Original Article

Indian Journal of Public Health Research & Development
Volume 13 Issue 3 July-September 2022
DOI: http://dx.doi.org/xxxxx/ijphrd.xxxx.13221.1

Effects of Prolonged Use of Face Masks among Healthcare Workers Working in a Tertiary level Hospital in Kathmandu, Nepal

Rajesh Karki[1,*], Asmita Lamicchane[2], Aarati Timsina[3]

[1]Assistant Professor, Department of Public Health, Yeti Health Science Academy, Kathmandu, Nepal
[2]Student, Post Basic Bachelor in Nursing, Yeti Health Science Academy, Kathmandu, Nepal
[3]Student, Bachelor in Public Health, Yeti Health Science Academy, Kathmandu, Nepal

How to cite this article: Rajesh Karki, Asmita Lamicchane, Aarati Timsina et al. Effects of Prolonged Use of Face Masks among Healthcare Workers Working in a Tertiary level Hospital in Kathmandu, Nepal. Volume 13 Issue 3 July-September 2022

Abstract

COVID-19 is a pandemic threat that affects every aspect of life on the planet. Hundreds of thousands of cases were diagnosed around the world in a short period of time. Health workers are critical to the health-care system and play a critical role during global pandemics. They are also a high-risk group that must wear a face mask for extended periods of time. The purpose of this study was to determine the effects of prolonged facemask use on healthcare workers. A descriptive cross-sectional study was conducted at Shahid Gangalal National Heart Centre, Kathmandu, Nepal. The information from 335 healthcare personnel was collected using a self-administered questionnaire technique. This study included all of the hospital's healthcare workers from various departments. The descriptive analysis was carried out using SPSS statistical software, version 26. Out of 355 respondents, the majority of responders (69.9%) were under 30 years old, with a mean age of 29.03 (± 4.7) years. Regarding the effects of wearing a face mask for a longer length of time, 99.70 % of the health workers experienced some sort of effect. The most prevalent effects were pain behind the ear (84.2%), difficult during exertion (71.0%), headache (57.6%), and the least common was alteration in sense of smell (15.2 %). According to the findings, almost all of the participants experienced some form of effect from wearing a face mask, hence necessary action by concerned authorities and participants is required to minimize these effects.

Keywords: Covid-19, Effects, Face mask, Healthcare worker

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the newly discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)[1]. It was first discovered in December 2019 in Wuhan, China, among patients with viral pneumonia symptoms. On March 11, 2020, the World Health Organization (WHO) declared the novel coronavirus outbreak a global pandemic. COVID-19 has resulted in a huge loss of human life around the world, and it poses an unprecedented threat to public health. Hundreds of thousands of cases were diagnosed around the world in a short period of time. The pandemic has created severe economic and social disruption: tens of millions of people are at risk of falling into extreme poverty, which might rise to 132 million by the end of the year [2-4]. COVID-19's worsening status will be difficult for nations like Nepal, which have a fragile and under-equipped health infrastructure[5]. Nepal, a South Asian country with a low health security index (111 out of 195 countries), is not safe from the COVID-19 threat [6], and on January 23, 2020, the country officially reported its first case[7]. In the fight against the pandemic, healthcare workers (HCW) are on the

***Corresponding Author:**
E-mail: karkirajesh2022@gmail.com

front lines. For the patients and families affected by this contagious disease, they are the only source of hope and cure. They've been posted in COVID-19 wards and laboratories to provide direct medical care to patients, putting their lives at risk. During the pandemic, several HCWs have been infected with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and have died[8, 9]. Face masks are a type of personal protective equipment intended to keep respiratory diseases from spreading[10]. Face masks have proven to be effective in safeguarding both HCWs and the general public by decreasing the spread of infection via airborne transmission[11]. However, wearing masks for lengthy periods of time has a number of physiologic and psychological consequences, as well as the potential to reduce work efficiency. Physical side effects of long-term usage of N95 and surgical masks include headaches, trouble breathing, acne, skin breakdown, rashes, and reduced memory. It also obstructs eyesight, communication, and thermal balance[12]. As a result, the main objective of this study is to determine the effects of prolonged face mask use among healthcare professionals in tertiary level hospital.

