



## Original Article

## Depression, Anxiety, Stress, and their Associated Factors among Iranian Physical Therapists during COVID-19 Pandemic: An Online-based Cross-sectional Survey

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## ABSTRACT

**Background:** Most physiotherapy treatments require direct contact with patients, which could predispose physical therapists to the transmission of infection. The present study aimed to investigate the depression, anxiety, and stress of physical therapists during the coronavirus disease 2019 (COVID-19) pandemic.

**Methods:** A cross-sectional, web-based survey was applied during the pandemic. The survey was completed by 135 physical therapists working in Iran. The depression-anxiety and stress scale 21 (DASS-21) was used to evaluate their depression, anxiety, and stress statuses. A multiple regression analysis was used to identify the demographic characteristics factors related to depression, anxiety, and stress.

**Results:** The results showed that 43.7%, 43.8%, and 54.8% of physical therapists had severe and very severe levels of depression, anxiety, and stress, respectively. In addition, female physical therapists had higher levels of depression, anxiety, and stress. The level of anxiety was higher in physical therapists working in hospitals and those with more work experience.

**Conclusion:** Our findings indicated that COVID-19 resulted in high levels of depression, anxiety, and stress in Iranian physical therapists. Therefore, the mental health of physical therapists should be regularly monitored, and the proper support and training in coping strategies should be provided for them.

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## Introduction

The 2019 coronavirus (COVID-19), first reported in Wuhan, China, in December 2019, spread rapidly worldwide. In March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic [1]. In Iran, on February 19, 2020, two patients with positive test results for COVID-19 were observed in Qom. Then, the disease quickly spread to 31 provinces of the country

[2]. This critical, infectious public health event has placed healthcare workers under with great physical and psychological pressure [3]. The prevalence of infectious diseases such as COVID-19 could affect people's lives in many ways. One such aspect is mental health [1]. Since the diagnosis of COVID-19 disease, mental health has been considered a very important issue [4].

During the COVID-19 pandemic, healthcare workers, especially those on the front lines of treatment and who had direct contact with infected patients, regularly experienced high psychological stresses such as anxiety and depressive symptoms, emotional breakdown, helplessness, and sleep disturbances [5, 6]. These

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problems can be attributed to several factors, including high workload, long shift time, fear of becoming infected, and risk of death from infection [7]. Concern about spreading the virus to family, friends, and relatives also led to more isolation and psychological consequences [8, 9]. Overall, this may cause poor morale at work, absenteeism, apathy, and poor work performance, resulting in patient dissatisfaction [10, 11]. Physical therapists are among the healthcare workers who are at the front lines of treatment, and there seems to be a substantial increase in the levels of stress, anxiety, and depression in the context of the COVID-19 pandemic in this group [12]. Person-to-person transmission of the COVID-19 infection has been widely documented [13-15]. It occurs primarily through aerosol-generating procedures and direct contact with COVID-19 patients who need long-term rehabilitation [16, 17]. Thus, it can be assumed that physical therapists are at risk of being in contact with COVID-19 patients in a rehabilitation setting [8, 18]. Work-related musculoskeletal disorders and workplace stress caused by an excessive amount of work have been reported by many physical therapists, even in the usual rehabilitation setting. Considering the information given above, it seems that the development of mental health problems may be even higher during the COVID-19 pandemic [18]. In the study by Nautiyal et al., who examined stress levels in Indian physical therapists during the COVID-19 pandemic, Overall, 13% had severe stress, 68% had moderate stress, and 19% had low stress [19]. Duarte et al. reported high levels of stress among Brazilian physical therapists during the COVID-19 pandemic [8]. In Korea, Yang et al. reported that the prevalence of anxiety and depression symptoms in physical therapists during the COVID-19 pandemic was 47.6% and 44%, respectively [18]. The results of a study by Jacome et al. showed that more than 40% of Portuguese physical therapists experienced personal and work-related burnout, and 25% reported patient-related burnout [20]. Another study conducted on Egyptian healthcare workers, including physical therapists, reported a high prevalence of perceived stress, anxiety, and depression among healthcare workers during the COVID-19 pandemic [21]. To the best of our knowledge, no study has yet investigated mental health problems in Iranian physical therapists during the COVID-19 pandemic. Therefore, the purpose of this study was to determine the prevalence of depression, anxiety, and stress among Iranian physical therapists during the COVID-19 pandemic.

