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COVID-19, Anxiety, and Hopelessness: Quality of Life Among Healthcare Workers in Turkey

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Abstract

The aim of the study is to investigate the effects of intense anxiety and hopelessness experienced by healthcare workers during the pandemic on their quality of life. This cross-sectional, online questionnaire-based study was conducted between August 31, 2020 and October 31, 2020, with 729 healthcare workers in Turkey. The study showed that hopelessness, the weekly working time, fatigue, and the workload of healthcare workers negatively affected their quality of life, those who found the pandemic measures inadequate had a lower quality of life and higher hopelessness levels, and those who needed knowledge on various issues to improve their skills had lower quality of life and higher levels of anxiety and hopelessness. Increasing the measures to make healthcare workers feel competent and ready during the COVID-19 pandemic and meet their information needs to improve their skills will reduce their anxiety and hopelessness and improve their quality of life. Identifying the factors affecting anxiety, hopelessness, and quality of life will help achieve sustainable success in the delivery of health services and promote employee health and safety.

Keywords

anxiety, coronavirus, healthcare workers, health-related quality of life, hopelessness, occupational health

Introduction

COVID-19 has affected all segments of society, but healthcare workers (HW) are among the highest risk groups (WHO, 2020). According to the data of the World Health Organization (WHO), 115.000 HWs have died from COVID-19 (WHO, 2021a). In Turkey, 403 HWs lost their lives between 11 March 2020, when the outbreak was declared a pandemic, and 31 May 2021 (Turkish Medical Association, 2021).

In addition to the lost lives, various studies in the literature have reported that the physical and social health and especially mental health of HWs who are directly involved in the diagnosis, treatment, and care of COVID-19 patients are adversely affected (Hacimusalar et al., 2020; Huang et al., 2020; Li & Lam, 2020; Weiner et al., 2020). In a study conducted by Huang et al., the isolation of HWs from their families, the changing routines, and the reduction of social support networks during the COVID-19 pandemic may cause mental problems. Various psychological effects like loneliness, helplessness, stress, irritability, physical and mental fatigue, and hopelessness may also develop in this period (Huang et al., 2020). In the study of Li and Lam, difficulty in obtaining a face mask was associated with a high prevalence of depression in HWs, while access to adequate personal protective equipment (PPE) potentially alleviated the perceptions of vulnerability to COVID-19 in healthcare workers in stressful environments, which is essential for their psychological health (Li & Lam, 2020). Weiner et al. emphasized that being in an unknown situation for an indefinite period increased the anxiety level of HWs, which in return affected their cognitive skills related to COVID-19, anxiety and hopelessness levels, and physical, mental, social, and environmental well-being (Weiner et al., 2020). Another study

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states that healthcare professionals worldwide frequently encounter problems in the supply of PPE and the field of education for protection from COVID-19, and they are faced with the psychosocial consequences of all these problems and the fatigue experienced during this period (Shaukat et al., 2020).

In Turkey, HCs have also been adversely affected by the COVID-19 pandemic (Turkish Medical Association, 2021). Among the reasons why HWs are affected psychologically and physically from the pandemic are fears of exposure pathogen/agent (SARS-CoV-2) and infecting family members, lack of additional payments, difficulties in accessing PPE, lack of education in protection against COVID-19, long working hours, psycho-social pressure, fatigue, occupational exhaustion, discrimination and stigma, physical and psychological harassment, and violence (SASAM (Sağlık-Sen Strategic Research Center), 2020, Turkish Medical Association, 2021). The rapid transition to the normalization process while the pandemic continues may cause feelings like anger, anxiety, and grief in HWs. Despite the steps towards the normalization of life, the fact that HWs continue to fight the epidemic in hospitals creates a feeling of abandonment and loneliness HWs and causes symptoms of burnout. Moreover, COVID-19 is considered an occupational disease for HWs in countries like the United Kingdom, Ireland, Germany, Spain, Belgium, Netherlands, Latvia, Czech, but not in Turkey. However, the number of HWs who died due to COVID-19 in Turkey is higher than the death tolls of these eight countries, which further increases the anxiety experienced by HWs (Turkish Medical Association, 2021).

Despite all these negative situations caused by the COVID-19 epidemic, vaccines are currently reported to be the most effective approach available to overcome the negative outcomes of the pandemic (Murphy et al., 2021). COVID-19 vaccines are a new hope for many, especially healthcare workers, who grieve for the lives or jobs lost due to the disease (Cooper et al., 2021; El-Elimat et al., 2021; Mannan & Farhana, 2020; WHO, 2021b). However, WHO emphasizes that although new vaccines are very promising, no vaccine is 100% effective and that measures such as testing and follow-up, wearing a mask, PPE, and social distance should be continued together with the vaccine (WHO, 2021b). WHO informs that COVID-19 vaccines have shown to be particularly effective in stopping severe disease; however, its effect in preventing transmission is still unknown, and COVID-19 is far from being eradicated (Eaton, 2021; WHO, 2021c). COVID-19 vaccine hesitancy and the initial initiation of vaccination with HWs also increased their stress, and the emergence of new variants of SARS-CoV-2 will cause tensions like supply-driven challenges associated with the introduction of COVID-19 vaccines, vaccine nationalism, and unequal vaccine access, both within and between countries (Eaton, 2021; WHO, 2021c).

