Original Article

Adult Mental Health and Loneliness During the COVID-19 Pandemic in Late 2020

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Abstract: The COVID-19 pandemic had an adverse impact on the mental health of numerous people. To examine the psychological status of the general public across Turkey during the COVID-19 pandemic, we collected data from 1,109 adults, ages ranging from 18 to 72 years. We used a demographic questionnaire, the Symptom Checklist-90-R (SCL-90-R), and the abbreviated version of the UCLA Loneliness Scale. The mean score of the participants on the SCL-90-R was 1.14 (*SD* = .78), and 16% of the participants scored 1 standard deviation above the mean. Some groups, including women and students, showed more severe psychological symptoms. The obsessive-compulsiveness, interpersonal sensitivity, and depression subscales had the highest three mean scores. We compared the SCL-90-R scores to previous study results and found a significant increase during the pandemic. Finally, individual stressors, COVID-19-related stressors, and perceived loneliness were found to be significant predictors, explaining 31% of the variance in psychological symptoms. Although collecting data online through self-report inventories limits the generalizability of the results, this study has important implications. Its results suggest that future clinical interventions should focus on obsessive-compulsiveness, interpersonal sensitivity, and depression among specific risk groups.

Keywords: public mental health, SCL-90-R, loneliness, COVID-19, psychological symptoms

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes the coronavirus disease 2019 (COVID-19), has spread around the world, and the number of corresponding deaths caused by the virus continues to rise. The World Health Organization (WHO) reported that by December 31, 2020, over 82 million individuals had been diagnosed with COVID-19, while over 1.8 million people had died because of the coronavirus (WHO, 2021). As of May 21, 2021, the case numbers increased to over 165 million, and the number of COVID-19-related deaths reached approximately 3.5 million (WHO, 2021). Countless numbers of individuals and families have directly or indirectly experienced an adverse impact because of COVID-19 (Campion et al., 2020).

The negative impact of the COVID-19 pandemic has been reported in various contexts, including social, economic, and psychological. In terms of social impact, government restrictions, such as mass lockdowns, quarantines, school and university closures, and social distancing have negatively impacted the daily routines of most people (Kumar & Dwivedi, 2020). From an economic perspective, businesses in numerous sectors, such as restaurants, hotels, coffee shops, performance, entertainment, and sport services were closed. As a result, many individuals started to work from home or lost their jobs (Ali et al., 2020; Gonzalez et al., 2020; Kalaylıoğlu et al., 2020; Xiong et al., 2020). Additionally, uncertainties during the COVID-19 pandemic and fears related to the virus, such as having family members being infected or experiencing the loss of loved ones from COVID-19 have been associated with substantial mental health problems (Vindegaard & Benros, 2020; WHO, 2020; Xiong et al., 2020). All of these fundamental changes may trigger excessive stress, anxiety, depression, insomnia, denial, anger, fear, and even suicide (Li et al., 2020; McIntyre & Lee, 2020; Torales et al., 2020; WHO, 2020; Xiong et al., 2020). According to Pfefferbaum and North (2020), the COVID-19 pandemic has affected both individual and community health, safety, and overall well-being. In support of this concept, Vindegaard and Benros (2020) reviewed 43 studies to investigate psychiatric symptoms and morbidity related to COVID-19, including both infected and noninfected individuals. Results indicated that infected individuals reported higher levels of posttraumatic stress and depression symptoms, while individuals with preexisting psychiatric disorders reported increased levels of psychological symptoms. Moreover, the well-being of the general public during COVID-19 is reported to have

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deteriorated; anxiety and depression symptoms have increased (Vindegaard & Benros, 2020).

Vulnerable groups, which includes but is not limited to individuals with chronic disease, elderly and homeless people, racial and ethnic minorities, immigrants and refugees, and socioeconomically disadvantaged individuals, disproportionately experienced the psychological impact of the COVID-19 pandemic (Kuy et al., 2020; The Lancet, 2020). Tian and colleagues (2020) also stated that being 50 years old and over, having an undergraduate degree or below, and being divorced, widowed, or an agricultural worker put people into high-risk status. Though the effect of sex is controversial, some researchers reported women as being disadvantaged compared to men (Forte et al., 2020; Kalaylıoğlu et al., 2020; Özmete & Pak, 2020; Xiong et al., 2020; Zhu et al., 2020). Although the COVID-19 outbreak has profoundly impacted individuals around the world, some variables such as enforced restrictions, economic stability, social structures, and the management of the pandemic by state authorities can potentially mediate the pandemic experience on the national level (Yan et al., 2020). Consequently, it is imperative to monitor the psychological functioning of all groups and take necessary measures on the local level to enhance public mental health. To enhance literature with data from across Turkey, we investigated the mental health status of the general public during the COVID-19 outbreak in late 2020.

