International Journal of Public Health Science (IJPHS)
Vol. 13, No. 2, June 2024, pp. 864~871
ISSN: 2252-8806, DOI: 10.11591/ijphs.v13i2.23609

The psychological impact of the COVID-19 epidemic among healthcare workers at the grassroots level in Vietnam

Nguyen Phuong Hoa[1], Tran Thi Ly[2], Nguyen Thi Nguyet[3], Hoang Thu Thuy[4], Pham Ngan Giang[1]
[1]Family Medicine Department, Hanoi Medical University, Hanoi, Vietnam
[2]Training and Direction of Healthcare Activities Center, National Lung Hospital, Hanoi, Vietnam
[3] University of Medicine and Pharmacy, Vietnam National University, Hanoi, Vietnam
[4]DECA CARE Center of Cancer, Vietnam

Article Info

Article history:

Received Jul 4, 2023
Revised Sep 3, 2023
Accepted Sep 14, 2023

Keywords:

COVID-19
Grassroots level
Healthcare workers
Psychological
Vietnam

ABSTRACT

The COVID-19 pandemic has significantly affected the mental health of healthcare workers (HCWs). Therefore, an immediate priority is to monitor rates of mental health issues to understand related factors and inform interventions. The main purpose of this study was to evaluate the psychological and mental health impact of COVID-19 and some related factors among HCWs at the grassroots level in Vietnam. A cross-sectional study was conducted on 675 HCWs working at health facilities through questionnaires. The finding showed the rate of HCWs who were psychologically affected by the COVID-19 pandemic was 37.2%, of which 64.1% of HCWs were afraid to tell their families about the risk of exposure to COVID-19 at work. The 31.0% of HCWs had difficulty sleeping deeply/insomnia due to the COVID-19 epidemic. No statistically significant differences were found in the psychological impact of COVID-19 between HCW groups by age, gender, seniority, and professional qualifications. Some groups of HCWs were found to have poor psychological health. Our research suggests that during the COVID-19 pandemic, HCWs working in healthcare facilities experienced an increased psychological burden; psychological interventions for those at high risk and with common mental disorders should be included to reduce this burden and protect HCWs' mental health.

Corresponding Author:

Tran Thi Ly
Training and Direction of Healthcare Activities Center, National Lung Hospital
Hoang Hoa Tham Street, Vinh Phu, Ba Dinh district, Hanoi, Vietnam
Email: ly13021984@gmail.com

1. INTRODUCTION

The COVID-19 pandemic is a medical and economic emergency on a scale that hasn't been witnessed in more than a century. Nearly 600,000 healthcare workers (HCWs) have COVID-19 infections as of September 2, 2020, and more than 2,500 of them have died from the virus in the Americas. At least 12,454 healthcare workers (HCWs) were infected and died in the Asia-Pacific region as of June 11, 2020 [1].

Exposure to workplace hazards such as COVID-19 has been demonstrated to impact the mental health of HCWs negatively [2]. Over time, research has accumulated on the impact of COVID-19 on HCWs' mental health. During the pandemic, depression, anxiety, and insomnia were quite common in China, affecting between 35% and 50% of both the general population and HCWs [3], [4]. In a global survey-based study on symptomatic anxiety caused by COVID-19, nearly 30% of the HCWs reported having physical symptoms related to their anxiety [5]. As a result of COVID-19, there have also been high rates of

psychological problems among HCWs and the general community which was reported in many countries worldwide [6]–[13]. Moreover, anxiety, depression, and stress were relatively common among HCWs in Saudi Arabia during the pandemic, with prevalence rates ranging from 17 to 27% [14]. Studies in some other countries also showed similar results such as Pakistan [15], China [16], and the eastern Mediterranean region [17]. Some meta-analyses also showed similar results [18]–[21].

In Vietnam, the first COVID-19 patient was reported on January 23, 2020, and on March 6, 2020, Hanoi Capital-Vietnam recorded the first COVID-19 patient. After that, the disease spread rapidly in the Capital, on April 1, 2020, the whole country had to implement social isolation for 15 days to control the disease. The health system in Vietnam, health facilities including community health stations, health centers, and district hospitals play a very important role in the prevention of COVID-19. The functions of health facilities such as: disseminating knowledge to the people; tracing; sample collection, preservation, and transportation of specimens; guidelines for medical isolation at home; and medical monitoring of isolated cases at home. To perform these tasks well, the role of HCWs is extremely important.