As can be seen in various studies, (Hacimusalar et al., 2020; Huang et al., 2020; Li & Lam, 2020; Weiner et al., 2020) physical, mental and social problems encountered in the struggle against the pandemic can negatively affect the mental health and quality of life of HWs. That Turkey offers more economic treatment opportunities than many countries in recent years is thought to increase its preferability in health tourism (Bagci et al., 2020), and its position as the country hosting the highest number of immigrants in the world (Mardin et al., 2020) has increased the number of people coming to the country from abroad, which may in return be reflected in the number of COVID-19 cases. It is reported that the number of confirmed COVID-19 cases from March 11, 2020, when the outbreak first emerged in Turkey, to September 10, 2021, was 6.566.568, and 58,913 people died (WHO, 2021d). When compared with other countries, it is noteworthy that Turkey is among the top 10 countries with the highest number of cases. According to the report, in which the responses of health systems in OECD (The Organization for Economic Co-operation and Development) countries, including Turkey, to COVID-19, are evaluated, while the OECD average is 8.8 in terms of the number of physicians and nurses per 1000 people, it is 2.0 in Turkey, and while the OECD average is 46.5 in terms of the number of hospital beds per ten thousand people, it is approximately 28.3 in Turkey. It is quite remarkable that the available data show that Turkey lags far behind other OECD countries (İşlek et al., 2020; OECD, 2020). The epidemic has had compelling effects on the health systems of all countries in the world (Lynch & Pusey-Murray, 2021; WHO, 2021b), but the data disclosed reveal that the burden on Turkey's health infrastructure, and HWs is quite high. After all these considerations, the researchers aimed to investigate the effects of intense anxiety and hopelessness experienced by healthcare workers during the pandemic on their physical, mental, social, and environmental well-being.

Based on the above literature analysis, we developed the following hypotheses: H1: Anxiety and hopelessness reported by HWs affect their quality of life, H2: Work characteristics of HWs affect anxiety and hopelessness levels and quality of life, H3: The adequacy of the measures taken during COVID-19 affects the anxiety and hopelessness levels of HWs and their quality of life, and H4: The knowledge and skills of HWs about COVID-19 affect their anxiety and hopelessness levels, and their quality of life.

Methods

Study Design

The study was conducted in a cross-sectional and online questionnaire-based design. The study population consisted of the HWs working in any hospital in Turkey between August 31 and October 31, 2020, who agreed to respond to the questionnaire via social media sites. The sample included 729 HWs who voluntarily filled in the questionnaire within the specified period.

Data Collection

The Personal and Occupational Information Form, the Turkish Version of the Shorter Version of the World Health Organization Quality of Life Instrument (WHOQOL-BREF-TR), the State-Trait Anxiety Inventory, and the Beck Hopelessness Scale (BHS) were used as data collection tools. It is noteworthy that the data collection tools we used in our study are also frequently used measurement tools in the literature for anxiety (Hacimusalar et al., 2020; Sakaoğlu et al., 2020), hopelessness (Franza et al., 2020; Güngör & Uçman, 2020; Kazan Kızılkurt et al., 2021; Kurian & Nishad, 2020; Saricali et al., 2020) caused by COVID-19, and the effects of COVID-19 on the quality of life of HWs (Sharma et al., 2021; Vitorino et al., 2021; Woon et al., 2021). In the study, after the questionnaire was created with Google Forms, they were sent to HWs by the researchers via social media sites (Instagram, Facebook, and WhatsApp). Those who completed the questionnaire were encouraged to forward the questionnaire to other HWs. Our questionnaire was designed to have forced choices.

The participants were informed about why the study was conducted, the data would be used for scientific purposes, and filling out the questionnaire would mean approval to participate in the study. Inclusion criteria were (1) being a healthcare staff, (2) being a social network user, (3) being a volunteer, and (4) responding to questions once using the same IP. Exclusion criteria were (1) not responding to all the questions. In the power analysis based on the statistics obtained from Hacımusalar et al. study, it was accepted as "$\alpha = 0.05$, $1\text{-}\beta = 0.94$, and effect size = 0.1439"; As a result of the power analysis of the study, the total sample size was determined as $n = 714$ people (Hacimusalar et al., 2020). The data of 729 participants were evaluated, but 52 participants were excluded as they did not complete the forms. In the study, although the HWs included in the data collection process consisted of physicians, nurses, technicians/technicians, data recording personnel/secretaries, and other health workers, most of the participants were nurses ($n = 332$).

