometni ligi in ligi kadetinj do 17 let in njihove vrstnice. Povprečna starost znaša 22 let  $\pm$  4 leta. V raziskavi je sodelovalo 232 merjenk, 198 jih je v celoti izpolnilo vprašalnik (85,34 %), od tega 78 nogometnašic. Vprašalnik je vseboval splošna vprašanja o starosti, stopnji aktivnosti, sodelovanju v tekmovalnem športu in stopnji izobrazbe ter Beckov vprašalnik depresivnosti (BDI-II), Beckov vprašalnik anksioznosti (BAI) in vprašalnik depresivnosti, anksioznosti in stresa (DASS-21).

**Rezultati:** Rezultati BDI-II kažejo, da je 43,6 % nogometnašic občutilo zmerno do resno stopnjo simptomov depresije, v primerjavi s 15,8 % vrstnic ( $p = 0,001$ ). Rezultati DASS-21 kažejo, da ima 71,8 % nogometnašic normalne do blage simptome depresije in da jih 56,4 % občuti normalne do blage simptome anksioznosti. Podobno, 75 % vrstnic doživlja normalne do blage simptome depresije in 56,7 % anksioznost enake stopnje. V teh kategorijah nismo ugotovili statistično značilnih razlik med skupinama.

**Zaključek:** Z raziskavo smo dobili vpogled v trenutno stanje pojavljanja simptomov depresivnosti in anksioznosti med nogometnašicami in njihovimi vrstnicami, vendar je za zanesljivejše sklepe potrebno dodatno raziskovanje področja duševnega zdravja.

**Ključne besede:** depresivnost, anksioznost, prevalenca, nogometnašice, adolesanca

## INTRODUCTION

Depression is a common mental disorder which affects more than 300 million people worldwide and is a big risk factor for suicide. Prevalence of depression varies across countries, from 1.5% in Taiwan to 19% in Beirut (Bromet et al., 2011). In European countries the lifetime prevalence of major depression is 11.32% and the average 12-month prevalence is 5.2% (Gutiérrez-Rojas, Porras-Segovia, Dunne, Andrade-González, & Cervilla, 2020). The disorder manifests as constant sadness, loss of interest in activities that used to be enjoyable, and the inability to complete everyday chores, the condition lasting for at least two weeks. Common symptoms are lack of energy, changes in appetite or weight, disruptive sleep disorders, anxiety, lack of attention, feelings of guilt and self-harm or suicidal thoughts (World Health Organization, 2021). The first onset of depression occurs in adolescence with 5% in early adolescence and 20% in late adolescence. A high number of adolescents displaying some of these symptoms do not get diagnosed and are not treated, even though that increases the risk factors for depression in later life (Alaie et al., 2019). Throughout the history of depression research, there have been many explanatory theories, most widely known are biological ones claiming depression develops due to lack of noradrenaline, endocrine disorders, sleep disturbances, changes in brain structures, and genetics. Psychological theories explain depression through psychoanalysis, attachment theory, behavioral models, cognitive models, self-control models, interpersonal theory, stressful life events, and sociocultural models (Bernaras, Jaureguizar, & Garaigordobil, 2019).

High-risk groups for depression are suicide attempt survivors, and people with exceptional psychosocial stress, mental disorders (anxiety, psychosis, addictions), or family history of depression, those suffering from chronic conditions, people with an unexplained somatic syndrome, frequent users of health services, post-partum women, and people with diabetes mellitus (Konec Juričič, Roškar, & Jelenko Roth, 2016).

Depression disorders differ in the duration, intensity and periods during which they occur. Disruptive dysregulation mood disorder is a chronic condition characterized by highly expressed irritability. There are two clinical manifestations, the first is frequent outbursts of anger as a response to frustration which occur at least three times a week for at least one year in two different settings. Angry outbursts can be verbal or behavioral, e.g., aggression towards objects, the self or other people. The second manifestation occurs during outbursts of anger, when an individual is chronically irritated or angry and is present most days. The disorder first presents itself before the age of 10, symptoms changing during adolescence. Children and adolescents affected by disruptive dysregulation mood disorder are more prone to developing depression and anxiety in adult life (American Psychiatric Association, 2013).