The risks that HCWs are exposed to could have an adverse effect on patient safety and occupational health, including pathogen exposure, long working hours, burnout, exhaustion, and disorders of mental health such as anxiety, depression, and stress. In fact, safeguarding professional health care is a crucial part of public health initiatives to confront widespread health emergencies. Interventions to improve mental well-being in healthcare workers exposed to COVID-19 must be implemented straight away to increase prevention and response efforts. These courses ought to cover crisis management and mental health assistance for medical practitioners. This study aimed to evaluate the psychological impact of COVID-19 and some related factors among HCWs working at the grassroots level in Hanoi Capital, Vietnam. This information is necessary to provide further psychological interventions for HCWs.

2. METHOD

A cross-sectional study was conducted on 675 HCWs at 5 District Health Centers of Hanoi City: Ba Vi, Thanh Oai, Thanh Xuan, Ung Hoa, and Nam Tu Liem. Study period from April 2020 to October 2021. The inclusion criteria for the study included all HCWs including physicians, nurses, public health, technicians, and pharmacists who worked during the COVID-19 pandemic. Exclusion criteria included HCWs who were working in administrative positions.

To evaluate the mental health of HCWs, an interdisciplinary group of medicine experts developed a questionnaire including 20 questions about the psychological impact of COVID-19 among HCWs. Two components made up the questionnaire including socio-demographic characteristics of the participants and how frequently they interacted with COVID-19 patients, were covered in the first section. In the study conducted by Thanh Thao Nguyen in Vietnam, the Event Scale-Revised questionnaire with 20 questions was used to evaluate the mental health of HCWs and gauge the psychological impact of COVID-19 [22]. The Likert scale of each question was rated from 0 (Not at all) to 4 (Extremely). HCWs were judged to be psychologically impacted or little impacted by COVID-19 by the threshold point of 50% or more answers being affected. This questionnaire was evaluated by a pilot study before using it in the study. The internal reliability with Croncbach's alpha of this questionnaire was 0.91. Test-retest reliability result was 0.89.

The software Epi data 3.1 was used for data entry. The SPSS version 22.0 was used for the data analysis. For qualitative variables, data was presented using frequencies and percentages, and for quantitative variables, means and standard deviations were used. Univariate analysis and multivariate regression analysis were used to assess the association between the psychological impact of COVID-19 among HCWs and other variables. Significance was considered at a p-value <0.05.

Ethical approval was received from the Ethics Council of the Institute of Population, Health and Development, Vietnam. The number of IRB Approval: 2019/PHAD/M2Q2HIV-05-01. All participants were explained about the purpose and content of the study. Participation in the study was completely voluntary, and the questionnaires remained anonymous. All information was kept confidential for research purposes only.

3. RESULTS AND DISCUSSION

3.1. The sociodemographic characteristics of participants

According to Table 1, the mean age score of HCWs working at health facilities was 38.8±9.2. The mean seniority of HCWs was 13.8±8.7. It was similar to the results of other studies in Vietnam with the mean age score of HCWs being 36.3±9.1 and the mean seniority of HCWs being 11.4±8.8 [23]. 25% of HCWs in the study were men, and 75% of HCWs were women. It was lower than the research in China (with 85.02% of HCWs being women, and 14.98% of HCWs being men) [24] However, the results of our study were higher than the results of research in Saudi Arabia [25]. This can be explained as follows: The participants in our study were HCWs working at health facilities where the rate of women were usually taller than men,

while in the other research, participants were medical staff working at the Centers for Disease Control (CDC), hospital, where had more equal in terms of gender, this leads to differences in research results.

In this study, the main HCWs were physicians, nurses, and technicians with over 80.0% of participants. It was similar to the general model of human resources of the Vietnamese health system. These activities were suitable for the functions and duties of HCWs because the health facilities were the first line in the Vietnamese health system. On the other hand, at the time of the study, the number of F0 cases (COVID-19 patients) in the community was still low, the whole country recognized 355 COVID-19 patients, of which there were no deaths, 5.6% of COVID-19 patients were treated, 94.4% of COVID-19 patients had recovered. Therefore, the antiepidemic strategy is mainly prevention.

Based on Table 2, temperature checks for incoming patients comprised the most frequent HCW activity at 74.4%, followed closely by providing medical declaration guidance (74.7%). Tracing infected contacts and monitoring home isolations were also prevalent activities, at 67.3% and 71.3% respectively. Importantly, HCWs actively disseminated COVID-19 knowledge to the community (73.9%), contributing significantly to broader public health efforts. Notably, nearly half participated in facility-level prevention planning, and some even undertook sample collection, transportation, and dedicated isolation work. This diverse engagement showcases the crucial role HCWs played beyond direct patient care, acting as pillars of community defense against the pandemic.

