

Well-Being and General Health of University Students during the Severe Acute Respiratory Syndrome-Coronavirus-2 Process

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Abstract

Aim: This study was to describe the levels of psychosocial well-being and general health of international students during the severe acute respiratory syndrome coronavirus pandemic. **Methods:** A cross-sectional study was carried out on 155 international students during the early period of the pandemic through social media applications with using online forms consisted of General Health Questionnaire-(GHQ-28) and WHO-5 well-being index. **Results:** The results showed that international students experienced psychological distress. The students who had difficulties providing their individual and fundamental requirements were more likely higher GHQ-28 scores ($P < 0.05$). It was found that there was a significant decrease in alcohol consumption of the students. The students were mainly indicated not to prefer to return to their home countries before commencing travel restrictions. **Conclusions:** Raising awareness of international students with providing robust information about outbreak precautions has been crucial to manage unpredictable emergency.

Keywords: Severe Acute Respiratory Syndrome Coronavirus-2, Students, Lockdown, Travel Bands, Well-being, General Health, GHQ, Mental Health, Psychosocial Health, Youth Mental Health, Health Behaviors

1. Introduction

To this date, a significant number of epidemics have occurred all around the world. Herpes and Legionnaires' disease (in the 1970s), AIDS, Ebola, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome, and the current novel coronavirus (SARS coronavirus [SARS-COV-2]) are among such epidemics, continuing to pose a threat to the human population while increasing the rates of morbidity and mortality¹. SARS-COV-2 was initially diagnosed in December 2019 in a group of individuals with a history of visits to the Huanan market of sea products, located in Wuhan's city in China^{2,3}. Transmitted through respiration, droplets, and contact,

the novel Coronavirus became a global health problem in a short period, affecting all the world countries. Within this scope, the World Health Organization declared SARS-COV-2 "A Public Health Problem of International Importance" on December 30, 2020, and a "Pandemic" as of March 11, 2020^{2,4}.

China, ground zero of SARS-COV-2 cases, and other countries where patients were being observed focused on traditional public health techniques of the fight against pandemics to prevent the disease's spread. In particular, the quarantine practice was successfully implemented as a useful measure throughout the SARS pandemic of 2003. In studies on this matter that analyzed the psychological effects of quarantine practices, which were implemented

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in previous endemics and the recent SARS-COV-2 pandemic, it was reported that individuals experienced fear, anger, bad temper, sadness, guilt, confusion/perplexity, grief, and anxiety-induced sleep deprivation problems^{5,6}.

The SARS-COV-2 virus also affects students in many ways. To slow down the spread of the virus among young and adult populations, several countries are suspending educational activities at all levels^{7,8}. As per the The United Nations Educational, Scientific and Cultural Organization data, schools were closed in 191 countries as of April 8, 2020, and more than 90% of the students enrolled almost all around the world (1.5 billion youths) ceased face-to-face education⁹.

The transition to online education requires both educational institutions and students to adapt to the current technology and be in various equipments. On increasing online activities, the entire household has started to heavily demand computers, tablets, and similar equipment available at home. On the other hand, some students do not have any access to such resources. The doubts on how it would be possible to conduct effectively the educational activities, such as theoretical and applied courses, or laboratory, music, or art courses taught online using such technological equipment, are causing students to become concerned and stressed^{8,10,11}. In particular, senior students and many students who have completed their graduate programs are concerned about their seminars and dissertation defenses due to the uncertainty caused by the risk of unemployment¹⁰.

In a study, which determined the prevalence of anxiety during the SARS-COV-2 pandemic among the general population, the rate of the anxiety of the students was found to be 21.5%, with a rate of depression of 38.6%, which was considered to be at high levels¹². In a longitudinal study conducted on 66 university students in China, it was found that university students experienced cognitive problems, negative emotions, and aggressiveness and that they had issues, such as low quality of sleep, a sense of tiredness, and loss of motivation, due to the fears regarding SARS-COV-2¹³.

The SARS-COV-2 pandemic process affects general and physical health and its effects on the mental health and state of well-being. A decrease in physical activity (PA) and an increase in sedentary behaviors occur as the unwanted consequences of the traditional pandemic interventions being implemented^{14,15}.

In addition to those who experience the SARS-COV-2 pandemic during their studentship period, some students are going through this process under quarantine, away from their homelands and families^{16,17}. As per the International Federation of Medical Students' Associations, managing the student exchange programs of medical students, thousands of students were affected on a global scale upon the cessation of student mobility programs unexpectedly¹⁶.