Major depressive disorder or clinical depression is characterized by a depressed mood throughout the whole day most days, in children and adolescents manifested as irritability. Clinical depression causes a lack of interest in previously enjoyed everyday activities, extreme weight loss or weight gain, insomnia or hypersomnia, psychomotor agitation or retardation, tiredness or lack of energy, feelings of guilt, lack of ability to

think and concentrate, thoughts about death, suicidal thoughts without a plan, suicide planning, and suicide attempt (Bernaras et al., 2019). Clinical depression has a high mortality rate, mostly by suicide. The course of the disease is variable, some people never or very rarely experience remission while others can live without symptoms for years (American Psychiatric Association, 2013).

Dysthymia or persistent depressive disorder is defined as chronic clinical depression and dysthymic disorder and manifests as a depressive mood throughout most days for at least two years. The prevalence of this disorder in the US is 0.5% (Bernaras et al., 2019).

Premenstrual dysphoric disorder is diagnosed when during the majority of menstrual cycles at least five of the following symptoms are present: emotional lability, intense irritability, anger or interpersonal conflicts, depressive mood and/or anxiety symptoms, which can be accompanied by behavioral or somatic symptoms. Prevalence of this disorder is 1.8% among women, with 1.3% of women experiencing functional impairment (Bernaras et al., 2019).

Substance or medication-induced depression can be caused by substances or medication, as the appellations suggest. It is defined as the presence of depressive symptoms after usage of a certain substance that persist even after the physiological effects have disappeared. This type of depression can be induced by drugs, toxins, psychotropic drugs and others and it develops in the first month of use. Prevalence in the US is 0.26% (Bernaras et al., 2019).

Anxiety is a common name for many mental disorders which are usually exhibited as excessive fear and worry. Anxiety disorders are prevalent worldwide, ranging from 3.8 to 25%; furthermore their prevalence among people with chronic conditions is 70%. Anxiety is a feeling of fear, worry or nervousness and often includes feelings of distress, powerlessness and a somatically aroused central nervous system. It often prompts responses to perceived danger which can be real or imaginary. There are different types of anxiety disorders: generalized anxiety disorder, social anxiety, separation anxiety, panic disorder and others. Anxiety is correlated with risk factors for cardiovascular conditions (Freidl et al., 2017; Kandola et al., 2018). Anxiety disorders can have different causes but are often a consequence of temperament, early experiences and specific life events (Barlow, 2000). Among the causes is heightened sensitivity to negative events, threatening objects or information, which increases the risk of negative feelings. The anxiety disorder is characterized by increased physiological responses, including dry mouth, nausea, feeling unwell, chest pain and shortness of breath.

The second cause is the child's feeling of not being able to control things like behaviour of their parents or peers and the tendency to react negatively to stressful events. The third cause is specific life events and experiences, such as trouble in the child's parents' relationship, dangerous attachment, critical parents with high expectations or anxious parents (Dobnik Renko, 2020).

Anxiety disorders that develop in early childhood can become chronic and have a high probability of recurrence. The presence of anxiety during adolescence increases the likelihood of the individual developing anxiety in adult life by two to three times

and similarly increases the risk of developing depression in adult life. Adolescents that suffer from anxiety have trouble in different areas such as general health, schoolwork, and later in adult life physical and cognitive functions. Proven risk factors that are the same for the development of anxiety and depression are female gender and stressful life events. In addition, loneliness, emotional reliance and dysfunctional relationships in the family or with peers also increase the risk of developing depression and anxiety (Essau, 2003; Essau, Lewinsohn, Olaya, & Seeley, 2014; Lewinsohn, Rohde, & Seeley, 1998; Woodward & Fergusson, 2001).

Depression and anxiety are fairly present among athletes, especially younger ones - both disorders are prevalent in 15.6% to 21% of student-athletes who are more exposed to certain risk factors than the general population. These include injuries, unfulfilled expectations, and overtraining (Wolanin, Gross, & Hong, 2015). Important factors are various personal characteristics, including perfectionism, poor negative-stress coping skills, and internal attributions for failure, poorer performance than expected, guilt and shame (Nixdorf, Beckmann, Nixdorf, & Nicholls, 2020). In a female football team consisting of 18 to 26 players, 2 to 4 players (14%) show serious signs and symptoms of depression. Groups of second league players who are younger than 20 years old, have less competitive experience, who describe their health as average or poor, and less frequently start the games are at greater risk of developing depression and anxiety (Junge & Prinz, 2018). The main causes of anxiety among elite athletes are pressure from competition, media, career instability or dissatisfaction, and injuries. Female gender, younger age and less experience in competing increase risk factors for developing anxiety disorder (Rice et al., 2019; Rocha & Osório, 2018).

