Comparison of anxiety in Covid-19 inpatients vs healthcare workers in the same ward and at the same time

Aynı tarihte aynı serviste bulunan Covid-19 yatan hastaları ile sağlık çalışanlarında anksiyetenin karşılaştırılması

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ABSTRACT

Aim: Demonstrating which population has the highest anxiety symptoms and its predictors is important for the coordination of psychiatric care and services. Hospitalized patients with Covid-19 and healthcare professionals caring for them are the two groups with the highest risk of psychiatric disorders during the SARS-CoV-2 pandemic. We aimed to assess the state and trait anxiety levels of Covid-19 patients and healthcare professionals simultaneously in the same Covid-19 ward of a tertiary center hospital.

Materials and Methods: Given the nature of this observational single-center study, purposive sampling of all patients and staff in the Covid-19 ward between 5-10 April 2020 was planned. The data was collected via an online survey using "Sociodemographic Form" and "State-Trait Anxiety Inventory (STAI)".

Results: The state anxiety levels of hospitalized patients with Covid-19 were significantly higher than healthcare workers in t-test ($p = .012$) however this was resolved in regression analysis ($\beta = .029$, $t = .19$, $p = .85$). Not being in a marital bond ($p = .035$) and having a lifetime psychiatric disorder ($p = .002$) were predictors of state anxiety; older age ($p = .006$), being female ($p = .007$) and having a lifetime psychiatric disorder ($p = .002$) were associated with trait anxiety scores in patients and healthcare workers in the Covid-19 ward.

Conclusion: Having a lifetime psychiatric disorder was the common item for both state and trait anxiety of patients, doctors, and nurses in the Covid ward. Psychiatrists should be accessible in the Covid-19 ward primarily for individuals whom they evaluated or treated before the pandemic.

Keywords: Coronavirus, crisis intervention, mental health, lifetime psychiatric disorder, consultation and liaison.

ÖZ

Amaç: *Hangi popülasyonun en yüksek anksiyete belirtilerine sahip olduğunu ve bunun yordayıcılarını göstermek, psikiyatrik bakım ve hizmetlerin koordinasyonu için önemlidir. SARS-CoV-2 pandemisi sırasında hastanede yatan Covid-19 hastaları ve onlara bakan sağlık çalışanları, psikiyatrik rahatsızlık riski en yüksek olan iki gruptur. Çalışmamızda üçüncü basamak bir hastanede tedavi gören Covid-19 hastaları ve onlarla ilgilenen sağlık çalışanlarının durumluk ve sürekli kaygı düzeylerini aynı zaman diliminde değerlendirmeyi amaçladık.*

Gereç ve Yöntem: *Bu gözlemsel tek merkezli çalışmanın doğası gereği, 5-10 Nisan 2020 tarihleri arasında Covid-19 servisinde bulunan tüm hasta ve personelden amaçlı örnekleme planlanmıştır. Veriler "Sosyodemografik Form" ve "Durumluk-Sürekli Kaygı Envanteri (STAI)" ni içeren çevrimiçi bir anket aracılığıyla toplanmıştır.*

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Bulgular: *Hastanede yatan Covid-19 hastalarının durumluk kaygı düzeyleri t-testinde sağlık çalışanlarına göre anlamlı derecede yüksekti (p = .012) ancak regresyon analizinde bu anlamlılık kayboldu (β = .029, t = .19, p = .85). Covid-19 servisinde yatan hastalarda ve sağlık çalışanlarında yaşam boyu herhangi bir psikiyatrik bozukluğa sahip olmak (p = .002) ve evlilik bağı içinde olmamak (p = .035) durumluk kaygının yordayıcılarıydı; ileri yaşta (p = .006), kadın olmak (p = .007) ve yaşam boyu psikiyatrik bozukluğa sahip olmak (p = .002) sürekli kaygı puanları ile ilişkiliydi.*

Sonuç: *Yaşam boyu psikiyatrik bozukluğa sahip olmak, Covid servisinde yatan hastalar ile onlara bakım veren doktor ve hemşirelerin hem durumluk hem de sürekli kaygılarının ortak belirleyicisiydi. Psikiyatristler öncelikle pandemi öncesi muayene veya tedavi ettikleri kişiler için Covid-19 servisinden ulaşılabilir olmalıdır.*

Anahtar Sözcükler: *Koronavirüs, krize müdahale, akıl sağlığı, yaşam boyu psikiyatrik bozukluk, konsultasyon ve liyazon.*

INTRODUCTION

Anxiety is a normal reaction to uncertainty and things that may harm us. State anxiety occurs upon a physical danger or psychological stress and is usually temporary, though trait anxiety is a proneness to anxiety for no apparent reason or disproportionate anxiety for that reason and is more long-standing (1). While anxiety is a normal and expected reaction to the pandemic, too much anxiety can cause harm (2). Feeling stressed and fearful every day takes a toll on mental health and well-being very quickly (3).

