



Mental status of nursing students assessed using the general health questionnaire during the COVID-19 pandemic in Turkey

İlknur Göl PhD, RN¹  | Özüm Erkin PhD, RN² 

¹Department of Public Health Nursing, Faculty of Health Sciences, Cankırı Karatekin University, Cankırı, Turkey

²Department of Public Health Nursing, Faculty of Health Sciences, İzmir Demokrasi University, İzmir, Turkey

Correspondence

İlknur Göl, PhD, RN, Department of Public Health Nursing, Faculty of Health Sciences, Cankırı Karatekin University, Cankırı, Turkey.
Email: ilknurnayirgol@gmail.com

Abstract

Purpose: The purpose of this study is to determine the mental state of nursing students when the impact of the COVID-19 pandemic on the Turkish population reached its peak.

Design and Methods: This cross-sectional study was remotely conducted using General Health Questionnaire-12 (GHQ-12) and personnel information form, for 2630 nursing students, in Turkey. Data were statistically analyzed.

Findings: The mean GHQ-12 score was 3.04 ± 2.13 , and 71.5% of nursing students scored ≥ 2 on the GHQ-12, indicating risk for mental problems. We highlighted that nursing students who reported less sleep and diet during the COVID-19 pandemic as well as those who thought they were suffering from COVID-19 symptoms obtained significantly higher mean scores on the GHQ-12.

Practice Implications: Our results showed that most nursing students reported mental problems during the COVID-19 pandemic. Pre-training of the frontline staff during outbreaks is needed to prepare them to deal with a global pandemic.

KEYWORDS

COVID-19 outbreak, mental status, nursing students

1 | INTRODUCTION

With the global pandemic of coronavirus disease (COVID-19), the psychological problems accompanying this pandemic have rapidly increased the public health burden.¹ Fearful conditions such as epidemics may carry the risk of triggering depressive and bipolar disorders at the community level. Experiences acquired from previous pandemics have shown that not only people with anxiety disorders and panic attacks but also individuals who have never had such complaints before can develop depressive symptoms, different levels of anxiety disorders, and post-traumatic stress disorders. Certainly, all health employees who perform an active role during the pandemic are also likely to suffer similar disorders and/or concerns. Precautions and measures that are taken from the very beginning to protect mental

health are gaining great importance to prevent treatment-resistant diseases that are likely to develop later in life.²

In studies conducted after the SARS outbreak in 2003, it was stated that healthcare workers suffered high-stress levels and psychological distress even after the epidemic was over. Healthcare workers should always be considered high-risk groups who are prone to develop psychopathology after the outbreak of a global pandemic. Moreover, health workers who have been exposed to and witnessed traumatic experiences were seen to sustain permanent distress.^{3,4} Physicians, nurses, and all other allied health professionals working in all health institutions are not only exposed to the stress caused by epidemics at the highest level but also are expected to cope with the psychological consequences of epidemics for a long time, as actively working in these types of situations is extremely challenging. According to many studies, it is pointed out that being a healthcare

worker during an epidemic outbreak creates a high level of stress in biopsychosocial aspects, even if it is not traumatic.⁵⁻⁷ Therefore, healthcare workers should be protected and reinforced to ensure the delivery of effective epidemic management.

The Ministry of Health in Turkey has established a scientific committee to develop strategies to fight against the COVID-19 pandemic ever since the first official case was recorded in the country on March 11, 2020. Some of the measures taken to control and limit the pandemic spread are as follows: the restriction of international trips and domestic travels, the imposition of a curfew for those over the age of 65, stopping formal education in schools, and transitioning to a distance education system.⁸

The aim of this study was to evaluate the mental states of nursing students when the impact of the COVID-19 pandemic reached its peak. We researched how nursing students have reacted to the severe COVID-19 pandemic and tried to predict how they will react to similar situations in the future. At present, the COVID-19 outbreak has demonstrated the importance of the physiological and psychological resilience of healthcare workers. Therefore, the results of the study could shed some light on the protective measures that need to be taken to prepare future healthcare professionals for any type of global outbreaks.