The prevalence of mild to severe depression among female athletes ranges from 9.8% to 36.5% (Gorczynski, Coyle, & Gibson, 2017).

The aim of this research is to determine the prevalence of depression and anxiety among Slovenian female football players and their non-player peers and compare the prevalence in order to find differences between the two groups.

## METHODS

### Participants

The sample consisted of Slovenian female football players who play in the Slovenian 1st female league or youth league and their non-player peers. The average age of subjects was  $22 \pm 4$  years. The upper age limit was 35 years, whereas the lower age limit was 15. The sample consisted of 232 subjects of which 198 filled out the questionnaires completely (85.34%), 78 of them were football players aged  $19.3 \pm 3.9$ , and 120 were non-active peers aged  $23.3 \pm 4.2$ . Football players were contacted through club and national team coaches and physical education teachers who invited them to participate. Non-players were selected from two sources: the same high schools as football players, reached via physical education teachers, and faculties of the University of Ljubljana,

via student organizations. All of the subjects decided to participate in the study voluntarily with no compensation.

### Instruments

We used three questionnaires that were translated into the Slovenian language: Beck Depression Inventory-II (BDI-II), Beck Anxiety Inventory (BAI), and Depression, Anxiety and Stress Scale (DASS-21). We added general information questions about age, activity levels and participation in competitive football. All questionnaires are self-reported measures of depressive or anxiety symptoms. BDI-II is a 21-item questionnaire that assesses an individual's depressive symptoms over the course of 2 weeks. It uses a 4-level scoring scale from 0 (not at all) to 3 (severe). Scores are summed to derive depressive symptoms severity: scores between 0 and 13 represent minimal depression, between 14 and 19 mild depression, between 20 and 28 moderate depression, and between 29 to 63 severe depression. Cronbach's alpha of BDI-II is 0.844.

BAI consists of 21 questions about anxiety symptoms and its purpose is to distinguish anxiety from depression. It uses a 4-level scoring scale from 0 (not at all) to 3 (severe). Scores are calculated as a sum of all, where scores between 0 and 7 represent minimal anxiety, between 8 to 15 mild anxiety, 16 to 25 moderate anxiety, and 26 to 63 severe anxiety. Cronbach's alpha of BAI is 0.875.

DASS-21 is an abbreviated version of Lovibond and Lovibond's 42-item Depression, Anxiety and Stress Scale (DASS) and has been constructed to measure multiple dimensions of depression, anxiety and stress. It consists of 21 questions, 7 per dimension, which are scored on 4 levels: 0 (not at all) to 3 (severe). The maximal score in each dimension is 21. We only used scores for depression and anxiety (Lovibond & Lovibond, 1995). Cronbach's alpha of DASS-21 is 0.710 for the anxiety subscale and 0.804 for the depression subscale.

All of the questionnaires were translated into the Slovenian language as an internal tool by psychological office Brst psihologija.

### Procedure

Before participating in the study, underage subjects needed to obtain a legal guardian's consent. The participants connected to an online call where they were sent a link to the questionnaires. They remained on the online call the whole time during answering in order to have the option to ask questions if needed.

## Statistical analysis

Statistical analysis was conducted in IBM SPSS 25 (SPSS Inc., Armonk, NY, USA) and the data were edited in Microsoft Excel 2019 (Microsoft Corporation, Redmond, Washington, USA). Frequency distribution was calculated for descriptive variables, and averages and standard deviations were calculated for numerical variables. We used cross-tabulations to get prevalence among football players and non-players. As data were not normally distributed, we used the Mann-Whitney test to examine differences.

## RESULTS

Results of the BDI-II presented in Table 1 show that 47.4% of football players have experienced minimal depression, 9% have experienced mild depression and 43.6% show symptoms of moderate to severe depression. In comparison, 64.2% of their peers report minimal depression, 20% mild depression, and 15.8% moderate to severe depression. In football players the mean score was  $15.65 \pm 9.5$  and for non-player peers the mean score was  $11.32 \pm 8.4$ . The Mann-Whitney test revealed differences between the groups ( $p = 0.001$ ).

