

Investigation on the Mental Health of Healthcare Workers for Aid in Hu Bei Province During the Outbreak of Covid-19 Based on the Network Survey

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Research

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Abstract

Background: The objective of this study is to explore the mental health of healthcare workers who went to Hubei for assistance during the outbreak of COVID-19. A total of 210 medical staff who traveled to Hubei Province for assistance in the first time completed the online questionnaire, including the Sleep Self-Assessment Scale (SRSS), Generalized Anxiety Scale (GAD-7), and 9-item patient health questionnaire (PHQ-9).

Results: The average score of the SRSS of all the subjects 25.13 ± 6.41 was significantly higher than the national norm 22.14 ± 5.48 ($p < 0.001$). The average score of the GAD-7 of all subjects 12.37 ± 4.89 was at the level of moderate anxiety, while the average score of the PHQ-9 of them 8.90 ± 5.42 was at the level of mild depression. The scores of SRSS and GAD-7 of all males 26.60 ± 6.38 , 14.45 ± 3.80 were significantly higher than those of females 23.67 ± 6.12 , 10.28 ± 4.99 ($p < 0.01$).

Conclusions: In this epidemic, the sleep quality of frontline medical staff in Hubei Province is poor, and the symptoms of anxiety and depression are common, while the anxiety is more prominent. Among them, the sleep and anxiety symptoms of males are more obvious than that of women, suggesting that we should pay attention to the psychological support of male doctors and nurses and provide them with appropriate psychological decompression training.

1. Background

The COVID-19 beginning in late 2019 has spread for almost four months. This calamity drove to the execution of the city closure policy in Hubei Province, and the worst-hit areas, Wuhan, is a city that everyone talks approximately. Since the virus is exceedingly contagious and pathogenic, it has caused a particular stun to the general public. In this exceptionally period, when the virus was raging, there was a group of people who were risking infection, applied for providing medical assistance in Hubei Province. For conventional people, they can choose to cancel, delay or alter the way they work, but the healthcare workers choose to take on more heavy work; and fight against danger. In this manner, this group of healthcare specialists in Hubei is not only under work pressure but also may be under tremendous mental pressure.

Relevant researches have found that during the SARS flare-up in 2003, front-line healthcare workers experienced substantial mental pressure and work pressure [1–3]. Simultaneously, during the outbreak of 2015 Middle East respiratory syndrome (MERS) Co-V, the hospital workers in South Korea also experienced various negative emotions and stress [4]. Other examples include novel swine-origin influenza A (H1N1) that originated in Mexico in 2009, Ebola in Guinea in 2013, the front-line medical workers, were reported have experienced a great deal of emotional stress related to their work [5]. However, in the outbreak of COVID-19 in Hubei Province, an expansive number of healthcare workers from other provinces and cities went to support, and they stationed at the source nearly two months, and long-term separation from family members and adaptation to new places may further increase their pressure because being assigned to unfamiliar work groups could reduce collegial interaction [6]. What's more, the related report has suggested that the group of healthcare workers were at the forefront of the 'special battle' against infectious diseases, placing them at a greater risk of infection [7]. Therefore, the potential risk may aggravate their mental burden further.

The latest report on COVID-19 has discovered that front-line healthcare workers are vulnerable to the emotional impact of COVID-19 [8]. But up to now, there is little information of the mental health of the healthcare workers who went to Hubei for assistance. To understand the mental health of the above-mentioned particular groups, this study intends to utilize them as a research participant to analyze the mental health status of this group in order to explore the psychological structure characteristics of this particular group. Furthermore, we intend to provide guidance for their intervention support programs after returning.

2. Method

Subjects

From January to February 2020, the healthcare workers sent to Hubei Province for medical assistance from exterior Hubei Area were selected as the objects of the investigation. The questionnaire was distributed to these healthcare workers in the form of network, and the principle of voluntary filling was adopted. The research has got the institutional review board (IRB) approval of West China Hospital. Two hundred twenty questionnaires were sent out in total, 210 qualified questionnaires were recovered, and the recuperation rate of the questionnaire was 95.4%.

