

The Level of Expression of Anxiety and Depression in Clinical Health Care Workers during the COVID-19 Outbreak in 2 Hospitals in Hanoi, Vietnam

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ABSTRACT: The disease caused by the SARS-Cov 2 virus has spread to most areas of the world with high rates of infection and deaths. Facing the complicated developments of the epidemic, clinical medical staff (CMS) are at risk of suffering psychological pressure. This study aimed to investigate the situation of anxiety, depression, and related factors affecting CMS during the COVID-19 pandemic at Dong Da General Hospital and Dong Anh General Hospital in Hanoi. A cross-sectional study was conducted from April to July 2020 using self-administered questionnaires amongst 341 CMS. The participants' anxiety levels were assessed using the standardized General Anxiety Disorder-7 (GAD-7) toolkit and levels of depression expression were assessed based on the standardized Patient Health Questionnaire-9 (PHQ-9) toolkit. Of the CMS who completed the questionnaire, 33.1% had an anxiety disorder and 23.2% exhibited mild to very severe depression. The factors associated with anxiety and depression were department of work, shortage of human resources, and discrimination from the community that directly affects the family of the CMS. The study results highlight the need for a training session to equip CMS with the skills required to cope with psychological stress in all circumstances in general and during the pandemic in particular. This training is especially important for those working in at-risk departments which are susceptible to infection.

KEYWORDS: COVID-19, anxiety, depression, medical staff, related factors, Hanoi

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Background

In the early days of December 2019, in Wuhan, China, cases of Severe Acute Respiratory Syndrome (SARS) caused by the SARS-CoV-2 virus, which is particularly dangerous for the elderly and patients with severe chronic diseases, were reported.^{1,2} On March 11, 2020, the World Health Organization (WHO) held an emergency meeting and announced COVID-19 as a Global Pandemic.³ The COVID-19 pandemic is a big challenge for the global health system at large as well as the health systems of particular countries. As of June 4, 2021, there were a total of more than 172 000 000 infected cases worldwide and more than 4 million people had died because of this disease.^{4,5} The level of spread of this virus has challenged humans with many difficulties, and the burden and death caused by the disease has quickly become a crisis in many countries and regions.⁶

In Vietnam, the disease control process has been divided into 3 waves. During the first wave, 16 patients were infected, detected, and treated promptly.⁷ The second wave started with case number 17 and as of April 19, 2020, the Ministry of Health recorded a total of 268 cases and no deaths.⁴ The third wave began with an outbreak in Da Nang due to unknown reasons, followed by an outbreak in Hai Duong which started on January 28, 2021. The outbreak in Hai Duong accounted for 80% of the total number of cases in the country during this wave.⁸ As of

June 4, 2021, according to the Vietnamese Ministry of Health's statistics, the total number of infected people was 8287 and number of deaths due to COVID-19 was 50.⁴

A number of hospitals in Hanoi City have been selected as receiving and quarantine places for patients at high risk of COVID-19.⁹ Having to perform daily professional duties along with having to always be being ready to participate in anti-epidemic measures in compliance with directives from the central and provincial levels has a direct impact on the psychological well-being of CMS.¹⁰ The most common psychological health issues CMS face are depression, anxiety, and stress. Therefore, given the situation, our research team decided to conduct research on the topic "*The level of expression of anxiety and depression in clinical health care workers during the covid-19 outbreak in 2 hospitals in Hanoi, Vietnam*" in order to explore the psychological well-being of CMS and factors associated with anxiety and depression in CMS during this pandemic.

Methods

Study setting and design

A cross-sectional study was conducted from April 2020 to July 2020. Participants were selected from CMS of 2 hospitals, namely Dong Da General Hospital and Dong Anh General Hospital, in Hanoi.



Dong Anh General Hospital and Dong Da General Hospital are Grade II hospitals under the Hanoi Department of Health. Dong Anh Hospital currently has 400 beds with a total of 488 staff, including 250 clinical staff. Dong Da General Hospital has 290 beds and a total of 311 staff, of which the number of clinical staff is 200. During the Covid-19 epidemic, these 2 hospitals were assigned by the Ministry of Health of Vietnam to receive and screen suspected cases.

Sample size and selection

All CMS in the clinical departments of the 2 hospitals were invited to participate in the study. According to the data provided by both hospitals, the total number of CMS was 341 (the number of CMS at Dong Anh General Hospital was 190 and at Dong Da General Hospital was 151).

A total population sampling method was used. All CMS from the clinical departments of both hospitals were invited to participate in the study via Zalo, a social networking application, and email.

