



Original Article

Municipal workers' mental health during the COVID-19 pandemic

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Abstract

Objectives: The ongoing coronavirus 2019 (COVID-19) outbreak has a documented, continuing, adverse effect on mental health. The aim of this study was to evaluate aspects of the mental health of municipal employees who, like healthcare professionals, provide necessary services and have to work despite pandemic conditions.

Methods: A cross-sectional study was carried out in June 2020 with İstanbul district municipality employees who continued to work during the initial pandemic period of March-May 2020. The data were collected using a sociodemographic questionnaire, the Generalized Anxiety Disorder-7 item scale (GAD-7) and the Patient Health Questionnaire-9 (PHQ-9) scale via online survey.

Results: The average age of the 775 participants was 40.2 ± 8.0 years and 75.7% of the group was male. Generalized anxiety disorder (GAD) was observed in 18.5% of the participants, and moderate-severe depression was recorded in 16.1%. Binary logistic regression analysis revealed a greater risk for depression and GAD, respectively, among those in the 30-39 age group (odds ratio [OR]: 2.53, 95% confidence interval [CI]: 1.10-5.79, $p=0.027$; OR: 1.72, 95% CI: 1.07-2.78, $p=0.025$), interacting with ≥ 20 people a day at work (OR: 2.73, 95% CI: 1.30-5.74, $p=0.008$; OR: 2.72, 95% CI: 1.32-5.60, $p=0.006$). In addition, female participants (OR: 1.75, 95% CI: 1.07-2.86, $p=0.026$) and those with a shortened work schedule (OR: 2.29, 95% CI: 1.43-3.68, $p=0.001$) were at greater risk for anxiety, and those who had shift work (OR: 2.08, 95% CI: 1.21-3.56, $p=0.007$) were at greater risk for depression.

Conclusion: Among the municipal employees studied, women, those under the age of 40, those who worked a shorter schedule or alternating shifts, those who considered the physical workload to be heavy, those who interacted with the public during the course of their work, those who had a diagnosis of COVID-19 in their immediate circle, and those who had been in contact with someone diagnosed with COVID-19 were at risk for GAD and depression. A multi-sectoral approach is required for successful epidemic control. Continuity of community mental health services that include primary, secondary, and tertiary protection should be ensured, employees at risk should be identified, and appropriate support provided for psychological treatment.

Keywords: COVID-19; mental health; municipal workers; pandemic.

Emergency conditions, such as an epidemic, can affect the health, safety, and well-being of both individuals and communities.^[1] Research conducted during previous outbreaks of disease has demonstrated that there may be negative mental health effects.^[2] Regardless of exposure to the disease, individuals may feel helpless and fearful. In addition, disruption of personal and large-scale activities contribute to uncertainty

and unease. It has previously been reported that anxiety, depression, panic attacks, somatic symptoms, post-traumatic stress disorder, delirium, psychosis, and even suicide, increased during epidemic periods.^[3-5] During the severe acute respiratory syndrome (SARS) epidemic of 2002-2003, it was observed that there was an increase in mental illness among healthcare workers and in the general population.^[2]

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What is presently known on this subject?

- COVID-19 has significantly affected the mental health of the community, especially those who have to work in difficult pandemic conditions due to their jobs. Therefore, there has been an increase in both some symptoms and the incidence of mental disorders. Especially in this period, there are many studies subjecting the negative effects on mental health's of health and social service workers who work intensively and devotedly.

What does this article add to the existing knowledge?

- Unlike many studies investigating the effects of the pandemic on mental health, this study provides an evidence-based view of the mental health effects of COVID-19 in local government workers who have been actively providing services since the beginning of the epidemic, even during times of social restrictions and curfews. Our results suggest that this process may have a greater impact on mental health in some groups.

What are the implications for practice?

- As the pandemic process continues, its effects on mental health also continue. In this period, our study will contribute to the recognition of high-risk groups for depression and generalized anxiety disorder in non-health workers, and thus support potential approaches to overcome the threats to mental health with institutional measures and interventions.