## Materials and Methods

### Study Design

This was a cross-sectional study with a web-based survey applied to physical therapists living in Iran. The web-based survey was implemented in the Google Form platform and was distributed among the physical therapist community. All participants gave their online informed consent to participate at the beginning of the survey. First, the participants were presented with an introduction to the study aim and the duration of the

survey. If they agreed to the study method, they were asked to click on the confirmation button to proceed to the survey. The study was approved by the Human Research Ethics Committee at the Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran (approval number IR.AJUMS.REC.1399.765).

### Participants (Procedures and Sample)

The sample size was estimated based on the study conducted by Park et al. [18], by considering the prevalence of 47.6% anxiety and 44% depression, with  $\alpha=0.05$ . Assuming a 10% dropout rate, 132 subjects were estimated as necessary to perform the study. Ultimately, 135 subjects completed the questionnaire. Physical therapists working in public or private centers during the COVID-19 pandemic were included in the study. Any participant with a history of heart/respiratory problems or systemic diseases, hospitalization due to mental disorders in the prior year, or taking anti-psychotic drugs was excluded from the study [18].

### Data Collection

The survey consisted of 2 parts: the first part collected information on age, sex, marital status, education level, number of working hours per week, work experience, history of heart/respiratory problems and systemic diseases, hospitalization due to mental disorders in the previous year, and antipsychotic drug use. The second part included the depression-anxiety and stress scale 21(DASS-21) for evaluating the prevalence of stress, anxiety, and depression among physical therapists. The DASS-21 consisted of 21 questions scored on a 3-point Likert scale, comprising seven questions related to anxiety, seven questions related to depression, and seven questions related to stress. Each question is scored from zero ("does not apply to me at all") to three ("absolutely applies to me"). Because this questionnaire is a short form of the original scale (42 questions), the final score of each subscale needed to be doubled. The anxiety subscale was scored as: 0-7, normal; 8-9, mild anxiety; 10-14, moderate anxiety; 15-19, severe anxiety; and >20, very severe anxiety. The depression subscale was scored as: 0-9, normal; 10-13, mild; 14-20, moderate; 21-27, severe; and >28, very severe. Finally, the stress subscale was scored as: 0-14, normal; 15-18, mild; 19-25, moderate; 26-33, severe; and >33, very severe. The validity and reliability of this questionnaire have been previously reported in Iran [22].

### Statistical Analysis

Statistical analyses were performed using IBM SPSS statistical software (Version 22.0, IBM Corp, Armonk, New York). For descriptive and qualitative variables, mean, standard deviation, and frequency percentage were reported. Multiple regression was performed for the relevant variables. The statistical significance level was considered at  $P<0.05$ .

## Results

A total of 135 physical therapists (mean age 35.3

(8.40) years, 72% females and 28% males) from all over the country participated in this study. The mean work experience of participants was 11.35 (7.96) years. Table 1 presents the participants' characteristics.

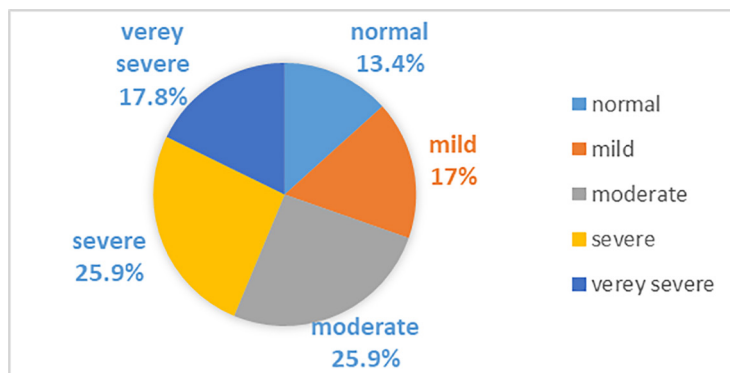
The grades of depression, anxiety, and stress are shown in Figures 1-3. As can be seen, 13.4% and 17% of participants showed normal and mild depression, respectively, while 51.8% showed moderate to severe depression and the remaining 17.8% had very severe depression. Figure 2 shows that 22.1% had no anxiety, 10.4% had low anxiety, and the remaining 67.5% of participants indicated moderate to very severe degrees of anxiety (23.7% moderate anxiety, 11.9% severe anxiety, and 31.9% very severe anxiety). About 12.6% of participants showed no degree of stress, and about 10.4% showed mild stress, while the remaining 77.2%