Table 1. The sociodemographic characteristics of participants (n=675)

Sociodemographic characteristics		Frequency n (%)
Age groups (years)	≤35	294 (43.6)
	>35	381 (56.4)
Gender	Male	169 (25.0)
	Female	506 (75.0)
Ethenic	Others	671 (99.4)
	Ethnic minority	4 (0.6)
Qualification	Physicians	188 (27.9)
	Pharmacists	47 (7.0)
	Nurses	206 (30.5)
	Public health	17 (2.5)
	Technicians	7 (1.0)
	Applied health practitioners	173 (25.6)
	Others	37 (5.5)
Marital status	Married	607 (89.9)
	Not married	58 (8.6)
	Others	10 (1.5)
Who live with	Living with family	661 (97.9)
	Living alone	12 (1.8)
	Living with others	2 (0.3)
Seniority (years)	≤10	296 (43.9)
	>10	379 (56.1)
Workplace	Community health stations	499 (73.9)
	Polyclinic	85 (12.6)
	District health center	91 (13.5)
Mean age (±SD)		**38.8±9.2**
Mean seniority (±SD)		**13.8±8.7**

Table 2. Activities of HCWs to prevention of COVID-19 (n=609)

No.	Activities of HCWs	Frequency n (%)
1.	Took samples of COVID-19 for testing	78 (12.8)
2.	Transported the samples of COVID-19	34 (5.6)
3.	Checked the temperature of people who went to health facilities	453 (74.4)
4.	Guidance on medical declaration for people who went to health facilities	455 (74.7)
5.	Participated in tracing, and made a list of people who contacted the patients (F1, F2, F3,...)	410 (67.3)
6.	Participated in monitoring and testing of people who were isolated in the community (or at home)	434 (71.3)
7.	Received suspected of COVID-19 infection	175 (28.7)
8.	Participated in making plans to prevent COVID-19 at health facilities	269 (44.2)
9.	Propagated and disseminated the knowledge of COVID-19 to the people	450 (73.9)
10.	Participated in working at concentrated isolation	26 (4.3)
11.	Other activities	25 (4.1)

3.2. The psychological impact of COVID-19 among HCWs

Over 64% of respondents are apprehensive about telling their families about work-related dangers, as shown in Tables 3 and 4. This apprehension is likely rooted in the dread of social stigma and the possibility of family avoidance. This feeling of isolation manifests internally as well: 59.6% of individuals

avoid work-related conversations, and 45.3% are concerned about their roommates who may have been exposed to COVID-19 patients. It was lower than the results in Egypt (66.3% of healthcare workers fear social stigma related to COVID-19) [26]. An additional emotional strain is exacerbated by a widespread absence of recognition: 52.7% of employees feel underappreciated by their employers, 53.5% by society at large, and over 60% report a decline in work motivation. The dedication of HCWs had not been properly assessed and recognized by the leadership and society, this was one of the causes leading to reduced motivation to work among HCWs. These findings highlight the urgent need to combat stigma through education and support systems while fostering genuine appreciation from organizations and communities. Recognizing and addressing the hidden cost of HCW heroism is crucial to ensure their well-being and continued resilience in their vital roles.

Table 3. Impact of COVID-19 on emotion among HCWs (n=675)

No.	Emotion of HCWs	Frequency n (%)
1.	Afraid to share with family about the risk of exposure to COVID-19 at work	433 (64.1)
2.	People avoid contact with me (because I'm a health staff)	386 (57.2)
3.	People avoid contact with my family	232 (34.4)
4.	Avoid talking about the work	402 (59.6)
5.	Worried because your housemate is a health worker who has been in contact with a COVID-19 patient	306 (45.3)

Table 4. Impact of COVID-19 on work motivation among HCWs (n=675)

No.	Work motivation of HCWs	Frequency n (%)
1.	Feeling that organize and leaders did not appreciate	356 (52.7)
2.	Feeling that society did not appreciate	361 (53.5)
3.	Feeling that work motivation was affected	409 (60.6)

Table 5 paints a concerning picture of the enduring mental health toll inflicted by COVID-19 on HCWs. A significant majority experience negative emotions when contemplating the pandemic, with 31.0% struggling with insomnia and 63.8% reporting constant preoccupation with the virus. This pervasive anxiety manifests in emotional volatility (increased anger and fearfulness in 14.5% and 18.4%, respectively), rumination (56.1% engage in purposeless contemplation), and hypervigilance (61.3% feel constantly alert and wary). Physical symptoms of anxiety are also prevalent, with 6.1% experiencing sweating, shortness of breath, nausea, and heart palpitations when thinking about COVID-19. Furthermore, nearly a fifth (19.3%) attempt to suppress thoughts of the virus altogether, while others try to ignore the associated anxiety (19.4%) or manage the stress it induces (64.4%). These findings underscore the profound and lasting psychological impact of COVID-19 on HCWs, highlighting the urgent need for comprehensive mental health support systems to address their unique challenges and ensure their well-being.