*Table 1. Depressive symptoms categories (BDI-II) in female football players and non-players*

Group		BDI_II depressive symptoms categories			
		Minimal	Mild	Moderate to severe	Total
<b>Football players</b>	Count	37	7	34	78
	% of the group	47.4%	9.0%	43.6%	100.0%
<b>Non-players</b>	Count	77	24	19	120
	% of the group	64.2%	20.0%	15.8%	100.0%
<b>Total</b>	Count	114	31	53	198
	% of Total	57.6%	15.7%	26.8%	100.0%

Results of depression symptoms from the DASS-21 questionnaire (Table 2) show that 71.8% of female football players experience normal to mild levels of depression, while 10.3% show severe to extremely severe symptoms of depression. The same questionnaire gave similar results for the peer group – 75% of peers report experiencing

normal to mild levels of depression and 11.7% serious to severe depression. Football players' mean score was  $9.13 \pm 7.5$  and non-player peers' mean score was  $9.33 \pm 8.4$ . The Mann-Whitney test revealed no differences between the groups ( $p = 0.703$ ).

*Table 2. Depressive symptoms categories (DASS-21) in female football players and non-players*

Group		DASS-21 depressive symptoms categories			
		Normal to mild	Moderate	Severe to extremely severe	Total
Football players	Count	56	14	8	78
	% of the group	71.8%	17.9%	10.3%	100.0%
Non-players	Count	90	16	14	120
	% of the group	75.0%	13.3%	11.7%	100.0%
Total	Count	146	30	22	198
	% of Total	73.7%	15.2%	11.1%	100.0%

Results of the BAI (Table 3) show that 79.5% of female football players experience low levels of anxiety, similar to 75% of their peers. According to the results of this questionnaire, none of the football players shows symptoms of severe anxiety. Football players mean score was  $14.36 \pm 8.5$  and non-player peers mean score was  $14.22 \pm 9.8$ . The Mann-Whitney test revealed no differences between the groups ( $p = 0.387$ ).

Results of anxiety symptoms from the DASS-21 questionnaire (Table 4) show that 56.4% of football players experience normal to mild levels of anxiety, similarly to 56.7% of their peers. Results for moderate, severe and extremely severe levels of anxiety were similar in both groups – 21.8% of female football players report moderate levels of anxiety, as do 21.7% of their peers. Prevalence for severe to extremely severe anxiety were 21.8% in football players and 21.7% in their peer group. Football players' mean score was  $9.13 \pm 7.5$  and non-player peers' mean score was  $9.9 \pm 7.6$ . The Mann-Whitney test revealed no differences between the groups ( $p = 0.973$ ).

*Table 3. Anxiety symptoms categories (BAI) in female football players and non-players*

Group		BAI anxiety symptoms categories			
		Minimal	Mild	Severe	Total
Football players	Count	62	16	0	78
	% of the group	79.5%	20.5%	0.0%	100.0%
Non-players	Count	90	25	5	120
	% of the group	75.0%	20.8%	4.2%	100.0%
Total	Count	152	41	5	198
	% of Total	76.8%	20.7%	2.5%	100.0%

*Table 4. Anxiety symptoms categories (DASS-21) in female football players and non-players*

Group		Anxiety symptoms categories			
		Normal to mild	Moderate	Severe to extremely severe	Total
Football players	Count	44	17	17	78
	% of Football players	56.4%	21.8%	21.8%	100.0%
Non-players	Count	68	26	26	120
	% of Football players	56.7%	21.7%	21.7%	100.0%
Total	Count	112	43	43	198
	% of Total	56.6%	21.7%	21.7%	100.0%

## DISCUSSION

Prevalence of depression and anxiety differ due to many factors: demographic variables, physical health variables, mental health variables, and sociocultural elements. We used only female football players who live in Slovenia and their non-player peers from the same environment. The response rate for our research was 85.34%. Slovenian female football players are not professionals, which means their primary income is not from playing football. Consequently, they are exposed to more risk factors for developing depressive or anxiety symptoms because their risk factors are combined from foot-

ball and everyday life. It is widely known that minor everyday problems or long-term stress create higher stress levels than major life events (Beable, Fulcher, & Lee, 2017). These risk factors can be the same as for their peers with the addition of stress coming from the football setting. We measured point prevalence for different levels of depression and anxiety and compared the groups.