Psychopathological Symptomatology in the World and in Turkey

To evaluate and compare the psychopathological symptoms and effects of the COVID-19 pandemic from a diverse perspective, researchers have used cross-culturally validated and widely utilized measurements such as the Symptom Checklist-90-R (SCL-90-R; Derogatis et al., 1977). Tian and colleagues (2020) investigated psychological symptoms in the general public in China from late January to early February 2020 using the SCL-90-R. They found that over 70% of participants reported having moderate or higher levels of symptoms related to obsessive-compulsiveness (OC), interpersonal sensitivity, phobic anxiety, and psychoticism. In a study conducted in Indonesia, Siste and colleagues (2020) compared the SCL-90-R scores of participants with and without confirmed/suspected COVID-19 cases within their households. According to the results, individuals diagnosed with or suspected of COVID-19 within their household reported higher scores in all subscales of the SCL-90-R, and the largest differences between the two groups were detected on the depression, OC, somatization, and interpersonal sensitivity subscales (Siste et al., 2020).

In Italy, Forte and colleagues (2020) investigated the psychological impact of COVID-19 in 2,291 participants. They reported higher scores on psychological symptoms such as depression, anxiety, hostility, and psychoticism compared to the general population scores reported in a previous study. It can be concluded that across the world the general public has displayed increased mental health problems as a result of the COVID-19 pandemic, and that governments need to address such needs urgently. Although the SCL-90-R is a screening tool and does not provide diagnostic information, we believe that investigating psychopathological symptomatology with a widely accepted instrument (i.e., SCL-90-R) across cultures can be helpful for better understanding the current psychological impact of COVID-19.

As of December 31, 2020, the Republic of Turkey Ministry of Health reported a total of 2,208,652 COVID-19 cases and 20,881 deaths in Turkey (Republic of Turkey Ministry of Health, 2020) – and the numbers continue to rise. By May 21, 2021, the number of individuals diagnosed with COVID-19 (over 5 million) and deaths (almost 46,000) had more than doubled (Republic of Turkey Ministry of Health, 2021). Turkey has been fighting the COVID-19 pandemic through implementing various precautions including travel restrictions, isolation, symptom monitoring for travelers, suspension of face-to-face education, suspending congregational prayers (including Friday prayers), weekend lockdowns, the shutdown of shopping malls, and remote or reduced workplace procedures (Demirbilek et al., 2020). The decisions made by the Turkish government were applied to all regions of the country, yet certain low-risk cities received governmental exceptions. In other words, Turkey's approach is somewhere between that in Sweden, which used nonenforced recommendations alone, and that in China, where complete lockdown of some cities and social distancing for everyone were mandated (Yan et al., 2020). In general, the Turkish population has complied with the pandemic precautions. In particular, hand-hygiene rules, mask-wearing, and social distancing were the expected behaviors most complied with (Bostan et al., 2020).

Risks of contracting the virus and becoming sick, social and economic side effects of the prolonged pandemic, and overall current uncertainty have triggered various psychological problems in Turkey (Aşkın et al., 2020; Hacimusalar et al., 2020; Satici et al., 2020). Anxiety and depression along with several other issues were frequently reported as significant mental-health problems during the pandemic (Bostan et al., 2020). For example, Karaşar and Canli, (2020) stated that, in the course of the pandemic, 16.6% of their participants reported moderate to severe symptoms of depression. Özmete and Pak (2020) demonstrated that, during the COVID-19 pandemic, the state

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anxiety mean score was higher than the trait anxiety mean score. In a recent study, participants were asked to compare their psychological symptoms considering their mental states before and during COVID-19 using the short form of the SCL-90-R. Results indicated a significant increase in somatization, OC, depression, anxiety, anger and hostility, and phobic anxiety-related symptoms (Bilge & Bilge, 2020).

Loneliness

The American Psychological Association (2000) defines loneliness as "affective and cognitive discomfort or uneasiness from being or perceiving oneself to be alone or otherwise solitary." Weiss described two different types of loneliness: Social loneliness is reported to be related to the lack of satisfying friendships and emotional loneliness is indicated as linked to the lack of intimate attachment to another person and satisfying intimate relationships (Russell et al., 1984). According to Baumeister and Leary (1995), loneliness is present when "belongingness needs are being insufficiently met" (Baumeister & Leary, 1995, p. 507). It is important to note that social contact is not the key to loneliness because the experience of loneliness is mostly related to an individual's perceptions of the quality of social interactions (Heinrich & Gullone, 2006).

Fulfilling relationships are fundamental to an individual's mental health. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) emphasizes the fact that relational problems may lead to clinical mental-health problems. When individuals experience difficulties establishing and maintaining satisfying relationships with others, they are likely to develop a sense of deprivation, depression, anxiety, anger, and physical-health problems (Cacioppo et al., 2002; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Russell et al., 1984). Additionally, Baumeister and Leary (1995) claimed that unsatisfied needs (such as a lower sense of belonging) may lead to pathological consequences.

During the COVID-19 outbreak, loneliness became a major risk factor for psychological problems (Groarke et al., 2020; Saltzman et al., 2020). However, study results provide contradictory findings regarding loneliness. For instance, Arslan and colleagues (2020) explored the relationship between coronavirus anxiety and rumination in Turkey, using loneliness and subjective vitality as mediators. Results indicated that both loneliness and subjective vitality mediated the association between coronavirus anxiety and rumination. Additionally, Rossi and colleagues (2020) investigated the protective effect of self-esteem on the relationship between COVID-19 fear, loneliness, anxiety, and depression among adults in Italy. The results illustrated significant relationships between loneliness, COVID-19 fear, anxiety, and depression, while self-esteem was found to be a mediator with presenting negative relationships with those psychological constructs. Mariani et al. (2020) examined the influence of coping strategies and perceived social support on depression and anxiety among healthy adults during the pandemic and found that family support lowered feelings of loneliness, while also mitigating depressive symptoms. On the other hand, Luchetti and colleagues (2020) examined changes in loneliness in response to the social restriction among American adults and found no significant changes in loneliness across three assessments. Surprisingly, participants reported having increased support from others over time. Furthermore, the study results indicated that individuals living alone and those with at least one chronic disease reported feeling lonelier at the beginning, even though their loneliness did not increase as the COVID-19 pandemic progressed. Considering the results of these studies, we conclude that the relationship between loneliness and the pandemic process remains unclear. Therefore, in the present study, we aimed to contribute to the literature by investigating the amount of variance explained by loneliness on individuals' psychological health symptom scores in Turkey.