The new Coronavirus, SARS-CoV-2 was first identified in Wuhan, China, and has spread rapidly across the World since December 2019 (4). The disease caused by infection of this virus was named Covid-19 (5) and with the increased number of cases, deaths and affected countries The World Health Organization (WHO) announced it as a 'pandemic' on 11th March 2020 (6). On the same day, the first case in Turkey has been officially reported by The Minister of Health (7).

Hospitalized patients with this virus and healthcare professionals caring for them are the two groups worrying about Covid-19 all the time and that are in close contact during the SARS-CoV-2 pandemic.

Anxiety in infected patients

The reasons for anxiety in hospitalized patients with Covid-19 are fear of death, being separated from loved ones, fear of dying lonely, financial losses, and facing stigmatization (8). Loneliness, denial, anxiety, depression, and hopelessness reduce compliance to treatment and may lead to anger, frustration, increased length of hospital stay, and suicidal ideas in affected people (9,10). One month after hospital discharge 28% of patients who survived Covid-19 self-rated above the threshold for post traumatic stress syndrome (PTSD), 31% for depression, 42% for anxiety, 20% for obsessive-compulsive symptoms, and 40% for insomnia (11).

Anxiety in healthcare workers

Health professionals are subject to the same social changes and try to cope with the same emotions as the public during the pandemic, besides they have to be exposed to infected people and treat them. The concerns of healthcare workers include fear of catching the virus, uncertainty about the outcomes of infection, transmitting the disease to their loved ones, and losing their families. This pandemic is not a one-day issue, considering the unpredicted duration of the epidemic and the upsurge in critically ill patients healthcare professionals have to carry on for a long time (12). Rising case and death counts, isolation from family and other support networks to avoid infecting them, stigmatization, extended work hours, using disturbing personal protective equipment (PPE), and witnessing the death of their colleagues are among the causes of emotional exhaustion in healthcare workers (8). Traumatic events, guilt, anger, anxiety, fear, shame, and depression have been shown to bring resignation and poor job performance in healthcare workers during the SARS epidemic (13, 14).

Early psychiatric intervention in hospitals

In particular, it may not be possible to catch up with everyone at the same time for crisis intervention and psychological support activities, thus it could be necessary to apply triage in order to identify some more vulnerable segments and direct limited resources earlier. While Covid-19

patients were worried about having a disease that is seen for the first time in the World and what would this virus do to their bodies; healthcare professionals had to continue working with the fear of catching this virus, sometimes even while waiting for their own PCR result. Despite there being so many people waiting for psychiatric help, the question of whom should be paid attention to first and which group's anxiety level is more severe was not exactly known and this study was designed to answer this.

The most important target group of psychological interventions in this crisis is hospitalized patients with confirmed infection or serious physical conditions and health professionals fighting at the front line (15). The psychiatrist who is called for Covid-19 consultation sometimes has to evaluate the mental status of both the patient and the doctor or nurse requesting the consultation. Although some comparisons were made separately (31), as far as we know, there is no study evaluating the anxiety levels of patients with Covid-19 and healthcare workers while interacting in the same environment. We aimed to assess the state and trait anxiety levels of these two high-risk groups in the early period of the pandemic and determine the factors affecting them in the same Covid-19 ward at the same time. Uniformity of time period ensured two groups heard the same news, and case numbers and have been going through the same lockdown process and other changes. Hypothetically, finding a significant difference between the anxiety levels of two groups under the uniformity of place would disclose whether the anxiety is transmitted from healthcare workers to patients or vice versa. We hope that the results of this study will be useful for identifying sufferers of severe anxiety and planning mental health management to alleviate anxiety in hospitals for the next days of the pandemic and the next pandemics.

MATERIALS and METHODS

This quantitative cross-sectional study was approved by the local ethics committee and complies with the principles laid down in the Declaration of Helsinki.

Sample size

A power analysis using the G power computer program indicated that a total sample of 52 people would be needed to detect large effects (d=.8) with 80% power using a t-test between means with alpha at .05 two-tailed (17).

Participants

Based on hospital records those with organic mental disorders, dementia, psychosis, a visual disability, and severely ill patients in the intensive care unit (ICU) were excluded from the study.

Patients

Patients over the age of 18, who were diagnosed with COVID-19 between 05.04.2020 and 10.04.2020 managed according to the National Health Commission Guidelines and hospitalized in the Covid-19 ward of a tertiary hospital were included in the study.

Healthcare workers

Frontline doctors and nurses providing care for patients with confirmed Covid-19 infection in the same hospital ward between 5th and 10th April 2020.

Setting and design

Given the nature of this observational single-center study, purposive sampling of all patients and the doctors and nurses who cared for them on the same floors between 5th and 10th April 2020 was planned. We used an online survey to minimize face-to-face interactions, eliminate contamination of paper pages and facilitate participation during this emergency period. At the beginning of the survey, information about the study was provided and voluntary consent was asked with a yes-no question. Only those confirming their willingness to participate in the study were able to fill out the survey. The participants could abandon the questionnaire at any time without any justification.