The Personal and Occupational Information Form

The form, developed by the researchers by reviewing the literature, includes four questions regarding the sociodemographic characteristics of HWs, including age, gender, marital status, and presence of chronic health problems, and 17 questions about the occupational characteristics such as the place of work, the weekly working hours, and the way of working (Kang et al., 2020; Parikh et al., 2020) to measure the HWs' knowledge, awareness, and perceptions about the COVID-19 pandemic.

The World Health Organization Quality of Life Instrument (WHOQOL-BREF-TR)

The Health-related Quality of Life Instrument was developed by the WHO in 1996. The scale has two versions; long (WHOQOL-100) and short (WHOQOL-27) versions. It has 26 questions in four sub-dimensions of physical, psychological, social relations, and environmental areas, including one question about the general perceived quality of life and one question about perceived health satisfaction. The scale is in the form of 1–5 points on a 5-point Likert scale, and the field scores are converted to scoring on the scale of 100 (Spielberger et al., 1970). The Turkish validity and reliability of the questionnaire were carried out by Eser et al., and the 27th question was added to the Turkish version and included in the calculation of the environmental sub-dimension. Therefore, the environmental sub-dimension score is named "Environment-TR." The WHOQOL-BREF-TR scale does not have a total score; that is, a single quality of life score cannot be obtained by adding the scores of all four sub-dimensions (Eser et al., 1999). Four different sub-dimension scores were calculated with the scale: The Physical (physical) sub-dimension evaluates daily living activities, needs for medical care, fatigue, mobility, pain, sleep, rest, and work capacity, etc. The Psychological (spiritual) sub-dimension evaluates issues such as body perception, positive and negative thoughts, self-confidence, religious and personal beliefs, thinking, learning, memory, and concentration. The Social Well-being sub-dimension evaluates interpersonal relationships and social support. The Environment sub-dimension evaluates financial resources, physical security, accessibility and quality of health and social services, home environment, opportunities to access new knowledge and skills, physical environment, and transportation.

The Cronbach alpha's coefficients calculated for the internal consistency of the scale were 0.83 for the physical well-being (PH), 0.66 for the psychological well-being (PSH), 0.53 for the social well-being (SW), and 0.73 for the environmental well-being (E-TR). Pearson coefficients calculated for each question to determine test–retest reliability varied between 0.57 and 0.81. In scoring, the four sub-dimension scores were calculated separately, and the higher scores indicate a higher level of life quality (Eser et al., 1999).

State-Trait Anxiety Inventory (STAI-I)

Spielberger et al. divided anxiety into two as State and Trait Anxiety according to the Two-Factor Anxiety Theory. State Anxiety occurs when encountering a dangerous, undesirable situation. Trait anxiety occurs even when there is no reason, and it is disproportionately long-lasting and severe. The State-Trait Anxiety Inventory (STAI-I) is a self-assessment questionnaire consisting of short expressions (Spielberger et al., 1970). It was adapted to Turkish by Öner and Le Compte in 1983. The STAI-I has 20 items, and there is no time limit for responding to the scale. Emotions or behaviors expressed in the STAI-I items are answered by choosing one of the options such as (1) almost never, (2) sometimes, (3) often, and (4) almost always, according to their severity of the experiences. In this study, only the State Anxiety subscale was used because it describes how the individual feels at a certain time and

under certain conditions, and the responses include the feelings about the current situation, which is consistent with our study (Öner & Le Compte, 1983; Spielberger et al., 1970). The internal consistency reliability coefficients of the Turkish version of the State-Trait Anxiety Inventory were calculated using Kuder–Richardson Formula 20 and range between 0.94 and 0.96. The scale consists of 20 items with scores ranging from 1 to 4. The total score to be obtained on the scale is between 20 and 80. A high score indicates a high level of anxiety (Öner & Le Compte, 1983).

The Beck Hopelessness Scale

The Cronbach's alpha reliability coefficient of the BHS, which was developed by Beck, Lester, Trexler in 1974 and whose validity and reliability study was conducted by Seber in and Durak & Palabıyıkoğlu, 1994 was calculated as 0.75–0.85 (Beck et al., 1974; Durak & Palabıyıkoğlu, 1994; Seber et al., 1993). The participants mark "true" for expressions that are appropriate for them and "false" for the others. On the scale, including 11 "true" and 9 "false" answers, correct answers get "1" point, and wrong answers get "0" point. A "yes" response to the questions 2, 4, 7, 9, 11, 12, 14, 16, 17, 18, 20, and a "no" response to the questions 1, 2, 5, 6, 8, 10, 13, 15, and 19 receive 1 point each.