2 | DESIGN AND METHODS

2.1 | Design and sample

A cross-sectional study was conducted in Turkey in June 2020. The population was composed of undergraduate nursing students who were recruited via the snowball sampling method. We used the formula $n = t^2 \times p \times q / d^2$ to determine the size of the sample, where

the population is unknown; p is the probability of occurrence; $q = 1 - p$; and d is the effect size.⁹ For the calculations, a confidence interval of 0.95%, a standard deviation of 5%, and 50% unknown prevalence were used. The minimum size of the sample was determined to be 384. The inclusion criteria in the study were as follows: (a) being an undergraduate nursing student in Turkey, (b) willing to participate in the study, (c) being able to read Turkish, (d) being users of Facebook, WhatsApp, Instagram; and (e) those who completed the questionnaire. The sample consisted of 2630 nursing students (Figure 1). Data were collected online via Google forms, because schools were closed and the distance education system was in progress due to the COVID-19 pandemic.

2.2 | Data collection tools

The study data were collected in June 2020 using the “Personal Information Form” and the “12-item General Health Questionnaire-12” (GHQ-12) developed by Goldberg (1972).¹⁰

2.3 | Personal information form

The form developed by the researchers in line with the pertinent literature^{11,12} included 15 items related to the following questions asked from the participating students: what year at school they are, age, sex, whether they have a chronic disease, smoking status, alcohol consumption, sleep pattern, diet, keeping up with news on COVID-19, whether they have been diagnosed with the COVID-19, what do they think symptoms of COVID-19 are, if they have a relative diagnosed with the COVID-19, and the number of days they stayed at home.

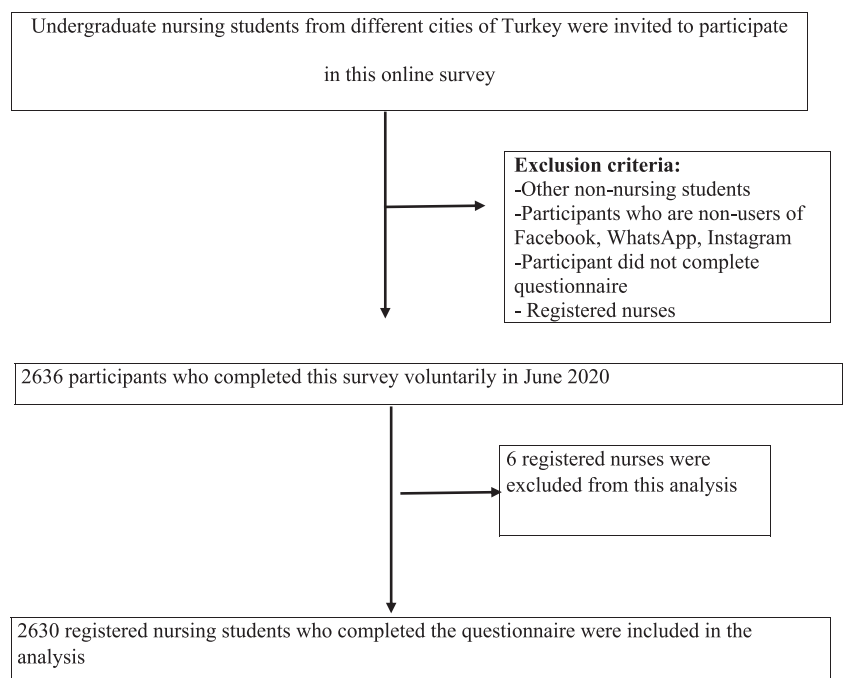


FIGURE 1 A flow chart of subjects' enrollment

2.4 | GHQ-12

The questionnaire developed by Goldberg to determine the mental state of people in the community and primary healthcare institutions is a self-administered test.¹³ Developed in the 1970s, the General Health Questionnaire (GHQ) is aimed at quantifying the risk of developing psychiatric disorders.¹⁴ The format of the full GHQ is the 60-item test with a four-point scale for each response. The test exists in several alternative forms. The GHQ-12 consists of 12 statements to which respondents indicate agreement on a four-point scale (0 = *Not at all*; 3 = *More than usual*).¹⁰