Research instruments

The level of depression expression of the study participants was assessed based on the PHQ-9 toolkit. PHQ-9 has been standardized in Vietnam and used in evaluation studies on mental health, specifically in a hospital environment.^{11,12} The participants assessed each part of the questionnaire on a 3-point Likert scale from 0 (absolutely not) to 3 (almost per day) during the second outbreak in Vietnam. The total score of the PHQ-9 scale is from 0 to 27 and if the participant scores 5 or more points, the result is counted as depressive.

The participants' anxiety levels were assessed using the GAD-7 toolkit. In Vietnam, the GAD-7 scale has been standardized and used in some studies to assess mental health condition.¹² The participants assessed each part of the questionnaire on a 3-point Likert scale from 0 (absolutely not) to 3 (almost per day) during the second outbreak in Vietnam. The total score on the GAD-7 scale is from 0 to 21 and if the study subject scores 5 or more, it is counted as having an anxiety disorder. This study used the validated GAD-7 and PHQ-9 scales with a 3-point Likert scale to assess level of anxiety and depression.^{11,12}

The method of data collection

An online questionnaire created on Kobotool box software, pre-designed based on research objectives and variables, was used as an information collection tool. The questionnaire was piloted on 8 CMSs from both selected hospitals, and then modified to be more suitable for the target participants of this study.

The online survey was conducted with CMS of both hospitals. The survey link was sent to the CMS in charge of coordination at each of the hospitals, namely those in the Office of

Personnel/Scientific Research, who then sent it out via email/Zalo to the CMS of the hospital.

During the survey period, the researcher contacted the coordinator at the hospital every 7 days to get an update of the situation and asked them to monitor the number of questionnaires, in order to help limit errors.

Statistical analysis

Data was analyzed using SPSS 20 software. Descriptive statistics were used to describe general information characteristics, anxiety, depression and risk factors, and community discrimination against CMS.

A Binary Logistic Regression model was used to find out the association of anxiety and depression manifestations of CMS. Results were expressed using Odds Ratio (OR), 95% confidence interval (CI) and *P*-value. A *P*-value of less than .05 (*P* < .05) was considered as statistically significant.

Results

General characteristics of research participants

Table 1 shows that out of 341 participants, the number of women (77.4%) was 3.4 times higher than the number of men (22.6%). When examining marital status, most participants were married (87.4%), while the rest were either unmarried (10.6%) or divorced (2.1%). With regards to career, a majority of the participants were nurses (66.6%). Doctors accounted for 29.3% of participants and only 4.1% were technicians, midwives, or medical assistants. A majority of CMS (92.4%) did not live in the quarantine area during the outbreak. Only 7.6% of the staff lived in the quarantine area. Most CMS spent between 8 and 12 hours per day in the hospital (49.9%), while the remaining spent either over 12 hours per day (41.6%) or less than 8 hours per day (8.5%).

Anxiety, depression level in COVID-19 epidemic of participants

Table 2 indicates that the percentage of CMS participating in the study without an anxiety disorder (66.9%) was 2 times higher than those with anxiety (33.1%). Of those with anxiety, most had "mild anxiety" (27.6%) and only 2.9% had "severe anxiety."

According to the results illustrated in Table 3, CMS participating in the study without depression accounted for the majority (76.8%), which was 3.3 times higher than those with depression (23.2%). Of those with depression, mild depression accounted for the highest rate (17.0%), while very severe depression accounted for the lowest proportion (0.6%).

Factors related to the manifestations of anxiety and depression in participants during the COVID-19 epidemic

In the analysis of related factors, we use the group of medical staff working in the Emergency Department as the background

Table 1. General information of research participants.

CHARACTERISTICS	FREQUENCY (N)	RATIO %
Gender		
Male	77	22.6
Female	264	77.4
Marital status		
Not married	36	10.6
Married	298	87.4
Divorced	7	2.1
Literacy		
Under-graduate	269	78.9
Post-graduate	72	21.1
Profession		
Doctor	100	29.3
Nursing staff	227	66.6
Other	14	4.1
Department		
Emergency	40	11.7
Infectious diseases	39	11.4
Inpatient	44	12.9
Outpatient	37	10.9
Other	181	53.1
Living in quarantine area		
Yes	26	7.6
No	315	92.4
Average working time in hospital per day		
Under 8h	29	8.5
8-12h	170	49.9
More than 12h	142	41.6

group to compare, see how medical staff in other clinical departments are psychologically affected due to the covid-19 pandemic. The results in Table 4 indicated that participants working in the Infectious Diseases Department were at 4.9 times greater risk of developing anxiety (OR=4.9 [95% CI: 1.4-17.2]) and 5.9 times greater risk of developing depression (OR=5.9 [95% CI: 1.5-22.9]) than those working in the Emergency Department. In comparison to participants working in the Emergency Department, participants working in the Outpatient Department were 4.2 times more likely to suffer from anxiety disorders (OR=4.2 [95% CI: 1.3-13.3]) and 3.3 times more likely to suffer from depression (OR=3.3 [95% CI:

1.1-10.2]). The results also showed that the participants working in the other departments had 2.5 times higher risk of depression than those working in the Emergency Department (OR=2.5 [95% CI: 1.2-5.6]).