In our 5-day study period, the number of Covid-19 cases in Turkey increased from 27.069 to 47.029 and the number of deaths due to the outbreak reached from 574 to 1.006 (7). The study locality Istanbul is the most populated and cosmopolitan city in Turkey.

Data collection tools

The sociodemographic data form together with the State and Trait Anxiety Scale (STAI) was transformed into a Google Document and delivered to both healthcare workers and patients via a Whatsapp link.

Sociodemographic and descriptive data form

The sociodemographic data form was prepared for patients and healthcare professionals by the investigators to determine age, gender, marital status, number of children, composition of the household, smoking status, alcohol consumption, past or present medical conditions, psychiatric disorders and number of days in Covid-19 ward so far.

State-Trait Anxiety Scale (STAI-S and STAI-T)

State-Trait Anxiety Inventory (STAI) is a self-report, Likert-type scale inspired by the two-factor anxiety theory and assesses state (STAI-S) and trait (STAI-T) anxiety levels separately (1). Each sub-scale consists of twenty items and each item is evaluated in four degrees, ranging from "I disagree at all" to "I fully agree". The validity and reliability study of the Turkish version was performed by Öner and LeCompte (18). For each scale, the total score ranges from 20 to 80. Higher scores indicate higher levels of anxiety.

Statistical Analysis

The data were analyzed with IBM Statistical Package for the Social Sciences for Windows version 20.0 (SPSS Inc., Chicago, Illinois, USA) program. Categorical variables were described as numbers and percentages and compared with the Chi-square test. Continuous data were presented as mean ± standard deviation (M ± SD) or Mean Rank (MR). The normal distribution assumption was checked with Kolmogorov Smirnov and Shapiro Wilks tests. For analysis of STAI scores according to sociodemographic variables between two groups, independent-sample t-test was used for parametric variables, Mann-Whitney U test was used for nonparametric variables. For the comparison of three or more groups, One-way ANOVA or the Kruskal-Wallis test was used for parametric and non-parametric data, respectively. After a significant ANOVA test, every two groups were compared with a posthoc Tukey test. To evaluate the contribution of statistically significant variables in univariate analyses on STAI-S and STAI-T scores, multiple linear regression analyses were performed. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Participant characteristics

A total of 103 participants responded to the study questionnaire. Of 93 patients hospitalized in the provided time period patients with organic mental disorders (2), dementia (7), psychosis (1), those with a visual disability (1), and severely ill patients in the intensive care unit (ICU) (10) were excluded based on information obtained from hospital records. From 72 surveys sent to the telephones of patients, 63 returned. From the total of 45 staff (three-shift groups) assigned to that ward, 2 were infected (1 doctor and 1 nurse) and were excluded from the study forwhy they had both the patient and healthcare worker roles. 40 healthcare workers replied to the survey link.

The sociodemographic characteristics of the patients and healthcare professionals and the comparisons of these two groups are shown in (Table-1).

47.6% of patients were housewives, 27% were employed, 22.2% were retired and 3.2% were unemployed. 20 patients (31.7%) had family members with Covid-19, and the rest 43 (68.3%) did not. Six patients (9.5%) were couples and 57 (90.5%) were single in their hospital room. Twenty-three patients had previous psychiatric disorders. Among these patients, 10 had a major depressive disorder (MDD), 4 had a panic disorder (PD), 4 had a generalized anxiety disorder (GAD), one had a functional neurologic disorder, one had a specific phobia, two had fibromyalgia, one had persistent complex bereavement disorder (PCBD) based on information obtained from hospital records. 15 patients were using psychiatric medication (10 SSRIs, 2 SNRIs, 2 anxiolytics 1 hypnotic). Among healthcare workers, 8 had lifetime psychiatric disorders (4 with MDD, 2 with PD, and 2 with GAD).

The mean state anxiety score of hospitalized patients with Covid-19 was higher than that of healthcare workers (p = .012) in the same ward, and there was no significant difference in terms of trait anxiety scores (p = .51).

State and trait anxiety scale scores according to sociodemographic characteristics

STAI-S and STAI-T scores according to sociodemographic characteristics of patients with Covid-19 are shown in (Table-2).

Patients with a lifetime psychiatric disorder had higher mean STAI-S and STAI-T scores than patients without a psychiatric disorder. Females had a higher mean STAI-T score than males.

STAI-S and STAI-T scores according to sociodemographic characteristics of healthcare workers are shown in (Table-3).

Table-1. Demographic characteristics and differences between patients with Covid-19 and healthcare workers.