Emergency public health situations may cause numerous psychological effects on university students, such as anxiety, fear, and apprehension, while affecting their well-being¹⁸. Although the state of well-being does not have a single definition, the literature harbors some definitions made by several researchers^{19,20}. These definitions are associated with the absence of negative emotions connected to mental health problems, such as depression, as well as with the state of being pleased with life, happiness, satisfaction with life, a positive psychological functioning, establishing positive relations with others, having a purpose of living, the ability to achieve one's objectives, and the completion of self-acceptance²¹.

The studies conducted report that students must be provided with social support by having their overall levels of health, their psychological states, and their states of well-being monitored throughout communicable diseases, such as the SARS epidemic and the SARS-COV-2 pandemic^{17,22}. There are reports on the psychological effects of the SARS-COV-2 pandemic over the general public, patients, healthcare personnel, children, and elderly^{14,23}. Nevertheless, universities and educational institutions across the world are not sure of how long the SARS-COV-2 pandemic would last or how it could affect their students' overall, emotional, and psychological health¹⁰. Since the measurement and precautionary and the declaration of the SARS-COV-2 outbreak, there is growing anxiety and panic worldwide, especially for people who stay away from their hometown. In this context, this study aims to determine the levels of the overall state of health and the well-being of university students, who were abroad when the SARS-COV-2 pandemic broke out and who had to go through this process quarantine in the country where they were present. This study will seek answers to the following research questions:

1. How are the psychosocial states and levels of international students' general health during the SARS-COV-2 pandemic?

2. Are the states of psychosocial well-being and levels of health of the students correlated with their sociodemographic characteristics within the scope of the precautions taken during the SARS-COV-2 pandemic?

2. Materials and Methods

This cross-sectional study was conducted between April 16 and May 29, 2020, within a month after the SARS-COV-2 lockdown and travel bands were announced in all countries. As the specific prevention recommended during the pandemic, including prevention in close contacts and following precaution measurements, the authors designed an online electronic form and reached the participant through social media such as Facebook, Instagram, and WhatsApp links. The sample of the study was included 167 international students. In the study, the authors aimed to reach Turkish students and international students from other nationalities. Although there had not been assigned specific inclusion criteria for sample characteristics, the target population comprised the students who were having difficulties returning to their home country or visiting families due to the travel bands. The authors enrolled in many student groups allowed by the group manager-especially on Facebook, to share the link of the form designed as electronic-based. To present and evaluate the data in the first rite month of the pandemic and lockdown process, the data collection time duration was restricted to a short-time. Data were collected with electronic Google-Form consists of the Personal Information Form, WHO-5 Well-Being Index (WBI), and General Health Questionnaire (GHQ-28 -28). All three measurement tools were combined to easily access to the students and created in both English and Turkish languages as an electronic google form.

2.1. Mesures

2.1.1. Personal characteristic form

This form was created by the authors and used to examine the socialdemographic characteristics (Age, gender, marital status, student type, level of education, nationality, residential country, residential year, and major at university and lastly SARS-COV-2 related conditions (living place-dormitory, apartment, etc.; basic food needs, precaution measurements, communication with families,

friend, relatives; virtual education experience, financial status, etc.) for student.

2.1.2. WHO-5 WBI

The WHO-5 WBI was mainly developed by the World Health Organization as a reliable, valid, short, and effective self-report tool to assess and measure the level of psychological and mental well-being of individuals. The WBI consists of 5 items scored on a 6-point Likert scale ranging (in relation to the past 2 weeks) from “at no time” (0-point) to “all of the time” (5-points) and the maximum scoring level of the index is 30 points. The WHO-5 WBI has been adapted and translated into more than 30 different languages, and it was translated into Turkish language in 1999 by a public health physician, the Turkish official version of the scale is presented in the website: “<https://www.psychiatri-regionh.dk/who-5/who-5-questionnaires/Pages/default.aspx>” which refers to all variety language adaptation versions of the index. The WHO-5 WBI index mean score has been used in many different countries, especially in Europe to score mental well-being in the general population. Furthermore, it has been used in different sample group in the literature, and it is proved as a suitable and usable reliable tool for individuals older than 9 years²⁴⁻²⁶.

2.1.3. GHQ-28 items

The GHQ-28 is one of the robust and validated measurement tools to screen and assess psychological distress and possible psychiatric morbidity which has been used and tested in many studies for general populations. The GHQ-28 was firstly developed and created by Goldberg (1978) and has been translated more than 38 languages. The GHQ-28 consists of 28 questions divided into four subscales as follows; somatic symptoms (items 1–7), anxiety or insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28). All items in each subscale are measured with 4-points Likert type scale (from 0 to 3 points) for assessment, and each items questions symptom from the last few weeks of the individuals. The method called GHQ-28 type scoring (Goldberg and Williams, 1997) is used for scoring the GHQ-28²⁷. Accordingly, the first two columns are scored as 0 point and the following last two columns scored as 1 point; and an increase in total scores indicates a decrease in psychological well-being^{28,29}.