Measures

The research tool (scale) are self-assessment questionnaire, and the following survey items are completed according to the unified guidance, including (1) general situation survey: including the gender, age, education background, marriage, occupation, education level. (2) Self-Rating Scale of Sleep (SRSS) [9]: it is composed of 10 items, 1–5 points score each item, and the final total score is the sum of the scores of each item, and the total score range is 10–50 points. The higher score, the more serious the sleep problem. The national norm score of the scale is 22.14 ± 5.48 [10]. (3) Generalized Anxiety Scale (GAD-7) [11]: it consists of 7 items, each item is scored by 0–3 points, and the total score range is 0–21 points. Among them, 0–4 points were no anxiety; 5–9 points were mild anxiety; 10–14 points were moderate anxiety; 15–21 points were severe anxiety. (4) 9-item patient health questionnaire (PHQ-9) [12]: it is composed of nine items, 0–3 points score each item, and the total score range is 0–27 points. Among them, 0–4 points were no depression; 5–9 points were mild depression; 10–14 points were moderate depression; 15–19 points were moderate and severe depression; 20–27 points were severe depression.

- *Statistical analyses*

Descriptive statistics were computed for all variables. The mean scores were then used for comparison among groups using T-test statistics. A P value of < 0.05 was used for statistical significance testing.

3. Results

3.1 General information on healthcare workers aiding Hubei (see Table 1 below).

There were 210 healthcare workers in Hubei Province, including 105 males and 105 females. According to the occupational situation, 147 nurses, accounting for 70%; 63 doctors, accounting for 30%. The age range of them is 23–40 years old, with an average of 30.47 ± 4.53 years. Among them, education background is as follows: secondary school 14, accounting for 6.7%; junior college 77, accounting for 36.7%; undergraduate 105, accounting for 50%; graduate 14, accounting for 6.7%. The marriage situation is as follows: 98 unmarried people, accounting for 46.7%; 112 married people, accounting for 53.3%. The working years of all subjects ranged from 2 to 20 years, with an average of 8.61 ± 4.37 years.

After grouping all subjects according to different genders or occupations, and comparing their average age and working years, it was found that the average age of men was higher than that of women ($t = 5.456, P < 0.001$), the working years were longer ($t = 2.890, P = 0.004$), the average age of doctors was higher than that of nurses ($t = 10.159, P < 0.001$), and the working years were longer ($t = 6.780, P < 0.001$).

Table 1
Comparative Analysis of age and working years according to gender and occupation groups

Project	Gender classification		T value
	Male (n = 105)	Female (n = 105)	
Average age	32.07 ± 4.30	28.87 ± 4.20	5.456 ^b
Working years	9.47 ± 3.42	7.75 ± 5.02	2.890 ^a
Project	Occupation Classification		T value
	Doctor (n = 63)	Nurse (n = 147)	
Average age	34.44 ± 3.33	28.76 ± 3.87	10.159 ^b
Working years	11.44 ± 4.06	7.39 ± 3.92	6.780 ^b
a:P < 0.01;b:P < 0.001			

3.2 Investigation results of GAD-7 and PHQ-9 for healthcare workers in Hubei Province (see Table 2 below)

We can see from the table that the average score of anxiety scale of healthcare workers is at the level of moderate anxiety, while the average score of depression scale is at the level of mild depression. Among them, the proportion of people with moderate anxiety level is the highest, accounting for 43.3%; while the proportion of people with moderate depression level is the highest, accounting for 35.7%.

Table 2
the scores of GAD-7 and PHQ-9 of healthcare workers in Hubei Province

Survey items	Average score	Severity									
		No		Light		Moderate		Moderate severe		Severe	
		Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
GAD-7	12.37 ± 4.89	19	9.0	30	14.3	91	43.3	-	-	70	33.3
PHQ-9	8.90 ± 5.42	59	28.1	47	22.4	75	35.7	23	11.0	6	2.9

3.3 Comparison of scores of SRSS, GAD-7 and PHQ-9 of healthcare workers in Hubei Province under different genders and occupational categories (see Table 3 below)

The results showed that the score of male sleep scale was significantly higher than that of female ($t = 3.397, P = 0.001$), i.e. the sleep quality of male was worse than that of the female; the score of male anxiety scale was significantly higher than that of female ($t = 6.832, P < 0.001$), i.e. the anxiety level of the male was higher than that of the female; however, there was no significant difference in the score of depression scale between male and female ($t = 1.611, p = 0.109$).