The items that make up the scale are examined in three subdimensions; feelings about the future (items 1, 6, 13, 15, and 19), loss of motivation (items 2, 3, 9, 11, 12, 16, 17, and 20), and expectations for the future (items 4, 7, 8, 14, and 18). The total score shows the score of "hopelessness" (Beck et al., 1974; Durak & Palabıyıkoğlu, 1994; Seber et al., 1993). The score to be obtained from the 20-item scale varies between 0 and 20. High scores indicate hopelessness, and low scores indicate hope; 0–3: no or minimal level of hopelessness, 4–8: a low level of hopelessness, 9–14: indicate a moderate level of hopelessness, and 15+: a high level of hopelessness (Beck et al., 1974).

Ethical Statement

The written permissions were obtained by the institution and nursing services directorate of the hospital before the study and the ethical committee approval was received from XXX University's Non-Invasive Clinical Research Ethics Committee (Date: 28.08.2020, Number: GOKAEK-2020/14.11, 2020/20.03).

Statistical Analysis

The statistical analyses were made with IBM SPSS 20.0 (IBM Corp. Armonk, NY, USA) package program. The distribution normality was evaluated with the Kolmogorov–Smirnov test. The numerical variables without normal distribution were presented as median (25th–75th percentiles), and the categorical variables were presented as frequency (%). The Mann–Whitney U test was used to test the difference between the groups, the Kruskal–Wallis one way variance analysis, and the Dunn's multiple comparison test for numerical variables that do not show a normal distribution. The relationships between the variables were determined with the Spearman's correlation analysis. For the testing of two-sided hypotheses, $p < 0.05$ was considered statistically significant.

Results

Sociodemographic Characteristics of HWs and their Knowledge, Awareness, and Perceptions Regarding the COVID-19 Pandemic

The median age of the HWs was 35.00 (28.00–42.00), 70.9% of them were female, 59.3% were married, 79% had no chronic health problems, 45.7% were nurses, 59.7% worked in other services, 59% contacted COVID-19 suspects or infected patients, and 44.3% evaluated their knowledge and ability as fully competent and ready while fulfilling their roles. 28.7% had a skin disorder caused by the protective equipment during the pandemic. 51.7% found the protective measures in their working environment during the pandemic partially adequate, and 81.8% didn't need psychological or other types of support due to contact with infected people or fear of being infected. 59.3% stated that there was no physical/emotional/social strain on them during the pandemic, and 60.1% had no chance to sleep/rest during the shift they worked (Table 1).

Correlation Between the HWs' WHOQOL-BREF-TR, STAI-I, and BHS Score Medians and their Occupational Characteristics

A significant positive correlation was found between PH ($r = 0.118$, $p = 0.002$), PSH ($r = 0.142$, $p < 0.001$), and E-TR score ($r = 0.206$, $p < 0.001$) and STAI-I scores of participants, and a significant negative correlation was seen between PS ($r = -0.486$; $p < 0.001$), PSH ($r = -0.605$; $p < 0.001$), SW ($r = -0.419$; $p < 0.001$), and E-TR ($r = -0.533$; $p < 0.001$) scores and BHS scores. Regarding the occupational characteristics, the following results were obtained: a significant positive correlation between the work experience and PSH score ($r = 0.077$, $p = 0.044$); a significant negative correlation between weekly working hours and E-TR score ($r = -0.114$, $p = 0.003$); a positive significant relationship between weekly working hours and BHS score ($r = 0.114$; $p = 0.004$); a significant negative correlation between the workload and the E-TR ($r = -0.172$, $p < 0.001$); a positive significant correlation between the workload and the BHS score ($r = 0.161$, $p < 0.001$); a significant negative correlation between the fatigue and PS ($r = -0.263$, $p < 0.001$), PSH ($r = -0.124$, $p = 0.001$), and E-TR ($r = -0.272$, $p < 0.001$) scores; and a positive significant correlation between the fatigue and the BHS score ($r = 0.210$, $p < 0.001$) (Table 2).

You can see the WHOQOL-BREF-TR, STAI-I, and BHS score medians according to the individual characteristics of HWs (Supplementary Table 1).

Table 1. Sociodemographic Characteristics of HWs and the Knowledge, Awareness, and Perceptions of HWs on COVID-19 Pandemic (n = 729) (Median (25.–75. Percentile)/n (%))