This study focused on self-reported measures of depression and anxiety symptoms and was conducted during the COVID-19 pandemic, which could have affected the results of the study. The pandemic caused psychological and social problems for a major proportion of the world's population. 53.8% of Chinese residents described the effect of the pandemic as moderate to serious to their mental health. Strict lockdowns caused people to move away from each other, both physically and emotionally. Lack of interpersonal contact can cause or worsen depression and anxiety and also the symptoms of both disorders. In addition, women are more prone to developing depression thus there are more chances they have been more affected during the pandemic than males. Also, the period was more stressful for high school and college students who had more distance learning and more uncertainty about going back to school or college, which may be one of the reasons for the increased incidence of depression and anxiety. Younger generations are more likely to use social networks, which can contain incorrect information, which can trigger feelings of anxiety, as well as tabloids (Ustun, 2021). In Slovenia, sports competitions were limited and even cancelled for a while, for a certain amount of time group training was not allowed either. These measures have had different effects on athletes. Results of the questionnaires can differ depending on the part of the season; this research was conducted during the winter break of the 2020/21 season. Knowing that the pandemic is a state of emergency, this has to be taken into account while interpreting the results as every individual responds and adapts in their way.

Our study has found significant differences between groups in depressive symptoms according to the results of BDI-II, showing that moderate to severe depression was more present in a group of football players who have experienced additional stress compared to their peers due to stopped competition and limited training processes. People who experience exceptional psychosocial stress are more prone to developing depression and as mentioned, a pandemic is a state of emergency which triggers different responses in every individual and depressive symptoms can be one of them. Ustun (2021) found that 65.8% of the research subjects felt deprived of social life and entertainment, which can cause symptoms of depression especially among extroverted people. Differences can also be seen due to the high sensitivity of the questionnaire. Beck Depression Inventory and Beck Anxiety Inventory do not have validated translations in the Slovenian language, meaning that their results cannot be applied to the whole population. Still, the questionnaires are well-accepted self-report measures for depression and anxiety, in both clinical and research settings.

Most research about depression and anxiety among athletes is done on individual sports athletes, retired athletes, and student-athletes, especially in the US and UK (Lebrun, MacNamara, Rodgers, & Collins, 2018; Newman, Howells, & Fletcher, 2016). This research has studied females from a team sport and their non-player peers, which

is a less researched area. Junge & Feddermann-Demont (2016) found that 2.3 female football players experience at least mild symptoms of depression, which represented 13% of their sample. Similar to our study, they found that depression was similarly present in the general female population. Anxiety symptoms were present among 1.4% of the players and half of these had accompanying symptoms of depression. According to this study, anxiety symptoms are less common among athletes than in the general population. Even though our research did not find statistically significant differences between most groups, depression and anxiety are conditions that are more common worldwide and the pandemic only increased the number of affected people. Due to this growth, it is important to talk about it to make the public aware and also scientifically support the findings in order to reduce the incidence of mental illness. In the future, we would like to see more research on this topic and thus alleviate the symptoms of individuals affected by these disorders.

## CONCLUSION

In conclusion, this study has offered an insight into the current situation among Slovenian female football players and their peers. Despite the size of the sample, we have not reached strong conclusions. Most commonly observed were symptoms of normal to mild levels of depression and anxiety among both groups from the questionnaires, which is not concerning. This study provided a start of research during the COVID-19 pandemic and the outcomes, as mentioned before, are not too concerning. This area of research needs more attention, especially after the pandemic which has influenced individuals differently, and after strong scientific conclusions have been reached, recommendations need to be made in order to lower the prevalence and some of the risk factors of depression and anxiety. A very important factor is the identification of individuals prone to psychological disorders and the preservation or improvement of their mental health.

## Limitations of the Study

A number of limitations can be noted. The standardized questionnaires that were used do not have a validated translation in the Slovenian language and the results cannot be generalized to the whole population. Participants completed the questionnaire online and this may have affected the results. The study could have been improved with a bigger sample size and with a randomized sample for both groups.

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