When the Alpha values of the scales were evaluated, it was found reliable for both scales. The Cronbach Alpha value of the WHO-5 WBI scale was calculated as .83 and for the GHQ-28 as 92.

2.2. Data analysis

The data obtained from the study were analyzed using the Statistical Package for Social Sciences software for Windows 25.0. Descriptive statistical methods (numbers, percentile, mean, standard deviation [SD]) were used to analyze the data. As to the data, the suitability to normal distribution was determined, checking the normality tests, kurtosis-skewness values, and the Q-Q Plot-chart. During the data analysis, the independent samples t-test was employed to compare the mean values of both groups when normal distribution was achieved, and the Mann-Whitney U test was used when it was not possible to achieve a normal distribution. The ANOVA was employed for tests, which yielded normal distributions on comparing the mean values of more than two groups. Multiple comparison tests were used to determine the difference in the results that yielded differences. The Pearson/Spearman analysis was conducted to analyze the correlation in continuous data. To ensure the reliability of the tests administered and their results, the Cronbach Alpha was used to evaluate the reliability of the scales and sub-scales employed.

3. Results

The participating students' mean age, 69% of whom were Turkish citizens, and 31% foreign nationals (Europe, the USA, Turkey, Asia, and the UK), were 26.38 ± 4.5 (min. 19, max. 45). Of the participants, 61% were female, 92% single. Undergraduate studies constituted the fundamental reason why students were abroad (38.7%), while those individuals lived mainly in cities (46%). The rate of quarantining was 85% in the countries they lived in. Of these individuals, 25% stated that they lived in flats or studio flats with their friends/families/relatives, while 23.9% reported that they lived in the same house with their friends, families, or relatives (Table 1). Of the students who lived in dormitories, 58.69% reported that the dormitories' precautions were sufficient, and 56.69% that hygiene rules were followed. Of these individuals, 58.1% said that the country allowed a limited time for shopping purposes, 20% that they had difficulties in

Table 1. Sociodemographic characteristics of international students (n=155)

	n	%
Nationality		
Turkish	107	69.0
Other countries	48	31.0
Gender		
Female	94	60.6
Male	61	39.4
Marital Status		
Single	142	91.6
Married	13	8.4
Citizenship		
Turkey	110	71.0
Other	45	29.0
Host Country		
Turkey	4	2.6
Europe	135	87.1
USA	16	10.3
Student status abroad		
Language and certificate programs	14	9.0
Bachelor degree	60	38.7
Masters degree	47	30.3
Doctorate	31	20.0
Post-doctorate	3	1.9
Residence the in host country		
Metropol	60	38.7

(Contd...)

Table 1. (Continued)

	<i>n</i>	%
Province	71	45.8
District	18	11.6
Village	6	3.9
Type of accommodation in this process		
Home/apartment/ studio alone	44	28.4
Home with friends/ family member/ relatives	75	48.4
Dormitory with single room	20	12.9
Dormitory sharing with a friend	16	10.3
Smoking status		
Yes, I use	45	29.0
No, I don't use	110	71.0
Drinking alcohol status		
Yes, I use	109	70.3
No, I don't use	46	29.7
Regular exercise status in your daily life		
Yes, I do	93	60.0
No, I don't	62	40.0
Rank your health status		
4	5	3.2
5	10	6.5
6	22	14.2
7	33	21.3
8	48	31.0
9	17	11.0
10	20	12.9

providing their food requirements; only a small rate of students (23.9%) stated that they could not continue their education during the pandemic, and 73.5% that they were satisfied with the practices of the countries they lived in during the pandemic. Of the students, 23.9% stated that they couldn't sustain their education lives. When asked about their respective reasons for not continuing their education, undergraduate students, exchange students, and students enrolled in certificate programs, such as language courses, reported that they were facing hardware problems, such as internet issues. However, many graduate students said that they could not sustain their education due to problems, such as provisional suspension or closure of laboratory studies, suspension of studies requiring contact with living individuals, and being unable to gather with research teams, etc. Of the students, 44.5% reported that they had financial problems due to the pandemic, while some of these students stated that this was caused by some setbacks in the payment of their stipends (Table 2).

A great majority of the students (72.3%) reported that their overall concerns increased during the pandemic. Of the students, 43.2% did not want to go back to their homelands or could not return to their families due to travel restrictions during the pandemic. Of those individuals, 70.3% stated that they consumed alcohol, 33.5% that their alcohol consumption decreased throughout this process, and 31.6% started to consume alcohol in recent months. Of the individuals, 29% reported that they smoked, 39.2% that they reduced the amount they smoked during this process, 31.4% continued to smoke the same amounts of cigarettes. Of the individuals, 60% stated that they had regularly exercised before the recent month, 25% that they did not exercise at all during this process, and 22.6% that they started to exercise less (Tables 1 and 2).