Characteristic		Median (25. –75. Percentile)	
Age		35.00 (28.00–42.00)	
Weekly working hours		40.00 (40.00–48.00)	
Daily patient number		10.00 (7.00–20.00)	
		n	%
Sex	Female	536	73.5
	Male	193	26.5
Marital status	Married	432	59.3
	Single	297	40.7
Presence of chronic health problems	Yes	153	21.0
	No	576	79.0
Profession	Physician	130	17.8
	Nurse	332	45.7
	Health technician	200	27.4
	Data entry personnel/secretary	14	1.9
	Other	53	7.2
Working place	COVID policlinics	24	3.3
	COVID service	92	12.6
	Other services	435	59.7
	Group working from home	20	2.7
	Accepting unit/emergency service	158	21.7
Way of working	Nighttime	38	5.2
	Daytime	315	43.2
	Shift	376	51.6
Have you ever been with COVID-19?	Yes	14	1.9
	No	715	98.1
Have you ever contacted with a person with COVID -19 or suspicion of COVID-19?	Yes	430	59.0
	No	126	17.3
	I don't know	173	23.7
How do you evaluate your knowledge of COVID-19 and your ability to do your job as you fulfill your role?	Partially competent	282	38.7
	Not prepared	124	17.0
	Completely competent and ready	323	44.3
What physical ailments do you experience due to the use of protective equipment during the pandemic?	Allergic reactions	108	14.8
	Skin problems (sweating, erythema, dryness, etc.)	209	28.7
	Fatigue	201	27.6
	Headache, vertigo	173	23.7
	Trouble breathing	12	1.6
	Other (insomnia, visual problems, anxiety, etc.)	26	3.6
What do you think about the measures taken in your workplace environment during the pandemic? (personal protective equipment, working time, etc.)	Partially competent	377	51.7
	Competent	242	33.2
	Incompetent	110	15.1
Did you need psychological or other help because of contact with infected people or fear of getting infected?	Yes	133	18.2
	No	596	81.8
Was there any physical/emotional/social strain or an event that affected you during the pandemic?	Yes	297	40.7
	No	432	59.3
Did you have the opportunity to sleep/rest during your shift?	Yes	438	60.1
	No	291	39.9
Total		729 100.0	

Note. HWs = healthcare workers.

Table 2. Correlation Between HWs' WHOQOL-BREF-TR, STAI-I, and BHS Score Medians and Some Occupational Characteristics (n = 729) (Median (25.–75. Percentile).

Scale and Subscale	Median (25.–75. Percentile)	[a]	1	2	3	4	5	6
1. PH	64.28 (50.00–75.00)	r						
		p						
2. PSH	62.50 (54.16–75.00)	r	0.653					
		p	p < 0.001					
3. SW	58.33 (41.66–75.00)	r	0.501	0.568				
		p	p < 0.001	p < 0.001				
4. E-TR	59.37 (50.00–68.75)	r	0.624	0.591	0.516			
		p	p < 0.001	p < 0.001	p < 0.001			
5. STAI-I	41.00 (38.00–43.00)	r	0.118	0.142	0.067	0.206	-	
		p	0.002	p < 0.001	0.094	p < 0.001		
6. BHS	5.00 (2.00–11.00)	r	−0.486	−0.605	−0.419	−0.533	−0.054	-
		p	p < 0.001	p < 0.001	p < 0.001	p < 0.001	0.174	
Weekly working hours	40.00 (40.00–48.00)	r	0.034	0.052	0.016	−0.114	−0.025	0.114
		p	0.379	0.178	0.686	0.003	0.534	0.004
Daily patient number	10.00 (7.00–20.00)	r	−0.065	−0.062	−0.066	−0.074	0.054	0.071
		p	0.105	0.123	0.114	0.064	0.183	0.083
The score given to workload	8.00 (6.00–9.00)	r	−0.071	0.050	0.010	−0.172	0.012	0.161
		p	0.064	0.185	0.805	p < 0.001	0.756	p < 0.001
Score given to fatigue	8.00 (6.00–9.00)	r	−0.263	−0.124	−0.061	−0.272	0.008	0.210
		p	p < 0.001	0.001	0.125	p < 0.001	0.834	p < 0.001

Note. HWs = healthcare workers; WHOQOL-TR = the Turkish version of the shorter version of the World Health Organization quality of life instrument; PH = physical health; PSH = psychological health; SW = social well-being; E-TR = environment-TR; STAI-I = State-Trait Anxiety Inventory; BHS = Beck Hopelessness Scale.
[a]Spearman correlation analysis.

WHOQOL-BREF-TR, STAI-I, and BHS Score Medians According to the Status of HWs Finding the Measures Taken During the COVID-19 Pandemic Adequate

A statistically significant difference was found between those who reported being incompetent and partially competent (p < 0.001) and between competent and incompetent (p < 0.001) in terms of PH; between those who reported being competent and incompetent (p < 0.001), and between partially competent and competent (p < 0.001) in terms of PS score; between those who reported being incompetent and partially competent (p = 0.046), between incompetent and competent (p < 0.001), and between partially competent and competent (p < 0.001) in terms of SW score; between those who reported being partially competent and incompetent (p < 0.001), partially competent and competent (p < 0.001) in terms of E-TR; and between those who reported being partially competent and incompetent (p = 0.010) and competent and incompetent (p < 0.001) in terms of BHS (Table 3).