	Hospitalized patients with Covid-19 (n=63)	Healthcare workers* (n=40)	p
Gender			
Female	38 (60.3%)	33 (82.5%)	0.01
Male	25 (39.7%)	7 (17.5%)	
Mean age±SD	52.4 ± 15.8	27.2 ± 6.2	0.000
Marital status			
Married	48 (76.2%)	12 (30%)	0.000
Single	5 (7.9%)	28 (70%)	
Divorced	5 (7.9%)		
Widowed	5 (7.9%)		
Number of children	2.1 ± 1.3	1.3 ± 0.8	0.000
Household			
Family	58 (92.1%)	32 (80%)	0.09
Alone	5 (7.9%)	6 (15%)	
Dormitory		2 (5%)	
Cigarette			
Yes	9 (14.3%)	11 (27.5%)	0.09
No	54 (85.7%)	29 (72.5%)	
Alcohol			
Yes	2 (3.2%)	6 (15%)	0.02
No	61 (96.8%)	34 (85%)	
Medical comorbidity			
Yes	25 (35.7%)	6 (17.5%)	0.008
No	38 (60.3%)	34 (82.5%)	
Psychiatric comorbidity			
Yes	24 (38.1%)	8 (20%)	0.05
No	39 (61.9%)	32 (80%)	
Number of days in Covid ward	7.3 ± 4.2	21.7 ± 10.1	0.000
Mean STAI-S score	52.3 ± 15.8	45.4 ± 9.7	0.012
Mean STAI-T score	43.0 ± 12.7	40.8 ± 9.0	0.51

*Healthcare workers included medical doctors and nurses. SD: Standart Deviation, STAI-S: State-Trait Anxiety Scale-State score, STAI-T: State-Trait Anxiety Scale-Trait score.

Table-2. STAI-S and STAI-T scores according to sociodemographic characteristics of patients with Covid-19

Sociodemographic characteristics	N	STAI-S M ± SD/MR	Statistics	STAI-T M ± SD/MR	Statistics
Gender					
Female	38 (60.3%)	52.9±16.7	*t:* .367	46.3±13.2	*t:* 2.587
Male	25 (39.7%)	51.4±14.5	*p=* .71	38.1±10.4	***p=* .01**
Marital status					
Married	48 (76.2%)	30.2	χ^2 :1.97	30.4	χ^2 :1.96
Single	5 (7.9%)	36.4	*p=* .57	34.3	*p=* .58
Divorced	5 (7.9%)	39.4		35.0	
Widowed	5 (7.9%)	37.3		41.7	
Having children	56 (88.8%)	32.2	*Z:* - .274	32.0	*Z:* - .011
Not having children	7 (11.2%)	30.2	*p=* .78	31.9	*p=*.99
Household					
Family	58 (92.1%)	31.6	*Z:* - .509	32.1	*Z:* - .165
Alone	5 (7.9%)	36.0	*p=* .61	30.7	*p=*.86
Cigarette					
Yes	9 (14.3%)	34.0	*Z:* - .364	31.0	*Z:* - .177
No	54 (85.7%)	31.6	*p=* .71	32.1	*p=*.86
Alcohol					
Yes	2 (3.2%)	21.7	*Z:* - .804	18.2	*Z:* - 1.079
No	61 (96.8%)	32.3	*p=* .42	32.4	*p=* .28
Medical comorbidity					
Yes	25 (35.7%)	31.5	*Z:* - .155	36.8	*Z:* - 1.701
No	38 (60.3%)	32.2	*p=* .87	28.8	*p=* .08
Psychiatric comorbidity					
Yes	24 (38.1%)	58.5±14.0	*t:* 2.542	48.9±11.5	*t:* 3.021
No	39 (61.9%)	48.5±15.8	***p=* .01**	39.4±12.3	***p=* .004**

STAI-S: State Trait Anxiety Inventory-State anxiety; STAI-T: State Trait Anxiety Inventory-Trait anxiety; *M ± SD:* Mean ± Standard Deviation; *MR:* Mean Rank*;* independent samples t-test *(t);* Kruskal Wallis test*, Chi-square (χ 2)*; Mann-Whitney U test *(Z).*

Table-3. STAI-S and STAI-T scores according to sociodemographic characteristics of healthcare workers

Sociodemographic characteristics	N	STAI-S M ± SD/MR	Statistics	STAI-T M ± SD/MR	Statistics
Gender					
Female	33 (82.5%)	46.2±8.9	*t:* 1.199	42.5±8.9	*t:* 2.777
Male	7 (17.5%)	41.4±12.7	*p=* .23	32.8±4.5	***p=* .008**
Marital status					
Single	28 (70%)	47.6±9.7	*t:* -2.318	42.8±9.4	*t:* -2.284
Married	12 (30%)	40.2±7.5	***p=* .02**	36.0±6.0	***p=* .02**
Without children	32 (80%)	46.9±9.6	*t:* 2.090	42.3±9.0	*t:* 2.177
Having children	8 (20%)	39.2±7.4	***p=* .04**	34.8±6.6	***p=* .03**
Occupation					
Nurse	21 (52.5%)	23.6	*Z:* - 1.764	21.9	*Z:* - .814
Doctor	19 (47.5%)	17.0	*p=* .07	18.9	*p=* .42
Household					
Family	32 (80%)	44.5±10.1	*F:* .681	41.4±9.0	*F:* .323
Alone	6 (15%)	49.1±8.4	*p=* .51	38.3±10.6	*p=.66*
Dormitory/hotel	2 (5%)	48.5±3.5		39.0±5.6	
Cigarette					
Yes	11 (27.5%)	50.8±9.0	*t:* -2.291	40.0±10.6	*t:* .757
No	29 (72.5%)	43.3±9.2	***p=* .02**	41.1±8.5	*p=* .75
Alcohol					
Yes	6 (15%)	51.8±14.4	*t:* -1.813	39.6±16.0	*t:* .203
No	34 (85%)	44.2±8.4	*p=* .07	41.0±7.5	*p=* .84
Medical comorbidity					
Yes	6 (17.5%)	44.6±7.7	*t:* -.198	42.6±8.3	*t:* -.536
No	34 (82.5%)	45.5±10.0	*p=* .84	40.5±9.2	*p=* .59
Psychiatric comorbidity					
Yes	8 (20%)	52.3±10.5	*t:* 2.410	45.0±13.7	*t:* 1.036
No	32 (80%)	43.6±8.8	***p=* .02**	39.7±7.3	*p=* .33