The coronavirus 2019 (COVID-19) pandemic has had a wide-spread psychological effect since its emergence in December 2019 that continues to this day. Several studies conducted in China have reported rates of depression, anxiety, stress, and insomnia as a result of the COVID-19 epidemic ranging from 18% to 48%.^[6,7,13] In a meta-analysis study evaluating 62 studies from 17 countries, it was noted that anxiety and depression were the most common psychological effects of the epidemic, with a prevalence of 28% and 33%, respectively.^[8] Different populations have experienced varying levels of psychological distress during the COVID-19 pandemic based on applicable conditions, such as the elderly, children, and healthcare workers.^[9-11] Studies have shown that there was an undeniably higher prevalence of anxiety and depression among individuals who had to work outside the home during these extraordinary circumstances.^[12-14] One study revealed rates of depression, anxiety, and insomnia among healthcare professionals at rates of 50% to 70%.^[13]

Research to examine the mental health effects on employees during the pandemic has primarily focused on healthcare workers, who are at the forefront of the response to the disease. However, employees of other sectors that provide critical public goods and services, such as law enforcement, postal and cargo services, the food and agriculture industry, and municipal services, have also been challenged to maintain adequate service under extreme conditions. Modern, urban environments particularly rely on a complex infrastructure, which includes a wide range of municipal services, such as the water and electricity supply, public safety, public transport, garbage removal, and sewerage services.^[15] Waste management for health facilities plays an important role in the control of the spread of infection, and this service provided by municipalities is considered a basic public health service.^[16] The continuity of essential services is the duty of local governments and their employees.^[16] Local government employees who need to leave home to provide these critical services despite restrictions on movement and potential in-

fection often worry about the high risk of infection and the fear of infecting family members.^[15] Those who have greater interaction with the public or significant daily contact with numerous people have demonstrated higher transmission anxiety.^[15] As with healthcare workers, these concerns suggest that these employees are also at risk of impairment of their mental health. While a necessary priority was given to the diagnosis, follow-up, and treatment of COVID-19 cases, care for individuals with existing or newly diagnosed health problems, including psychiatric illness, was severely limited. The public was asked not to go to a hospital unless it was an emergency. Many facilities, including community mental health centers, were closed as part of the effort to control the spread of COVID-19. Many people with psychiatric illness were left without professional help and support. Though some effort to provide services was made, such as tele-health services, families and individuals were largely left to struggle on their own. The painstakingly established and fragile work of community mental health nurses to care for public mental health, such as identifying high-risk individuals and providing counseling, education, and crisis intervention, has been interrupted, adding to the existing burden of unmet community needs in terms of psychiatric disease.^[15,17]

The mental health effects of the pandemic will have consequences. It is important to understand the impact in order to provide appropriate responses. The purpose of this study was to evaluate signs of anxiety and depression in local government employees working in a district municipality of Istanbul during the early pandemic period and to assess influential factors.

Materials and Method

Ethical Responsibilities

Before beginning the study, the Kadıköy Municipality was approached by the researchers and granted approval for the administration of the questionnaires. The study was also approved by the Göztepe Training and Research Hospital Clinical Research Ethics Committee on June 24, 2020 (no: 2020/0384). All of the respondents provided written, informed consent.

Study Design

This was a quantitative, cross-sectional study conducted with employees of the district municipality in Kadıköy, one of the most socio-economically developed districts of the Anatolian side of Istanbul, during the period of June 19-30, 2020 to assess their experience following the first officially reported case of COVID-19 in Turkey on March 11, 2020.

Target Population and Sample

No selection method was used; the goal was to reach municipal employees who continued to perform their duties during the period studied (March-May 2020). A presidential decree in response to the pandemic provided administrative leave for

most government employees on March 22, 2020.^[18] A total of 775 people (54%) of 1432 who continued to work during the period evaluated were surveyed; those on administrative leave were not included in the study.

Data Acquisition Tools

The participants were first asked to complete a questionnaire consisting of 21 items related to sociodemographic details (age, gender, marital status, children, educational status, financial status, presence of chronic disease in the respondent, number of people in the home during the pandemic, cohabitation with a person >65 years of age or with a chronic disease), work conditions (general duties, work during the pandemic period, working as a member of a government assistance program created to provide services to housebound members of the public, means of commute, work hours, physical workload, average number of non-co-workers encountered daily), and diagnosis with COVID-19 or contact with a COVID-19 patient (personal or family diagnosis, death due to COVID-19 in their surroundings, contact through employment with someone diagnosed with COVID-19) were included as independent variables. In the second part, the participants completed the Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9) scales and the results were analyzed as dependent variables.