Purpose of the Study

This study investigates the psychological health of the general public across Turkey during the COVID-19 pandemic in late 2020 by asking the following research questions:

Research Question 1: Are there any statistically significant differences in the participants' psychological symptom scores, as measured by the SCL-90-R, compared to studies conducted in the pre-COVID-19 era?

Research Question 2: What are the mean differences among different groups (e.g., sex, education, living conditions, relationship status), as measured by the SCL-90-R, during the COVID-19 pandemic in Turkey?

Research Question 3: Does loneliness significantly predict the Global Severity Index (GSI) scores of the SCL-90-R after controlling for existing individual stressors and COVID-19-related stressors?

Method

Participants

A total of 1,159 individuals participated in our survey. We removed 50 cases, since the percentage of missing values

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exceeded 10% per case. The final sample for this study thus consisted of 1,109 adults residing in Turkey. Participants were aged between 18 and 72 years (M = 27.01; SD = 9.90), who had been recruited from all regions of the country [Mediterranean = 96 (8.70%), Black Sea = 71 (6.43%), Aegean = 60 (5.43%), Marmara = 175 (15.80%), Central Anatolia = 448 (40.40%), Eastern Anatolia = 56 (5.00%), and Southeastern Anatolia = 198 (17.90%)]. Participants were predominantly women (N_{women} = 835, 75.29%; N_{men} = 264, 23.81%, N_{other} = 1; 0.09%). Moreover, 382 participants (34.4%) were employed, and 712 (64.2%) were not employed. The vast majority of those who were employed were active in education (n = 134), health (n = 53), and production sectors (n = 71). 506 participants were in a relationship (marriage or romantic partnership; 45.62%), and 597 participants were single (53.83%). 596 (53.7%) participants were students, 149 (13.4%) had a high school or a lower degree, and 356 (32.1%) had a university degree. Only 70 (6.3%) participants reported living alone, while the majority of the participants (n = 1,035, 93.3%) reported living with others, including family members, partners, or friends.

Of the participants, 293 (26.42%) reported living with at least one individual over 65 years old or someone who had a chronic condition, while 101 (9.1%) reported having a chronic illness themselves. Additionally, 794 respondents (71.59%) reported dwelling in cities where weekend lockdowns were imposed, 57 (5.14%) had received a COVID-19 diagnosis, 152 (13.71%) had someone else in the house with a COVID-19 diagnosis, and 289 (26.06%) had lost a family member or friend from COVID-19 (see Table 1 for details).

Instruments

We created an online survey for data collection. The survey consisted of a demographic questionnaire, the Symptom Checklist-90-R (SCL-90-R; Dağ, 1991), and the abbreviated version of the UCLA Loneliness Scale (ULS-8; Doğan et al., 2011). In the demographic questionnaire, self-reported data were gathered including participants' age, sex, education, employment status, relationship status, living condition, and COVID-19-related stressors.

The SCL-90-R

The Symptom Checklist-90-R (SCL-90-R; Derogatis et al., 1977) is a self-report instrument that assesses psychological symptoms normed on a variety of groups, including adults with no psychiatric diagnosis. Participant responses are rated on a 5-point rating scale ranging from 0 (*not at all*) to 4 (*extremely*), indicating the degree to which each item has concerned respondents in the last 15 days (Dağ, 1991). The instrument was adopted to Turkish (Dağ, 1991; Kılıç, 1991) and includes 90 items constituting 10 subscales: anxiety, depression, interpersonal sensitivity, hostility, obsessive-compulsiveness (OC), paranoid ideation, phobic anxiety, psychoticism, somatization, and an additional domain consisting of items related to eating and sleep disorders as well as feelings of guilt. In addition, the instrument yields a GSI, that is, the average score of the instrument. For the Turkish version, Dağ (1991) and Kılıç (1991) reported GSI values of 1.06 and .91, respectively. Considering the mean and standard deviation values in various studies, Dağ (1991) proposed that a GSI value of 1 for the general public is the average. Values between 1 and 2 standard deviations above the mean are indicative of mild symptoms, while values above 2 standard deviations or more are indicative of greater symptoms. The reliability scores of the Turkish version of the SCL-90-R's subscales ranged from .65 to .87 (Dağ, 1991) and .65 to .84 (Kılıç, 1991). In this study, we found a Cronbach's alpha reliability coefficient value of .98 for the SCL-90-R. The subscales of the instrument also demonstrated a high level of reliability: somatization, .92, obsessive-compulsiveness, .89, interpersonal sensitivity, .90, depression, .92, anxiety, .91, hostility, .87, phobic anxiety, .81, paranoid ideation, .82, and psychoticism, .88.