showed moderate to very severe stress (22.2% moderate stress, 34.1% severe stress, and 20.7% very severe stress) (Figure 3). There was a significant association between depression and the female sex ( $P=0.003$ ) (Table 2), as females reported higher levels of depression. Furthermore, there were significant relationships between anxiety and the female sex ( $P=0.006$ ), work experience ( $P=0.045$ ), and workplace ( $P=0.007$ ). Females were more anxious than males. Increased work experience was associated with increased anxiety. Moreover, physical therapists working in private practices had low levels of anxiety compared with those working in a hospital. The same was found for physical therapists working in both the hospital and the private clinic; they were less anxious than those working in the hospital only. There was a significant association between stress and the female sex ( $p=0.000$ ) (Table 2).

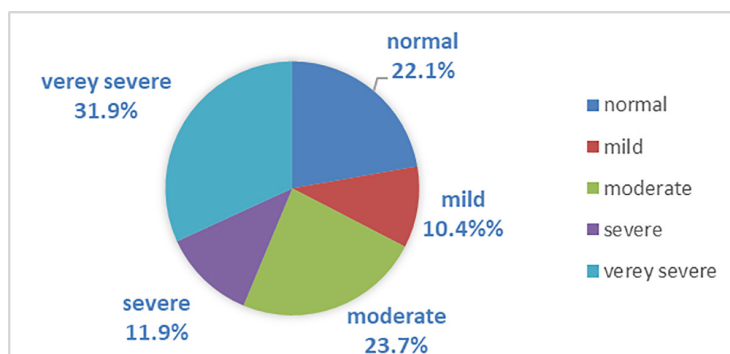
**Table 1:** Sociodemographic characteristics of participants (n=135)

Characteristic	Frequency	Percent
Sex		
Woman	97	71.9
Man	38	28.1
Marital status		
Married	84	62.2
Single	51	37.8
Educational level		
Bachelor's degree	60	44.5
Master's degree	62	45.9
PhD	13	9.6
Work time		
Less than 30 hours	46	34.1
30-60 hours	89	65.9
Workplace		
Hospital	42	31.3
Private clinic	52	38.5
Both	41	30.2

PhD: Doctor of Philosophy



**Figure 1:** Depressions grades among study participants



**Figure 2:** Anxiety grades among study participants

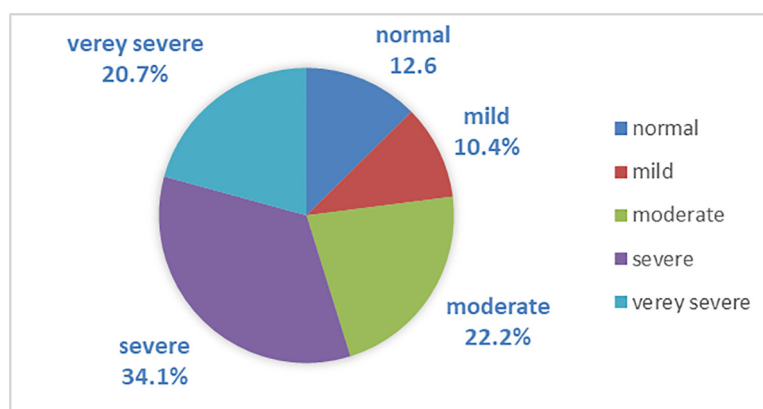


Figure 3: Stress grades among study participants

Table 2: Multiple regression for the variable of depression, anxiety, and stress

Variable	Depression		Anxiety		Stress	
	Beta (95% CI)	P	Beta (95% CI)	P	Beta (95% CI)	P
Age	0.107	0.729	-0.561	0.076	-0.215	0.487
Work time	0.983	0.571	1.376	0.434	1.364	0.432
Experience	-0.012	0.971	0.668	0.045	0.335	0.305
Sex						
Male	1	1	1	1	1	1
Female	-5.2	0.003	-4.914	0.006	-6.796	0.000
Marital status						
Single	1	1	1	1	1	1
Married	1.791	0.263	2.201	0.176	-0.283	0.859
Education						
Bachelor's degree	1	1	1	1	1	1
Master's degree	0.697	0.660	-0.871	0.588	0.511	0.747
PhD	-0.666	0.805	2.006	0.464	-0.131	0.961
Workplace						
Hospital	1	1	1	1	1	1
Clinic	-1.005	0.586	-5.120	0.007	-1.083	0.558
Hospital & Clinic	-0.412	0.828	-4.647	0.01	-2.789	0.144

Significant P value are shown in bold. PhD: Doctor of Philosophy

Females were more stressed than males. There was no significant association between depression, anxiety, stress, and other general characteristics of physical therapists (i.e., age, marital status, educational level, and work time).

