

The relationship between college athletes' health literacy and COVID-19 anxiety levels

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Abstract

Background and Study Aim Health literacy is the ability to access health information, understand, evaluate and apply health information. The health literacy of athletes may be determinant in the understanding of the COVID-19 pandemic process and in the level of the impact of this health-related anxiety factor. Therefore, the aim of this study is to examine whether there is a relationship between college athletes' COVID-19 anxiety levels and their health literacy levels during the COVID-19 pandemic.

Material and Methods College athletes between the ages of 18 and 32 participated in the study and the average age was 24.2. A total of 234 elite collage athletes participated in the study. 133 of the participants were males and 101 were females. COVID-19 Anxiety Scale was used to determine the COVID-19 anxiety states and Health Literacy index was used to the level of health literacy of the participants in the COVID-19 pandemic process. Pearson correlation analysis and stepwise regression analysis were performed for statistical analyses. Significance level in analysis has been accepted as $p < 0.05$.

Results: Our findings revealed that there were significant relationships between elite athletes' health literacy sub-dimension scores and COVID-anxiety level. In addition, it was determined that access to information and understanding information sub-dimensions from health literacy sub-dimensions predicted elite college athletes' the COVID-19 anxiety level at 21.2%. As a result, elite college athletes had low levels of anxiety against COVID-19, and this situation associated with their high level of health literacy.

Conclusions The increase of elite college athletes' the level of health literacy will decrease their anxiety levels. It will be beneficial to implement training programs that can increase their health literacy levels in order to reduce the impact of the unexpected health crisis due to COVID-19, especially the anxiety levels of college athletes.

Keywords: anxiety, college athletes, COVID-19, health, health literacy.

Introduction

With the increase in COVID-19 cases worldwide, countries have had to take many measures, social distance rules were established, people were put under quarantine. Many institutions and organizations (schools and workplaces etc.) were closed within the scope of these measures [1]. Due to the pandemic, people have experienced unprecedented stress, anxiety, depression, fear in their homes and continue to live [2]. In previous scientific studies, it has been revealed that staying indoors for a long time increases the stress level of people and causes psychological negativity [3]. Considering that people stay indoors for a long time during the epidemic process, it is normal for them to experience similar mental problems [4]. In particular, anxiety emerged as a common mental health problem during the COVID-19 outbreak [5]. Because uncertainty is an important factor in increasing people's anxiety level [6]. A study in the literature reveals that the COVID-19 outbreak alone increases the anxiety level in humans between 28% and 33% [7].

Undoubtedly, the pandemic has caused many negative effects on people, and it seems that this situation will likely continue for a while. This unusual situation has physical,

psychological and behavioral consequences on athletes [8]. The pandemic has also affected the lives, planning and routines of athletes. Athletes experience difficulties and problems such as career disruption, social isolation, an unusually uncertain process, staying away from teammates [9]. The situations such as uncertainty when the epidemic threat will end, increased information pollution about the epidemic and its effects, a mandatory reduction in social relations, the recommendation of home isolation unless it is necessary, and the introduction of different types of bans are likely to affect the mental health of athletes. As a matter of fact, there are studies showing that athletes are also negatively affected by this process [10, 11, 12]. Pillay et al [13], in their study with elite and semi-elite South African athletes, found that athletes worked on their own (61%), their sleep patterns changed significantly (79%), consumed excessive amounts of carbohydrates (76%), and many athletes experienced depressive feelings (52%) [13]. In this process, an important factor that will affect the anxiety levels of both elite and non-elite athletes is health literacy.

Health literacy is the ability to access health information, understand, evaluate and apply health information [14]. According to Nutbeam [15], health literacy consists of functional, interactive and critical domains. Functional

domain refers to the basic skills required to read and write health information. While the interactive domain represents advanced skills that enable individuals to extract health information and gain meaning, the critical domain refers to the empowerment of the individual and society by critically evaluating health information. Low level of health literacy is an important problem all over the world. In a study conducted in 2003, it is estimated that approximately 36% of the population in the United States has limited health literacy [16]. Although it varies from country to country in Europe, it has been found that the health literacy of 12% of the population is insufficient and 47% of the population is not at a sufficient level [17]. Similarly, there is a limited health literacy in Japan, behind Europe [18]. These studies actually show that health literacy is a current issue all over the world.

