GÜSBD 2024; 13(4): 1721 -1732 **Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi** **Araştırma Makalesi**
GUJHS 2024; 13(4): 1721 -1732 Gümüşhane University Journal of Health Sciences Original Article

COVID-19 Process; Physical and Psychosocial Effects of Long Term Mask Use on Healthcare Workers

COVID-19 Süreci; Uzun Süreli Maske Kullanımının Sağlık Çalışanları Üzerindeki Fiziksel ve Psikososyal Etkileri

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ABSTRACT

Mask use is one of the most important protective equipment for healthcare workers since the beginning of the COVID-19 epidemic but it could be caused psychophysiological problems. Aim of this study, revealing he psychophysiological problems experienced by healthcare professionals regarding the term mask use. This cross-sectional descriptive study were conducted with 552 healthcare workers working of a hospital in Erzurum/Turkey between Dec 2021-Feb 2022. A questionnaire form including socio-demographic characteristics, attitudes towards mask use and psychophysiological characteristics was used as measuring tool. 53.4% of the participants reported nasal congestion and bad breath, 50% facial irritation and 34.7192% vision problems. 47.6% of the participants stated that they had negative thoughts about mask use and experienced burnout. Participants stated that mask use created concerns about identity security among healthcare professionals. Long term use of masks causes important psychophysiological problems in healthcare workers. For this reason, hospital administrations and state administrators can take the necessary steps by taking this information as a reference and these results will be an example for other studies.

Key Words: Covid-19, Healthcare, Nurse

ÖZ

Maske kullanımı, COVID-19 salgını başlangıcından itibaren sağlık çalışanları için en önemli koruyucu ekipmanlardan biridir fakat uzun süre maske kullanımı fizyopsikolojik sorunlara neden olabilir. Bu çalışmanın amacı, sağlık çalışanlarının uzun süreli maske kullanımına ilişkin yaşadıkları psikofizyolojik sorunları ortaya koymaktır. Kesitsel tanımlayıcı tipte olan bu çalışma, Aralık 2021- Şubat 2022 tarihleri arasında Erzurum/Türkiye'deki bir hastanede çalışan 552 sağlık çalışanı ile yapılmıştır. Ölçüm aracı olarak sosyo-demografik özellikler, maske kullanımına yönelik tutumlar ve psikofizyolojik özelliklerin değerlendirildiği bir anket kullanılmıştır. Katılımcıların % 53,4'ü, burun tıkanıklığı ve ağız kokusu, %50'si yüzde tahriş ve %34,7'si görme sorunu yaşadığını bildirmiştir. Katılımcıların %47,6'sı maske kullanımına ilişkin olumsuz düşüncelere sahip olduğunu ve tükenmişlik yaşadığını belirtmiştir. Katılımcılar maske kullanımının sağlık çalışanları arasında kimlik güvenliği açısından endişe yarattığını belirtmiştir. Uzun süreli maske kullanımı sağlık çalışanlarında önemli psikofizyolojik sorunlara yol açmaktadır. Bu nedenle hastane ve devlet yöneticileri çalışmadaki bilgileri referans alarak gerekli adımları atabilirler ve bu sonuçlar diğer çalışmalara örnek olacaktır.

Anahtar Kelimeler: Covid-19, Sağlık bakımı, Hemşire

Ethics committee approval was received for this study from the ethics committee of Atatürk University of Medical Sciences (Date: 05.11.2021 Decision No: 2021-5/22).

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Geliş Tarihi / Received: 26.09.2023
Kabul Tarihi/Accepted: 24.11.2024

INTRODUCTION

Coronavirus Infectious Disease-19 (COVID-19) is a respiratory tract infection disease that has spread all over the world. Healthcare workers take an active role in the diagnosis, treatment and monitoring stages of the disease and constitute a special group that should be kept apart from other occupational groups. Because they carry the risk of being infected, contagious, contracting the disease and even death in this process. The increase in the number of health workers who have been caught in this disease and lost their lives because of this disease all over the world and in our country shows the seriousness of the situation and shows that the fight against this disease is an important public health problem.[1,2]

Healthcare workers who treat patients are at risk of infecting themselves and others by being contaminated with aerosols and touching contaminated surfaces. Infection prevention and control guidelines are published that include the correct use of personal protective equipment such as masks, gloves and gowns, isolation of patients with respiratory tract infections, and stricter cleaning routines to reduce the transmission of infections. However, the extent to which healthcare workers adhere to this guideline varies.[3]