Table 5. Impact of COVID-19 on psychological among HCWs (n=675)

No.	Psychological among HCWs	Frequency n (%)
1.	Feeling bad emotions when thinking of COVID-19	486 (72.0)
2.	Insomnia	209 (31.0)
3.	Thinking of COVID-19 always	431 (63.8)
4.	It's easier to get angry	98 (14.5)
5.	It's easier to fear	124 (18.4)
6.	Thinking of COVID-19 without purpose	379 (56.1)
7.	Feeling alert and wary	414 (61.3)
8.	Sweating, shortness of breath, nausea, heart palpitations when thinking of COVID-19	41 (6.1)
9.	Trying not to talk about COVID-19	57 (8.4)
10.	Trying not to think about COVID-19	130 (19.3)
11.	Feeling anxiety when thinking of COVID-19 but ignore it	131 (19.4)
12.	Feeling stress when thinking of COVID-19	435 (64.4)

Figure 1 shows that the number of HCWs who were psychologically affected by COVID-19 was two times higher than those who had little affected. In detail, 37.2% of HCWs who were psychologically impacted by COVID-19 (had 50% or more answers were affected). 62.8% of HCWs were psychologically impacted by COVID-19 (less than 50% of answers were affected). Similar to previous studies in other countries, which found that the psychological impact of COVID-19 among HCWs was severe [27]–[29].

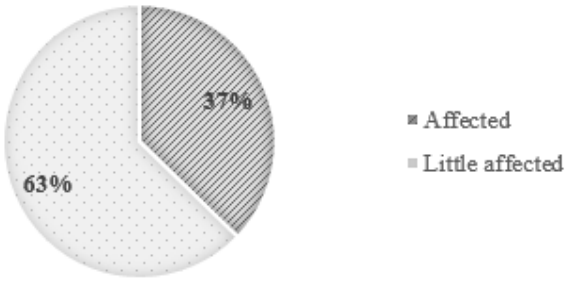

Figure 1. The psychological impact of COVID-19 among HCWs (n=607)

Impact of COVID-19 on the psychological of HCWs: All of the HCWs were affected by COVID-19, in this study, 72.0% of HCWs felt bad emotions when thinking of COVID-19. 63.8% of HCWs think of COVID-19 always. Feeling anxiety and stress when thinking of COVID-19 (64.4% and 19.4%). It is easier to get angry and fearful (14.5% and 18.4%). The psychological impact of COVID-19 on HCWs was very diverse, most of them were published in previous studies such as the study of Xiao Xiao in China showed that 55.1% of medical staff were stressed and 54.2% of medical staff were anxious [30]. According to the study by Elhadi *et al*. [31], 56.3% of medical staff were depressed. The 46.7% of medical staff were anxious. One of the serious psychological impacts of COVID-19 among HCWs was insomnia. In our study, 31.0% of HCWs were insomnia, which was higher than the results of Jianyu Que in China with 28.75% of HCWs being insomnia [16].

3.3. The psychological impact of COVID-19 among HCWs and some related factors

According to Table 6, the results of univariate analysis and multivariate analysis show that males had a 1.005 higher chance of being psychologically impacted by COVID-19 than females. Moreover, HCWs aged below 35 had a 1.099 higher chance of being psychologically impacted by COVID-19 than those aged above 35. HCWs who had less than 10 years of seniority, had a 1.26 higher chance of being psychologically impacted by COVID-19 than those who had more than 10 years of seniority. Other HCWs had a 1.06 higher chance of being psychologically impacted by COVID-19 than physicians. However, gender, age group, seniority, and qualification of HCWs have no relationship with the psychological impact of COVID-19.