When we look specifically at athletes, it shows that health literacy is at a higher level among athletes. The fact that sports environments and clubs offer a health-promoting environment may have contributed to the emergence of such a difference [19, 20]. Although health literacy is higher in athletes, the long stay of athletes in home environments during the COVID-19 process increases their anxiety levels and the risk of getting sick [21]. In the statement of the International Society of Sports Psychology, it is recommended to increase the health literacy of elite athletes for mental health [22]. Castaldelli et al [23] stated that low health literacy in elite athletes causes them to experience more mental problems. It is stated in the studies conducted that the health literacy level of individuals may be an important factor in reducing anxiety [24, 25].

In the light of all these data, the COVID-19 pandemic process is one of the important factors affecting the anxiety levels of both elite athletes and non-elite athletes. On the other hand, the health literacy of athletes may be determinant in the understanding of the COVID-19 pandemic process and in the level of the impact of this health-related anxiety factor. In order for athletes to spend this period with less physical and psychological losses, anxiety and factors that affect anxiety should be examined. In this context, the aim of the study is to examine the relationship between the health literacy levels of elite athletes and their COVID-19 anxiety levels.

Materials and Methods

Participants

The distribution of elite college athletes participating in the study according to their sports branches was as follows. Those who do individual sports make up 29,9% of the participants, those who do team sports make up 35% of the participants, those who do net and racket sports make up 25,6% of the participants, those who do combat sports make up 9,4% of the participants. In total, of 234 athletes participated in the study. While 56.8% (n = 133) of the study were male athletes, 43.2% (n = 101) were female athletes. College athletes between the ages of 18 and 32 participated in the study and the average age was 24.2. While collecting the data, attention was paid to

the fact that the participants were still in the training and competition period, and the data were collected during the COVID-19 pandemic process.

Research Design

Relational screening model was used to examine the relationship between the health literacy levels of elite athletes and their COVID-19 anxiety levels. Relational screening research are studies that give an idea about the cause-effect probability among the objective variables and the relationship between the variables [26]. In this study, the relationship between the 4 sub-dimensions of the health literacy scale and Covid-19 anxiety was examined. This study was conducted according to the criteria set by the Declaration of Helsinki and ethical standards in sport and exercise science research [27].

Data collection tools

“Health Literacy Scale” and “Short Form of “Coronavirus Anxiety Scale” were used as data collection tools in the study.

Health literacy scale: Toçi, Bruzari and Sorenson converted the 47-item HLS-E.U (Health Literacy index) form, developed by Sørensen, into a 25-item form by working together later [28,29]. The scale, whose adaptation was made by Aras and Temel [30], which consists of 25 items and 4 sub-dimensions was used. Cronbach alpha value of “Access to Information” dimension was 0.807, cronbach alpha value of “Understanding Information” dimension was 0.734, cronbach alpha value of “Value Assessment / Evaluation” was 0.821, and Cronbach alpha value of “Implementation / Use” dimension was 0.816. It has a 5-point likert structure such as “5: I have no difficulty, 4: I have little difficulty, 3: I have some difficulty, 2: I have many difficulties, 1: I cannot do it / I have no talent / impossible”.

Short form of Coronavirus Anxiety Scale: In the study the scale form, which was developed by Lee [31] to describe possible cases of dysfunctional anxiety associated with the COVID-19 crisis and adapted to Turkish by Biçer et al [32], was used. It is a 5-point Likert-type scale as “never”, “rare, less than a day or two”, “a few days”, “more than 7 days” and “almost every day in the last two weeks”. Cronbach alpha value of the scale was determined to be 0.816.