Comparison of the Subjects HWs Need to Improve their Skills and their WHOQOL-BREF-TR, STAI-I, and BHS their Median Scores

The PH (p = 0.008), PSH (p = 0.033), and E-TR (p = 0.016) scores of those who needed information about "infection prevention control" in developing their skills among HWs were found to be significantly lower, while the BHS score was significantly higher (p = 0.028). The PH (p = 0.015) and E-TR (p = 0.001) scores of those who needed information on "the use of PPE" were significantly lower while their BHS (p = 0.029) scores were significantly higher. Besides, the STAI-I score (p = 0.039) was found to be significantly higher in those who needed information about "case management" (Table 4).

You can see a comparison of the HWs' knowledge and skills regarding COVID-19 at work and WHOQOL-BREF-TR, STAI-I, and BHS median scores (Supplementary Table 2).

Discussion

When caring for COVID-19 patients, HWs are at risk for physical, mental, and social health (Shaukat et al., 2020). Therefore, protecting the health of HWs has been highlighted as a crucial component of public health measures against the COVID-19 pandemic (Lai et al., 2020). To the best of our knowledge, this is the first study in Turkey and the international literature to examine the effects of anxiety and hopelessness experienced during the COVID-19 pandemic on the physical, mental, and social health of HWs together. According to our results, the quality of life increased as the state anxiety levels of HWs increased, and the quality of life decreased as the hopelessness increased; the increase in weekly working time, workload, and fatigue increased the hopelessness and the relationship with health and decreased the quality of life in various areas; those who found the measures taken during the COVID-19 pandemic inadequate had a lower quality of life and higher hopelessness; those who needed

Table 3. Comparison of the HWs' Status Finding the Measures Taken During the COVID-19 Pandemic Process Adequate and the Median Score of WHOQOL-BREF-TR, STAI-I, and BHS (n = 729) (Median (25.–75. Percentile).

	PH	PSH	SW	E-TR	STAI-I	BHS
Partially competent (n = 377)	64.28 (53.57–71.42)	62.50 (54.16–70.83)	58.33 (41.66–66.66)	59.37 (50.00–65.62)	40.00 (38.00–43.00)	5.00 (2.00–10.00)
Competent (n = 242)	64,28 (57.14–75.00)	70,83 (58.33–75.00)	66,66 (50.00–75.00)	64,06 (56.25–71.87)	41,00 (39.00–44.00)	3,00 (2.00–9.00)
Incompetent (n = 110)	53.57 (42.85–64.28)	58.33 (45.83–68.75)	50.00 (33.33–64.58)	46.87 (37.50–56.25)	40.00 (38.00–43.00)	9.50 (3.00–16.00)
p value *	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p = 0.288$	$p < 0.001$
p[a]	$p < 0.001^{+}$ $p < 0.001^{++}$	$p < 0.001^{++}$ $p < 0.001^{+++}$	$p = 0.046^{+}$ $p < 0.001^{++}$ $p < 0.001^{+++}$	$p < 0.001^{+}$ $p < 0.001^{++}$ $p < 0.001^{+++}$		$p = 0.010^{+}$ $p < 0.001^{++}$

Note. HWs = healthcare workers; WHOQOL-TR = the Turkish version of the shorter version of the World Health Organization quality of life instrument; PH = physical health; PSH = psychological health; SW = social well-being; E-TR = environment-TR; STAI-I = State-Trait Anxiety Inventory; BHS = Beck Hopelessness Scale.
*: Kruskal–Wallis Test; p[a]: multiple comparison test; $^{+}$: incompetent—partially competent; $^{++}$: incompetent—Competent; $^{+++}$: partially competent—competent.

Table 4. Comparison of the Subjects HWs Need to Improve their Skills and their Median Scores on the WHOQOL-BREF-TR, STAI-I, and BHS (n = 729) (Median (25.–75. Percentile).

Subject	Need of Information Yes/No	PH	PSH	SW	E-TR	STAI-I	BHS
Infection prevention control	No	64.28 (53.57–75.00)	66.66 (54.16–75.00)	58.33 (50.00–75.00)	59.37 (53.12–68.75)	40.50 (38.00–43.00)	4.00 (2.00–9.00)
	Yes	60.71 (50.00–71.42)	62.50 (54.16–70.83)	58.33 (41.66–66.66)	59.37 (50.00–65.62)	40.00 (38.00–43.00)	5.00 (2.00–11.00)
p[a]		$p = 0.008$	$p = 0.033$	$p = 0.616$	$p = 0.016$	$p = 0.876$	$p = 0.028$
Using personal protective equipment	No	64.28 (53.57–75.00)	62.50 (54.16–75.00)	58.33 (50.00–75.00)	59.37 (50.00–68.75)	41.00 (39.00–43.00)	4.00 (2.00–10.00)
	Yes	60.71 (46.42–67.85)	62.50 (50.00–72.91)	58.33 (41.66–66.66)	53.12 (43.75–62.50)	40.00 (37.00–42.00)	5.00 (3.00–13.00)
p[a]		$p = 0.015$	$p = 0.209$	$p = 0.340$	$p = 0.001$	$p = 0.055$	$p = 0.029$
Case management	No	64.28 (53.57–75.00)	62.50 (54.16–75.00)	58.33 (50.00–75.00)	59.37 (50.00–68.75)	40.00 (38.00–43.00)	4.00 (2.00–11.00)
	Yes	64.28 (50.00–71.42)	62.50 (54.16–75.00)	58.33 (41.66–66.66)	59.37 (50.00–68.75)	41.00 (39.00–43.00)	5.00 (2.00–10.00)
p[a]		$p = 0.295$	$p = 0.570$	$p = 0.567$	$p = 0.316$	$p = 0.039$	$p = 0.337$