The GAD-7 is a 7-question, self-report scale that uses a 4-point Likert-type scale (0=not at all to 3=nearly every day) to assess the previous 2 weeks that was developed by Spitzer et al.^[19] according to the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV-TR) criteria. A total score threshold of 10 yielded a sensitivity for the diagnosis of GAD of 89% and a specificity of 82%. A validity and reliability study of a Turkish version of the scale was performed by Konkan et al.,^[20] and the authors reported a Cronbach alpha value of 0.852 with a cut-off value for the diagnosis of GAD of 8.

The PHQ-9 is another self-report scale developed by Spitzer et al.^[21] This tool evaluates the severity of depressive symptoms in individuals aged ≥18 years. Nine questions are scored from 0 (not at all) to 3 (nearly every day). According to the scoring system of the original questionnaire, a sum score of 0-4 was considered a result indicating no or minimal depression, 5-9 suggested mild depression, 10-14 revealed moderate depression, 15-19 was a sign of moderate-severe depression, and a score of 20-27 indicated severe depression. Sarı et al.^[22] performed a validity and reliability study of a Turkish version and reported a Cronbach alpha value of 0.842. A cut-off value of 10 was used to define clinically significant depression.

In the present study, a Cronbach alpha value of 0.920 was recorded for the GAD-7 scale and 0.917 for the PHQ-9.

Statistical Analysis

The data were analyzed using IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY, USA). The Kolmogorov-

Smirnov test was applied to determine whether the data were conformed to normal distribution. Descriptive statistics (percentage, frequency, mean and SD) were calculated, and groups were formed according to guidelines specified in the literature to determine factors associated with GAD and depression. A chi-squared test was used to assess the anxiety and depression groups according to independent variables. The Hosmer-Lemeshow test was used to determine goodness-of-fit for logistic regression and the independent predictors for GAD and depression were examined. A value of $p < 0.05$ was considered significant.

Results

A total of 775 individuals who reported to work during the initial stage of the pandemic were included in the study. The mean age of the participants was 40.2 ± 8.0 years. Of the group, 75.7% were male, 72.9% were married, and 67.1% had children. Other sociodemographic characteristics indicated that 36.1% were primary school or secondary school graduates, 64.9% reported a moderate financial status, 10.5% had a chronic disease themselves, and 18.8% lived with individuals >65 years of age or with a chronic disease. The questionnaire items related to work status revealed that 52.1% worked standard hours and 33.7% commuted with a corporate bus service. The responses indicated that 46.8% of employees considered their workload to be of medium intensity in terms of physical effort, 33.3% classified themselves as administrative staff and 16.6% did not come into contact with anyone other than their colleagues (Table 1).

Analysis of a positive COVID-19 diagnosis revealed that that 2.1% ($n=16$) of the respondents had been diagnosed with the disease and 18.8% ($n=146$) had a friend or relative diagnosed with COVID-19. In all, 3.6% ($n=28$) had a family member die due to COVID-19, and 10.3% ($n=80$) had contact with someone known to be diagnosed with COVID-19 as a result of their work (Table 1).

The mean GAD-7 scale score was 4.1 ± 4.9 (min-max: 0-21) and the mean PHQ-9 scale score was 4.9 ± 5.6 (min-max: 0-27). The results showed that 18.5% ($n=143$) of the employee scores indicated GAD, 61.3% ($n=475$) suggested minimal depression, 22.6% ($n=175$) showed mild depression, 7.9% ($n=61$) moderate depression, 4.8% ($n=37$) moderate-severe depression, and 3.5% revealed signs of severe depression ($n=27$) (Table 2).

Evaluation according to age group indicated that 20% of the 20-29 age group could be classified with GAD, while the rate was 13.7% in the 40-49 age group ($p=0.024$). The PHQ-9 scores revealed moderate-severe depression in 22.0% of the 20-29 age group and in 7.0% of those aged ≥50 ($p=0.007$). Scores indicating moderate-severe depression were recorded among 22.3% of the women and 14.1% of the men in the study ($p=0.008$). GAD was detected in 26.1% of the female participants and 16% of the male respondents ($p=0.002$), and in 25.7% of singles and 15.8% of married employees; moderate-