Droplets occur when a person infected with the COVID-19 virus coughs or sneezes, exposing the person in close contact to infective respiratory droplets. Since droplets can also be found on surfaces where the virus can live, contact with the close environment of the person infected with the COVID-19 virus is another way of transmission. Therefore, in addition to standard precautions, healthcare workers must comply with droplet and contact isolation precautions specific to the transmission routes of the COVID-19 virus.[4] World Health Organization (WHO) recommends the use of medical/surgical masks in the routine care processes of patients with probable/definite diagnosis of COVID-19. In addition, WHO states that a mask with at least N95/FFP2 or equivalent filtration should be used during aerosol-generating interventions (Ex; tracheal intubation, nebulizer therapy, open airway aspiration, sputum sampling, tracheotomy, cardiopulmonary resuscitation, non-invasive ventilation, manual ventilation before intubation and bronchoscopy etc.).[5,6]

However, there are also studies indicating the difficulties of using masks to protect against the SARS-CoV-2 virus.[7] Wearing different types of masks and changing masks with different frequencies may have different effects on the skin microbiota.[8] After using the mask; headache, facial tension, ear pain, vision problems and shortness of breath are among the most frequently reported complaints.[9] In their study, Ong et al. reported that due to the design of N95 masks, pain occurred in the face and ear areas where the mask elastics came into contact.[10] In their study, Lim et al reported that the use of N95 respirator masks for more than 4 hours may cause headaches, and they reported that shorter-term use may reduce the incidence and severity of these pains.[11] Similarly, Metin et al' study showed the presence of new-onset headaches associated with mask use in healthcare workers during the COVID-19 pandemic.[12] In another study, mask use was found to be significantly associated with the development of headaches, eye and skin complications.[13]

The use of masks is one of the most important personal protective equipment from the beginning of the epidemic. For this reason, the use of masks is mandatory for healthcare workers to protect themselves and their environment from the epidemic safely. However, it should not be ignored that long term mask use adverse effect can lead to negative social-psychological effects.[14] Evidence in the literature suggests that wearing a mask can have important psychological effects on basic psychosocial needs such as competence, autonomy, and relatedness.[15] For Example, long-term mask use can cause symptoms such as lack of concentration, and anxiety.[16]

There are studies in the literature that have evaluated the physical problems of healthcare

workers related to the use of masks during the Covid-19 pandemic, but studies on physical and psychosocial problems are quite insufficient. From this point of view, our study aimed to evaluate the physical and psychosocial effects of mask use on health workers and to obtain information about the views of health workers about masks.

Study Questions

1. What are the physical effects of long-term mask use on healthcare workers?
2. What are the psychosocial effects of long-term mask use on healthcare workers?

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Study Design and Sample Selection

The population of this descriptive cross-sectional study consisted of healthcare workers (nurse, doctor, technician, laboratory assistant, paramedic and cleaning staff) in different department of a hospital in Erzurum/Türkiye. The population covered 1781 health workers, including 848 nurses, 500 doctors, 73 technicians, 31 paramedics, 319 cleaning staff and 10 laboratory assistants working in this hospital. No sampling method was used, and the study was completed with 552 health workers who agreed to participate in the study and met the inclusion criteria. It was determined in the power analysis that the working power of the study was 0.93 at the 0.05 significance level and 95% indicates that the sample is adequate.

Criterias of Sample Selection

In this study, the inclusion criteria were as follows: Being health care workers, among 18–60 years old (the age range for incumbent HCWs) and understanding the question literally. All subjects provided informed consent before registration. Only subjects who agreed to participate voluntarily were included in this study, and subjects could quit the process at any time. Participants were asked to answer the survey via face to face interview, and only one response was allowed for each question in the survey.

Measures

In the collection of research data, a questionnaire consisting of 31 questions was used, which was prepared by the researcher in line with the relevant literature, in which socio-demographic characteristics, attitudes towards the use of masks and physical and psychosocial processes were examined.[4,5,7]

Statistical Analysis

The data obtained from the research were analyzed in the SPSS 20 package program. In the analysis, descriptive (percentage, arithmetic mean, standard deviation, min-max) tests were performed.

Ethical Consideration

Ethics committee approval was received for this study from the ethics committee of Atatürk University of Medical Sciences (Date: 05.11.2021 Decision No: 2021-5/22). And this study performed in accordance with the ethical regulations of the Declaration of Helsinki as well as Turkish laws and regulations. The hospital official permission has been obtained and informed consents were obtained from the participants

Limitations

One limitation for this study is that the participants were healthcare workers dealing with COVID-19 patients and therefore cannot be generalized to all healthcare workers. While designing for sampling, we aimed to reach as many healthcare workers as possible. The refusal of a part of the sample group to participate in the questionnaire due to the current working conditions constituted the obstacles to our study.