Note. HWs = healthcare workers; WHOQOL-TR = the Turkish version of the shorter version of the World Health Organization quality of life instrument; PH = physical health; PSH: psychological health; SW = social well-being; E-TR = environment-TR; STAI-I = State-Trait Anxiety Inventory; BHS = Beck Hopelessness Scale.
[a]Mann–Whitney U test.

information to improve their skills regarding COVID-19 had a lower quality of life and higher hopelessness.

The COVID-19 epidemic can affect HWs working under stress, which may negatively affect their quality of life (Shaukat et al., 2020). Hacimusalar et al. explored the level of anxiety and hopelessness in the groups with and without HWs (n = 1121: HWs, 52%) and found a higher level of hopelessness and anxiety in the group with HWs and a positive relationship between hopelessness and anxiety and argued that anxiety and uncertainty can exacerbate the level of hopelessness (Hacimusalar et al., 2020). The literature has citations that hopelessness is associated with reduced physical function and lower physical activity in people with heart disease (Botterman, 2021), HWs with a high level of hopelessness attribute less meaning to life, which aggravates depression (Güngör & Uçman, 2020), there is a positive significant relationship between health anxiety and hopelessness seen in the early stages of the COVID-19 pandemic (r = 0.35, $p < 0.01$) (Kazan Kızılkurt et al., 2021), hopelessness is negatively correlated with life satisfaction (Kliem et al., 2018), and a negative predictor of resilience to stressful events (Saricali et al., 2020). In this study, as the state anxiety levels of HWs increased, the quality of life in the physical, psychological, and environmental health areas increased; however, as the

hopelessness increased, the quality of life in the physical, psychological, social well-being, and environmental health areas decreased. That is hopelessness in HWs impaired health-related quality of life. The hypothesis (H1) investigating the relationship between anxiety and hopelessness levels of HWs and their quality of life was partially confirmed, which is consistent with research findings revealing the relationship between hopelessness and quality of life (Botterman, 2021; Güngör & Uçman, 2020; Kliem et al., 2018; Saricali et al., 2020; Scogin et al., 2016). In the study, the anxiety experienced by HWs due to COVID-19 may help improve the perceived risk of the pandemic among HWs, which may motivate them to take appropriate, preventive measures to improve their quality of life in healthcare field. It can be said that the well-being of HWs continues as the data were collected during the first wave of the COVID-19 pandemic in our country. However, as hopelessness increased in HWs, the quality of life decreased in all health-related areas. Therefore, hopelessness in HWs is considered a risk factor for health-related quality of life.

The COVID-19 outbreak, which has led to dramatic health alarms, caused an explosion in the healthcare burden (Franza et al., 2020). HWs have been physically and mentally affected by this situation (Zhao et al., 2020); thus, their workload, anxiety, depression, compassion fatigue, and despair have increased (Franza et al., 2020). In the study conducted by Liang et al. on mental health screening on the subject, it is stated that having sufficient rest intervals can help HWs relieve stress, the mental health of HWs should not be neglected during the pandemic, maintaining physical and psychological health is essential in the fight against COVID-19, and depression and anxiety scales are simple and significant tools in monitoring personal health (Liang et al., 2020). In a study by Teles et al., exploring psychosocial working conditions and quality of life among primary healthcare workers ($n = 797$), it was found that there is a relationship between negative psychosocial working conditions and low quality of life (Teles et al., 2014). Hacimusalar et al. indicated that the increase in weekly working hours causes an increase in hopelessness and state anxiety levels in HWs (Hacimusalar et al., 2020). In this study, in support of the above-mentioned research findings (Hacimusalar et al., 2020; Teles et al., 2014), it was found that the increase in weekly working time, workload, and fatigue increased hopelessness, not anxiety, which adversely affected the quality of life in various health-related areas. With this finding, the hypothesis (H2) that "work characteristics of HWs affect anxiety and hopelessness levels and quality of life in the areas of physical, mental, social and environmental health" was partially confirmed. In our country, the Ministry of Health has developed a mobile application called "RUHSAD" which allows video calls with volunteer adult and child adolescent mental health specialists through a secure and official channel especially for HWs and their children who are in quarantine due to COVID-19, who have a positive test result, whose relatives are followed in the intensive care unit, who take active roles in the COVID-19 services and intensive care units, who have a high level of anxiety and who think that they need mental health support to protect and support their mental health in this period. In addition, fewer patients were given to HWs with COVID-19 working in hospitals included in the study, and more and longer breaks were added to their work schedule.

