

## BRIEF COMMUNICATION

# ‘Anxiety is still ongoing!’ Evaluation of the effect of the COVID-19 pandemic on anxiety severity of physicians working in the internal medicine department after 1 year: a collaborative cross-sectional study

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**Key words**

anxiety, COVID-19, female, internal medicine, internist.

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Received 12 August 2021; accepted  
22 September 2021.

**Abstract**

The COVID-19 pandemic has increased anxiety in society and particularly in healthcare workers, as shown with a questionnaire in our centre at the beginning of the pandemic. In this collaborative study, we aimed to evaluate the effects of the pandemic on anxiety 1 year later by applying the same questionnaire to the physicians working in the same department. A total of 77 participants consented to the study. The median age was 28 (interquartile range = 4) years and 55.8% were male. As in the first survey, female gender, having family members over 65 years of age, and having family members with chronic diseases were significantly associated with high anxiety scores and levels. There were no statistically significant differences between the first and second survey participants in any of the anxiety scales, which means anxiety persists.

Since declared as a pandemic in March 2020, Coronavirus disease 2019 (COVID-19) is still ongoing with new mutations and causes millions of deaths all around the world despite the availability of vaccines.<sup>1</sup> From the beginning of the pandemic, it was seen that COVID-19 caused many psychological disorders, such as anxiety, both in society and especially in healthcare workers (HCW). In a recent systematic review and meta-analysis of the psychological burden of frontline HCW included 86 studies, reporting data from 75 991 participants, frontline staff showed a wide range of symptoms, such as concern about transmitting the virus to their family (60.39%), perceived stress (56.77%), concerns about own health (45.97%), sleeping difficulties (39.88%), burnout (31.81%), symptoms of depression (25.72%), symptoms of anxiety (25.36%), symptoms of post-traumatic stress disorder (24.51%), mental health issues (23.11%) and symptoms of somatisation (14.68%).<sup>2</sup>

One of the first studies to assess the psychological and occupational impact of the COVID-19 pandemic on

internal medicine department physicians by using an online survey questionnaire was conducted in our centre, a tertiary care university hospital, which at the beginning of the pandemic, revealed that female gender, having family members aged over 65 years and with chronic diseases was significantly associated with high anxiety scores and levels.<sup>3</sup>

In this collaborative study, we aimed to evaluate the effects of the pandemic on anxiety 1 year later by applying the same questionnaire to the physicians working in the same department. Although the department and working areas are the same, the study population was not exactly the same as the previous year due to residents who finished their residency and left the department, academic staff who retired or changed institutions, or newcomers (academic staff and residents) to the department. The study protocol was approved by the Institutional Ethics Board (Approval number: GO20/353, 31 March 2020).

We used the same questionnaire entirely that was used in the previous year (the first survey)<sup>3</sup> for a straight comparison. When assessing the results, we separated the population into two major groups: ‘First survey

Funding: None.

Conflict of interest: None.

participants' and 'Second survey participants'. We also divided the 'Second survey participants' into two groups as 'Participated in the first survey' and 'Did not participate in the first survey'. The degree of symptoms of anxiety was assessed using the 7-item Generalised Anxiety Disorder Scale (GAD-7) and Beck Anxiety Inventory (BAI). All scales used have previously been adapted to Turkish and were tested for their validity and reliability.<sup>4,5,6</sup> We added only one unique question about having COVID-19 (Have you had COVID-19?) to assess the association between having COVID-19 and anxiety.

A total of 77 participants consented to participate in the study and completed the questionnaire. The median age was 28 (interquartile range (IQR) = 4) years and 55.8% were male. The demographic characteristics of

two groups (First and Second survey participants) were evaluated statistically and there were no differences (Table 1).

Supporting Information Table S1 lists the answers of the participants to questions with regards to the knowledge and fear towards COVID-19; 49 (63.6%) of second survey participants answered that they have enough knowledge about COVID-19, 54 (70.1%) of all stated that they can manage the follow-up and treatment process correctly when they encounter COVID-19 patients, while 31 (40.2%) participants answered that they are anxious about the possibility of following COVID-19 patients.