RESULTS AND DISCUSSION

Opinions of healthcare professionals about mask use and the psychophysiological effects of mask use were examined under four headings;

The individual characteristics and working conditions of the healthcare workers are given in Table 1.

Of the 552 healthcare workers who participated in our study, 120 (21.7%) work in internal clinics, 163 (29.5%) in surgical clinics, 34 (6.1%) in pediatric clinics, 71 (12.8%) in intensive care clinics, 81 (14.6%) in emergency services and 83 (15.3%) in other clinics.

290 healthcare participants are female, 310 participants are under 29 years old and 220 participants have a university degree. In addition, 91 doctors, 201 nurses, 66 technicians participated in the study and 194 workers are from other profession groups. Other profession groups consist of cleaning staff, paramedic and laboratory assistants participating in the study from all clinics, 42 workers in internal clinics, 52 workers in surgical clinics, 12 workers in pediatrics clinics, 23 workers in intensive care units, 31 workers in emergency services, and 34 workers in imaging centers and analysis laboratories.

Table 1. Individual Characteristics And Working Conditions

Variables		Internal Clinics n (%) (n=120)	Surgical Clinics n (%) (n=163)	Pediatric Clinics n (%) (n=34)	Intensive Care Clinics n (%) (n=71)	Emergency n (%) (n=81)	*Other n (%) (n=83)	Total n(%) (n=552)
Gender	Male	52 (43.3%)	80 (49.1%)	15 (42.1%)	27 (38%)	49 (60.5%)	39 (47%)	262 (47%)
	Female	68 (56.7%)	83 (50.9%)	19 (52.9%)	44 (62%)	32 (39.5%)	44 (53%)	290 (53%)
Age	29 and under	68 (56.7%)	87 (53.4%)	18 (52.9%)	49 (69%)	51 (63%)	37 (44.5%)	310 (56%)
	30-44 age	40 (33.3%)	57 (35%)	15 (44.1%)	18 (25.4%)	24 (29.6%)	33 (39.8%)	187 (34%)
	45 and over	12 (10%)	19 (11.6%)	1 (2%)	4 (5.6%)	6 (7.4%)	13 (15.7%)	55 (10%)
Education	High School	29 (24.2%)	49 (30.1%)	6 (17.6%)	23 (32.4%)	26 (32.1%)	23(27.7%)	156 (28%)
	Graduate	49 (40.8%)	51 (31.3%)	15 (44.1%)	37 (52.1%)	29 (35.8%)	39 (47%)	220 (40%)
	Postgraduate	29 (24.2%)	33 (20.2%)	4 (11.8%)	4 (5.6%)	15 (18.5%)	12 (14.5%)	97 (18%)
	Other	13 (10.8%)	30 (18.4%)	9 (26.5%)	7 (9.9%)	11 (13.6%)	9 (10.8%)	79 (14%)
Profession	Doctor	31 (25.8%)	34 (20.9%)	2 (5.9%)	3 (4.2%)	15 (18.5%)	6 (7.2%)	91 (17%)
	Nurse	40 (33.3%)	62 (38.%)	15 (44.1%)	34 (47.9%)	20 (24.7%)	30 (36.1%)	201 (36%)
	Technician	7 (5.8%)	15 (9.2%)	5 (14.7%)	11(15.5%)	15 (18.5%)	13 (15.7%)	66 (12%)
	**Other	42 (35.1%)	52 (31.9%)	12 (35.3%)	23 (32.4%)	31 (38.3%)	34 (41%)	194 (35%)
Working Year	0-2 years	38 (31.7%)	45(27.6%)	6 (17.6%)	25(35.2%)	31 (38.3%)	21(25.3%)	166 (30%)
	2-4 years	16 (13.3%)	30 (18.4%)	8 (23.5%)	11 (15.5%)	10 (12.3%)	8 (9.6%)	83 (15%)
	>4 years	66 (55%)	88 (54%)	20 (58.9%)	35 (49.3%)	40 (49.4%)	54 (65.1%)	303 (55%)

** Analysis Lab, Imaging centers(BT,MR, Ultrasound)*
*** Paramedic, Cleaning staff, Laboratory assistant*

The general opinions of health workers on mask use are given in Table 2. 369 (66.8%) health workers for all clinics received that training on the use of personal protective equipment during the COVID-19 process, 389 (70.4%) health workers received that personal protective equipment is sufficient. 415 (75.1%) health workers received that the necessity of using masks for COVID-19 is realistic.Health workers who do not find the personal protective equipment sufficient in their clinics complain about the necessity of higher quality materials, the inadequacy of the N 95 Mask, the lack of adequate isolation and the lack of adequate material supply (Table 2).