The average score obtained in the total of the GHQ-28 points scale was 9.16 (SD = 7.06). Establishing a cut-off point of 3 or more points, the results showed that the participants presented psychological distress. When the subscales of the scale subscale scores for GHQ-28 were as follow somatic symptoms 1.51 (SD = 1.75), anxiety and insomnia 2.78 (SD = 2.73), social dysfunction 3.38 (SD = 2.44), and severe depression 1.50 (SD = 1.90). The social dysfunction subscale score was found to be higher. No statistical difference was found between the mean scores of the GHQ-28 scale and the sociodemographic characteristics of the participants.

Table 2. Students experienced about SARS-COV-2 (n=155)

	<i>n</i>	%
Lockdown in your host country		
Yes	131	84.5
No	24	15.5
Sufficient measures in the dormitory		
Yes	29	18.7
No	17	11.0
I do not stay in the dormitory.	109	70.3
Sufficient hygiene rules in the dormitory		
Yes	27	17.4
No	18	11.6
I do not stay in the dormitory.	110	71.0
An unfulfilled requirement by the management for the protection of health in the dormitory		
Yes	15	9.7
No	29	18.7
I do not stay in the dormitory.	111	70.3
Limited market shopping implementation		
Yes	90	58.1
No	65	41.9
Difficulties providing your personal and basic food needs		
Yes	31	20.0
No	124	80.0
Education process		
Yes, continues	118	76.1

(Contd...)

Table 2. (Continued)

	<i>n</i>	%
No, it doesn't continue	37	23.9
Communicating with your family		
Yes	155	100.0
Your host country administrations' management of the pandemic		
Taken measures are sufficient	114	73.5
Taken measures are insufficient	41	26.5
Feeling safe		
Yes	116	74.8
No	39	25.2
Anxiety level		
Increased my anxiety	112	72.3
Decreased my anxiety	12	7.7
No change	31	20.0
Change in financial status		
Yes	69	44.5
No	64	41.3
This question isn't for me	22	14.2
Opinions about returning to home country		
I wanted and returned	11	7.1
I didn't prefer to return, and I didn't return	67	43.2
I am sorry about not returned	10	6.5
I am happy for being in the host country	42	27.1
I have no idea	25	16.1
Family's opinions about returning to home country		
They wanted me to return to my home country	31	20.0

(Contd...)

Table 2. (Continued)

	<i>n</i>	%
They did not want me to return to my home country	28	18.1
They left the decision to me	96	61.9
Change in smoking habits		
Increased	19	39.2
Decreased	12	23.5
I smoke the same amount	14	31.4
I have just started smoking in the last month	2	5.9
Change in alcohol consumption		
Increased	18	11.6
Decreased	52	33.5
I drink the same amount	36	23.2
I have just started drinking in the last month	49	31.6
Change in doing exercise		
I don't exercise	39	25.2
My frequency of exercise increased	27	17.4
My frequency of exercise decreased	35	22.6
I have no longer opportunity doing exercise	13	8.4
I do exercise at the same frequency	18	11.6
I have just started exercising in the last month	23	14.8

Upon the analysis of the results of the comparison of the GHQ-28 scale based on the sociodemographic characteristics, it was found out that the points scored in the GHQ-28 scale differed, depending on whether

the individuals had any difficulties in providing their individual and fundamental food requirements throughout the pandemic ($P < 0.05$). It was found that those who had challenges scored higher points in the GHQ-28, compared to those who did not have any difficulties. It was determined that the points scored in the GHQ-28 differed between those who did and did not feel safe throughout the pandemic and that those who did not feel safe within the scope of the SARS-COV-2 precautions scored higher points ($P < 0.05$). It was found that the points scored in the GHQ-28 differed in regards to the changes in the levels of overall anxiety throughout the SARS-COV-2 pandemic ($P < 0.05$). A multiple comparison test was administered to determine the groups that differed. Accordingly, it was found that the differing group was between those whose level of anxiety increased and those who had experienced no changes at all. It was determined that the points scored in the GHQ-28 scale did not differ at all, based on other demographic characteristics. Unlike these data, it was determined that the students' WBI scores did not yield any differences compared to sociodemographic characteristics ($P > 0.05$). It was determined that the students, who reported an increase in their levels of anxiety, had higher mean WBI scores, although their GHQ-28 levels were found to be worse ($P < 0.05$) (Table 3).