Statistical analysis

After the data were loaded into the Jamovi 1.6.9 statistical program, analyzes were performed. The skewness and kurtosis values were examined for the normality analysis of the data. After it was determined that the data was distributed between + 1.5 and -1.5, which is the normal distribution condition [33], Pearson correlation analysis and stepwise regression analysis were performed. Before performing regression analysis, the suitability of the data for regression analysis was tested. It was investigated whether there was a multicollinearity problem. Multicollinearity occurs when independent variables have a high correlation such as .80-.90 (34). Correlation values among variables were found to be between 0.704 and - 0.238. In order to determine whether there is a multicollinearity problem, the VIF value

should also be less than 10 [33]. VIF values were found to vary between 1.0 and 1.40. In the light of these data, it was determined that the multiple regression analysis conditions were met for this study. Significance level in analysis has been accepted as p. 05.

Results

When Table 1 was examined, it was seen that the average and standard deviation values of the athletes participating in the study are 4.39 ± 0.567 in the dimension of access to information, 4.34 ± 0.504 in the dimension of understanding information, 4.32 ± 0.559 in the assessment / evaluation dimension, 4.32 ± 0.594 in the implementation/ use dimension, and 1.51 ± 0.639 in the coronavirus anxiety. While the skewness value varied between - 0.576 and 1.14, the kurtosis value was found to be between -0.0154 and 1.18.

Partial correlation values of the relationship between the health literacy sub-dimensions of athletes and coronavirus anxiety scores were calculated, and the findings are presented in Table 2. It is seen that there is a significant negative correlation between access to information and coronavirus anxiety ($r = -0.431, p < .001$),

between understanding information and coronavirus anxiety ($r = -0.367, p < .001$), between assessment / evaluation and coronavirus anxiety ($r = -0.238, p < .001$), and finally between implementation/ use and coronavirus anxiety ($r = -0.295, p < .001$).

As a result of the partial correlation analysis made in Table 2, a stepwise regression analysis was performed on coronavirus anxiety, which was determined to be related to health literacy, and the results obtained are presented in Table 3.

When Table 3 was examined, it was found that access to information, which is a health literacy sub-dimension, predicted coronavirus anxiety ($r^2 = 0.186 = f = 53.0, p < .0001$) at a rate of 18.6%. In the second step of stepwise regression, re-analysis was performed by including the dimension of understanding information. As a result of this analysis, it was concluded that the dimensions of access to information and understanding information predicted coronavirus anxiety ($r^2 = 0.212 = f = 31.1, p < .05$) at a rate of 21.2%. Assessment / evaluation and implementation dimensions were not included in the stepwise regression since they did not predict significantly.

Table 1. The Averages, Skewness and Kurtosis Values of the Health Literacy Sub-Dimensions and Coronavirus Anxiety Levels of the Athletes Participating in the Study

Dimensions	N	\bar{X}	S.D	Skewness	Kurtosis
Access to Information	234	4.39	0.567	-0.864	0.0741
Understanding Information	234	4.34	0.504	-1.05	1.18
Assessment/ Evaluation	234	4.32	0.559	-0.763	0.522
Implementation/ Use	234	4.32	0.594	-0.576	-0.587
Coronavirus Anxiety	234	1.51	0.639	1.14	-0.0154

Table 2. Analysis Results of Pearson Correlation Between Health Literacy Sub-dimensions and Coronavirus Anxiety

Dimensions	Access to Information	Understanding Information	Assessment/ Evaluation	Implementation/ Use	Coronavirus Anxiety
Access to Information	-				
Understanding Information	0.537***	-			
Assessment/ Evaluation	0.368***	0.684***	-		
Implementation/ Use	0.374***	0.582***	0.704***	-	
Coronavirus Anxiety	-0.431***	-0.367***	-0.238***	-0.295***	-

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. Regression Analysis Results Related to the Prediction of Health Literacy Sub-Dimensions for Coronavirus Anxiety Level

Predictor	Estimate	SE	T	P	Stand. Estimate	R	R ²	F
Intercept	3.650	0.2956	12.35	.001				
Access to Information	-0.486	0.0667	-7.28	.001	0.431	0.431	0.186	53.0
Intercept	4.190	0.3517	11.92	.001				
Access to Information	-0.371	0.0780	-0.524	.001	-0.329	0.460	0.212	31.1
Understanding Information	-0.241	0.0877	-0.414	0.006	-0.190			