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Table 2. Opinions On Mask Use

Questions		Internal Clinics n (%) (n=120)	Surgical Clinics n (%) (n=163)	Pediatric Clinics n (%) (n=34)	Intensive Care Clinics n (%) (n=71)	Emergency n (%) (n=81)	*Other n (%) (n=83)	Total n(%) (n=552)
Have you received training on the use of personal protective equipment during the COVID-19 process?	Yes	79 (65.8%)	114 (69.9%)	27 (79.4%)	51 (71.8%)	53 (65.4%)	45 (55.4%)	369 (67%)
	No	41 (34.2%)	49 (30.1%)	7 (20.6%)	20 (28.2%)	28 (34.6%)	38 (44.6%)	183 (33%)
Do you think personal protective equipment is sufficient in your clinics?	Yes	93 (77.5%)	106 (65.6%)	23 (67.6%)	50 (70.4%)	64 (79.0%)	53 (63.9%)	389 (70.4%)
	No	27 (22.5%)	57 (34.4%)	11 (32.4%)	21 (29.6%)	17 (21.0%)	30 (36.1%)	163 (29.6%)
***If your answer is "No", what is the reason?*	Need Better Quality Material	*1*	*2*	-	-	*1*	*1*	*5(9%)*
	N 95 Mask Not Available	-	*3*	-	-	*1*	*2*	*6 (11%)*
	Adequate Isolation Isn't Provided	-	*1*	-	*1*	-	*1*	*3 (5%)*
	Sufficient Material Supply Isn't Provided	*5*	*16*	*4*	*6*	*2*	*8*	*41 (75%)*
Do you find the requirement to use masks for COVID-19 realistic?	Yes	106 (88.3%)	125 (76.7%)	24 (70.6%)	46 (64.8%)	56 (69.1%)	58 (69.9%)	415 (75%)
	No	14 (11.7%)	38 (23.3%)	10 (29.4%)	25 (35.2%)	25 (30.9%)	25 (30.1%)	137 (25%)
Which practice do you think is correct about the use of masks?	The mask should be placed on the upper wing of the nose and be worn in such a way that it completely covers the mouth and nose.	*119*	*159*	*31*	*69*	*75*	*79*	*532 (96.3%)*
	The mask does not need to fit completely, just covering the mouth is sufficient.	*1*	*4*	*2*	*1*	*2*	*2*	*12 (2.1%)*
	If you cannot breathe comfortably in the mask, you can lower the mask under the nose.	-	-	*1*	*1*	*4*	*1*	*7 (1.2%)*
	It is okay to lower the mask to the chin while talking.	-	-	-	-	-	*1*	*1(0.4%)*

**Analysis Lab, Imaging center (BT,MR, Ultrasound)*
***Only participants who gave that answer*

The physical problems due to long-term use of masks (since the beginning of the pandemic, 8 hours in daytime shift, 16 hours in night shift) on health workers are given in Table 3. 219 (39.6%) health workers change their masks every 4 hours. 295 (53.4%) health workers working in surgery, intensive care, analysis lab and imaging center reported that long-term use of masks causes nasal congestion. Health workers working in internal and surgical clinics stated that they experienced runny nose and cold symptoms due to the use of masks. Half of the healthcare workers working in clinics other than the intensive care and emergency departments stated that the use of masks causes facial irritation. 192 (34.7%) health workers stated that they had vision problems related to the use of masks. 295 (53.4%) healthcare workers have bad breath due to the use of masks. At the same time, healthcare workers in all clinics experienced shortness of breath due to the use of masks. Healthcare workers in surgical clinics and intensive care clinics had difficulties in treatment and care practices due to the use of masks. In addition, 230 (41.6%) healthcare workers stated that the use of masks prevents emergency intervention to patients (Table 3).