STAI-S: State Trait Anxiety Inventory-State anxiety; STAI-T: State Trait Anxiety Inventory-Trait anxiety

M ± SD: Mean ± Standard Deviation; *MR:* Mean Rank*;* independent samples t-test *(t);* Mann-Whitney U test *(Z);* One way ANOVA *(F).*

Table-4. Multiple regression analysis of factors on STAI-S and STAI-T.

Dependent Variable: **STAI-S**	Assignment description	B	Std. Error	Beta	t	p
(Constant)		46.297	9.832		4.709	.000
Age		.157	.140	.177	1.125	.264
Gender	Female= 0, Male = 1	.588	2.923	.019	.201	.841
Marital status	Married =0, Single* = 1	3.709	1.738	.210	2.134	**.035**
Having a child	No = 0, Yes = 1	1.652	1.283	.141	1.287	.201
Lifetime psychiatric disorder	Yes= 0, No= 1	-9.169	2.902	-.302	-3.160	**.002**
Cigarette smoking	No = 0, Yes = 1	1.008	3.396	.028	.297	.767
Role	HCW = 0, Patient =1	.843	4.447	.029	.190	.850
Dependent Variable: **STAI-T**						
(Constant)		59.500	7.624		7.804	.000
Age		.303	.109	.420	2.793	**.006**
Gender	Female= 0, Male = 1	-6.195	2.266	-.251	-2.734	**.007**
Marital status	Married =0, Single* = 1	2.307	1.348	.161	1.711	.090
Having a child	No = 0, Yes = 1	.125	.995	.013	.126	.900
Lifetime psychiatric disorder	Yes= 0, No= 1	-7.147	2.250	-.289	-3.176	**.002**
Cigarette smoking	No = 0, Yes = 1	-4.281	2.633	.148	-1.626	.107
Role	HCW = 0, Patient =1	-5.431	3.448	-.232	-1.575	.119

STAI-S: State Trait Anxiety Inventory-State anxiety, STAI-T: State Trait Anxiety Inventory-Trait anxiety,
B: Unstandardized Beta coefficient, SE: Standard error, β: Standardized beta coefficient, HCW: healthcare worker. *Marital status single composed of never married, divorced and widowed participants.

Healthcare workers who are single, without children, smoking cigarettes, and had a lifetime psychiatric disorder had higher STAI-S scores. Healthcare workers single, female, and without children had higher STAI-T scores. Anxiety scores between doctors and nurses did not show a significant statistical difference.

Multiple regression analysis of factors on STAI-S and STAI-T

Factors with a p-value less than 0.05 in the univariate analyses for STAI-S and STAI-T scores have been added to regression analysis and results are shown in (Table-4). A lifetime psychiatric disorder was related to higher STAI-S and STAI-T scores.

Being single was predictor of higher STAI-S; being older and female was predictor of higher STAI-T scores. The role was not associated with STAI-S and STAI-T scores significantly.

DISCUSSION

Summary and interpretation of results

Our study found that having a lifetime psychiatric disorder was related to higher STAI-S and STAI-T scores both for Covid-19 patients and healthcare workers. In addition, people not engaged in a marital bond had higher state anxiety; older and female participants had higher trait anxiety. When compared with the t-test the state anxiety levels of hospitalized Covid-19 patients were higher than that of healthcare workers but this difference has resolved in the regression analysis.

The relation of a lifetime psychiatric disorder with anxiety may have arisen from the notion of vulnerability-stress models. Vulnerabilities like preexisting mental health problems increase the risk for psychopathological symptoms under stress. Depression and anxiety symptoms progress and symptom severity intensifies (19).

Our finding of having a lifetime psychiatric disorder associated with anxiety corroborates

with the results of some other studies. In the Netherlands, people who had depressive, anxiety or obsessive-compulsive disorder before the pandemic had higher perceived mental health impact of Covid-19, fear of the virus, and poorer ability to cope during the first few weeks after the national lockdown. And number and chronicity of disorders showed a positive graded dose-response relation with the burden on mental health (20).