Table 1. Distribution of participant characteristics

	n	%		n	%
Gender			Method of commute to work		
Female	188	24.3	On foot	83	10.7
Male	587	75.7	Bicycle/Motorcycle	14	1.8
Age group (years)			Private vehicle	259	33.4
20-29	50	6.5	Institutional service	261	33.7
30-39	334	43.1	Public transport	158	20.4
40-49	277	35.7	Work with the government assistance program		
≥50	114	14.7	Yes	180	23.2
Marital status			No	595	76.8
Married	565	72.9	Average number of people encountered per day, excluding co-workers		
Single	210	27.1	0	131	16.6
Children			1-20	329	42.5
Yes	520	67.1	21 and over	315	40.6
No	255	32.9	Workload		
Educational status			Light	110	14.2
Primary/middle school	280	36.1	Moderate	363	46.8
High school graduate	220	28.4	Heavy	302	39.0
University/master/PhD	275	35.5	Work type		
Financial status			Administrative	258	33.3
Poor	137	17.7	Maintenance	161	20.8
Mod.	503	64.9	Security	109	14.1
Good	135	17.4	Laborer	62	8.0
Chronic disease			Driver	75	9.7
Yes	81	10.5	Municipal police	54	7.0
No	694	89.5	Other	56	7.2
Living with person(s) over 65 years of age or with a chronic illness			Diagnosis and contact characteristics of respondent and close friends/family		
Yes	146	18.8	Respondent diagnosed with COVID-19	16	2.1
No	629	81.2	Relative diagnosed with COVID-19	146	18.8
Working hours			Relative died due to COVID-19	28	3.6
Normal work hours (8:00-17:00)	404	52.1	Contact with someone diagnosed with COVID-19 due to work	80	10.3
Shortened work schedule (9:00-16:30)	198	25.5			
Shift work (certain days/weeks)	173	22.3			

severe depression was observed in 23.3% and 13.5%, respectively ($p=0.001$, $p=0.001$). Results indicating moderate-severe depression were seen in 21.8% of those with a university or higher level of education, in 10.7% of those with a primary/secondary school formal education, and 15.9% of high school graduates ($p=0.002$). Moderate-severe depression was identified in 22.6% of those who lived with someone >65 years of age or with a chronic illness ($p=0.018$) (Table 2).

The study participants were categorized into 7 employment subgroups based on primary responsibilities: administrative, maintenance, security, manual laborer, driver, municipal police, and other. Analysis by subgroup revealed that GAD was observed in 29.4% of the security officers and 10.6% of the maintenance staff, and the level of moderate-severe depression was 28.4% and 5.6%, respectively, in the same groups ($p=0.001$, $p<0.001$).

GAD was identified in 25.3% of those who had a shorter work schedule (in place prior to the pandemic), and 20.2% and 14.4% of those working shifts and normal working hours, respectively ($p=0.004$). There was a moderate-severe level of depression of 23.7% among shift workers, 17.2% in those with reduced hours, and 12.4% in those with standard hours ($p=0.003$). The respondents were also asked about their perception of their workload in physical terms, and GAD was found in 23.5% of those with a reported heavy workload, 14.6% of those who considered their workload moderate, and 17.3% of those with a light workload ($p=0.012$). Daily interactions with others were grouped as 0, 1-20, and >20. On the basis of this level of engagement, 9.2% of those in the first group were identified as having GAD, and 20.1% and 20.6% in the remaining groups, respectively, while moderate-severe depression was observed in 8.4%, 17.9%, and 17.1%, respec-

Table 2. Distribution of Depression and Generalized Anxiety Disorder by Sociodemographic Characteristics