Materials and Methods

Study area and design

The study was conducted at the Shahid Gangalal National Heart Center in Bansbari, Kathmandu, which has been in operation since 1995. It is currently a tertiary-level hospital with 293 beds. The hospital is fully equipped and offers all of the necessary treatment options for cardiac patients. For this study, the researchers used a descriptive cross-sectional design.

Sample Size

This study includes a total of 335 healthcare workers from different departments, including medical officers, nurses, lab technicians, and radiographers.

Sampling Technique and Procedure

The HR department provided records of health care workers working at the concerned hospital. All health care professionals who gave consent and were present during the data collection period were included in this study.

Data collection: Tools and techniques

The data was collected from respondents using a self-administered questionnaire. The researcher created the questionnaire based on the existing literature [12, 13]. Each respondent was provided with clear instructions prior to receiving the questionnaire. During the distribution and collection of the questionnaire, the researcher was personally involved. The data was collected between August 1st and September 30th, 2021.

Data Collection Procedure

Permission to collect data was acquired from the hospital prior to the start of the study. Ethical approval was provided by the Yeti Health Science Institutional Review Committee (YHSA-IRC) and the Shahid Gangalal National Heart Center Institutional Review Committee (IRC).The study's purpose was fully explained, and each respondent signed a consent form. On a daily basis, the obtained data was checked, reviewed, and organized to verify its accuracy and completeness. The data was coded and modified to eliminate omissions and duplicates.

Data Analysis

For descriptive analysis, frequency, percentage, mean, and standard deviation were determined. Cross-tabulation was used to quantify the relationship between socio-demographic factors, professional-relevant information, and the effects of wearing a mask for a long period of time. All of the analyses were carried out using SPSS statistical software, version 26.

Results

Professional Characteristics of the Respondents

A total of 335 health-care workers were enrolled in the study, with an average age of 29.03 (± 4.7) years. Respondents with more than 6 years of job experience were found to have the most (37.0%). The majority of healthcare employees who participated in this survey were nurses (78.8%), with more than half (57.0%) working in medical departments and the majority (76.4%) working 6–8 hours per day. In terms of mask types, number of masks used, and duration of mask use, more than half of the respondents (54.6%)

used both types of mask, i.e., surgical and N-95. The majority (79.7%) of respondents preferred to use two masks at a time, and wearing mask for 6-8 hours was the most common (62.1 %).

Physical Effects

Table 1 outlines the physical effects that health workers have experienced. The majority (84.2%) of the 372 respondents reported pain behind the ears, 71.0 percent reported difficulty breathing at work, and more than half (63.6%) reported general nose discomfort, followed by headache (57.6 percent). Only 15.2 percent of respondents reported a change in their sense of smell.

Table 1: Physical effects experienced by respondents.

Characteristics	Frequency	Percentage
Suffered from pain behind the ear	282	84.2
Feelings of difficulty in breathing during work	238	71.0
Feeling of generalized nasal discomfort	213	63.6
Having difficulty with communication	196	58.5
Headache	193	57.6
Excessive sweating around the mouth	160	47.8
Fogging of spectacles	157	46.9
Feelings of excessive fatigue	156	46.6
Altered sense of smell	51	15.2

*Multiple Response Answer

Dermatological Effects

Out of 335 respondents, over half (53.4%) of them had detected acne on their faces, 23.9 percent had noticed skin rashes on their faces, and 12.5 percent had noticed no dermatological changes (Table 2).

Table 2: Dermatological effects experienced by the respondents.

Characteristics	Frequency	Percentage
Feelings of itchiness on the face	159	47.5
Acne on the face	179	53.4
I noticed skin rashes	80	23.9
Facial redness	118	35.2
Experienced increased skin temperature around the mouth	92	27.5
None of above	42	12.5

*Multiple Response Answer

Physical effects based on selected socio-demographic and professional factors

From table 3, we can infer that the physical effects of prolonged use of a mask are highly prevalent according to socio-demographic and professional characteristics.