GHQ-12, a commonly used screening test whose validity and reliability in Turkey was performed by Kılıç, is a valid and reliable test (Cronbach's $\alpha = 0.78$). In our study, we used GHQ-type scoring in which the responses given to the "a" and "b" options of the questions are scored as "0" points, and the responses given to the "c" and "d" options are scored as "1" point. The score of GHQ-12 ranges between 0 and 12. In the present study, those whose GHQ-12 scores were ≥ 2 were accepted as being at risk in terms of mental problems. Goldberg et al.¹⁵ found that the most common cut-off score was 2/3 (a score of 2 or less indicates the absence of a mental disorder and a score of 3 or greater indicates the presence of a disorder).¹⁵ For this cut-off point, the sensitivity and specificity values were determined as 74% and 82%, respectively.^{16,17}

2.5 | Data analysis

The Statistical Package for Social Sciences 22.0 (SPSS) was used to analyze the collected data. The percentage, mean, *SD*, Kruskal–Wallis *H*, and Mann–Whitney *U* tests were used for the analysis. Linear regression analysis was used to determine the extent to which independent variables affect the GHQ-12 total score. The statistical significance level was set at 0.05.

2.6 | Ethical consideration

To collect the study data, approval of a University Research Committee and Publication Ethics Board (Protocol Number: 2020/115) in Turkey was obtained. A consent page was attached on the front part of the questionnaire that explains the purpose of the research, which is supposed to be read before filling the questionnaire. Participants could only proceed to fill the questionnaire after they had given their consent.

3 | RESULTS

The mean age of students participating in the study was 21.30 ± 1.95 *SD*. The majority of them (82.1%) were female students and 11.4% had a chronic disease. When the participants were asked whether there was any change in their smoking behavior during the COVID-19 pandemic, 11.4% of them stated that they started to

smoke less after the pandemic, whereas 1.1% stated that they started to smoke more. When they were asked whether there was any change in their alcohol use behavior during the pandemic, 8.4% of them stated that they started to drink alcohol less. In addition, according to their statements, during the pandemic, 68.1% slept more and 53.7% started to eat more. However, 0.8% of them were diagnosed with COVID-19, and 30.4% of them thought they had symptoms of COVID-19 (Table 1).

Within the scope of the lockdown order imposed throughout the country due to the pandemic, the mean number of days the students stayed at home was 54.85 ± 19.65 *SD* days (minimum: 11 days, maximum: 150 days).

The mean score the participants obtained from the GHQ-12 was 3.04 ± 2.13 *SD* (min: 0, max: 9). The scores obtained from the GHQ demonstrated that 71.5% of nursing students scored ≥ 2 on the GHQ-12, indicating that they were at risk of developing mental problems. The analysis of the independent variables considered to affect the students' mean GHQ-12 scores demonstrated that those who slept less or ate less during the pandemic and those who thought they had symptoms of COVID-19 obtained significantly higher scores ($p < 0.05$). Even though not statistically significant, those who started smoking after the COVID-19 pandemic, those who kept up with COVID-19-related news on television and/or social media for more than 4 h a day, and those who were diagnosed with the COVID-19 or had a relative diagnosed with the COVID-19 obtained higher mean scores ($p > 0.05$; Table 2).

The mean scores obtained from the items in the GHQ-12 are presented in Table 3. The participants had a score ≥ 2 from 8 of 12 items on the scale. The first three items from which the students participating in the study obtained the highest scores are as follows: Item 5, "Have you been feeling unhappy and depressed?" Item 9, "Have you felt like you were playing a useful role in some things?" and Item 10, "Have you been able to face your problems?"