		GAD-7		p	PHQ-9		p
		GAD No % (n)	GAD Yes % (n)		Minimal-Mild Depression % (n)	Moderate-Severe Depression % (n)	
Age (years)	20-29	80.0 (40)	20.0 (10)	0.024	78.0 (39)	22.0 (11)	0.007
	30-39	76.9 (257)	23.1 (77)		80.2 (268)	19.8 (66)	
	40-49	86.3 (239)	13.7 (38)		85.6 (237)	14.4 (40)	
	≥50	84.2 (96)	15.8 (18)		93.0 (106)	7.0 (8)	
Gender	Female	73.9 (139)	26.1 (49)	0.002	77.7 (146)	22.3 (42)	0.008
	Male	84.0 (493)	16.0 (94)		85.9 (504)	14.1 (83)	
Marital status	Married	84.2 (476)	15.8 (89)	0.001	86.5 (489)	13.5 (76)	0.001
	Single	74.3 (156)	25.7 (54)		76.7 (161)	23.3 (49)	
Children	Yes	84.2 (438)	15.8 (82)	0.006	87.5 (455)	12.5 (65)	<0.001
	No	76.1 (194)	23.9 (61)		76.5 (195)	23.5 (60)	
Educational status	Primary/middle school	85.4 (239)	14.6 (41)	0.056	89.3 (250)	10.7 (30)	0.002
	High school	81.8 (180)	18.2 (40)		84.1 (185)	15.9 (35)	
	University or more	77.5 (213)	22.5 (62)		78.2 (215)	21.8 (60)	
Financial status	Poor	79.6 (109)	20.4 (28)	0.801	79.6 (109)	20.4 (28)	0.317
	Moderate	81.9 (412)	18.1 (91)		84.9 (427)	15.1 (76)	
	Good	82.2 (111)	17.8 (24)		84.4 (114)	15.6 (21)	
Living with person(s) >65 years of age or with a chronic disease	Yes	76.0 (111)	24.0 (35)	0.056	77.4 (113)	22.6 (33)	0.018
	No	82.8 (521)	17.2 (108)		85.4 (537)	14.6 (92)	
Chronic disease in respondent	Yes	85.2 (69)	14.8 (12)	0.373	81.5 (66)	18.5 (15)	0.537
	No	81.1 (563)	18.9 (131)		84.1 (584)	15.9 (110)	

GAD-7: Generalized Anxiety Disorder-7 item scale; PHQ-9: Patient Health Questionnaire-9 scale.

tively ($p=0.011$, $p=0.030$) (Table 3).

Results indicating GAD were found in 25.3% and moderate-severe depression in 24.7% of those who had a person close to them diagnosed with COVID-19 ($p=0.017$, $p=0.001$). Both GAD and moderate-severe depression were seen in 32.5% of those who had to come into contact with a person diagnosed with COVID-19 during the course of their work duties ($p=0.001$, $p=0.000$) (Table 4).

Table 5 provides the results of logistic regression analysis used to examine the relationship of the variables to the GAD-7 and the PHQ-9 scales. Those aged 30-39 years, working as a security officer, and contact with others during work were observed as common risk factors for anxiety and depression. Additionally, shift work, a friend or relative diagnosed with COVID-19, and having to come into contact with someone who is known to have been diagnosed with COVID-19 in the course of work were determined to be independent risk factors for depression. Furthermore, female gender, work as a laborer, a shortened work schedule, and a heavy physical workload were independent risk factors for anxiety ($p<0.05$) (Table 5).

Discussion

To the best of our knowledge, this is the first study to examine depression and anxiety and related factors among Turkish local government employees who worked during the COVID-19 pandemic. The frequency of moderate-severe depression and GAD among municipal employees was 16.1% and 18.1%, respectively. The majority of studies examining the effects of the COVID-19 pandemic on mental health have been conducted among healthcare workers. A meta-analysis reported a prevalence of depression and anxiety in healthcare workers of 25% and 26%, respectively. The same study found that the rate of depression and anxiety was similar among healthcare professionals and the general population.^[8] Another Chinese study evaluating depression and anxiety levels according to occupation found no significant difference between healthcare workers, teachers/students, and those employed in private business or government.^[13] The fact that the study was conducted in China, where the COVID-19 outbreak occurred, during the early period of the epidemic may have contributed to a greater finding of distress than seen in our study. In a study conducted with healthcare professionals in April-May 2020 in Turkey, the prevalence of GAD and depression was greater than in our

Table 3. Distribution of depression and generalized anxiety disorder according to work characteristics