Table 2 shows the association between depression, anxiety, and stress and the demographic characteristics of physical therapists.

## Discussion

The COVID-19 pandemic has triggered the onset or worsening of stress, anxiety, and depression symptoms among healthcare workers [23, 24]. Therefore, the current study evaluated depression, anxiety, and stress among physical therapists during this period. The results showed that 43.7%, 43.8%, and 54.8% of physical therapists had severe to very severe depression, anxiety, and stress, respectively. The findings of the present study are consistent with those of a study conducted among physical therapists in South Korea which found that 47.6% and 44% of physical therapists had anxiety and depression, respectively, during the COVID-19 pandemic [18]. Another study performed by Nautiyal et al. in India found that 68% of physical therapists had

a moderate stress level [19]. In a study conducted by Duarte et al. on Brazilian physical therapists, the mean of 10-item Perceived Stress Scale (PSS-10) scores was higher than other Brazilian samples before COVID-19, which can reflect an increased level of stress in this group [8]. Considering the transmission of coronavirus through contact or droplet transmission, COVID-19 can endanger the health of healthcare workers. Physiotherapy is one of the most common jobs in which direct contact with patients is common, especially when implementing therapeutic interventions. Such contact can predispose physical therapists to COVID-19 infection [12]. Therefore, physical therapists are seriously concerned about their well-being and the health of their family members. This can lead to psychological problems in them, including depression, anxiety, and stress [8].

Similar to previous studies, the current study found higher stress levels in the female sex. In the study by Duarte et al. on Brazilian physical therapists, the female sex was associated with higher stress level. Moreover, Gebaska et al. found that female physical therapists were characterized by a significantly higher level of stress [25]. In a study by Nautiyal et al. on Indian physical therapists, females perceived higher stress levels than males [19]. In a study conducted by Aiyer et al. on healthcare workers

and respiratory physical therapists in the United States, a significant sex influence was found; 69% of healthcare workers with a high level of stress were females as compared to 29% of males [26].

The present study found that anxiety and depression were higher in the female sex. These findings are also in agreement with the results reported by Wang et al. that showed that depression and anxiety scores were three times higher in females than males during the COVID-19 pandemic [27]. In Iran, a study conducted on health workers and the general population showed that females had significantly higher levels of anxiety and depression [28].

The present study found that among the general characteristics of physical therapists, anxiety was related only to work experience. Physical therapists with more work experience were more anxious. This result is in contrast with the study of Sharifi et al., They showed that with increasing work experience, anxiety and post-traumatic stress disorder were decreased [29]. Additionally, Nemati et al. showed that there was no correlation between stress and work experience [30].

The results of the current study demonstrated that physical therapists working in hospitals had a higher level of anxiety than others. This was in line with previous studies. Jacome et al. found that the scores of personal burnout and anxiety were higher in physical therapists working directly with COVID-19 patients [20]. Nautiyal et al. found that respiratory physical therapists working in hospitals had a higher level of perceived stress than clinical physical therapists [19]. The reason stress appeared higher among physical therapists working in hospitals may be caused by the prolonged exposure to the virus in the workplace as the pandemic persisted [18]. Hospital physical therapists may feel vulnerable to COVID-19 infection when performing respiratory rehabilitation programs, which involve repeated direct contact with patients [12].

Even though the results of this study are promising, several limitations need to be considered when interpreting the results. First, the design of this study was cross-sectional. Second, this study employed only the DASS questionnaire to examine the mental status of physical therapists (depression, anxiety, and stress). It is suggested that future studies use other tools (e.g., Perceived stress scale (PSS-10), Patient Health Questionnaire (PHQ-9)) for a more comprehensive mental status evaluation.

In conclusion, this study showed that COVID-19 resulted in high levels of depression, anxiety, and stress in Iranian physical therapists. Therefore, the mental health of physical therapists should be regularly monitored and the proper support and training in coping strategies should be provided for them.

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**Conflict of Interest:** None declared.

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