Table 3: Distribution of Physical Effects based on Selected Socio-demographic and Professional Characteristics.

Characteristics	Physical Effects	
	Yes	No
Gender		
Male	46 (100%)	0
Female	288 (99.7%)	1 (0.3%)
Working hours per day		
6-8 hours	255 (99.6%)	1 (0.4%)
More than 8 hours	79 (100%)	0
Used mask type		
Surgical	143 (99.3%)	1 (0.7%)
N-95	8 (100%)	0
Both	183 (100%)	0
Number of masked uses at a time		
1	51 (98.1%)	1 (1.9%)
2	267 (100%)	0
More than 2	16 (100%)	0
Total number of hours spent wearing the mask		
less than 8 hours	207 (99.5%)	1
More than 8 hours	127(100%)	0

Dermatological effects according to selected socio-demographic and professional-related information

Dermatological effects are more prevalent (89.6%) in females than in males (67.4%), whereas effects are almost similarly distributed according to working hours, mask types, number of masks used at a time and number of hours spent wearing a mask (Table 4).

Table 4: Distribution of Dermatological Effects based on Selected Socio-demographic and Professional Characteristics.

Characteristics	Dermatological Effects	
	Yes	No
Gender		
Male	31 (67.4%)	15 (32.6%)
Female	259 (89.6%)	30 (10.4%)
Working hours per day		

Conti..Table 4: Distribution of Dermatological Effects based on Selected Socio-demographic and Professional Characteristics.

Characteristics	Dermatological Effects	
	Yes	No
6-8 hours	224 (87.5%)	32 (12.5%)
More than 8 hours	66 (83.5%)	13 (16.5%)
Used mask type		
Surgical	125 (86.8%)	19 (13.2%)
N-95	7 (87.5%)	1 (12.5%)
Both	158 (86.3%)	25 (13.7%)
Number of masked uses at a time		
1	48 (92.3%)	4 (7.7%)
2	227 (85%)	40 (15%)
More than 2	15 (93.7)	1 (6.3%)
Total number of hours spent wearing the mask		
Less than 8 hours	178 (85.6%)	30 (14.4%)
More than 8 hours	112 (88.2%)	15 (11.8%)

Discussion

In the current study, 335 health workers participated, and 99.7% of them said they had experienced side effects from wearing facemasks for long periods of time. This results is similar to a research conducted in New York City, which found that 91.54 percent of health workers experienced side effects as a result of wearing a face mask for a longer length of time[12]. A cross-sectional study of 250 healthcare workers conducted at SRM Medical College Hospital and Research Institute in Chennai found that 67.6% developed excessive sweating around the mouth, 58.2% had difficulty breathing on exertion when wearing a mask, 48.8% had general discomfort in the nose, 45.2 percent had pain behind the ears, 35.3 percent had dry mouth, 30.3 percent had dry mouth, and 26.1 percent had dry mouth, and only a small percentage of healthcare workers had symptoms of impaired sense of smell (7.2%)[13]. Similarly, a research in Italy found that 55% of people have nasal dryness, 50% have nasal blockage, and 39% have headaches[14]. Another study conducted in Portugal found communication discomfort (40.9%), headache (19.4%), and dyspnea (14.4%) as a result of prolonged use of a facemask[15]. This percentage is lower than what we found in our research.

In our study, 87.46% (293/335) of the respondents said they had dermatological problems. This percentage was higher than the (46.1%) recorded in a Chinese prospective cross-sectional survey of 567 HCWs. Similarly, the most prevalent adverse skin reactions were acne (69.0%), rash (60.5%), and itching (55.2%), according to the same study[16]. Another study found that 35.5 percent of people in Singapore experienced significant skin reactions as a result of wearing masks during the severe acute respiratory syndrome pandemic, with acne (59.6%), itching (51.4%), and rash being the most prevalent (35.8 %) [17]/. In our study, acne (53.4%) and itchiness (47.5%) were the most common symptoms of dermatological effects, followed by redness on the face (35.2%) and an increase in skin temperature (27.5%).