		GAD-7		p	PHQ-9		p
		GAD No % (n)	GAD Yes % (n)		Minimal-Mild Depression % (n)	Moderate-Severe Depression % (n)	
Type of work	Administrative	80.2 (207)	19.8 (51)	0.001	80.6 (208)	19.4 (50)	<0.001
	Maintenance	89.4 (144)	10.6 (17)		94.4 (152)	5.6 (9)	
	Security	70.6 (77)	29.4 (32)		71.6 (78)	28.4 (31)	
	Laborer	79.0 (49)	21.0 (13)		91.9 (57)	8.1 (5)	
	Driver	88.0 (66)	12.0 (9)		90.7 (68)	9.3 (7)	
	Municipal police	88.9 (48)	11.1 (6)		83.3 (45)	16.7 (9)	
	Other	73.2 (41)	26.8 (15)		75.0 (42)	25.0 (14)	
Work with the government assistance program	Yes	79.4 (143)	20.6 (37)	0.406	85.6 (154)	14.4 (26)	0.483
	No	82.2 (489)	17.8 (106)		83.4 (496)	16.6 (99)	
Method of work commute	On foot	81.9 (68)	18.1 (15)	0.578	84.3 (70)	15.7 (13)	0.118
	Bike/motorcycle	78.6 (11)	21.4 (3)		78.6 (11)	21.4 (3)	
	Private vehicle	80.3 (208)	19.7 (51)		79.2 (205)	20.8 (54)	
	Institutional service	80.1 (209)	19.9 (52)		87.0 (227)	13.0 (34)	
	Public transport	86.1 (136)	13.9 (22)		86.7 (137)	13.3 (21)	
Work hours	Normal work hours	85.6 (346)	14.4 (58)	0.004	87.6 (354)	12.4 (50)	0.003
	Shortened work hours	74.7 (148)	25.3 (50)		82.8 (164)	17.2 (34)	
	Shift work	79.8 (138)	20.2 (35)		76.3 (132)	23.7 (41)	
Workload	Light	82.7 (91)	17.3 (19)	0.012	80.0 (88)	20.0 (22)	0.073
	Moderate	85.4 (310)	14.6 (53)		87.1 (316)	12.9 (47)	
	Heavy	76.5 (231)	23.5 (71)		81.5 (246)	18.5 (56)	
Number of people encountered during work	0	90.8 (119)	9.2 (12)	0.011	91.6 (120)	8.4 (11)	0.030
	1-20	79.9 (263)	20.1 (66)		82.1 (270)	17.9 (59)	
	≥21	79.4 (250)	20.6 (65)		82.5 (260)	17.5 (55)	

GAD-7: Generalized Anxiety Disorder-7 item scale; PHQ-9: Patient Health Questionnaire-9 scale.

Table 4. Distribution of depression and generalized anxiety disorder according to COVID-19 diagnosis and contact characteristics

		GAD-7		p	PHQ-9		p
		GAD No % (n)	GAD Yes % (n)		Minimal-Mild Depression % (n)	Moderate-Severe Depression % (n)	
Diagnosed with COVID-19	Yes	81.2 (13)	18.8 (3)	1.0	81.2 (13)	18.8 (3)	0.732
	No	81.6 (619)	18.4 (140)		83.9 (637)	16.1 (122)	
Someone close diagnosed with COVID-19 diagnosis	Yes	74.7 (109)	25.3 (37)	0.017	75.3 (110)	24.7 (36)	0.002
	No	83.1 (523)	16.9 (106)		85.9 (540)	14.1 (89)	
Relative died due to COVID-19	Yes	78.6 (22)	21.4 (6)	0.679	71.4 (20)	28.6 (8)	0.110
	No	81.7 (610)	18.3 (137)		84.3 (630)	15.7 (117)	
Contact with a person diagnosed with COVID-19 in the course of work	Yes	67.5 (54)	32.5 (26)	0.001	67.5 (54)	32.5 (26)	<0.001
	No	83.2 (578)	16.8 (117)		85.8 (596)	14.2 (99)	

GAD-7: Generalized Anxiety Disorder-7 item scale; PHQ-9: Patient Health Questionnaire-9 scale.

study results.^[14] The difference in depression and anxiety levels may be associated with the occupational groups exam-

ined, as well as the dates of the studies and related awareness of the disease and circumstances of the pandemic.

Table 5. Logistic regression analysis of factors related to depression and generalized anxiety disorder