Table 3. Physical Problems Due To Long-Term Mask Use

Questions		Internal Clinics n (%) (N=120)	Surgical Clinics n (%) (N=163)	Pediatric Clinics n (%) (N=34)	Intensive Care Clinics n (%) (N=71)	Emergency n (%) (N=81)	*Other n (%) (N=83)	Total n(%) (n=552)
How often do you change your mask while you are in the clinic	Once An Hour	9 (7.5%)	18 (11%)	6 (17.7%)	12 (16.9%)	10 (12.3%)	8 (9.6%)	63(11.4%)
	Every 2 Hours	15 (12.5%)	27 (16.6%)	5 (14.7%)	15 (21.1%)	14 (17.3%)	14 (16.9%)	90 (16.3%)
	Every 4 Hours	51 (42.5%)	60 (36.8%)	14 (41.2%)	29 (40.9%)	32 (39.5%)	33 (39.8%)	219(39.6%)
	One Mask During The Work	34 (28.3%)	53 (32.5%)	8 (23.5%)	12 (16.9%)	17 (21%)	25 (30.1%)	149 (27%)
	Other	11 (9.2%)	5 (3.1%)	1 (2.9%)	3 (4.2%)	8 (9.9%)	3 (3.6%)	31 (5.7%)
Did you experience nasal congestion due to mask use	Yes	59 (49.2%)	93 (57.1%)	15 (44.1%)	37 (52.1%)	40 (49.4%)	51 (61.4%)	295(53.4%)
	No	61 (50.8%)	70 (42.9%)	19 (55.9%)	34 (47.9%)	41 (50.6%)	32 (38.6%)	257(46.6%)
Did you experience any discomfort such as cold or runny nose while using the mask?	Yes	65 (54.2%)	90 (55.2%)	15 (44.1%)	34 (47.9%)	39 (48.1%)	33 (39.8%)	276 (50%)
	No	55 (45.8%)	73 (44.8%)	19 (55.9%)	37 (52.1%)	42 (51.9%)	50 (60.2%)	276 (50%)
Did you experience any irritation on your face while using the mask?	Yes	63 (52.5%)	88 (54%)	17 (50%)	32 (45.1%)	37 (45.7%)	45 (54.2%)	282 (51%)
	No	57 (47.5%)	75 (46%)	17 (50%)	39 (54.9%)	44 (54.3%)	38 (45.8%)	270 (49%)
Have you experienced problems such as blurred seeing or watering in your eyes associated with the use of masks?	Yes	42 (35%)	68 (41.7%)	6 (17.6%)	23 (32.4%)	25 (30.9%)	28 (33.7%)	192(34.7%)
	No	78 (65%)	95 (58.3%)	28 (82.4%)	48 (67.6%)	56 (69.1%)	55 (66.3%)	360(65.3%)
Does using a mask constantly cause you to feel bad smell in the mouth?	Yes	55 (45.8%)	103(60.1%)	18 (52.9%)	38 (53.5%)	40 (49.4%)	39 (47%)	293 (53%)
	No	65 (54.2%)	60 (39.9%)	16 (47.1%)	33 (46.5%)	41 (50.6%)	44 (53%)	259 (47%)
Does using a mask all the time cause breathingproblems?	Yes	82 (68.3%)	119 (73%)	19 (55.9%)	44 (62%)	48 (59.3%)	55 (66.3%)	367(66.4%)
	No	38 (31.7%)	44 (27%)	15 (44.1%)	27 (38%)	33 (40.7%)	28 (33.7%)	185(33.6%)
Does using a mask constantly prevent you from applying treatment and care to your patients?	Yes	53 (44.2%)	74 (45.4%)	15 (44.1%)	40 (56.3%)	33 (40.7%)	31 (37.3%)	246(44.5%)
	No	67 (55.8%)	89 (54.6%)	19 (55.9%)	31 (43.7%)	48 (59.3%)	52 (62.7%)	306(55.5%)
Does the use of mask prevent your intervention when there are patients who need urgent intervention?	Yes	48 (40%)	74 (45.4%)	14 (41.2%)	32 (45.1%)	35 (43.2%)	26 (31.3%)	229(41.4%)
	No	72 (60%)	89 (54.6%)	20 (58.8%)	39 (54.9%)	46 (56.8%)	57 (68.7%)	323(58.6%)

**Analysis Lab, Imaging center (BT,MR, Ultrasound)*

The psychological problems due to long-term use of mask on health workers are given in Table 4. 106 (19.2%) healthcare workers are uncomfortable with the team members not wearing masks. Despite the fact that 308 (55.7%) healthcare workers used masks in all

clinics, they were infected with COVID-19 infection, but this didn't change the employees' thoughts on mask use. 263 (47.6%) employees who have negative thoughts about the use of masks and feel burnout in all clinics, this number is higher in surgical clinics (52.8%). Although there are employees who experience stigma due to the use of masks in clinics, the number of employees who experience this situation is low (23%).