The UCLA Loneliness Scale-8

The UCLA Loneliness Scale (Russell et al., 1978) is a Likert-type instrument measuring the extent to which individuals feel lonely. This 20-item instrument was abbreviated by Hays and DiMatteo (1987). The shorter version (ULS-8) is a unidimensional instrument consisting of 8 items and adapted to Turkish by Doğan and colleagues (2011). Participants rated their response on a 4-point scale ranging from 1 (*never*) to 4 (*always*). The instrument was validated among various groups including adolescents (Yildiz & Duy, 2014) and college students (Doğan et al., 2011). Doğan and colleagues (2011) reported an internal consistency value of .72, while Hays and DiMatteo (1987) indicated an internal consistency value of .84. In the present study, we found an internal consistency score of .82 for the ULS-8.

Procedures

After obtaining IRB approval from the first author's institution, we created an online survey containing the Turkish versions of the SCL-90-R and ULS-8, along with a demographic questionnaire. The survey included an online consent form outlining study details and criteria for participation. We recruited participants via snowball and convenience sampling, using social media platforms (Facebook and WhatsApp). The survey was open from October 13 to November 30, 2020.

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Table 1. Descriptive statistics of SCL-90-R (GSI) by demographics

Variable	Level/category	*n*	%	*M*	*SD*	*t*	*df*	*p*
Sex						−4.38	1,097	.000
	Male	264	23.8	.95	.78			
	Female	835	75.3	1.19	.77			
Employment						−4.57	1,092	.000
	Yes	382	34.4	.99	.79			
	No	712	64.2	1.21	.77			
Relationship						−1.85	1,101	.064
	In a Relationship	506	45.6	1.09	.79			
	Single	597	53.8	1.18	.77			
Student status						3.99	1,099	.000
	Student	596	53.7	1.22	.79			
	Nonstudent	505	45.5	1.03	.75			
Living condition						2.73	1,103	.006
	With Somebody	1,035	93.3	1.15	.78			
	Alone	70	6.3	.89	.78			
Living with someone over 65 or chronically ill						−2.36	1,104	.018
	Yes	293	26.4	1.23	.80			
	No	813	73.3	1.10	.77			
Chronic illness						−2.37	1,104	.019
	Yes	101	9.1	1.33	.87			
	No	1,005	90.6	1.11	.77			
Psychiatric diagnosis						−3.55	1,099	.001
	Yes	128	11.5	1.39	.86			
	No	973	87.7	1.10	.76			
Curfew city						−.81	1,103	.420
	Yes	794	71.6	1.15	.77			
	No	311	28.0	1.10	.80			
COVID-19 + diagnosis (self)						.79	1,104	.429
	Yes	57	5.1	1.06	.78			
	No	1,049	94.6	1.14	.78			
COVID-19 + diagnosis (others in the house)						.50	1,103	.615
	Yes	152	13.7	1.11	.78			
	No	953	85.9	1.14	.78			
COVID-19 death – family or friends						−3.15	1,101	.002
	Yes	289	26.1	1.26	.79			
	No	814	73.4	1.09	.77			
Quarantine (contact)						.36	1,100	.722
	Yes	169	15.2	1.11	.81			
	No	933	84.1	1.14	.77			
Job loss in the family						−3.39	1,105	.001
	Yes	129	11.6	1.39	.92			
	No	978	88.2	1.10	.75			
Critical life changes in the past 6 months						−6.15	1,103	.000
	Yes	248	22.4	1.42	.84			
	No	857	77.3	1.05	.74			

Note. GSI = Global Severity Index.

Results

After data collection, we carried out a sensitivity analysis in G*Power (Faul et al., 2007). Our findings suggested that, to run a two-tailed independent samples *t*-test with a fairly balanced independent groups given a = .05 and .80 power, our study could detect an effect size of (Cohen's *d*) .16 or .09 Cohen's *F*. These values indicate small effect sizes. In other words, when a small effect size as small as .16 (Cohen's *d*) or .09 (Cohen's *F*) was present, our sample size had sufficient power to detect the difference between groups. Additionally, we run a posthoc power analysis. Given the input

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Table 2. Descriptive statistics of SCL-90-R and its subscales

				Prevalence			
Variables	*n*	*M*	*SD*	*n* (1 *SD*+)	%	*n* (2 *SD*+)	%
GSI	1,109	1.1362	.78038	177	16	54	4.9
SOMA	1,109	0.9798	.83809	195	17.6	61	5.5
OC	1,109	1.4201	.91304	193	17.4	45	4.1
INT	1,109	1.2593	.93599	206	18.6	48	4.3
DEPR	1,109	1.4133	.93315	199	17.9	43	3.9
ANX	1,109	0.9906	.86844	179	16.1	66	6
HOST	1,109	1.0424	.96149	159	14.3	70	6.3
PHOB	1,109	1.0365	.85933	176	15.9	43	3.9
PARA	1,109	1.1579	.90521	192	17.3	52	4.7
PSYC	1,109	0.7966	.79257	179	16.1	65	5.9

Note. GSI = Global Severity Index; SOMA = Somatization; OC = Obsessive-Compulsiveness; INT = Interpersonal Sensitivity; DEPR = Depression; ANX = Anxiety; HOST = Hostility; PHOB = Phobic Anxiety; PARA = Paranoid Ideation; PSYC = Psychoticism.

parameters above (i.e., $p = .05$; Cohen's $d = .16$; two-tailed; balanced independent groups), we detected a power of .80 ($1 - \beta$).