The students of Turkish origin were asked about their opinions in regards to the 14-day quarantine process, which mandated a stay at the dormitories or hotels provided by the offices of governors, instead of a self-quarantine applied upon their return to the country, and it was analyzed whether there were any differences between their GHQ-29 and WHO scores. Of the Turkish students, those who said "I avoided going back to my country due to this practice" were found to have higher mean total GHQ-28 scores for all sub-scales (Table 4).

A simple linear regression analysis was conducted to determine whether the GHQ-28 and WHO-5 WBI points scored by the students had any impact on their nationality. The regression model established on the analysis of the results was statistically significant ($F: 37.517; P < 0.05$). It was found that there was a statistically significant, negative, and moderate correlation between the students' mean scores of WBI and GHQ-28 ($P < 0.01; r = -0.570$) (Table 5). The change in the overall state of health of the students was explained through a 32% state of well-being. Furthermore, one unit of decrease in the state of

Table 3. Relationship between sociodemographic characteristic and both GHQ-28 and WHO-5 WBI scales

	WHO-5 WBI (Ort±SS)	t/u/F-p (WBI)	GHQ (Ort±SS)	t/u/F-p (GHQ)
Nationality				
Turkish	9.98±5.18	$t=-0.641$	8.95±7.09	$t=-0.563$
Other countries	10.56±2.29	$P=0.522$	9.64±7.04	$P=0.574$
Gender				
Female	10.38±4.98	$t=0.657$	9.72±6.93	1.217
Male	9.82±5.56	$P=0.512$	8.31±7.24	$P=0.225$
Marital Status				
Single	9.0-0.0-22.0	$t=-1.491$	8.0-0.0-26.0	$t=-0.336$
Married	12.0-3.0-21.0	$P=0.136$	10.0-1.0-22.0	$P=0.737$
Which country are you citizen?				
Turkey	10.05±5.18	$u=-0.398^*$	8.97±7.15	$u=-0.536^*$
Other	10.42±5.31	$P=0.691$	9.64±6.90	$P=0.593$
What is your student status in abroad?				
Language and certificate programs	8.79±5.89	$F=1.093$	7.57±6.36	$F=0.348$
Bachelor degree	9.57±5.30	$P=0.354$	9.07±7.16	$P=0.791$
Masters degree	11.02±4.91		9.28±7.18	
Doctorate/Post doctorate	10.59±5.14		9.85±7.20	
Please mark the appropriate one for the place where you live in the current host country?				
Metropol	9.88±5.23	$F=0.941$	9.93±7.43	$F=0.708$
Province	9.94±5.01	$P=0.393$	8.46±5.60	$P=0.494$
District/Village	11.50±5.71		9.33±7.81	
Is there a lockdown in your host country during the SARS-COV-2 pandemic process?				
Yes	10.27±5.32	$t=0.590$	9.32±7.14	$t=0.628$

(Contd...)

Table 3. (Continued)

	WHO-5 WBI (Ort±SS)	t/u/F-p (WBI)	GHQ (Ort±SS)	t/u/F-p (GHQ)
No	9.58±5.10	P=0.556	8.33±6.70	P=0.531
Which kind of accommodation do you have in this process?				
Home/apartment/studio alone	9.25±4.35	F=1.293	7,23±6,30	F=1,637
Home with friends/family member/ relatives	9.40±5.38	P=0.270	9,75±6,93	P=0,183
Dormitory with single room	9.45±5.18		10,10±7,74	
Dormitory sharing with a friend	9.56±5.48		10,63±8,37	
If you live in a dormitory during the SARS-COV-2 pandemic process, do you think the dormitory measures are sufficient?				
Yes	11.69±5.87	t=1.528	8.10±6.57	t=-1.518
No	9.12±4.82	P=0.134	11.53±7.04	P=0.136
If you live in a dormitory during the SARS-COV-2 pandemic process, do you think that the taken hygiene rules in the dormitory are sufficient?				
Yes	11.15±5.70	t=0.566	8.37±7.37	t=-1.045
No	10.17±5.68	P=0.574	10.78±7.30	P=0.302
If you live in a dormitory during the SARS-COV-2 pandemic process, do you have any needs that you feel disregarded by the manager to protect your health?				
Yes	9.53±5.12	t=-1.077	10.67±7.77	t=0.851
No	11.48±5.95	P=0.288	8.58±7.64	P=0.339
Is there a limited market shopping implementation in your host country during the SARS-COV-2 pandemic process?				
Yes	10.59±5.00	t=1.205	9.09±7.31	t=-0.163
No	9.57±5.45	0.230	9.28±6.75	0.871
Do you have any difficulties in providing your personal and basic food needs during the SARS-COV-2 pandemic process?				
Yes	8.84±4.61	t=-1.589	12.26±7.62	t=2.782
No	10.49±5.31	P=0.114	8.39±6.73	P=0.006*

(Contd...)