Table 6. The psychological impact of COVID-19 related to gender, age groups, seniority, and qualification of HCWs (n=675)

Related factors		Affected (≥50 answers were affected) n (%)	Univariate analysis cOR	95%CI of OR	Multivariate analysis aOR	95%CI of OR
Gender	Female	188 (27.9)	1	-	1	-
	Male	251 (37.2)	1.005	0.701–1.441	0.990	0.686–1.427
Age groups (year)	>35	63 (9.3)	1	-	1	-
	≤35	252 (37.3)	1.099	0.803 – 1.505	0.857	0.538 – 1.365
Seniority (year)	>10	138 (20.4)	1	-	1	-
	≤10	245 (36.2)	1.258	0.919 – 1.722	1.403	0.886 – 2.221
Qualification	Physicians	113 (16.74)	1	-	1	-
	others	260 (38.4)	1.059	0.774 – 1.448	1.010	0.721 – 1.414

The results of the univariate and multivariate analyses in Table 5 revealed that contrary to many studies, the sociodemographic characteristics of participants—such as gender, age groups, seniority, and HCW qualification—had no relationship with the psychological impact of COVID-19] [32]–[34]. Numerous psychological research conducted in the past have revealed that women's psychological resilience and distress are higher than men's in a variety of groups, including HCWs [35]. On the other hand, many studies have shown that professional titles and marital status were related to psychological effects [30], [36].

3.4. Strengths and limitations

This study had some strengths. Firstly, the questionnaire has been developed and accepted by experts in the field of preventive medicine and public health. Secondly, the anonymity provided by the survey could prevent any negative individual consequences and could reduce the threshold for responding. Thirdly, confounders were controlled by multivariate analysis when determining related factors. Finally, the sample of the study was large (n=675) with many research subjects such as physicians, nurses, technicians,

and public health. Therefore, our results might extrapolate to the rest of the country.

However, the study also has certain limitations. First, this was a cross-sectional study, therefore, the analyses cannot be used to draw a final causal relationship between the impact of COVID-19 and the psychological of HCWs, so prospective studies can better determine correlation and causality. The second, study was carried out after the first epidemic was controlled in Vietnam. At the time, the whole country recognized 355 COVID-19 patients, of which there were no deaths, 5.6% of COVID-19 patients were being treated, and 94.4% of COVID-19 patients had recovered, so it may not fully reflect the impact of this dangerous pandemic on society and mental health of HCWs like the reality of subsequent epidemics in Vietnam. Finally, all participants of our study worked at health facilities, the first line in the Vietnamese health system, their main activities were preventing COVID-19 like checking the temperature, guidance on the medical declaration for people who went to health facilities participating in tracing, making a list of people who contacted with the patients. Participated in monitoring and testing of people who were isolated in the community (or at home), propagated and disseminated the knowledge of COVID-19 to the people, the pressure on work and psychology is also lower than others. Therefore, the study results are not representative of all health workers, especially for health workers working at the CDC and hospitals.

4. CONCLUSION

An independent risk factor for stress, depression, and anxiety was continuing to work during the COVID-19 outbreak. HCWs, on the other hand, had limited knowledge of the novel virus and were continually investigating and learning in the face of cases. HCWs were also more likely to come into contact with COVID-19 cases. The fear of contracting the disease and spreading it to others was greater. These elements may cause HCWs' psychological well-being to deteriorate. HCWs play a critical role in the prevention and management of COVID-19. This study demonstrated that COVID-19 has a detrimental effect on HCWs' psychological well-being. Establishing psychological intervention programs for health professionals, especially HCWs, is therefore crucial and important. Interventions include training and preventive program guidance, informational support, and equipment support (personal protective equipment and its use). Leaders should also commend and support employees for their efforts at the same time.

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BIOGRAPHIES OF AUTHORS

Nguyen Phuong Hoa is lecturer in Family Medicine Department, Hanoi Medical University, Vietnam. Her current research interests are family medicine, primary care, NCDs, and tuberculosis. She can be contacted at email: nguyenphuonghoa@hmu.edu.vn.

Tran Thi Ly is medical staff in the National Lung Hospital, Vietnam. Her current research interests are public health, primary care, health management, NCDs, and tuberculosis. She can be contacted at email: ly13021984@gmail.com.

Nguyen Thi Nguyet has done her PhD in self-management program for people with chronic kidney disease at the School of Nursing, Queensland University of Technology since June 2018. Currently, she is a lecturer at University of Medicine and Pharmacy, Vietnam National University, and conducting several research projects for people with chronic kidney disease in Vietnam. She is interested in chronic disease management, particularly in self-management and chronic kidney disease/or multiple chronic diseases. She can be contacted at email: nguyetnguyenvnu@gmail.com.

Hoang Thu Thuy is director of the DECA CARE Center of Cancer, Vietnam. Her current research interests are family medicine, primary care, cancer, and tuberculosis. She can be contacted at email: thuyhoang@decacare.vn.

Pham Ngan Giang is physician in Hanoi Medical University, Vietnam. Her current research interests are dermatology and non-communicable diseases. She can be contacted at email: giangsoc@gmail.com.