The ratios of answers to all three questions between first and second survey participants were statistically

**Table 1** Demographic characteristics of the first and second survey participants,  $n = 77$

Characteristics	First survey participants ( $n = 113$ )	Second survey participants ( $n = 77$ )			<i>P</i>
		Participated in the first survey ( $n = 56$ )	Did not participate in the first survey ( $n = 21$ )	Total ( $n = 77$ )	
Age, median (IQR) (years)	29 (5)	28 (3)	30 (9)	28 (4)	0.910
Sex, $n$ (%)					
Male	60 (53.1)	29 (51.8)	14 (66.7)	43 (55.8)	0.709
Female	53 (46.9)	27 (48.2)	7 (33.3)	34 (44.2)	
Marriage status, $n$ (%)					
Married	56 (49.6)	24 (42.9)	8 (38.1)	32 (41.6)	0.369
Unmarried	56 (49.6)	32 (57.1)	11 (52.4)	43 (55.8)	
Divorced	1 (0.6)	0	2 (9.5)	2 (2.6)	
Children, $n$ (%)					
No children	86 (76.1)	47 (83.9)	12 (57.1)	59 (76.6)	0.934
Have children	27 (33.9)	9 (16.1)	9 (42.9)	18 (23.4)	
1	9 (8)	7 (12.5)	7 (33.3)	14 (18.2)	0.142
2	15 (13.3)	1 (1.8)	2 (9.5)	3 (3.9)	
3	2 (1.8)	1	0	1 (1.8)	
4	1 (0.9)	0	0	0	
Chronic disease, $n$ (%)					
No	90 (79.6)	50 (89.3)	19 (90.5)	69 (89.6)	0.068
Yes	23 (20.4)	6 (10.7)	2 (9.5)	8 (10.4)	
Chronic disease in the family members, $n$ (%)					
No	49 (43.4)	24 (42.9)	3 (14.3)	27 (35.1)	0.252
Yes	64 (56.6)	32 (57.1)	18 (85.7)	50 (64.9)	
Family member aged $\geq 65$ years, $n$ (%)					
No	72 (63.7)	37 (66.1)	13 (61.9)	50 (64.9)	0.863
Yes	41 (36.3)	19 (33.9)	8 (38.1)	27 (35.1)	
Working area					
Frontline, $n$ (%)	72 (63.1)	52 (91.1)	19 (90.5)	70 (90.9)	<0.001
Intensive care unit, $n$	25	29	13	42	
COVID-19 wards, $n$	35	22	6	28	
COVID-19 outpatient clinic, $n$	12	0	0	0	
Non-COVID-19 areas, $n$ (%)	41 (36.9)	5 (8.9)	2 (9.5)	7 (9.1)	
Had COVID-19?, $n$ (%)					
No	—	40 (71.4)	13 (61.9)	53 (68.8)	0.442
Yes	—	16 (28.6)	8 (38.1)	24 (31.2)	

IQR, interquartile range.



BAI level, n	Working position			Working area				Working area frontline (COVID-19 care areas)†				Have you had COVID-19?		Total (n = 77), n (%)
	Resident	Academic staff	P-value	Frontline	Non-COVID-19	P-value	ICU	Ward	Outpatient clinic	P-value	No	Yes	P-value	
Minimal	33	12	0.097	40	5	0.561	22	18	0	0.211	30	15	0.122	45 (58.4)
Mild	13	5		17	1		9	8	0		12	6		18 (23.4)
Moderate	2	5		6	1		5	1	0		4	3		7 (9.1)
Severe	6	1		7	0		6	1	0		7	0		7 (9.1)
BAI score, median (IQR)	5.0 (10.0)	8.0 (14.0)	0.471	6 (0-63)	2 (0-16)	0.223	7.5 (17.25)	5.5 (7.5)	0 (0)	0.403	5 (10.5)	6.5 (9.5)	0.921	6 (10.0)

†Analysis of the data of 70 participants who work in these areas. Bold values are statistically significant ( $P < 0.05$ ).

BAI, Beck Anxiety Inventory; GAD-7, 7-item Generalised Anxiety Disorder Scale; ICU, intensive care unit; IQR, interquartile range.

different (Table S1). When 39.8% of first survey participants answered that they have enough knowledge about COVID-19, the ratio was 63.6% in the second survey participants ( $P = 0.002$ ). The ratio of the participants stated that they can manage the follow-up and treatment process correctly when they encounter COVID-19 patients in the first and second survey participants were 34.5% and 70.1 respectively ( $P < 0.001$ ). Although 49.6% of first survey participants answered that they are anxious about the possibility of following COVID-19 patients, the ratio of second survey participants was 31 (40.2%) ( $P = 0.001$ ).

The median (IQR) scores on the GAD-7 and the BAI for all internists were 3 (6.5) and 6 (10.0) respectively. For the GAD-7 anxiety subscales, more than half (49; 63.6%) of the internists had scores within the minimal level, while 16 (20.8%) internists were considered to suffer from mild anxiety (score: 5–9); 5 (6.5%) were considered to suffer from moderate anxiety (score: 10–14); and 7 (9.1%) were considered to suffer from severe anxiety (score: 15–21). Based on the Turkish version of GAD-7 scale most (58; 75.3%) of the internists have normal scores, under the ‘GAD-7 cut-off score 8’, and did not require further assessment, whereas 19 (24.7%) internists scored  $\geq 8$ , indicating the need for further assessment and/or referral to a mental health professional. BAI levels were also compatible with GAD-7 levels and the majority of internists were not found to have high anxiety scores (Table 2).