The results in Table 5 showed that CMS who experienced a lack of human resources were at 3.2 times higher risk of having an anxiety disorder (OR=3.2 [95% CI: 1.7-5.9]) and 2.6 times higher risk of having depression (OR=2.6 [95% CI: 1.3-5.4]) than CMS who did not encounter this situation. In addition, the results also showed that the group of participants experiencing lack of medical supplies and equipment were 2.2 times more likely to develop depression than those who had sufficient supplies and equipment (OR=2.2 [95% CI: 1.2-4.0]).

The results in Table 6 showed that the participants who were frequently offended verbally were at 2.3 times greater risk of depression than those who were not frequently offended verbally. (OR=2.3, 95% CI: 1.1-4.9). Also, participants whose families were repeatedly affected by the work of the CMS were 3.1 times more likely to develop an anxiety disorder (OR=3.1, 95% CI: 1.1-8.7) than those whose families were not affected by the work of the CMS. In addition, participants who did not regularly participate in family activities were at a 7.8 times higher risk of anxiety disorders (OR=7.8 [95% CI: 2.2-27.8]) and 9.7 times higher risk of depression (OR=9.7 [95% CI: 2.8-33.5]) than the those who participated in family activities. The results also showed that the group of participants who felt that the position of the medical staff brings many problems once were 7.7 times more likely to suffer from anxiety (OR=7.7 [95% CI: 2.6-22.9]) and 7.5 times more likely to suffer from depression (OR=7.5 [95% CI: 2.6-21.6]).

Discussion

The situation of anxiety and depression of CMS due to the impact of COVID-19 epidemic

Out of a total of 341 participants, the majority were nursing staff (66.6%), and the remaining were either doctors (29.3%) or technicians, midwives or paramedics (4.1%). There were 2 times more participants with anxiety disorder than those without. Of the CMS who participated in this study, 23.2% showed signs of depression. This rate is about 2.2 times lower than that of Lai's et al¹³ research. Although the 2 hospitals in which this study was conducted did not treat patients infected with COVID-19 during the second outbreak in Vietnam, there are a number of physicians in these 2 hospitals who had been mobilized by the Ministry of Health to support the treatment of patients with COVID-19 infection. This may be the cause of 2.9% of the CMS participating in the study showing severe anxiety. In addition, during the second outbreak, cross-contamination occurred in the hospitals. This resulted in increased levels of risk which contributed to CMS having manifestations of mild anxiety and depression.

Table 2. The degree of manifestation of an anxiety disorder of participants.

NO ANXIETY (0-4 POINT) N (%)	MANIFESTATION OF ANXIETY DISORDER			
	MILD (5-9 POINTS) N (%)	MODERATE (10-14 POINTS) N (%)	SEVERE (15-21 POINTS) N (%)	TOTAL N (%)
228 (66.9)	94 (27.6)	9 (2.6)	10 (2.9)	113 (33.1)

Table 3. Level of depression expression of participants.

NO DEPRESSION (0-4 POINTS) N (%)	MANIFESTATION OF DEPRESSION				TOTAL N (%)
	MILD (5-9 POINTS) N (%)	MODERATE (10-14 POINTS) N (%)	SEVERE (15-19 POINTS) N (%)	VERY SEVERE (20-27 POINTS) N (%)	
262 (76.8)	58 (17.0)	13 (3.8)	6 (1.8)	2 (0.6)	79 (23.2)

Table 4. The level of expression of anxiety and depression disorders according to general information of subjects.