Table 4 shows the effects of some independent variables on the GHQ-12 total score. The increase in GHQ-12 score is explained by the following variables; 2.8% ($R^2 = 0.028$) sleep pattern, 3.9% ($R^2 = 0.039$) diet, 1.6% ($R^2 = 0.016$) actual news about COVID-19, and 2.4% ($R^2 = 0.024$) symptoms of COVID-19. The variables that increase the GHQ-12 score are as follows; change in sleep pattern 62.9% ($= 0.629$), change in diet 64.6% ($= 0.646$), actual news about COVID-19 29.8% ($= 0.298$), and symptoms of COVID-19 71.2% ($= 0.712$) ($p < 0.05$).

4 | DISCUSSION

The present study aimed at assessing the mental status of nursing students during the COVID-19 pandemic, in which the mean score of GHQ-12 was obtained to be 3.04 ± 2.13 *SD*. Bearing in mind that those with GHQ-type score ≥ 2 are considered at risk of developing mental problems, thus, we can definitely state that majority of the participants in our study were considered to be at risk to develop mental problems. When reviewing research works in Turkey that

TABLE 1 Descriptive characteristics of the students

Descriptive characteristics	n	%
Sex		
Women	2160	82.1
Men	470	17.9
Year at school		
1	400	15.2
2	550	20.9
3	760	28.9
4	920	35.0
Presence of a chronic disease		
Yes	300	11.4
No	2330	88.6
Smoking status		
I never smoke	2160	82.1
I started smoking after the pandemic	10	0.4
I smoked less after the pandemic	300	11.4
I smoked more after the pandemic	30	1.2
There have been no changes in my smoking habit	130	4.9
Alcohol consumption		
I never drink alcohol	2340	89.0
After the pandemic, I drank less	220	8.4
There have been no changes in my alcohol drinking habit	70	2.6
Sleep pattern		
There have been no changes in my sleep pattern	390	14.8
I sleep more than I did before	1790	68.1
I sleep less than I did before	450	17.1
Diet		
There have been no changes in my diet	870	33.0
I eat more than I did before	1410	53.7
I eat less than I did before	350	13.3
Keeping up with news on COVID-19		
Never	110	4.2
2 h a day on average	1500	57.1
4 h a day on average	400	15.1
More than 4 h a day	620	23.6
Diagnosed with COVID-19		
Yes	20	0.8
No	2610	99.2
Thinking that he or she has symptoms of COVID-19		
Yes	800	30.4
No	1830	69.6
Having a relative diagnosed with COVID-19		
Yes	330	2.5
No	2300	87.5

TABLE 2 The mean GHQ-12 scores obtained by our sample divided by nursing student characteristics

Descriptive characteristics	Mean (X ± SD)	Test	p
Sex			
Women	3.12 ± 2.01	z = 4.390.500	0.143
Men	2.55 ± 2.11		
Year at school			
1	2.72 ± 1.94	h = 1.870	0.600
2	3.03 ± 2.05		
3	3.18 ± 2.08		
4	3.00 ± 2.32		
Presence of a chronic disease			
Yes	2.93 ± 2.25	z = 3.600.500	0.786
No	3.03 ± 2.13		
Smoking status			
I never smoke	2.93 ± 2.20	h = 5.471	0.242
I started smoking after the pandemic	6.00 ± -		
I smoked less after the pandemic	3.36 ± 1.75		
I smoked more after the pandemic	2.66 ± 2.51		
There have been no changes in my smoking habit	3.76 ± 1.69		
Alcohol consumption			
I never drink alcohol	2.95 ± 2.14	h = 4.682	0.960
After the pandemic, I drank less	3.95 ± 1.914		
There have been no changes in my alcohol drinking habit	2.85 ± 2.41		
Sleep pattern			
There have been no changes in my sleep pattern	2.41 ± 2.13	h = 7.798	0.020*
I sleep more than I did before	3.01 ± 2.16		
I sleep less than I did before	3.66 ± 1.91		
Diet			
There have been no changes in my diet	2.36 ± 2.113	h = 12.603	0.002
I eat more than I did before	3.35 ± 2.11		
I eat less than I did before	3.42 ± 1.98		
Keeping up with news on COVID-19			
Never	3.00 ± 2.44	h = 4.292	0.232
2 h a day on average	2.78 ± 2.10		
4 h a day on average	3.32 ± 2.33		
More than 4 h a day	3.45 ± 2.02		