Female gender was significantly associated with high scores in three scales compared with male gender (GAD-7 cut-off 8,  $P = 0.049$ ; GAD-7 score,  $P = 0.046$ ; BAI score,  $P = 0.010$ ). Additionally, having family members over 65 years of age (GAD-7 score,  $P = 0.016$ ; BAI level,  $P = 0.06$ ; BAI score,  $P = 0.022$ ) and having family members with chronic diseases (GAD-7 score,  $P = 0.007$ ; BAI level;  $P = 0.006$ ; BAI score,  $P = 0.001$ ) were significantly associated with high anxiety scores and levels. Other sociodemographic variables, including age, marriage status, children status and having chronic disease, were not associated with anxiety scores and levels (Table 2).

There was statistically significant difference only in GAD-7 cut-off 8 scale ( $P = 0.004$ ) between residents and academic staff. Working area was an insignificant factor in terms of anxiety, and working in either a COVID-19 intensive care unit or COVID-19 ward or COVID-19 outpatient clinic was not associated with higher anxiety scores and levels (Table 2). Having COVID-19 was also not associated with higher or lower anxiety scores and levels (Table 2).

There was no statistically significant difference between first and second survey participants in any of the five scales (GAD-7 level,  $P = 0.247$ ; GAD-7 cut-off 8,

$P = 0.682$ ; GAD-7 score,  $P < 0.276$ ; BAI level,  $P = 0.993$ ; BAI score,  $P = 0.399$ ) (Table S2). In a detailed analysis, there was also no statistically significant difference between the first survey and second survey in any of the five anxiety scales, in females, in participants who have family members aged over 65 years and those who have family members with chronic diseases.

Anxiety scores and associated factors of second survey participants who participated in the first survey ( $n = 56$ ) are given in Table S3.

## Discussion

This study is apt in terms of showing the permanent effects of the ongoing COVID-19 pandemic on anxiety and to the best of our knowledge is the first collaborative study in the literature in terms of the method. At the end of the first year, it was seen that the physicians generally felt that their knowledge about COVID-19 increased in general, they were more confident in managing the follow-up and treatment process when they encountered COVID-19 patients, and their concerns about the possibility of following up COVID-19 patients decreased. Female gender, having family members aged over 65 years and with chronic diseases were still significantly associated with high anxiety scores and levels in the second survey participants and further analysis revealed that these factors still significantly increased anxiety levels in the second survey participants who participated in the first survey. One of three physicians had COVID-19 in the past year and having COVID-19 was not associated with higher or lower anxiety scores and levels.

Thousands of studies have been published on the psychological effects of the COVID-19 pandemic. As of 10 August 2021, it is seen that there are 5619 publications in LitCovid, a curated literature hub for tracking up-to-date scientific information about COVID-19, when

searching only with the term ‘anxiety’.<sup>7</sup> A new term called ‘Coronaphobia’ has been coined to describe the fear stemming from the COVID-19 pandemic<sup>8</sup> and Lee developed a brief mental health screener to identify probable cases of dysfunctional anxiety associated with the COVID-19 crisis named the Coronavirus Anxiety Scale.<sup>9</sup> It has been shown in many studies that coronaphobia is seen in almost all segments of society and especially in HCW, regardless of age, gender, race, profession, workplace environment, socio-cultural, intellectual and economic parameters.<sup>2,10–13</sup>

Demonstrating that having COVID-19 does not change anxiety levels may be meaningful in terms of drawing attention to the long-term persistence of this problem. Despite providing vaccines, the psychological toll of this health crisis seems likely to continue given the number of deaths, mass unemployment and quarantine measures. From this point of view, repeating the same test in the same population will guide us in terms of the course of anxiety levels. In the second survey the overall median (IQR) scores on the GAD-7 and the BAI for all internists were 3 (6.5) and 6 (10.0), respectively, also reflecting minimal anxiety levels and there was no statistically significant difference in the levels of the first survey ( $P = 0.247$ ), which means anxiety persists.

The fact that all participants were internists working in a university hospital and the study was conducted through self-report are limitations that prevent the results from generalising to all healthcare professionals and the community.

While publications on COVID-19 anxiety continue to increase daily, the scarcity of attempts to solve it draws attention. With the present study, we have shown that this mental health disorder, which started with the pandemic, has now become chronic. This study could raise awareness about the necessity of finding a solution to this chronic problem.

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## Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web-site:

**Table S1.** Knowledge and fear assessment of the participants with regards to COVID-19.

**Table S2.** Comparison of anxiety scores between first survey participants ( $n = 113$ ) and the second survey participants ( $n = 77$ ).

**Table S3.** (a,b) Anxiety scores and associated factors of second survey participants who participated in the first survey ( $n = 56$ ).