The mean of the SCL-90-R was 1.14 ($SD = .78$, $N = 1{,}109$). The mean scores of the SCL-90-R subscales ranged from Psychoticism .80 ($SD = .79$, $N = 1{,}109$) to Obsessive-Compulsiveness 1.42 ($SD = .91$, $N = 1{,}109$). 16% of our participants scored 1 standard deviation above the SCL-90-R mean, while 4.9% of all participants scored 2 standard deviations above the mean. When we examined the subscales of the SCL-90-R, the prevalence of those demonstrating symptoms (1 *SD*+) ranged between 14.3% (hostility) and 18.6% (interpersonal sensitivity), while individuals with greater symptoms (2 *SD*+) ranged between 3.9% (depression and phobic symptoms) and 6.3% (hostility). Descriptive statistics of the SCL-90-R and its subscales are presented in Table 2.

Research Question 1

The first research question relates to whether our participants' psychological symptom levels significantly differed from those participants in previous studies conducted in Turkey. For this purpose, we employed a meta-analytic approach in examining studies using the SCL-90-R, excluding norm studies. To achieve this, we followed a series of steps. First, we examined previous studies using SCL-90-R in Turkey and identified seven publications reporting the mean and standard deviation scores for the GSI and all subscales of the SCL-90-R. Of these studies, four examined psychological symptoms of nonclinical samples before COVID-19 (Group 1: Bekiroğlu, 2020; Bulut & Yıldırım, 2020; Sır et al., 1998; Taymur et al., 2016), two investigated clinical patients before COVID-19 (Group 2: Aytaç et al., 2020; Gökçek et al., 2020), and one study examined healthcare providers' potential psychiatric symptoms during the COVID-19 pandemic (Group 3: Uzun et al., 2020). We included the current study as Group 4 in the analysis. Second, we created a Microsoft Excel sheet and entered the summary data of these studies, including the number of participants, participant characteristics, and mean and standard deviation values. Third, we calculated the pooled mean and pooled standard deviation/variance scores for the clinical and nonclinical groups, since these groups included multiple studies. In the final step, we compared the mean and standard deviation values (pooled values when needed) of the three groups to those of our sample using ANOVA (see Table 3).

When we compared the GSI scores, we detected significant differences among the four groups, $F(3, 2679) = 73.01$, $p < .001$. Participants in the clinical group ($M_{pooled} = 1.14$, $SD_{pooled} = .60$) reported significantly higher scores than those in the remaining three groups, $p < .001$. Additionally, our participants ($M = 1.14$, $SD = .78$) indicated significantly higher psychological symptoms than those in the nonclinical groups ($M_{pooled} = .91$, $SD_{pooled} = .69$), $p < .001$. Finally, we observed no significant difference between our findings ($M = 1.14$; $SD = .78$) and those of Uzun and colleagues (2020) ($M = 1.10$; $SD = .84$) (see Table 4).

Next, we examined whether the OC, depression, and interpersonal sensitivity subscale scores of our study differed from previous research conducted in Turkey using the SCL-90-R. We ran an ANOVA to explore overall and pairwise differences among the groups mentioned above. The ANOVA results suggested significant differences among OC scores, $F(3, 2679) = 72.52$, $p < .001$. Pairwise comparisons among the groups demonstrated that our participants had significantly higher scores than the nonclinical group ($M_{difference} = .22$; $p < .001$), whereas they had significantly lower scores than those of the clinical group ($M_{difference} = .39$; $p < .001$). There was no significant difference between the OC scores of our participants

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Table 3. Comparison of SCL-90-R scores across studies

Population and pair of groups	*M* or M_{pooled}	*SD* or SD_{pooled}	*F*	*p*	*N*
GSI			73.01	.000	
1	0.91	.69			681
2	1.45	.60			790
3	1.10	.84			103
4	1.14	.78			1,107
Obsessive compulsiveness (OC)			72.52	.000	
1	1.20	.73			
2	1.81	.50			
3	1.40	.96			
4	1.42	.91			
Depression			181.18	.000	
1	1.04	.58			
2	2.03	.56			
3	1.27	.99			
4	1.41	.93			
Interpersonal sensitivity (IS)			66.55	.000	
1	1.01	.74			
2	1.64	.88			
3	1.13	.90			
4	1.25	.94			

Note. 1 = nonclinical studies; 2 = clinical studies; 3 = Uzun et al. (2020); 4 = the current study.