(Continues)

TABLE 2 (Continued)

Descriptive characteristics	Mean ($X \pm SD$)	Test	p
Diagnosed with COVID-19		$z = 131.500$	0.222
Yes	5.50 ± 3.53		
No	3.01 ± 2.12		
Thinking that he or she has symptoms of COVID-19		$z = 5.962.000$	0.016*
Yes	3.53 ± 2.187		
No	2.81 ± 2.09		
Having a relative diagnosed with COVID-19		$z = 3.577.500$	0.591
Yes	3.33 ± 2.50		
No	2.99 ± 2.08		

Abbreviations: GHQ-12, General Health Questionnaire-12; h , Kruskal–Wallis H ; z , Mann–Whitney U .

* $p < 0.05$.

used GHQ-12 score, Demir¹⁸ had demonstrated mean GHQ-12 scores of first- and fourth-year students who participated in his study, which were $2.24 \pm 2.49 SD$ and $2.23 \pm 2.70 SD$, respectively, and in another study by Bingöl et al.,¹⁹ it was found to be 1.93. The high scores of GHQ-12 obtained in our study indicate the negative impact of the COVID-19 pandemic on mental health. The first evidence obtained from studies on the impact of COVID-19 on mental health has shown the association between mental health and the pandemic.²⁰ In a study conducted with 7143 university students after the COVID-19 pandemic in the city of China, of the participants, 0.9% experienced intense anxiety symptoms, 2.7% experienced moderate anxiety symptoms, and 21.3% experienced mild anxiety symptoms.²¹ In another similar study examining the mental health of nursing and healthcare professionals in Wuhan, a city in

Items	Min.	Max.	Mean ($X \pm SD$)
Have you lost much sleep over worry?	1	4	1.85
Have you felt constantly under strain?	1	4	2.23
Have you felt capable of making decisions about things?	1	4	2.10
Have you felt you could not overcome your difficulties?	1	4	2.18
Have you been feeling unhappy and depressed?	1	4	2.71
Have you been losing confidence in yourself?	1	4	1.88
Have you been thinking of yourself as a worthless person?	1	4	1.53
Have you been able to concentrate on what you are doing?	1	4	2.09
Have you felt you were playing a useful part in things?	1	4	2.39
Have you been able to face up to your problems?	1	4	2.27
Have you been feeling reasonably happy, all things considered?	1	4	2.12
Have you been able to enjoy your normal day-to-day activities?	1	4	1.92

Abbreviation: GHQ-12, General Health Questionnaire-12.

TABLE 4 The effect of independent variables on GHQ-12 scores

Independent variables	GHQ-12			
	Model 1 (β)	Model 2 (β)	Model 3 (β)	Model 4 (β)
Sleep pattern	0.629			
Diet		0.646		
Keeping up with news on COVID-19			0.298	
Thinking that he or she has symptoms of COVID-19				0.712
R	0.167	0.197	0.125	0.154
R^2	0.028	0.039	0.016	0.024
F	7.444	10.583	4.135	6.311
p	0.007*	0.001*	0.043*	0.013*
DW (1.5–2.5)	1.815	1.843	1.850	1.844

Abbreviations: DW, Durbin–Watson; GHQ-12, General Health Questionnaire-12.

* $p < 0.05$.

China where the coronavirus outbreak began, of the 994 healthcare workers examined, 34% had mild, 22% had moderate, and 6% had severe mental health problems.²² In the literature, it is stated that psychological problems are common among healthcare workers during the COVID-19 outbreak, as they are on the frontlines exposed to serious risks that lead to psychological problems.