Despite the start of vaccination studies, healthcare workers in all clinics still consider the use of masks necessary. Especially in surgical clinics, analysis labs, and imaging centers, healthcare professionals complain that patients and their caregivers don't wear masks. Healthcare workers in all clinics think that patients and their relatives do not give enough importance to the use of masks. The fact that patients, their relatives and team members didn't use masks in clinics caused controversy, and this is more common in surgical clinics (50.9%). In addition, the use of masks creates anxiety in some of the health workers in terms of identity security (33.3%) (Table 4).

Table 4. Psychosocial problems due to long-term use of mask

Questions		Internal Clinics n (%) (n=120)	Surgical Clinics n (%) (n=163)	Pediatric Clinics n (%) (n=34)	Intensive Care Clinics n (%) (n=71)	Emergency n (%) (n=81)	*Other n (%) (n=83)	Total n(%) (n=552)
Are there staff members of the team who do not use masks?	Yes	69 (57.5%)	93 (57.1%)	13 (38.2%)	38 (53.5%)	39 (48.1%)	35 (42.2%)	287 (52%)
	No	51 (42.5%)	70 (42.9%)	21 (61.8%)	33 (46.5%)	42 (51.9%)	48 (57.8%)	265 (48%)
***If your answer is "Yes", does this situation bother you?*	Yes	*29*	*35*	*7*	*8*	*13*	*14*	*106 (67%)*
	No	*8*	*9*	*4*	*12*	*11*	*8*	*52 (33%)*
Did you get COVID-19 even though you pay attention to the use of mask?	Yes	70 (58.3%)	96 (58.9%)	20 (58.8%)	46 (64.8%)	32 (39.5%)	44 (53%)	308 (55.7%)
	No	50 (41.7%)	67 (41.1%)	14 (41.2%)	25 (35.2%)	49 (60.5%)	39 (47%)	244 (44.3%)
***If your answer is "Yes", has this changed your ideas about the use of masks?*	Yes	*15*	*5*	*9*	*6*	*8*	*6*	*49 (36.8%)*
	No	*24*	*26*	*4*	*10*	*10*	*10*	*84 (63.2%)*
Did the obligation to use masks create psychologically negative thoughts in you?	Yes	49 (40.8%)	86 (52.8%)	16 (47.1%)	32 (45.1%)	38 (46.9%)	42 (50.6%)	263 (47.6%)
	No	71 (59.2%)	77 (47.2%)	18 (52.9%)	39 (54.9%)	43 (53.1%)	41 (49.4%)	289 (52.4%)
Do you feel burnout associated with mask use?	Yes	54 (45%)	93 (57.1%)	18 (52.9%)	37 (52.1%)	41 (50.6%)	47 (56.6%)	290 (52.5%)
	No	66 (55%)	70 (42.9%)	16 (47.1%)	34 (47.9%)	40 (49.4%)	36 (43.4%)	262 (47.5%)
Do you feel stigma associated with mask use?	Yes	28 (23.3%)	42 (25.8%)	5 (14.7%)	17 (23.9%)	12 (14.8%)	23 (27.7%)	127 (23%)
	No	92 (76.7%)	121 (74.2%)	29 (85.3%)	54 (76.1%)	69 (85.2%)	60 (72.3%)	425 (77%)
Does the fact that your patients do not use masks make you nervous?	Yes	87 (72.5%)	112(68.7%)	20 (58.8%)	45 (63.4%)	54 (66.7%)	60 (72.3%)	378 (68.4%)
	No	33 (27.5%)	51 (31.3%)	14 (41.2%)	26 (36.6%)	27 (33.3%)	23 (27.7%)	174 (31.6%)
Do you find the use of masks unnecessary with the start of vaccination studies?	Yes	28 (23.3%)	50 (30.7%)	12 (35.3%)	21 (29.6%)	25 (30.9%)	21 (25.3%)	157 (28.4%)
	No	92 (76.7%)	113(69.3%)	22 (64.7%)	50 (70.4%)	56 (69.1%)	62 (74.7%)	395 (71.6%)

Table 4. (Continued)

Do you think that patients and their relatives also attach importance to the use of masks like you?	Yes	17 (14.2%)	23 (14.2%)	2 (5.9%)	18 (25.4%)	16 (19.8%)	20 (24.1%)	96 (17.4%)
	No	103 (85.8%)	140(85.8%)	32 (94.1%)	53 (74.6%)	65 (81.2%)	63 (75.9%)	456 (82.6)
Have you had a discussion with the patient/relative/team member about the use of masks?	Yes	56 (46.7%)	83 (50.9%)	14 (41.2%)	23 (32.4%)	33 (40.7%)	35 (42.2%)	244 (44.2%)
	No	64 (53.3%)	80 (49.1%)	20 (58.8%)	48 (67.6%)	48 (59.3%)	48 (57.8%)	308 (55.8%)
Has the use of masks created a distrust for you in terms of identity information against people?	Yes	37 (30.8%)	51 (31.3%)	16 (47.1%)	26 (36.6%)	26 (32.1%)	28 (33.7%)	184 (33.3%)
	No	83 (69.2%)	112(68.7%)	18 (52.9%)	45 (63.4%)	55 (67.9%)	55 (66.3%)	368 (66.7%)