Table 4. Pairwise comparison scores across studies

Pairwise comparisons	$M_{difference}$	*p*	Pairwise comparisons	$M_{difference}$	*p*
GSI			Depression		
1 vs. 2*	−.54	.000	1 vs. 2*	−.99	.000
1 vs. 3	.19	.047	1 vs. 3	−.23	.046
1 vs. 4*	.23	.000	1 vs. 4*	−.37	.000
2 vs. 3*	.35	.000	2 vs. 3*	.77	.000
2 vs. 4*	.31	.000	2 vs. 4*	−.62	.000
3 vs 4	.04	.96	3 vs 4	−.14	.35
Obsessive compulsiveness (OC)			Interpersonal sensitivity (IS)		
1 vs. 2*	−.61	.000	1 vs. 2*	−.63	.000
1 vs. 3	−.20	.09	1 vs. 3	−.12	.58
1 vs. 4*	−.22	.000	1 vs. 4*	−.25	.000
2 vs. 3*	.41	.000	2 vs. 3*	.51	.000
2 vs. 4*	.39	.000	2 vs. 4*	.38	.000
3 vs 4	.02	.99	3 vs 4	.13	.47

Note. 1 = nonclinical studies; 2 = clinical studies; 3 = Uzun et al. (2020); 4 = the current study. Pairwise comparisons were carried out using Tukey HSD posthoc test. The critical *p*-value for the posthoc analysis was .0125.

and those of the healthcare providers ($M_{difference}$ = .02; $p < .10$).

The ANOVA result pertaining to depression scores was significant, $F(3, 2679) = 181.18$, $p < .001$. When pairwise comparisons were examined, our participants reported significantly higher scores than those of the nonclinical group ($M_{difference}$ = .37; $p < .001$) and significantly lower scores than those of the clinical group ($M_{difference}$ = −.62; $p < .001$). We observed no differences between our findings and those of the other study conducted with healthcare providers during COVID-19.

Finally, we found a significant difference among the groups on the interpersonal sensitivity scores, $F(3, 2679) = 66.55$, $p < .001$. Posthoc analysis (i.e., Tukey HSD) illustrated our findings to be significantly higher than those of the nonclinical group ($M_{difference}$ = .25; $p < .001$) and significantly lower than the clinical group ($M_{difference}$ = −.38; $p < .001$). Lastly, we observed no significant differences between our group and the study carried out with healthcare providers during the pandemic ($M_{difference}$ = .13; $p < .47$) (see Table 4).

Research Question 2

The second question concerns the mean differences among demographic groups during the COVID-19 pandemic in Turkey. We selected to examine certain demographic groups based on the currently emerging COVID-19 literature (e.g., Bostan et al., 2020; Deady et al., 2020; Eisma et al., 2020; Forte et al., 2020; Patsali et al., 2020; Son et al., 2020; Vindegaard & Benros, 2020; Xiong et al., 2020). Our goal was not only to provide information for the current study but also to present data for future studies which would allow comparisons. Therefore, we investigated the mean differences in GSI scores among different groups using independent samples *t*-tests. We found statistically significant group differences in GSI scores on the following group variables: (a) sex, (b) employment, (c) student status, (d) living condition, (e) living with someone over 65 or chronically ill, (f) chronic illness, (g) psychiatric diagnosis, (h) COVID-19 death – family or friends, (i) job loss in the family, and (j) critical life changes in the past 6 months (see Table 1 for *t* and *p* values).

Research Question 3

Our third research question focuses on the role of loneliness in predicting psychological symptoms. To conduct a regression analysis, we first obtained descriptive statistics and checked assumptions. The mean score of the ULS-8 was 1.76 ($SD = .58$, $N = 1{,}109$). Correlation statistics showed that the SCL-90-R and the ULS-8 were significantly correlated with each other ($r = .51$, $p < .01$). We detected no assumption violations. The relationship between independent and dependent variables was linear. There was no multicollinearity as evidenced by Tolerance (> .2; Menard, 1995), and VIF values (< 10; Neter et al., 1989).

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Table 5. Multiple regression analysis in predicting psychological symptoms from stress factors and ULS-8

					Change statistics				
Model	*R*	R^2	Adjusted R^2	*SE* of the estimate	R^2 change	*F* change	*df*1	*df*2	Sig. *F* change
1	.231[a]	.053	.052	.75889	.053	30.652	2	1,088	.000
2	.253[b]	.064	.060	.75559	.011	4.179	3	1,085	.006
3	.557[c]	.310	.306	.64920	.246	385.738	11	1,084	.000

Note. GSI = Global Severity Index, ULS-8 = UCLA Loneliness Scale-8. [a]Predictors: (constant), psychiatric diagnosis critical life changes in the past 6 months. [b]Predictors: (constant), psychiatric diagnosis, critical life changes in the past 6 months, COVID-19 positive diagnosis – self, chronic illness, COVID-19 death – family or friends. [c]Predictors: (constant), psychiatric diagnosis, critical life changes in the past 6 months, COVID-19 positive diagnosis – self, chronic illness, COVID-19 death – family or friends, ULS-8. [d]Dependent variable: GSI.

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We further examined whether COVID-19-unrelated stress factors (psychiatric diagnosis and critical life changes), COVID-19-related stress factors (own COVID-19 positive diagnosis, chronic illness, and COVID-19-related loss), and loneliness predicted psychological symptoms. To control for COVID-19-unrelated and -related stress factors and to assess a loneliness effect, we carried out hierarchical multiple regression analysis, the result of which indicated that all models were statistically significant. The COVID-19-unrelated stressors were entered in Model 1 and explained 5% of the variance in psychological symptoms, $R^2 = .053$, $p < .05$. The COVID-19-related stressors were entered in Model 2, and their unique contribution was less than 1% of the variance, $R^2 = .064$, $p < .05$. Loneliness was entered in Model three, and the final model explained 31% of the variance, $R^2 = .31$, $p < .05$ (see Table 5).