CHARACTERISTICS	MANIFESTATIONS OF ANXIETY			MANIFESTATIONS OF DEPRESSION		
	N (%)	OR	95% CI	N (%)	OR	95% CI
Gender						
Male	35 (45.4)	1	-	19 (24.7)	1	-
Female	78 (29.5)	0.7	0.3-1.3	60 (25.7)	1.1	0.5-2.3
Profession						
Doctor	30 (30.0)	1	-	23 (23.0)	1	-
Nursing staff	78 (34.4)	1.4	0.6-3.1	53 (25.1)	1.3	0.5-3.03
Other	5 (35.7)	1.1	0.3-4.2	3 (21.4)	0.5	0.1-1.94
Department						
Emergency	5 (12.5)	1	-	8 (20.0)	1	-
Infectious diseases	16 (41.0)	4.9	1.4-17.2	10 (25.6)	5.9	1.5-22.9
Inpatient	22 (50.0)	1.4	0.3-1.7	7 (15.9)	0.8	0.4-2.3
Outpatient	6 (16.2)	4.2	1.3-13.3	17 (45.9)	3.3	1.1-10.2
Other	64 (35.4)	1.3	0.6-2.7	37 (20.4)	2.5	1.2-5.6
Average time in hospital for 1 day						
Under 8 h	10 (31.0)	1	-	6 (20.7)	1	-
8-12 h	51 (30.0)	1.9	0.7-5.0	39 (22.9)	1.3	0.5-3.7
More than 12 h	52 (36.7)	1.3	0.5-3.6	34 (23.9)	1.2	0.4-3.6

Factors related to the anxiety and depression of CMS caused by COVID-19 pandemic

When examining the relationship between the department of work and the degree of depression, the study results showed that the medical staff working in the Infectious Diseases Department had 5.9 times higher levels of expression of depression than the staff working in the Emergency Department. This result is similar to the study results of Tung Ping Su et al. which showed that nurses in the COVID-19 treatment unit exhibited greater depression than nurses who

did not treat patients with COVID-19.¹⁴ Compared to CMS in other departments, the CMS working in the Department of Infectious Diseases, who are the first to work on the treatment of patients with COVID-19, often face higher risk of infection and have to live in a quarantine area. As a result, they have greater concern about being infected and thus, show greater signs of anxiety and depression. The absence of a statistically significant relationship between demographic factors such as sex, marital status, education level, etc., and level of anxiety and depression during the second outbreak may be due to

Table 5. Relationship between expression of anxiety, depression, and risk factors.

CHARACTERISTICS	MANIFESTATIONS OF ANXIETY			MANIFESTATIONS OF DEPRESSION		
	N (%)	OR	95% CI	N (%)	OR	95% CI
Reception/treatment of patients diagnosed with COVID-19						
Yes	107 (32.8)	1	-	74 (22.7)	1	-
No	6 (40.0)	1.1	0.4-3.6	5 (33.3)	1.6	0.5-5.4
Admission/management of patients with suspected COVID-19 infection						
Yes	84 (32.1)	1	-	55 (21.0)	1	-
No	29 (36.7)	0.8	0.5-1.5	24 (30.4)	1.0	0.5-1.9
The number of patients (or amount of work) was always overwhelming						
No	40 (22.9)	1	-	22 (12.6)	1	-
Yes	73 (44.0)	1.4	0.8-2.5	57 (34.3)	1.5	0.8-3.1
Shortage of human resources						
No	31 (18.6)	1	-	17 (10.2)	1	-
Yes	82 (47.1)	3.2	1.7-5.9	62 (35.6)	2.6	1.3-5.4
Having shortage of medical supplies and equipment						
No	62 (27.7)	1	-	33 (14.7)	1	-
Yes	51 (43.6)	1.1	0.6-1.9	46 (39.3)	2.2	1.2-4.0

the hospitals, not designated directly to receive and treat COVID-19 infected patients during the epidemic in Vietnam. In addition, the COVID-19 epidemic in Vietnam has not been as serious as in China and around the world.

During the epidemic, the community's discrimination and alienation also had certain effects on the mental health of CMS. Discrimination during the epidemic resulted in feelings of distrust from their own communities.¹⁵ Before the outbreak of the Covid-19 epidemic, the sources of psychological pressure of health workers occurred often related to the quality of work and work intensity, continuing education and career needs, the relationship between colleagues and families.¹¹

Strengths and limitations of the study

Our research shows a number of strong points. First, the results of this study help to improve our understanding about the effects of the COVID-19 pandemic on the psychology of CMS. In addition, conducting the the study at 2 hospitals representing urban and suburban areas of Hanoi indicates that the results can be generalized and applied to CMS in other hospitals.

However, despite the aforementioned strengths, our research also has some limitations. Firstly, the information was collected through anonymous self-filled questionnaires. This could result in errors such as incorrect filling in the information or inability to recall information accurately. Secondly, this was a cross-sectional study, so there is a possibility that the signs of anxiety and depression the subject experienced appeared before the epidemic. To

mitigate the effects of these bias of the study, we carefully checked the answer of respondents and remove the questionnaires with illogical answers, incomplete information out of analysis.