**Workers of Analysis Lab, Imaging center (BT,MR, Ultrasound)*
***Only participants who gave that answer*

Since the first day of the COVID-19 epidemic, healthcare workers, who are our soldiers fighting the virus at the forefront, have struggled with many difficulties during this process. Some of these difficulties develop due to long-term use of masks. The data we obtained from the results of the study also supports this situation.

Most of the healthcare workers received training on personal protective measures in COVID-19 infection and found their personal protective equipment sufficient. In the study of O'Byrne et al., despite these masks not being distributed by hospitals, over 70% of participants real thought that the mask was necessary.[17]

The results of the study revealed that most of the healthcare workers change their masks every 4 hours. It is stated that if the masks are not damaged, moistened and / or contaminated, they can be used for a maximum of 4-6 hours in case of contact with more than one patient.[18] The frequency of replacement of an equipment is determined by the ease of access to the equipment and the equipment becoming unusable as a result of contamination while using it.[19] In this study, we can say that the frequency of changing masks in general for healthcare workers is appropriate.

The continuous use of an N95 mask can lead to a mild increase in respiratory rate.[20] Respiratory problems were derived from study data as a result of long-term use of masks. Half of the healthcare workers working in the surgery, intensive care, analysis laboratory and imaging center experience nasal congestion from long-term use of masks. Healthcare workers working in internal and surgical clinics experience a runny nose and cold due to the use of masks. At the same time, healthcare workers in all clinics experience shortness of breath due to the use of masks. In the study by Lepelletier et al., it was emphasized that the use of FFP masks causes respiratory distress and discomfort.[21] Similarly, in a study evaluating the effects of two different mask types with 112 healthcare workers, it was observed that shortness of breath and facial discomfort were felt in the 60th minute in both mask types. In the study, there was a decrease in oxygen saturation at the 60th and 180th minutes in both groups.[9] In another study evaluating the use of surgical and N95 type masks, it was reported that respiratory complaints developed at a substantial rate.[22]

Facial irritation due to long-term mask use was reported in all clinics, and this problem was seen less frequently in emergency and intensive care clinics. In the study of Biçen and Ertürk, 27.2% of the volunteers using surgical masks at the 60th minute, 39.5% had facial discomfort at the 180th minute; 45.1% of the volunteers using FFP2 masks at the 60th minute, 64.5% had facial discomfort at the 180th minute.[7] It is emphasized that this complaint is present at high rates in both groups and that it is significantly different in those who use FFP2 masks. In another study, 49% of the participants reported skin reactions related to the use of masks.[22] In

their study, Field et al.[23] recommended sticking strips on the nose to reduce the feeling of pain and pressure in the face and nose after the use of an FFP type mask. At the same time, in order to reduce the difficulty of using masks, it is recommended to make personalized masks with the help of 3D printing.[24] In Binkhamis et al'study, the most common problems, with 78.1% of participants responding, were skin in the nasal area.[13]

Healthcare workers with longer mask using times are at greater risk of ocular surface damage.[25] In our study, some of the healthcare workers experience seeing problems due to the use of masks. As a result of a similar study, complaints related to vision were observed in some of the healthcare workers using surgical masks and FFP2 masks. Among the problems described were blurriness, inability to see clearly, and pain behind the eye.[9] In the study of Zuo et al., 6% of the participants described seeing problems.[22] In a similar study, most participants reported dry eyes due to mask use.26

More than half of the healthcare workers working in pediatric, surgical and intensive care clinics have bad breath due to the use of masks. This result can be explained by the existence of factors such as having to work with a mask for a long time, excessive working hours, limited time to spare for oral hygiene, and working with a single mask for a long time.

The long-term use of masks also reduces the quality of treatment and care given to patients. According to the data obtained from the study, healthcare workers working in surgical clinics and intensive care clinics have difficulties in treatment and care practices due to the use of masks. In addition, the necessity of using masks for a long time in healthcare workers working in surgical clinics prevents emergency intervention to patients. No study has been found in the literature regarding this result, and this result can be explained by the physical problems caused by long-term exposure to mask use (respiratory problems, seeing problems, facial irritation, etc.).