Discussion

Our goal was to understand the impact of the COVID-19 pandemic on public mental health in Turkey in late 2020. The mean GSI score was 1.14, and 16% of the participants were 1 standard deviation, 4.9% 2 standard deviations above the mean. Examining the mean and percentages (see Table 2), we discovered that subscales with higher mean scores (i.e., OC, interpersonal sensitivity, and depression) were the most common problem areas among all participants. Subscales that the participants who scored 2 standard deviations above the mean (i.e., anxiety, hostility, and psychoticism) were severe problem areas for fewer respondents.

To answer our first research question, we compared the GSI, OC, depression, and interpersonal sensitivity subscale scores in our findings with those of previous findings. These three subscales were consistently reported as the highest three mean scores in the studies conducted both during (Uzun et al., 2020) and before (e.g., Bekiroğlu, 2020; Bulut & Yıldırım, 2020) the pandemic in Turkey. The OC scores of the participants in this study were significantly higher than those in nonclinical studies conducted before the pandemic. One explanation can be the overlap between the scope of the OC subscale and the behaviors necessitated to fight the coronavirus. Therefore, this interpretation can serve as a reminder for clinicians. The OC symptoms, particularly pertaining to cleanliness, should be carefully examined during the first interview. Before diagnosing a client, the nature of the COVID-19 pandemic and cultural differences in hygiene practices should be kept in mind.

During the COVID-19 pandemic, depressive symptoms were identified as a common problem for the general population (Forte et al., 2020). Interpersonal sensitivity-related issues were also recognized as a problem area (Tian et al., 2020). Accordingly, the participants in this study reported greater complaints about depression and interpersonal sensitivity. When we compared depression and interpersonal sensitivity mean scores from our study to those obtained in nonclinical focused studies before the pandemic, we observed a significant increase during the pandemic. Anxiety was often reported as a problem area during the pandemic; yet, in our study the mean score was relatively lower compared to the other subscales. Therefore, we did not compare the anxiety subscale scores to the ones reported in the previous studies. We argue that items designed to measure general anxiety may not be sensitive enough to detect COVID-19-related anxiety indicators. Additionally, we collected our data in October and November, almost 8 months after the start of the pandemic in Turkey. Thus, we argue that the burden and fatigue of the pandemic and all safety measures, primarily social distancing, may have increased depression and sensitivity in interpersonal areas, more so than anxiety.

Our second research question addressed the disproportionate effects of the COVID-19 pandemic on different groups. The mean GSI scores were significantly higher for the following participant groups: women, students, currently not employed, job loss in the family, having a psychiatric diagnosis, having experienced COVID-19-unrelated critical life changes in the last 6 months, living with others, living with someone over 65 or chronic illness, having a chronic illness oneself, and experiencing loss. During the

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pandemic, women were shown to be more disadvantaged in terms of experiencing psychological symptoms (Bilge & Bilge 2020; Forte et al., 2020; Özmete & Pak, 2020; Xiong et al., 2020; Zhu et al., 2020). We argue that culturally expected gender roles may have an impact on women, whose childcare and household responsibilities have in fact increased because of the pandemic. İlkkaracan and Memiş (2021) reported that unpaid work time of women at homes has almost doubled during the pandemic in Turkey, and women have much more frequently assumed the responsibility for complying with hygiene requirements as well as childcare and food preparation. Additionally, women college students reported higher levels of danger perception of the COVID-19 pandemic (Rodriguez-Besteiro et al., 2021), which can be associated with higher levels of stress. Students' mental-health concerns during the COVID-19 pandemic have been extensively documented; transition to online education, relocation to living with family, the subsequent loss of independence, imposition of a more distracting environment, and sudden change in social relations have all been identified as COVID-19-pandemic-related stressors for students (Patsali et al., 2020; Son et al., 2020; Xiong et al., 2020). All these factors, individually or in combination, can be useful for explaining the higher levels of psychological symptoms for students in our study.

Job loss and unemployment have been listed as important risk factors for increased mental-health problems (Brand, 2015; Classen & Dunn, 2012), and studies confirmed this relationship for the pandemic as well (Achdut & Refaeli, 2020; Deady et al., 2020; Liu et al., 2021; Xiong et al., 2020). Our findings are compatible with the previous research and can be explained by the fact that individuals who were not currently employed or who experienced a job loss in the family had reduced financial resources and were more isolated (Achdut & Refaeli, 2020). People with current or previous psychiatric diagnosis and those who have experienced recent critical life changes are much more vulnerable to psychological problems during the pandemic because of their preexisting psychological burden (Xiong et al., 2020). This runs parallel to the higher mean GSI scores for these groups in our study.