Table 3. (Continued)

	WHO-5 WBI (Ort±SS)	t/u/F-p (WBI)	GHQ (Ort±SS)	t/u/F-p (GHQ)
Are you able to continue your education during the SARS-COV-2 outbreak?				
Yes	10.34±5.08	t=0.758	8.77±6.05	t=-1.250
No	9.59±5.59	P=0.450	10.43±6.05	P=0.213
How do you feel about the management of the host country during the SARS-COV-2 pandemic process?				
Taken measures are sufficient	10.25±5.29	t=0.370	8.88±6.13	t=-0.827
Taken measures are insufficient	9.90±4.99	P=0.712	9.95±6.88	P=0.409
Do you feel safe during the SARS-COV-2 pandemic process?				
Yes	10.62±5.23	t=1.911	8.19±6.70	t=-3.023
No	8.79±4.91	P=0.058	12.05±7.40	P=0.003*
Do you feel safe during the SARS-COV-2 pandemic process?				
Increased my anxiety	9.82±4.74	F=2.923	10.47±6.98	F=9.712
Decreased my anxiety	8.50±6.36	P=0.057	9.08±7.79	P=0.000*
No change	12.03±5.97		4.48±2.28	Bonf** 1>3
Have your economic status (scholarship/grant/support from your family) been affected during the SARS-COV-2 pandemic process?				
Yes	9.88±5.12	t=-0.855	10.01±7.22	t=1.318
No	10.64±5.06	P=0.394	8.41±6.81	P=0.190
What is your opinion about returning to your home country (Turkey) during the SARS-COV-2 pandemic?				
I wanted and returned	9.63±4.67	F=1.831	11.09±5.88	F=2.116
I didn't prefer to return, and I didn't return	10.04±4.61	P=0.126	8.76±6.36	P=0.082
I am sorry about not returned	7.10±4.55		14.50±8.16	
I am happy for being in the host country	5.67±0.87		7.85±5.56	
I have no idea	9.52±5.94		9.48±7.38	

(Contd...)

Table 3. (Continued)

	WHO-5 WBI (Ort±SS)	t/u/F-p (WBI)	GHQ (Ort±SS)	t/u/F-p (GHQ)
What was your family's thoughts about returning to your home country (Turkey) during the SARS-COV-2 outbreak?				
They wanted me to return to home country (Turkey)	10.80±4.88	F=0.316	8.97±6.96	F=0.512
They didn't want me to return to my home country (Turkey)	9.82±5.60	P=0.729	10.39±8.61	P=0.600
They left the decision to me	10.05±5.22		8.87±6.63	
Do you smoke?				
Yes, I do	10.18±5.26	F=0.330	9.24±7.36	F=0.086
No, I don't	10.07±5.20	P=0.742	9.13±6.97	P=0.931
Do you drink alcohol?				
Yes, I do	10.16±5.09	t=0.014	9.35±7.04	t=0.514
No, I don't	10.15±5.51	P=0.989	8.71±7.18	P=0.608
If yes, during the SARS-COV-2 pandemic process (later 1 month), has your exercise routine (fitness, pilates, yoga, running, etc.) changed?				
Yes, I do	10.49±5.26	t=0.976	8.87±7.15	t=-0.639
No, I don't	9.66±5.12	P=0.330	9.61±6.96	P=0.524

$P < 0.05$ statistically significant, Bonf^{***} -Bonferroni, t=student t test, U=Mann Whitney U test, F=One Way ANOVA

well-being of the students increases the overall level of health by 0.77 units. It was found that the nationalities of the students were not statistically significant ($P > 0.05$).

4. Discussion

As of the beginning of the pandemic, potent precautions have been implemented to effectively alleviate the disease, including the shutdown of Wuhan and the collective quarantine practices imposed by local governments. Throughout the process after SARS-COV-2 was declared a pandemic, mandatory lockdown and quarantine practices were initiated by the leaders of almost all countries across the globe, to alleviate its effects on a global scale and its rate of infection. Moreover, in addition to these comprehensive precautions taken, each country published

circulars, consisting of the Universal rules and sanctions to be followed domestically. Citizens, vulnerable groups in the community, and international students were reported to have been affected by a number of measures implemented with all these global precautions such as the closure of borders between the world countries, limited shopping practices, curfews, educational activities having been taken to online platforms, and cancellation of specific education and certificate programs, excluding education programs providing diplomas^{11,30,31}.