In the review of the literature, anxiety level has been inversely associated with resilience in patients (21), doctors (22), and nurses (23). Individuals with high levels of mental resilience and active coping styles had lower levels of anxiety and depression nonetheless, especially females, the younger and less educated populations, and unmarried individuals had higher levels of anxiety and depression during the outbreak of COVID-19 in China (24). Moreover, a study in The United Arab Emirates showed that psychosocial variables like a previous history of a psychiatric disorder, younger age, being female, testing positive for Covid-19, higher Covid-19 related anxiety, and economic threats were associated with higher depression and anxiety (25).

In our study, being in a marital bond was protective against anxiety. Isolation may be a risk factor for excessive anxiety and being with family may be useful against it (9). Pyszczynski et al. reported that even if one supposes that the virus is a major threat to life consciously or thinks it is only a minor inconvenience, attitudes and behaviors related to the virus are determined by fear of death (26). Terror management theory postulates that awareness of the inevitability of death excites potential anxiety and people manage it by maintaining their cultural worldviews, self-esteem, and close relationships (27). From these anxiety-buffering systems patients hospitalized with Covid-19 were deprived of close relationships (28). Also, a study from China showed that COVID-19 patients had less social support than nurses working in Covid-19 centers (29).

Contrary to studies in the general population (24, 25), older age predicted higher trait anxiety levels in our hospital sample. Patients with Covid-19 were older and they may have been terrified due to being infected with a virus that no one knows the cure in the first month of the pandemic. Elderly patients are more susceptible to adverse

effects of social isolation, the huge media coverage of Covid-19 advising the elderly to take more precautions and pointing out higher mortality rates. This may have provoked a much higher risk of anxiety in the elderly with a lifetime psychiatric disorder (30, 31).

Females having higher anxiety levels is consistent with many studies of hospitalized patients, healthcare workers, and the general public in the literature (9, 14, 32-34,), this confirms the higher prevalence of anxiety disorders in females which is suspected to be about gender roles and societal norms.

In the case of healthcare workers, in addition to having a lifetime psychiatric disorder, being female, single, smoker, and without children were suspected to be related to state and trait anxiety levels. Doctors and nurses in the Covid ward who smoke had higher state anxiety scores. Smoking can be both reason and the result of anxiety. Healthcare workers with high state anxiety levels may be smoking as an unhealthy way to cope with stress. In addition, being single and without children may evoke existential issues and provoke death anxiety (30, 31).

Although statistically insignificant in the regression analysis the state anxiety levels of patients hospitalized due to Covid-19 were higher than that of healthcare workers The Covid-19 illness and anxiety disorders have crossing symptoms like dyspnea, palpitations, dry mouth, headache, myalgia, dizziness, tiredness, sweating, fever, and chills. Patients with anxiety may think they have more severe symptoms of Covid-19 and become more anxious. Also, the drugs for Covid-19 treatment may affect anxiety (11). In addition to the health threat, lack of knowledge and interpersonal unfamiliarity may be the other reasons for anxiety in patients with Covid-19 (28, 35). Many of the patients with Covid-19 have complex medical conditions and use many different medications that could play a role in the patient's current anxiety (30). A new longitudinal study followed up patients hospitalized with Covid-19 during the first wave of the pandemic in France and the risk of subsequent hospitalization for a psychiatric disorder was increased after 12 months of initial discharge. If the initial hospitalization was to ICU and the patient had a psychiatric history the risk was even higher (36).

Vahedian-Azimi et al. compared stress, anxiety, and depression levels between Covid-19

patients, medical staff, medical students and the Iranian population (16). They found anxiety of patients with Covid-19, and medical students higher than the medical staff and community population. A systematic review and metaanalysis amidst the Covid-19 pandemic comparing the prevalence of psychological morbidities among the general population, healthcare workers and Covid-19 patients found the pooled prevalence of anxiety disorder highest among Covid-19 patients (37%), then by the general population (26%) and healthcare workers (24%) (8).

Anxiety is associated with non-adherence to treatment, longer hospitalization, and pessimism over the illness in hospitalized patients with Covid-19 (37). Therefore, consulting psychiatrists must be sensitive to signs and predictors of anxiety (38). Education of nonpsychiatric physicians and allied health professionals about Covid-19 related psychiatric disorders can lead to heightened sensitivity by medical staff which results in earlier detection and more cost-effective management of patients with psychiatric problems. Besides healthcare workers can notice their own mental health problems and ask for help; just frontline healthcare providers for Covid-19 have heavy workloads (28).

As part of the multidisciplinary medical team, psychiatrists can hardly participate in ward rounds and team meetings in Covid-19 isolation wards not to transmit infection and not to spend PPE on every patient. Therefore, instead of face-to-face interaction with patients, we may use videoconference and teleconference methods for patients having digital technology or an internet connection but we have to be accessible for patients and workers in the Covid-19 ward (39).