Although living alone during the pandemic is a risk factor for psychological problems (Guo et al., 2020), we found that people living with others are at risk for higher levels of psychological symptoms. Living with others does not equate with having greater social support or decreased loneliness. Rather, during the pandemic, the quality of relationships was the key factor determining the psychological outcomes for people living together (Pieh et al., 2020). Additionally, 28% of those living with others indicated living with someone having a chronic illness/condition or who is older. These people are aware of the amplified risk for their loved ones, and also feared transmitting the virus (Bilge & Bilge, 2020; Bostan et al., 2020). Studies showed that COVID-19-infected individuals with preexisting health conditions such as hypertension, diabetes, chronic obstructive pulmonary disease, cardiovascular disease, and cerebrovascular disease exhibit a more rapid progression and a more severe course, and that older age is a mediator increasing the risk (Sanyaolu et al., 2020; Wang et al., 2020). People with a chronic illness/condition may themselves experience a higher level of stress, which is compatible with our findings (Gonzalez et al., 2020). Losing a family member or a friend because of the virus during the COVID-19 pandemic is different in many ways than losses experienced during ordinary times. For example, COVID-19 deaths often come unexpectedly and suddenly, interrupting traditional grieving processes with required safety precautions and limiting physical social support during the pandemic (Lee & Neimeyer, 2020). All these factors can make people much more susceptible to experiencing higher levels of psychological symptoms (Eisma et al., 2020, 2021).

Our last research question focused on the role of loneliness in predicting the psychological symptoms of the participants after controlling for preexisting and COVID-19-related stressors. Hierarchical multiple regression analysis revealed that, when preexisting personal stressors and COVID-19-related stressors held constant, perceived loneliness was a significant predictor of psychological symptoms. Prior individual and COVID-19-related stressors played a small but significant role in predicting psychological symptoms. Previous studies (e.g., Groarke et al., 2020; Saltzman et al., 2020) identified loneliness as a risk factor for psychological problems during the COVID-19 pandemic. Additionally, having a psychiatric diagnosis, experiencing critical life changes in the past 6 months, being diagnosed with COVID-19, having a chronic illness, and experiencing a COVID-19-related death among family or friends each create risk factors for increased psychological symptoms (Eisma et al., 2020, 2021; Vindegaard & Benros, 2020; Xiong et al., 2020). We can argue that, irrespective of the stressors experienced by the participants, what mattered the most was how lonely individuals felt.

Findings from the current study may inform future intervention plans and research. For instance, preventing and managing OC, depression, and interpersonal sensitivity symptoms could become a goal for programs intended for the public, whereas intensive interventions targeting anxiety, hostility, and psychoticism can be planned for fewer individuals who experience more severe symptoms. Comparisons of the SCL-90-R scores for different groups suggest that some participants are at greater risk of developing various psychological problems because of their unique conditions. Therefore, mental-health interventions should

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prioritize certain groups and target their specific problems. For instance, psychoeducational programs teaching stress-management skills can target women, students, or recently unemployed people. While planning interventions for specific groups, one should carefully examine the problems and needs. Future studies can focus on uncovering the underlying reasons for these differences in the SCL-90-R scores. Narrowing the focus and making cross-comparisons can become a strategy since none of these variables exists in an isolated manner. For instance, women can be students, have a psychiatric diagnosis, and experience the loss of a loved one at the same time. How all these factors interact with each other is also another layer that needs further inquiry. There is great uncertainty surrounding the pandemic, and psychological problems are not exempt. Because of the prolonged impact of the pandemic and reduced opportunities for getting psychological and psychiatric help, the severity of symptoms and the number of people with severe symptoms may increase. Longitudinal studies may help to understand the long-term psychological impact of the pandemic.

To our knowledge, this study is the first research in Turkey to extensively evaluate various psychological symptoms on a large sample and compare the findings to previous studies through statistical analysis. However, our study is not free from limitations. Using convenient and snowball sampling and self-report inventories are common limitations in social sciences. Collecting data through online surveys alone also excludes people lacking internet access, and we do not have any information about the characteristics of the nonrespondents (Lefever et al., 2007). Additionally, some groups such as women and students were overrepresented in the current study. Therefore, caution should be employed in generalizing our findings. We compared our findings to those of previous studies using the SCL-90-R to detect the impact of the pandemic on psychological symptoms. Though we separated previous studies as being conducted with clinical and nonclinical samples, it is noteworthy to mention that our sample included both groups – individuals with a diagnosis constituted 11.50% of the sample. We intentionally kept these participants in our analyses, because previous studies using nonclinical samples did not provide such information, and lifetime prevalence of psychiatric diagnosis in the general public for Turkey lies at around 17% (Erol et al., 1998). Thus, we believe that the diagnostic composition of our study is more comparable to the nonclinical studies. We aimed to explore group differences on the SCL-90-R scores to identify risk groups. This study presented some of the fundamental characteristics of the individuals at greater risk for developing psychological symptoms, although there are numerous other possible combinations of the demographic variables we presented in this study, and the concept of intersectionality is different than the combined impact of the variables (Walby et al., 2012). Thus, without having a particular interest or theory since the beginning, analyzing some of those variables in combination would be an arbitrary attempt.

Conclusion

The goal of this study was to present a general snapshot of the psychological symptoms in Turkey during the COVID-19 pandemic in late 2020. Results revealed that people experienced higher levels of psychological problems in many areas. Additionally, some groups such as women, college students, and people with chronic illness were much more vulnerable to developing psychological symptoms. Finally, feeling lonely is an important factor in predicting psychological symptoms. Our study portrays the current mental health status of the Turkish population and provides a baseline for developing clinical interventions, as well as planning future research.

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