According to the related literature, it can be seen that quite a limited number of studies that focus on the student samples throughout the SARS-COV-2 pandemic. Therefore, this study aimed to determine the states of psychosocial well-being and levels of general health of the students who could not return to their own countries

Table 4. The relationship of Turkish students' opinions on the 14 days country-specific quarantine process with their scale scores

		<i>n</i>	Mean	SD	<i>t</i>	<i>P</i>
GHQ	I am living this process, and I find the practices right	37	7.054	6.22	-2.108	0.037
	I was afraid of returning to my country due to this process.	69	10.06	7.37		
WHO	I am living this process, and I find the implementation right	37	9.46	5.06	-0.689	0.493
	I was afraid of returning to my country due to this process.	69	10.188	5.2644		

P < 0.05 statistically significant

Table 5. The Regression model to explain the effect of WHO-5 WBI on GHQ-28 in line with students nationalities

Model	B	<i>t</i>	<i>P</i>	F (<i>P</i>)	R ²
GHQ-28					
Constant	17,868	14,064	0,000	37,447 (0,000)	0,32
WHO-5 WBI	-0,778	-8,627	0,000		
Nationality = Turkish	-1,145	-1,131	0,260		

because of the travel and flight restrictions, imposed within the scope of the lockdown and emergency measurements throughout the pandemic. In this context, it is believed that this study functions as the first research example, which presents the problems faced by international students during the SARS-COV-2 period, despite the limitations of research.

Even though the study did not find any statistically significant correlation between the sociodemographic characteristics of the students during the SARS-COV-2 and the mean scores in the GHQ-28 and WHO-5 WBI was found higher during the pandemic (Table 3). Likewise, in previous studies, it was found that it had effects over the time spent by individuals throughout the pandemic, as well as over their levels of psychosocial health^{11,30,32,33,34}.

To the best of our knowledge, it can be easily mentioned that the countries of the participating students have been implementing quarantines and lockdown practices. It is a significant finding that the students living in dormitories stated that their dormitory of residence took the necessary precautions in regards to SARS-COV-2 and that their fundamental requirements of food and hygiene were met, despite the obligation of using common areas, such as lavatories, bathrooms, or kitchens (Table 3)³⁵.

This study includes relatively quite a low rate of those who could not sustain their education lives due to the pandemic. It is observable that both undergraduate and graduate degree students had some setbacks in terms of continuity of the education, even though unprepared universities and schools put efforts to swiftly create the infrastructure needed within the scope of the pandemic precautions. In particular, it is striking similarly that the scientific activities completely came to a halt for students who were receiving graduate educations and who sustained their scientific activities through dissertation studies (Tables 2 and 3)^{8,36,37}. Although this study did not find any statistically significant difference between the mean GHQ-28 and WBI scores of the students who had problems sustaining their right of education, it was still relatively high. This result is consistent with many other studies conducted among student populations or academic personnel⁸.

A great majority of the students in this study reported that they had financial problems throughout this process. Furthermore, it can be seen that the students, who had difficulties in providing their individual and fundamental food requirements, had higher mean GHQ-28 scores. It is a fact that the socioeconomic level and levels of

mental health were directly proportional, as seen in similar studies in the literature^{35,36,38}. In this regard, it is believed that it is important to create solutions that would offer economic conveniences in a way that would meet the accommodation, fundamental food and hygiene requirements of international students throughout this pandemic or similar ones.

There are many students in a number of countries, who non-preferred to return to their countries prior to the commencement of travel restrictions because of the anxiety and fear induced by the pandemic. Nonetheless, even though a great majority of the students that stayed following the travel restrictions reported that they felt safe in the countries, the mean GHQ-28 scores of the students who did not feel safe in host country during the pandemic were found high levels (Table 3). In the fact that, it was found that the total mean GHQ-28 scores were higher in those who stated that they avoided going back to their countries because of the 14-day quarantine process imposed on their return to the country, as an answer to the question that was asked only to Turkish students (Table 4). In this context, it can be considered that they preferred staying because of their insecurity in regard to the quarantine and different measurements implemented in their home countries. In the study of Taneri (2020), it was found that Turkish students hardly trust for informative declaration and pandemic management process of the WHO and Turkish Ministry of Health explanation³⁹.