LIMITATIONS

Our study was a naturalistic observative study. The first limitation was that it was a single-center study with a low sample size which limits the generalizability of our results. The second is its cross-sectional design with a self-report questionnaire. Our lifetime psychiatric diagnoses were based on medical records, just a structured and standardized clinical diagnostic instrument like SCID-V was not used. Third, we excluded patients in the ICU but did not consider the clinical severity of the disease in the rest of the patients. There is a need for studies that can evaluate these two risky groups for Covid-19 anxiety at different periods of the pandemic and by taking into account the factors that may affect their interactions such as communication skills and personality traits.

CONCLUSION

Higher state anxiety levels were associated with having a lifetime psychiatric disorder and not being married in the whole ward. Together patient and provider anxiety related to Covid-19 is an essential point that deserves attention. Determining anxiety levels and related factors during a pandemic may contribute to preparedness via planning to take precautions for the most risky groups earlier. Early prevention and treatment of anxiety are of vital importance to help patients have good clinical outcomes and to keep healthcare workers calm and maintain their ability to pay attention, decision-making, and care (40).

Mental health-related national associations and academic societies are required to adopt emergency psychological crisis interventions, psychological counseling and establish psychological assistance expert groups to provide professional guidance and coordinate with health authorities (15). Comprehensive support has to be prepared and supplied for the well-being of both hospitalized patients and health professionals.

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References

1. Spielberger CD, Gorsuch RL, Lushene R, Vagg PR, Jacobs GA. Manual for the State-Trait Anxiety Inventory (Form Y1–Y2). Palo Alto, CA: Consulting Psychologists Press; 1983;Volume IV.

2. Rajkumar RP. COVID-19 and mental health: A review of the existing literature. Asian J Psychiatr 2020;52:102066.

3. Canadian Mental Health Association [homepage on the Internet]. British Columbia Division: Covid-19: Tips for managing anxiety. [cited 10 Nov 2020]. Available from: *https://cmha.bc.ca/covid-19/tips-for-managing-anxiety/*

4. Zu ZY, Jiang MD, Xu PP, Chen W, Ni QQ, Lu GM, et al. Coronavirus disease 2019 (COVID-19): a perspective from China. Radiology 2020;296(2):E15-E25.

5. World Health Organization. Novel Coronavirus (2019-nCoV) Situation Report.2020-1. [cited 20 June 2020] Available from: *https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports*

6. World Health Organization. Coronavirus disease 2019 (COVID-19) Situation Report. 2020-52.

[cited 20 June 2020] Available from: *https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports*

7. Republic of Turkey Ministry of Health Corona Table [cited 13 Dec 2020]. Available from: *https://covid19.saglik.gov.tr/*

8. Krishnamoorthy Y, Nagarajan R, Saya GK, Menon V. Prevalence of psychological morbidities among general population, healthcare workers and COVID-19 patients amidst the COVID-19 pandemic: A systematic review and meta-analysis. Psychiatry Res. 2020;293:113382.

9. Şahan E, Ünal SM, Kırpınar İ. Can we predict who will be more anxious and depressed in the COVID-19 ward? J Psychosom Res 2021;140:110302.

10. Rogers JP, Chesney E, Oliver D, Pollak TA, McGuire P, Fusar-Poli P, et al. Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. Lancet Psychiatry 2020;7(7):611-27.

11. Mazza MG, De Lorenzo R, Conte C, Poletti S, Vai B, Bollettini I, et al. Anxiety and depression in COVID-19 survivors: role of inflammatory and clinical predictors. Brain Behav Immun 2020;89:594-600.

12. Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. JAMA 2020;323(21):2133-4.

13. McAlonan GM, Lee AM, Cheung V, Cheung C, Tsang KW, Sham PC, et al. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. Can J Psychiatry 2007;52(4):241-7.

14. Şahan E, Tangılntız A. State and trait anxiety among medical staff during the first month of COVID-19 pandemic: A sample from Turkey. Int J Psychiatry Med 2022;57(4):338-56.

15. Li W, Yang Y, Liu ZH, Zhao YJ, Zhang Q, Zhang L, et al. Progression of mental health services during the COVID-19 outbreak in China. Int J Biol Sci 2020;16(10):1732.

16. Vahedian-Azimi A, Moayed MS, Rahimibashar F, Shojaei S, Ashtari S, Pourhoseingholi MA. Comparison of the severity of psychological distress among four groups of an Iranian population regarding COVID-19 pandemic. BMC Psychiatry 2020;20(1):1-7.

17. Erdfelder E, Faul F, Buchner A. "GPOWER: A general power analysis program.Behav Res Methods Instrum Comput 1996;28(1):1-11.

18. Öner N, Le Compte VA. State-trait anxiety inventory handbook. Bogazici University, Istanbul, Turkey. 1985:1-26.

19. Bendau A, Kunas SL, Wyka S, Petzold MB, Plag J, Asselmann E, et al. Longitudinal changes of anxiety and depressive symptoms during the COVID-19 pandemic in Germany: the role of pre-existing anxiety, depressive, and other mental disorders. J Anxiety Disord 2021;79:102377.