It is vital to use PPE during treatment and care in healthcare institutions during the COVID-19 pandemic. However, due to its frequent use, PPE insufficiency has become a serious problem worldwide (Çiriş-Yildiz et al., 2020; Hoernke et al., 2021; Razu et al., 2021). In addition, it is necessary to support the HWs, working at the forefront of the epidemic, and to understand their fears and concerns. Çiriş-Yildiz et al. reported that anxiety due to the lack of adequate PPE, unsuitable physical conditions, and size of PPE cause reluctance to use it, so adequate PPE should be provided to overcome these problems (Çiriş-Yildiz et al., 2020). Razu et al. noted that medical personnel and medical equipment shortages are common during the COVID-19 pandemic in Bangladesh, which increases the workload, and HWs need adequate equipment and employee support for both their physical and mental health and a protocol on the use of PPE (Razu et al., 2021). In this current study, the quality of life was worse and hopelessness levels were higher in HWs who found the measures taken during the COVID-19 pandemic were "inadequate" in all health-related areas than those who found them partially adequate and adequate. This result partially confirmed the hypothesis (H3) that "The adequacy of the measures taken during COVID-19 affects the anxiety, and hopelessness levels of HWs and their quality of life in the areas of physical, mental, social and environmental health." It is noteworthy that the finding obtained in our study is consistent with the findings obtained in Table 4. To take an adequate level of measures (PPE, training for infection control, etc.) during the COVID-19 pandemic are vital to meet the information needs of HWs for the development of their skills, make them feel competent, ready, and safe, reduce their anxiety, and hopelessness, and improve their quality of life.

Providing pre-training (virus and contagiousness, isolation measures, PPE use, ways to prevent infection, psychological reactions, etc.) for HWs who have an active role in the pandemic is essential in terms of readiness (Nurses Association Turkish, 2020). In a study conducted in Singapore, the PPE training is emphasized for HWs to feel safe and prepared during the COVID-19 pandemic, and the misuse of PPE will exacerbate the shortage of PPEs and may place HWs at a higher risk of infection (Wong et al., 2020). In a study by Unroe et al., conducted with staff, mostly nurses, in a nursing home, educating staff about vaccination has been reported to contribute to their willingness to be vaccinated, and widespread vaccination protects workers against serious illness and death and promises to improve their quality of life (Unroe et al., 2021). In our study, those who needed information on "infection prevention control" and "use of PPE" to improve

their skills had lower quality of life and higher hopelessness in various health-related areas, and that those who needed information on "case management" had higher state anxiety. This result confirms the hypothesis (H4) that "Knowledge-skills about COVID-19 affect anxiety and hopelessness levels, and quality of life in the areas of physical, mental, social, and environmental health" and is similar to research findings showing the relationship between life expectancy and quality of life (Pappa et al., 2020; Zhou & Zhang, 2020).

Limitations of the Study

The main identified limitation of the study is that a limited number of physicians and paramedics participated in the study. The ratio of nurses' participation in the research was higher because of cooperation with the nursing services directorates. As the research was based on volunteerism, and the number of physicians and paramedics that could be reached was low, the participation of this group of HWs in the research was not enough. Another limitation is that during the data collection, anxiety, hopelessness, and quality of life could not be evaluated according to the exposure levels (low, medium, high risk) that HWs faced while caring for the COVID-19 patients. Besides, the data were collected during the 1st wave period (March – November 2020), and since the COVID-19 vaccination in Turkey started on January 14, 2021, questions about vaccination could not be asked to the HWs, and the effect of vaccination on anxiety and hopelessness could not be investigated.

Conclusion

The study revealed that anxiety and hopelessness negatively affected the quality of life of HWs; the increase in weekly working hours, workload, and fatigue negatively affected the quality of life in health areas such as physical, psychological, and environment and increased hopelessness; HWs who found the measures taken during the pandemic inadequate had lower quality of life and higher hopelessness; those who needed information to develop their knowledge-skills in "infection prevention control," "the use of PPE," and "case management" during the COVID-19 pandemic had lower quality of life in various health-related areas and higher anxiety and hopelessness. Considering these results, it is recommended to provide online training for HWs who had less experience in the profession and needs knowledge and skills regarding the COVID-19 pandemic, evaluate the anxiety and hopelessness levels of HWs regularly with reliable measurement tools during the pandemic, implement psychological support services to strengthen mental health, take measures to reduce workload and fatigue in the working environment (increasing rest intervals, increasing the number of employees, etc.), take urgent measures to regulate working conditions by health policymakers, and carry out studies on the potential effects of the hope arising from vaccination on public opinion and HWs as studies examining the effects of vaccination on anxiety, hope/hopelessness levels, and quality of life of HWs have not yet been conducted.

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