This study assessed the post-pandemic changes in the students' frequencies of healthy life style behaviors. As is seen, the Tables 2 and 3 show that a small percentage of the students smoked, quite a few of whom stated that their rates of smoking tended to decrease throughout the pandemic. On the analysis of the alcohol consumption habits of the students, while some reported that it decreased by 33.9% compared to the previous month. In a study that conducted in individuals in the community found that the smoking rates remained the same throughout the lockdown period and that individuals smoked even more cigarettes⁴⁰. Students had limited opportunities for socializing, due to strict curfews imposed in many countries on the start of the SARS-COV-2 lockdown process. Therefore, it can be concluded that they tended to sustain their unhealthy behaviors as smoking, for the purpose of stress management. The decrease in the alcohol consumption of the students is among the most important results of

this study. Unlike this result, in a study conducted by Chodkiewicz *et al.* (2020)⁴⁰, it was found that there was a significant increase in the alcohol consumption behaviors of individuals. In a study of Gallè *et al.*⁴¹, (2020) was found that student who had lower level of satisfaction about control measures were mostly associated and correlated with lower frequency of PA level and higher severity of negative thoughts. As for the examined limited lifestyles behaviors, it was reported that the students smoking habits increased, alcohol consumption and PA level were mostly decreased. In this context, it can be concluded that the outbreak process negatively affects the health behavior of students, but the positive reduction in alcohol consumption behavior is considered as striking and promising. Furthermore, it believed that decrease in the frequency of alcohol consume as a consequence of closure of cafes, restaurants, bars, etc. as well as the limitation of social events inside and outdoors the home due to lockdown measurements. The role of adjustable healthy lifestyle factors in maintaining physical and psychosocial well-being is crucial and fundamental. Likewise, the studies it is mentioned that the perk of encourage and motivate to people in community to stay more active and maintenance healthy lifestyle behaviors during the outbreak^{11,41}.

To the best of our knowledge, no studies to date have addressed how to new outbreak affect international student's psychosocial well-being and related factors on student's general health level who could not return home country due to travel bands after the SARS-COV-2 pandemic. In this context, it provides valuable and crucial insights into community health initiative and raise awareness to prevent measures among international background student during the SARS-COV-2 pandemic.

4.1. Limitation

There are limitations regarding data collection and sample size since participation in the study is voluntary and reaching students through social media such as Facebook and Instagram. In addition, due to the data being based on self-reporting, it assumes to affect the accuracy of provided answers and collected information to some extent. The data cannot be generalized to all international status students. Third, our subjects were enrolled in different countries, which make it difficult to compare the data. Even though some specific limitations, the present

study may be helpful during the health crisis process to better highlight future community health campaigns to combat SARS-COV-2 and plan prevention programs and necessary intervention during the lockdown.

5. Conclusion

The international students who had to stay away from their home countries have different well-being and psychosocial health during pandemic and lockdown measures. The factors contributing to varying levels of psychosocial health can be various; universities, colleges, and all educational institutions' administration and student organization associations should consider these results to plan mental health education for such an unexpected health crisis. They should create health crisis management circulars and economic support funding for students who have accommodation problems or difficulties with fundamental life needs. In addition, mental health counseling and stress management programs should be carried out for students to protect their well-being and physiological health.

5.1. Implications health care practice

All universities or other educational institutions at the international level have health units and other social well-being-guidance units. However, in such a pandemic, all units serving students were caught unprepared. We believe most, students, are a special group that should not be ignored during the obligatory lockdown process of the SARS-COV-2 pandemic and also quarantine regulations. In this context, educational institutions should prepare road-map or crisis management plans and procedures of health-related crises, and health providers, especially school health nurses and occupational health nurses should promote the integrity of the health situations of both students and teachers. Students and all staff should be provided with regular information through emails and education institution intranets.

The findings of the present study will contribute to a better understanding by health care service providers and health care centers workers at educational institutions of the psychosocial health and well-being of students who are foreign to host country and providing appropriate health services and counseling. It should be informed to the student about the educational institution where the

students are registered and the health and social service opportunities offered by the host country during such a massive outbreak. In addition, social and sports activities as virtually or limited person participating can be organized in light of the measures taken within the scope of SARS-COV-2 that support healthy lifestyle behaviors positively and to provide better stress management.

The School Health Nursing is a new term, which is still developing in Turkey, undertakes the main task of preventing and promoting health in educational institutions in many developed countries. In such health crises, nurses working in primary health care centers or educational institutions play a crucial role in assessment the health needs of students, parents and staff and providing appropriate interventions. It is believed that the result of the current study will provide basic data for health care professionals in the management of both SARS-COV-2 pandemic and other endemic diseases in the future.

There is also a strongly recommended to monitor students' psychosocial health status over the long term of outbreak measurements long period and to study how prolonged educational institutions closures, quarantine rules other obligatory social distancing measures, and the pandemic itself affect the wellbeing of students from all age and education level. Monitoring and screening programs by health care providers should be planned and added in the institutions' crisis management procedures and health care units of the institutions should be aware of the students who have a greater risk of having with mental health-related problems.

6. Ethical Consideration

Approval was obtained from the Istinnye University Ethics Committee of Social and Humanities (Date: 2020/04/16 No:03).

7. Conflict of Interest

The authors declare that they have no conflict of interest. All authors have participated sufficiently.

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