20. Pan KY, Kok AA, Eikelenboom M, Horsfall M, Jörg F, Luteijn RA, et al. The mental health impact of the COVID-19 pandemic on people with and without depressive, anxiety, or obsessive-compulsive disorders: a longitudinal study of three Dutch case-control cohorts. Lancet Psychiatry 2021;8(2): 121-9.

21. Zhang J, Yang Z, Wang X, Li J, Dong L, Wang F, et al. The relationship between resilience, anxiety, and depression among patients with mild symptoms of COVID-19 in China: A cross-sectional study. J Clin Nurs 2020;29(21-22):4020-9.

22. Mosheva M, Hertz-Palmor N, Dorman Ilan S, Matalon N, Pessach IM, Afek A, et al. Anxiety, pandemic-related stress and resilience among physicians during the COVID-19 pandemic. Depress Anxiety 2020;37(10):965-71.

23. Labrague LJ, De los Santos JAA. COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. J Nurs Manag 2020;28(7):1653-61. doi:10.1111/jonm.13121

24. Song S, Yang X, Yang H, Zhou P, Ma H, Teng C, et al. Psychological resilience as a protective factor for depression and anxiety among the public during the outbreak of COVID-19. Front Psychol 2020;11:4104.

25. Thomas J, Barbato M, Verlinden M, Gaspar C, Moussa M, Ghorayeb J, et al. Psychosocial Correlates of Depression and Anxiety in the United Arab Emirates During the COVID-19 Pandemic. Front Psychiatry 2020. https://doi.org/10.3389/fpsyt.2020.564172

26. Pyszczynski T, Lockett M, Greenberg J, Solomon S. Terror Management Theory and the COVID-19 Pandemic. J Humanist Psychol 2020: 0022167820959488. doi:10.1177/0022167820959488

27. Courtney EP, Goldenberg JL, Boyd P. The contagion of mortality: A terror management health model for pandemics. Br J Soc Psychol 2020;59(3):607-17. doi:10.1111/bjso.12392

28. Bronheim HE, Fulop G, Kunkel EJ, Muskin PR, Schindler BA, Yates WR, et al. The Academy of Psychosomatic Medicine Practice Guidelines for Psychiatric Consultation in the General Medical Setting. Psychosomatics 1998;39(4): S8-S30. doi:https://doi.org/10.1016/S0033-3182(98)71317-9

29. Li Z, Ge J, Feng J, Jiang R, Zhou Q, Xu X, et al. Less Social Support for Patients With COVID-19: Comparison With the Experience of Nurses. Front Psychiatry 2021;12:44.doi: 10.3389/fpsyt.2021.554435

30. Berg-Weger M, Morley JE. Loneliness and social isolation in older adults during the Covid-19 pandemic: Implications for gerontological social work. J Nutr Health Aging 2020;24:456–8. https://doi.org/10.1007/s12603-020-1366-8

31. Mehra A, Rani S, Sahoo S, Parveen S, Singh AP, Chakrabarti S, Grover S. A crisis for elderly with mental disorders: Relapse of symptoms due to heightened anxiety due to COVID-19. Asian J Psychiatr 2020;51:102114.

32. Zhang WR., Wang K, Yin L, Zhao WF, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. Psychother Psychosom 2020;89(4):242-50.

33. Hacimusalar Y, Kahve AC, Yasar AB, Aydin MS. Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. J Psychiatr Res 2020;129:181-8.

34. Yang L, Wu D, Hou Y, Wang X, Dai N, Wang G, et al. Analysis of psychological state and clinical psychological intervention model of patients with COVID-19. MedRxiv. 2020 Jan 1. https://doi.org/10.1101/2020.03.22.20040899.

35. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, et al. A qualitative study on the psychological experience of caregivers of COVID-19 patients. Am J Infect Control 2020;48(6):592-8.

36. Decio V, Pirard P, Pignon B, Bouaziz O, Perduca V, Chin F, et al. Hospitalization for COVID-19 is associated with a higher risk of subsequent hospitalization for psychiatric disorders: a French nationwide longitudinal study comparing hospitalizations for COVID-19 and for other reasons. Eur Psychiatry Cambridge University Press; 2022;1–44.

37. Kong X, Zheng K, Tang M, Kong F, Zhou J, Diao L, et al. Prevalence and factors associated with depression and anxiety of hospitalized patients with COVID-19. MedRxiv 2020. https://doi.org/10.1101/2020.03.24.20043075.

38. Neto MLR, Almeida HG, Esmeraldo JDA, Nobre CB, Pinheiro WR, de Oliveira CRT, et al. When health professionals look death in the eye: the mental health of professionals who deal daily with the 2019 coronavirus outbreak. Psychiatry Res 2020;288:112972.

39. Ramsetty A, Adams C. Impact of the digital divide in the age of COVID-19. J Am Med Inform Assoc 2020;27(7):1147-8.

40. Kang L, Li Y, Hu S, Chen M, Yang C, Yang BX, et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. Lancet Psychiatry 2020;7(3):e14.