Conclusion

According to this study, almost all health professionals had various negative effects from prolonged mask wear during the COVID-19 epidemic. A health professional is a vital resource in the fight against the pandemic. Working with a mask for longer periods of time is not always a choice, but rather a necessity, and this necessity must be carefully monitored and managed by the concerned authorities to minimize negative effects. A study like this could also be valuable in raising awareness among health providers so that they can take the necessary steps to avoid negative consequences.

Ethical Approval

Ethical approval was obtained from the Institutional Review Committee of Yealth Health Science Academy and Shaid Gangalal National Heart Center.

Conflict of Interest

The authors declare that they have no conflicts of interest

Source of funding

None

References

1. Panthee B, Dhungana S, Panthee N, et al. COVID-19: the current situation in Nepal. New microbes and new infections. 2020;37:100737.
2. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. Acta Bio Medica: Atenei Parmensis. 2020;91(1):157.
3. World Health Organization. Impact of COVID-19 on people's livelihoods, their health and our food systems. 2020, October 13 [Available from: https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people's-livelihoods-their-health-and-our-food-systems.
4. Feldman M, Lacey Krylova V, Farrow P, et al. Community health worker knowledge, attitudes and practices towards COVID-19: Learnings from an online cross-sectional survey using a digital health platform, UpSCALE, in Mozambique. PloS one. 2021;16(2):e0244924.
5. Dhakal S, Karki S. Early epidemiological features of COVID-19 in Nepal and public health response. Frontiers in medicine. 2020:524.
6. Khanal P, Paudel K, Devkota N, et al. Corona virus fear among health workers during the early phase of pandemic response in Nepal: A web-based cross-sectional study. PLOS Global Public Health. 2021;1(12):e0000083.
7. Pun SB, Mandal S, Bhandari L, et al. Understanding COVID-19 in Nepal. Journal of Nepal Health Research Council. 2020;18(1):126-7.
8. Erdem H, Lucey DR. Healthcare worker infections and deaths due to COVID-19: a survey from 37 nations and a call for WHO to post national data on their website. International Journal of Infectious Diseases. 2021;102:239-41.
9. Shrestha RM, Kunwar AR. COVID-19 impact on doctors and health workers. Orthodontic Journal of Nepal. 2020;10(2):2-5.
10. Liu X, Zhang S. COVID-19: Face masks and human-to-human transmission. Influenza and other respiratory viruses. 2020;14(4):472.
11. Liao M, Liu H, Wang X, et al. A technical review of face mask wearing in preventing respiratory COVID-19 transmission. Current Opinion in Colloid & Interface Science. 2021;52:101417.
12. Rosner E. Adverse effects of prolonged mask use among healthcare professionals during COVID-19. J Infect Dis Epidemiol. 2020;6(3):130.
13. Purushothaman P, Priyangha E, Vaidhyswaran R. Effects of prolonged use of facemask on healthcare workers in tertiary care hospital during COVID-19 pandemic. Indian Journal of Otolaryngology and Head & Neck Surgery. 2021;73(1):59-65.
14. Monini S, Meliante PG, Salerno G, et al. The impact of surgical masks on the nasal function in the COVID-19 era. Acta Oto-Laryngologica. 2021;141(10):941-7.
15. Peres D, Monteiro J, Boléo-Tomé J. Medical masks' and respirators' pattern of use, adverse effects and errors among Portuguese health care professionals during the COVID-19 pandemic: A cross-sectional study. American Journal of Infection Control. 2021.
16. Wan X, Lu Q, Sun D, et al. Skin barrier damage due to prolonged mask use among healthcare workers and the general population during the COVID-19 pandemic: a prospective cross-sectional survey in China. Dermatology. 2022;238(2):1-8.
17. Foo CCI, Goon ATJ, Leow YH, et al. Adverse skin reactions to personal protective equipment against severe acute respiratory syndrome–a descriptive study in Singapore. Contact dermatitis. 2006;55(5):291-4.