Studies conducted on the SARS epidemic have demonstrated that psychological effects are not always short-lived but can lead to severe and permanent mental problems.²³ This information

TABLE 3 Mean scores obtained from the items in the GHQ-12

Items	Min.	Max.	Mean ($X \pm SD$)
Have you lost much sleep over worry?	1	4	1.85
Have you felt constantly under strain?	1	4	2.23
Have you felt capable of making decisions about things?	1	4	2.10
Have you felt you could not overcome your difficulties?	1	4	2.18
Have you been feeling unhappy and depressed?	1	4	2.71
Have you been losing confidence in yourself?	1	4	1.88
Have you been thinking of yourself as a worthless person?	1	4	1.53
Have you been able to concentrate on what you are doing?	1	4	2.09
Have you felt you were playing a useful part in things?	1	4	2.39
Have you been able to face up to your problems?	1	4	2.27
Have you been feeling reasonably happy, all things considered?	1	4	2.12
Have you been able to enjoy your normal day-to-day activities?	1	4	1.92

demonstrates the importance of enabling healthcare professionals to be prepared for disastrous situations at any given time. Some practices such as the provision of booklets containing information on the psychological effects of the pandemic and counseling and psychotherapy services have been shown to be effective in reducing the psychological traumas suffered by healthcare workers due to the COVID-19 outbreak.²² This suggests that applying similar practices to groups whose members will become healthcare professionals in the future might be an effective tool to prepare them for such situations starting from their school years.

In our study, it was observed that those who slept and ate less during the pandemic and those who thought they were suffering from COVID-19 symptoms scored significantly high on GHQ-12. In fact, changes in the quantity and quality of sleep, changes in appetite, and abnormal eating habits such as binge eating or anorexia nervosa can be the main complaints in distress environmental conditions as well as in many psychiatric disorders. Difficulty in falling asleep and maintaining sleep and poor sleep quality are the most common problems in psychiatric, physical morbidities, and accidents.^{24,25} According to a study in Turkey conducted by Günaydın,²⁶ a significant relationship was determined between sleep quality and mental status in nurses. One study stated that Polish nurses who thought nutritional status and general mental health status affect each other and those who considered themselves as malnourished obtained higher GHQ scores.²⁷ Among the physical symptoms of mental health problems, changes in appetite are common.²⁸ Literature and related studies on this subject support our study result, and according to the general health questionnaire, students who started to sleep and eat less during the pandemic were determined to have a deteriorated mental status. Another factor that makes individuals vulnerable to mental health problems during the pandemic is discrimination and stigma. Studies have demonstrated that those diagnosed with COVID-19 and/or whose family members are diagnosed with COVID-19 are exposed to discrimination or stigma.^{7,29} In another study, it was stated that people at high risk and/or suspected to be infected during the COVID-19 outbreak suffered more negative psychological effects, even if they did not develop an infection.^{30,31} In our study, those who thought they had symptoms of COVID-19 and those who stated that they or their relatives were diagnosed with the COVID-19 obtained higher scores on the GHQ, which is in line with the findings from the literature.

5 | LIMITATIONS

The results are restricted by the study period; the questionnaire was developed specifically for this study, and the fact that the data were based on self-reports was seen as a limitation by the research team.

6 | CONCLUSION

Our results indicated that 71.5% ($n = 1880$) of the participating nursing students were at risk to develop mental health problems, as they had a score >2 on GHQ-12. The mean GHQ-12 scores were

significantly high among nursing students who reported less sleep and diet during the pandemic and those who thought they were suffering from the COVID-19 symptoms.