Variables	Generalized anxiety disorder			Moderate-severe depression		
	OR	95% CI	P	OR	95% CI	P
	Min.-Max.			Min.-Max.		
Gender						
Female	1.75	1.07-2.86	0.026	1.27	0.75-2.13	0.364
Male ^{a,b}						
Age (years)						
20-29	1.02	0.43-2.43	0.957	2.41	0.82-7.08	0.109
30-39	1.72	1.07-2.78	0.025	2.53	1.10-5.79	0.027
40-49 ^a						
≥50	1.48	0.76-2.88	0.240	2.32	0.99-5.43	0.052
Marital status						
Single	1.33	0.84-2.11	0.219	1.37	0.85-2.21	0.185
Married ^{a,b}						
Educational status						
Primary/middle school ^{a,b}						
High school	0.93	0.52-1.69	0.836	0.70	0.37-1.34	0.292
University/MA/PhD	1.10	0.57-2.14	0.764	0.97	0.47-1.97	0.936
Living with someone >65 years or with a chronic disease						
Yes	1.12	0.68-1.86	0.637	1.29	0.76-2.18	0.331
No ^{a,b}						
Diagnosis of COVID-19 in someone close						
Yes	1.65	0.96-2.82	0.066	1.79	1.02-3.12	0.039
No ^{a,b}						
Work type						
Municipal police	0.77	0.24-2.52	0.675	2.67	0.82-8.73	0.103
Driver	1.49	0.58-3.79	0.401	1.76	0.59-5.25	0.306
Laborer	2.57	1.08-6.11	0.032	1.34	0.40-4.43	0.628
Administrative	1.40	0.61-3.23	0.425	2.31	0.87-6.15	0.092
Security officer	7.51	3.26-17.32	<0.001	9.10	3.70-22.38	<0.001
Maintenance ^{a,b}						
Work hours						
Shortened work hours (9:00-16:30)	2.29	1.43-3.68	0.001	1.64	0.97-2.78	0.062
Shift work (certain days/weeks)	1.57	0.91-2.73	0.105	2.08	1.21-3.56	0.007
Normal work hours ^{a,b}						
Number of people encountered during work						
0 ^{a,b}						
1-20	2.76	1.35-5.63	0.005	2.75	1.32-5.73	0.007
≥21	2.72	1.32-5.60	0.006	2.73	1.30-5.74	0.008
Contact with COVID-19 (+) persons due to work						
Yes	1.65	0.89-3.06	0.105	2.23	1.20-4.13	0.011
No ^{a,b}						
Workload						
Light	1.00	0.53-1.90	0.981	–	–	–
Moderate ^a						
Heavy	2.20	1.37-3.53	0.001	–	–	–

^aReference for generalized anxiety disorder; ^bReference for moderate-severe depression.

The circumstances of confronting a new virus, uncertainty about transmission routes, difficulties with clinical care and treatment of the disease, the disclosure of new information every day, and fear of contracting the disease, as well as the measures taken by governments to attempt to control the pandemic and broad economic effects, have had a substantial impact on the mental health of the public. There have been cascading effects as a result of compulsory social isolation and disruption of daily life. A sense of loneliness resulting from this social isolation may have increased the negative effects of the pandemic on mental health. Our study was conducted during a decrease in the number of cases (after first wave), and some normalization was initiated on June 1 as part of an ongoing process. Given that the GAD-7 and PHQ-9 scales evaluate the previous 2 weeks, these conditions may have contributed to the low frequency of GAD and depression in our study.

We found that GAD was most common in the 30-39 age group, women, and those who were not married. Anxiety was also higher in security personnel, those who work a shorter schedule, those with a heavy physical workload, and those who encountered 21 or more people during their workday. A high prevalence of GAD was observed in those who had a person close to them with a diagnosis of COVID-19 and who had to come into contact with a person with a diagnosis of COVID-19 as a result of their duties. Moderate-severe depression was most common in those in the 20-29 age group, women, and singles. Moderate-severe depression was also more frequent in those who had a university or higher level of education, those who lived with someone aged ≥ 65 or with a chronic disease, and those who worked in shifts and as security officers. Moderate-severe depression was also more common in those who interacted with the public during their work, in those who had a diagnosis of COVID-19 in a friend or relative, and in those who had to come into contact with a COVID-19 patient through their work.

In our study, female gender equated to a 1.75 times greater risk of GAD. In studies conducted with healthcare professionals and the general population around the world, depression and anxiety levels are often higher in women than in men, and female gender is considered a risk factor for anxiety.^[14,23-27] Findings of a gender difference in depression and anxiety have been consistent in different countries, varied occupational groups, and large populations. It is thought that various biological processes may play a role in women's susceptibility to depression, as well as psychosocial elements, such as victimization, coping with problems through internalization, and disadvantaged social status due to gender inequality, may contribute to the increased vulnerability of women to depression.^[28] Also, considering that working women generally spend more time on childcare and housework than men, the closure of schools and the implementation of distance education for children created additional burdens, such as keeping children focused, helping them get used to the new routine, eliminating disruptions, and additional housework, which have disproportionately affected women and created additional stress.