In summary, the research results prove that the mental health of CMS is affected by the pandemic. Therefore, it is necessary to develop and prepare more interventions to ensure that the mental health of CMS is protected in the future, especially in the case of other infectious disease outbreaks.

Conclusion and Recommendation

Conclusions

CMS in a number of hospitals in Vietnam were under psychological pressure during the COVID-19 outbreak in 2020. Specifically, one third of the participants in the study had encountered anxiety disorder (33.1%) and 23.2% of CMS experienced mild to very severe depression. Department of work, workplace risks, and community discrimination showed statistically significant connections to the level of anxiety and depression expressed by CMS. The CMS working in the Infectious Diseases Department were at 4.9 times greater risk of developing anxiety disorders and 5.9 times greater risk of depression than those working in the Emergency Department.

Recommendations

In our study, the majority of CMS had mild symptoms of both depression and anxiety, while moderate and severe

Table 6. Relationship between expression of anxiety, depression, and discrimination of the community.

CHARACTERISTICS	MANIFESTATIONS OF ANXIETY			MANIFESTATIONS OF DEPRESSION		
	N (%)	OR	95% CI	N (%)	OR	95% CI
Offended with words						
Never	56 (24.8)	1	-	32 (14.2)	1	-
Once	16 (50.0)	1.6	0.6-4.5	16 (50.0)	2.6	0.9-7.3
A few times	41 (48.4)	1.8	0.9-3.5	30 (36.6)	2.3	1.1-4.9
Encounter a strange attitude from the community						
Never	67 (25.6)	1	-	41 (15.6)	1	-
Once	10 (40.0)	0.4	0.1-1.2	12 (48.0)	1.1	0.3-3.3
A few times	36 (66.7)	1.6	0.7-4.1	25 (47.2)	1.6	0.6-4.3
Family affected by medical staff work						
Never	74 (26.1)	1	-	50 (17.7)	1	-
Once	15 (60.0)	2.8	1.01-7.8	13 (52.0)	2.9	1.05-8.5
A few times	24 (72.7)	3.1	1.1-8.7	15 (46.9)	1.5	0.5-4.5
Do not participate in family activities						
Never	76 (28.9)	1	-	54 (20.5)	1	-
Once	7 (53.8)	1.8	0.53-6.61	4 (30.8)	1.04	0.3-4.2
A few times	19 (38.0)	1.1	0.53-2.39	11 (22.0)	0.8	0.3-2.0
Regularly	11 (73.3)	7.8	2.2-27.8	10 (66.7)	9.7	2.8-33.5
Feel the paramedic position brings many problems CMS						
Never	63 (24.1)	1	-	39 (14.9)	1	-
Once	16 (69.6)	7.7	2.6-22.9	14 (69.0)	7.5	2.6-21.6
A few times	34 (59.6)	1.9	0.9-4.4	26 (45.6)	2.0	0.9-4.8

symptoms were less common among the participants. This emphasizes the need for and importance of early detection and effective treatment for CMS displaying milder clinical symptoms. Such early detection and treatment can help prevent development of these milder symptoms into more complex and long-term psychological problems. In addition, hospitals need to organize a training session to equip CMS with the skills needed to cope with psychological stress in all circumstances in general and during a pandemic in particular, especially for those working in at-risk departments which are susceptible to infection.

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Authors' Contributions

La Ngoc Quang, Nguyen Trung Kien and Nguyen Thi Thuy Lieu conceptualized and coordinated the study and conducted literature review. La Ngoc Quang, Nguyen Thi Thuy Lieu, Pham Ngoc Anh, Tran Do Bao Nghi, Nguyen Van Son and Pham Phuong Lan designed the study and tools. La Ngoc Quang, Nguyen Thi Thuy Lieu, Pham Ngoc Anh, Dang Thi Van Anh, Tran Do Bao Nghi, Nguyen The Anh and Pham Phuong Lan collected the data, analyzed the data, and drafted the manuscript. La Ngoc Quang Nguyen Thi Thuy Lieu, Pham Ngoc Anh, Dang Thi Van Anh, Tran Do Bao Nghi, Nguyen The Anh, Nguyen Van Son and Pham Phuong Lan reviewed the manuscript and provided critical inputs. All authors read and approved the final manuscript.

Availability of Data and Material


The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

The research protocol has been reviewed by the Ethics Council of the Hanoi University of Public Health. Decision number was 020-201/DD-YTCC.

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