Discussion

In this study, the relationship between the health literacy levels of elite athletes and their covid-19 anxiety levels was examined. According to the results of statistical analysis, it is seen that the health literacy average scale scores of the athletes participating in the study are quite high, while coronavirus anxiety is low. Contrary to our study, in studies in which the anxiety levels of elite athletes were measured in the literature, it was found that the anxiety levels of elite athletes were high [35, 36, 37]. Many elite athletes spend this period in the home environment uncertainly, they have to train on their own and without supervision, the dates of the competition are not clear, these situations make this process difficult for the athletes [35, 36]. Hull et al [37] state that the sudden cancellation and postponement of international competitions (Tokyo Olympics, etc.) for which elite athletes have been prepared for a long time, and the subsequent isolation of the athletes at home and staying away from the training process cause the anxiety levels of athletes to increase. In the study conducted by Fronso et al [40] with 1132 athletes, it was revealed that the COVID-19 epidemic increased the stress level of athletes significantly on condition that it was more in non-elite athletes. Contrary to these studies, studies that are in parallel with our study are also included in the literature [11, 41]. Clemente et al [11], as the reason for that the elite athletes were less affected in this process, stated that these athletes have psychological flexibility, they can receive institutional support and they can cope with problems more. At the same time, an important factor in the low anxiety level of athletes may be that they continue to do sports even at home. Because, in studies conducted, it has been determined that individuals who stay in the home environment and exercise during the isolation process significantly decrease their anxiety levels [42, 43].

Another finding of our study shows that there is a significant negative correlation between the health literacy of athletes and their coronavirus anxiety scores. It was concluded that access to information, which is the health literacy sub-dimension, predicts coronavirus anxiety by 18.6%, and when the dimension of understanding information is added to the analysis, it predicts the coronavirus anxiety level by 21.2%. When athletes' level of access to information is added to their level of

understanding of the information they have reached, it can be concluded that it positively predicts their anxiety levels. It can be stated that athletes' access to the right sources of information and their level of understanding these are important. Therefore, we can say that health literacy plays an important role in low anxiety levels of elite athletes. The low level of health literacy among elite athletes may lead to more mental problems [23]. In this respect, it can be stated how important the health literacy level is for athletes.

In the studies conducted, it was emphasized that athletes should be trained in health literacy in order to prevent the psychological problems caused by the COVID-19 epidemic and to improve themselves [13, 44-47]. Gorczyński et al [48] states that health literacy can play an important role in the development of the mental health of elite athletes and in eliminating the disorders if any. In order for the individual to make healthy decisions in sickness or in health, the individual needs health literacy skills [49]. Kickbusch et al [50] state that health literacy is more important than individuals' reading skills, and the ability to understand and process complex information is the main point. Experts provide recommendations for individuals with high levels of anxiety to increase their health literacy. Because it is known to play an important role in reducing anxiety [51, 52]. In another study, it was determined that health literacy specific to infectious diseases predicted 32.7% of anxiety levels in individuals [25]. Although we have been exposed to some inevitable adversities during the pandemic process, we can say that elite athletes are well equipped to manage this process well in our study. In fact, our findings indicate that their anxiety levels are low and they have the necessary health literacy skills.

Conclusion

It was observed that elite college athletes had low anxiety levels during the COVID-19 outbreak. It has been concluded that an important factor in low anxiety levels of elite college athletes is health literacy. There is a significant negative correlation between health literacy and anxiety, and health literacy (dimensions of access to information and understanding information) predicts coronavirus anxiety by approximately 21%. It may be interesting to compare the impact of the COVID-19

crisis on non-elite athletes as well as athletes in the same sports branch in future studies. Programs can be developed to increase health literacy among athletes. It will be beneficial to implement training programs that can increase their health literacy levels in order to reduce the impact of the unexpected health crisis due to COVID-19, especially the anxiety levels of athletes.

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Conflicts of Interest

The authors declare that they have no conflict of interest.

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