7 | IMPLICATIONS FOR PSYCHIATRIC NURSING PRACTICE

Pre-training of personnel who will be on the frontline in situations like epidemics is important in terms of their readiness for such situations. Undergraduate nursing curriculum should adequately include the provision of comprehensive and repeated training on infection control, and accessible psychological support resources, guidance, and psychological counseling services should also be expanded in universities. In addition, within the framework of theoretical training of mental health and psychiatric nursing, it may be recommended to add or examine in more detail the topics such as crisis and its management, empathy, anxiety, communication in difficult situations, and loss and grief in relation to the pandemic process. Psychiatric nurses who are equipped with basic knowledge and skills related to mental health and psychiatric disorders and communication should take part in training and counseling processes that will contribute to individual and professional readiness before such disasters like epidemics. Psychological first aid can be integrated into nursing functions in disaster environments such as natural disasters, terrorism, and pandemic, by predicting that the psychological losses caused by a particular disaster are much more than physical losses.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Study design and data collection: Ilknur Göl and Özüm Erkin Geyiktepe. *Data analysis:* Ilknur Göl. *Study supervision:* Ilknur Göl and Özüm Erkin Geyiktepe. *Manuscript writing:* Ilknur Göl. *Critical revisions for important intellectual content:* Ilknur Göl and Özüm Erkin Geyiktepe.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

To collect the study data, approval of a University Research and Publication Ethics Board (Protocol Number: 2020/115) in Turkey was obtained. In addition, to explain the purpose of the study, an informed consent form that had to be read and approved by the participants was included in the questionnaire.