Anxiety and depression were found more common in participants aged 20-40 years in our study. Members of the 30-39 age group were 1.72 times more likely to have GAD and 2.53 times more likely to have moderate-severe depression. Other mental health studies conducted during the pandemic period have also noted higher levels of depression and anxiety in younger age groups.^[6,13,23,25,26] The extraordinary circumstances of the COVID-19 pandemic led to a proliferation of information shared on the internet as well as in written and visual media about the disease. The greater use of online environments by young and middle-aged individuals may have contributed to a negative psychological effect.^[29] Also, these individuals may be responsible for the care of children or older family members. The thought of carrying disease into the home from outside and putting others at risk may have had a stressful effect.

In a study of the effects of COVID-19 that included an evaluation of work conditions, the risk of anxiety and depression was found to be greater in those who continued to work from home than in those who returned to work at a regular schedule.^[6] Another study also noted that depression and anxiety levels were higher in those who worked from home and those with reduced work hours compared with those who maintained a normal work schedule.^[26] In our study, there was a 2.29-times greater risk of GAD among those with a shorter work schedule and a 2.08-times greater risk of depression in employees who work periodically. Individuals working normal hours spend more time at work, which may help individuals to avoid excessive consumption of information and thoughts about the pandemic. Additionally, the interpersonal interactions that occur with colleagues may also reduce the negative psychological impact.^[6] In our study, evaluation of anxiety and depression according to the number of people encountered other than work colleagues indicated that rates were higher among those who interacted with the public. Social exchange with colleagues in the workplace appears to have a positive effect on human psychology, however, the need to interact with people they do not know in a period when disease transmission from person to person was a prominent concern may easily have led to anxiety and fear in employees.

Our findings did not indicate that the diagnosis of COVID-19 was a risk for depression and anxiety, though the presence of a person diagnosed with COVID-19 in the respondent's immediate circle was found to create a 1.79-times greater risk for depression. The literature provides mixed results regarding the diagnosis of COVID-19 in someone close. There are studies showing that depression and anxiety were more common in these individuals and that this is a risk factor;^[6,30,31] however, another study found that there was not a greater risk for depression and anxiety.^[32] Anxiety related to someone in the household contracting COVID-19 may be exacerbated by the fear of becoming infected and quarantined, and the possibility of stigmatization.^[33,34] The treatment of infected individuals may be performed in a hospital or at home, depending on the severity of the disease, and a caretaker or others who have contact with the patient should quarantine themselves for a

certain period. A patient in the home may also be a source of anxiety due to an inability to provide the accustomed social support. Learning about the negative experiences of the infected individual may further provoke stress about their own vulnerability in a caretaker.

In our study, contact with people who were known to be diagnosed with COVID-19 at work represented a 2.23-times greater risk for depression. The same circumstances were reported to be a risk factor for both depression and anxiety in another study.^[6] These results can be attributed to the negative effects of concern about becoming infected after contact, fear of infecting loved ones, and the social isolation that will be required as a result of a positive diagnosis.

Conclusion

The results of our research conducted with municipal employees indicated that women, those under the age of 40, those who worked a shorter schedule or had shift work, those who considered their physical workload to be heavy, those who interacted with others aside from their colleagues during the course of their work, those who had someone in the household diagnosed with COVID-19, and those who had contact with someone diagnosed with COVID-19 were at risk for GAD and depression. Although our research was conducted with municipal employees, these risk factors may be similar for many employees who continue to work actively during the pandemic.

Successful control of an epidemic requires a multi-sectoral approach. The protection of not only the physical but also the mental health of local government employees who continue to work should be a priority in order to preserve the availability of essential public services. Therefore, the continuity of community mental health services, including primary, secondary, and tertiary protection, should be ensured, employees at risk should be identified, and psychological support and treatment should be provided and the appropriate interventions should be planned for risk factors associated with mental disorders, such as anxiety and depression.

Limitations

At the time of the study, the number of cases in Turkey had demonstrated an initial decrease in comparison with the first months of the pandemic. Also, the scales used evaluate the mental state of the respondent in the previous 2 weeks. These characteristics may have had an influence on the lower frequency of depression and GAD recorded in our study than seen in the earliest period of the pandemic. In addition, the data were obtained based on self-rating scales and a clinical evaluation might have produced different results. No data were collected regarding a previous diagnosis of psychiatric illness before the study, which could also limit interpretation of the findings.

Finally, the data were collected using an online questionnaire in order to maintain social distance. Since less educated and

socially disadvantaged groups may be underrepresented in online questionnaires, the population reached may not be representative of the target population, and the volunteer effect associated with responding to surveys should also be considered.

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