In addition to the physical problems caused by long-term use of masks, another very important problem for healthcare professionals is the psychological effects of mask use. In a study conducted with people involved in the COVID-19 process in China, it was found that wearing a high mask was significantly associated with high depression and anxiety level.[27]

Especially in surgical clinics and internal clinics, there are healthcare workers who do not use masks. Most of the healthcare workers are uncomfortable with the team members not wearing masks. There are discussions in clinics due to team members who do not use masks. The risk of contracting an infection and carrying this infection to family members is very stressful for healthcare workers, who also carry the social burden of the COVID-19 epidemic. The fact that the team members were not wearing a mask may have increased this stress. This result, especially in surgical clinics, can be explained by the current working conditions and the greater physical and psychological tension regarding the use of masks. In the study of Polat and Coşkun, it was stated that healthcare professionals who protect themselves correctly are less affected psychologically by current conditions.[28] According to the results of the studies, it can be thought that health workers who can protect themselves correctly are less affected by the current conditions and this situation provides potential psychological benefits by providing a sense of security.

In surgical clinics, the number of health workers who think negatively about the long-term use of masks and feel burnout is higher than others. This status can be explained by the heavy workload in surgical clinics and the fact that the health workers working in this clinic experience the physical effects of using masks for a longer time and more severely.

Although the majority of healthcare workers use masks, they have been infected with COVID-19. This problem suggests that there may be problems related to the protection of the mask, the correct use of the mask, the correct mask selection and the

appropriate mask change time. Despite the start of vaccination studies, health workers in all clinics are aware of the necessity of using masks. This result can be associated with proven literature knowledge evaluating the effectiveness of mask use in preventing or reducing the social transmission of COVID-19.[6] In literatüre, the necessary therapeutic and preventive interventions regarding the complications of using masks, as well as planning to train personnel for the correct use of masks with minimal health effects are suggested.[29] There were also health workers who reported that they were stigmatized due to the use of masks in clinics. Stigma is a social problem that health workers are exposed to during epidemic times. The Turkish Psychiatric Association has also pointed out that health care workers are at risk of stigma and evaluated them among the risk groups.[30] For this reason, it is important to monitor health workers who are quarantined or infected during the epidemic process by their managers in terms of their relations with their colleagues after they start working, in order to prevent possible psychological problems.[31]

Healthcare workers in all clinics think that patients and their caregivers do not attach enough importance to the use of masks. Many healthcare workers in surgical clinics, analysis laboratories, and imaging centers are uncomfortable with patients and their caregivers not wearing masks.

In line with the results of the reviews on mask effectiveness; As an additional precaution in protecting public health, it is recommended that the mask be used by the society, especially in diseases transmitted by droplets.[32,33]

Some of the healthcare workers in the clinics are worried about identity security due to the use of masks. Healthcare workers may have difficulty identifying the face profile, which allows to verify the identity of the person, due to the use of masks and this may have created anxiety about identity security. Although expressions can vary from culture to culture as they are part of a complex non-verbal communication system; sadness, anger, happiness and similar facial expressions are universal. Facial expressions are one of the most important advantages of face to face communication. Thanks to facial expressions, we can understand what the other person is thinking and feeling, and in this way, we can communicate more effectively. When these nonverbal signals are matched with spoken words, they increase trust, clarity, and compliance. Otherwise, it creates tension, insecurity and confusion.[34]

CONCLUSIONS AND SUGGESTIONS

According to the results of this study, it is seen that healthcare workers working in different clinics experience nasal congestion and bad breath, facial irritation, and vision problems due to long-term mask use. At the same time, it is possible to say that almost nearly half of the participants have negative thoughts about the use of masks, half of the participants experience burnout, and one third of the participants are worried about identity security. Unfortunately, the necessity of using masks for a long time in the current working conditions of healthcare workers who care for COVID-19 patients and the problems they experience lag behind the care and treatment needs of patients. However, these problems negatively affect the quality of care provided and the comfort of employees. For this reason, it is recommended that due care should be taken to reduce the working hours of health workers, to support them physically and psychologically, and to determine and meet their current physio-psychosocial needs by the hospital management, especially during epidemic times.

Limitations of the Study

This study was conducted with healthcare workers in a single center, so it cannot be generalized to all healthcare workers.

Acknowledgements

We express our gratitude to the valued participants who have agreed to participate in the research and gave their support.

Author Contributions

Concept: MT,YÇY; Supervision: MT,YÇY; Materials: MT,YÇY; Data Collection and/or Processing: YÇY; Analysis and/or Interpretation: MT,YÇY; Writing: MT,YÇY.

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