ORCID

Ilknur Göl  <https://orcid.org/0000-0003-3259-3886>

Özüm Erkin  <https://orcid.org/0000-0002-0977-2854>

REFERENCES

1. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry*. 2020;66:317-320. <https://doi.org/10.1177/0020764020915212>
2. Önder TH. *Mental Health Considerations Depending on the COVID-19 Pandemic*; 2020. <http://www.losante.com.tr/Blog/Detail/2156>
3. Oflaz F. *COVID-19 and Mental Health of Healthcare Professionals*; 2020. <https://korona.hasuder.org.tr/covid-19-ve-saglik-calisanlarinin-ruh-sagligi/>
4. Levin J. Mental health care for survivors and healthcare workers in the aftermath of an outbreak. In: Huremović D, ed. *Psychiatry of Pandemics*. Switzerland AG: Springer Nature; 2019:127-141.
5. Sakaoğlu HH, Orbatu D, Emiroglu M, Çakır Ö. Spielberger state and trait anxiety level in healthcare professionals during the Covid-19 outbreak: a case of Tepecik Hospital. *J Tepecik Educ Res Hosp*, 30(suppl 1):1-9. <https://doi.org/10.5222/terh.2020.56873>
6. Suwantarat N, Apisarnthanarak A. Risks to healthcare workers with emerging diseases: lessons from MERS-CoV, Ebola, SARS, and avian flu. *Curr Opin Infect Dis*. 2015;28(4):349-361. <https://doi.org/10.1097/QCO.000000000000183>
7. Tuncay FE, Koyuncu E, Ozel Ş. A Review of protective and risk factors affecting psychosocial health of healthcare workers in pandemics. *Ankara Med J*. 2020;2:488-501. <https://doi.org/10.5505/amj.2020.02418>
8. Turkey Academy of Sciences. *Assessment Report on Covid-19 Global Outbreak*. Ankara: Turkey Publication of the Academy of Sciences; 2020. <http://www.tuba.gov.tr/files/yayinlar/raporlar/T%C3%9CBA%20Assessment%20Report%20on%20COVID-19%20Global%20Outbreak.pdf>. Accessed September 4, 2020.
9. Sumbuloğlu V, Sumbuloğlu K. *The Research Methods in Health Science*. 7th ed. Ankara, Turkey: Hatipoglu Publishment; 2013.
10. Golderberg D, Williams P. *A User's Guide to the General Health Questionnaire*. Windsor, UK: NFER-Nelson; 1988.
11. Liu Z, Han B, Jiang R, et al. *Mental Health Status of Doctors and Nurses During COVID-19 Epidemic in China*; 2020. Available at SSRN 3551329.
12. Mottaghi S, Poursheikhali H, Shamelı L. Empathy, compassion fatigue, guilt and secondary traumatic stress in nurses. *Nurs Ethics*. 2020;27(2):494-504. <https://doi.org/10.1177/0969733019851548>
13. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med*. 1979;9(1):139-145.
14. Goldberg DP, Blackwell B. Psychiatric illness in general practice: a detailed study using a new method of case identification. *Br Med J*. 1970;1:439-443.
15. Goldberg DP, Gater R, Sartorius N, et al. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med*. 1997;27(1):191-197.
16. Kılıç C. General Health Questionnaire: a validity and reliability study. *Turkish J Psychiatry*. 1996;7(1):3-9.
17. Kılıç C, Rezaki M, Rezaki B, et al. General Health Questionnaire (GHQ12 & GHQ28): psychometric properties and factor structure of the scales in a Turkish primary care sample. *Soc Psychiatry Psychiatr Epidemiol*. 1997;32(6):327-331.
18. Demir S. Effects of an undergraduate nursing program on the self-esteem, submissive behaviors, and mental problems: a descriptive cohort study. *EC Psychol Psychiatry*. 2017;2(5):172-179.
19. Bingöl G, Gebeş R, Yavuz R. An analysis of students' general state of health at Amasya School of Health Sciences according to some variables. *Med J Goztepe Training Res Hosp*. 2012;27(3):106-111.
20. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*. 2020;3(3):e203976. <https://doi.org/10.1001/jamanetworkopen.2020.3976>
21. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, & Zheng J. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res*. 2020;287:112934.
22. Kang L, Li Y, Hu S, et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *Lancet Psychiatry*. 2020;7(3):e14. [https://doi.org/10.1016/S2215-0366\(20\)30047-X](https://doi.org/10.1016/S2215-0366(20)30047-X)
23. Taylor S. *The Psychology of Pandemics: Preparing for the Next Global Outbreak of Infectious Disease*. Cambridge Scholars Publishing; 2019.
24. Krystal AD, Prather AA, Ashbrook LH. The assessment and management of insomnia: an update. *World Psychiatry*. 2019;18(3):337-352. <https://doi.org/10.1002/wps.20674>
25. Duran S, Erkin Ö. Psychologic distress and sleep quality among adults in Turkey during the COVID-19 pandemic. *Prog Neuropsychopharmacol Biol Psychiatry*. 2021;107(3):110254. <https://doi.org/10.1016/j.pnpbp.2021.110254>
26. Günaydın N. The quality of sleep and effects on general mental health of nurses who works in a State Hospital. *J Psychiatr Nurs*. 2014;5(1):33-40.
27. Lewko J, Misiak B, Sierżantowicz R. The relationship between mental health and the quality of life of Polish nurses with many years of experience in the profession: a cross-sectional study. *Int J Environ Res Public Health*. 2019;16(10):1798. <https://doi.org/10.3390/ijerph16101798>
28. The National Health Services of the United Kingdom. *Symptoms of Clinical Depression*; 2020. <https://www.nhs.uk/conditions/clinical-depression/symptoms/>
29. Cyrus SHH, Cornelia YIC, ve Roger CMH. Mental health strategies to combat the psychological impact of COVID-19 beyond paranoia and panic. *Acad Med*. 2020;49(3):155-160.
30. Xiao H, Zhang Y, Kong D, Li S, Yang N. Social capital and sleep quality in individuals who self-isolated for 14 days during the coronavirus disease 2019 (COVID-19) outbreak in January 2020 in China. *Med Sci Monit*. 2020;26:e923921. <https://doi.org/10.12659/MSM.923921>
31. Erkin Ö, Konakçı G, Duran S. Secondary traumatic stress in nurses working with patients with suspected/confirmed COVID-19 in Turkey [published online ahead of print February 1, 2021]. *Perspect Psychiatr Care*. <https://onlinelibrary.wiley.com/doi/full/10.1111/ppc.12733>

How to cite this article: Göl İ, Erkin Ö. Mental status of nursing students assessed using the general health questionnaire during the COVID-19 pandemic in Turkey. *Perspect Psychiatr Care*. 2021;57:1712-1718. <https://doi.org/10.1111/ppc.12740>