The results showed that there was no significant difference in sleep quality, anxiety level and depression level between doctors and nurses.

Table 3
Comparative Analysis of SRSS,GAD-7 and PHQ-9 according to gender and occupation groups

Project	Gender classification		T value
	Male (n = 105)	Female (n = 105)	
SRSS	26.60 ± 6.38	23.67 ± 6.12	3.397 ^a
GAD-7	14.45 ± 3.80	10.28 ± 4.99	6.832 ^b
PHQ-9	9.50 ± 5.37	8.30 ± 5.42	1.611
Project	Occupation Classification		T value
	Doctor (n = 63)	Nurse (n = 147)	
SRSS	24.22 ± 4.82	25.52 ± 6.96	1.351
GAD-7	13.16 ± 3.25	12.03 ± 5.42	1.540
PHQ-9	8.06 ± 4.69	9.27 ± 5.68	1.477
a:P < 0.01;b:P < 0.001			

4. Discussion

Due to the sudden outbreak, rapid contagious, and the lack of anti-virus vaccines and medicine, it is inevitable that healthcare workers participating in clinical first-line treatment will sustain enormous pressure and expose themselves to hazard. However, healthcare workers from other provinces and cities have left their hometown and come to a particular area. They work in conjunction with the local healthcare workers in the anti-epidemic work. Therefore, they will moreover confront the corresponding pressure. In order to understand the mental health status of the particular population, this study uses the way of network questionnaire to investigate their sleep quality, anxiety level and depression level in this part of Hubei Province, to provide guidance on how to carry out the corresponding psychological intervention after their return journey.

This study showed that the sleep quality of all the healthcare workers was significantly worse than that of the ordinary people, which indicated that the healthcare workers in Hubei Province could not have a good rest due to the limited accommodation conditions and heavy work tasks during the working period. Even some people might have some sleep disorders. According to the investigation of the first-line healthcare workers during the SARS outbreak in 2003, 26.62% of them suffered from insomnia [13]. According to media reports, we can see that due to the shortage of protective materials, in arrange to save materials, medical personnel need to work continuously for 6–7 hours after wearing protective clothing. This kind of high-intensity work would inevitably lead to excessive exhaustion of energy and pressure of the human body, and under the excessive pressure, the main performance of the human body may be sleep problems. Therefore, for these particular groups, the government should give them appropriate leaving system after their return to ensure that everyone has enough sleep, to help them to adjust their daily life and return to regular work.

Through the analysis of the scores of anxiety and depression self-assessment scale of all healthcare workers, it can be found that there are some anxiety and depression in healthcare workers, and the performance of anxiety is more prominent than depression. About 14.3% of them are at the level of mild anxiety, 43.3% are at the level of moderate anxiety, and 33.3% are at the level of severe anxiety. It can be seen that anxiety symptoms are the most common and prominent manifestation of the aid workers. Some scholars have believed that the psychological reactions of individuals after encountering stress events mainly include depression and anxiety [14, 15]. However, our healthcare workers in Hubei Province have to face not only the highly infectious new COVID-19 but also heavy physical consumption and enormous mental pressure every day. In this manner, anxiety and depression are inevitable. As this study found, approximately 35.7% of the people are moreover at the level of moderate depression. As Tian et al. [13] analyzed when investigating the mental health level of healthcare workers on the front-line of SARS prevention and treatment, these front-line workers must treat and care patients in the condition of wearing protective clothing, gloves, hats, masks and eye masks, and must receive isolation observation after work, which will increase their mental pressure. Besides, since few healthcare workers in Hubei Province have ever been exposed to the prevention and control of infectious diseases, they may also have some deficiencies in the knowledge and skills related to epidemic prevention and control. The temporary multiple training tasks before entering the front-line will also increase their mental pressure. During the period of aiding Hubei, the time of communication with family and companions will be significantly reduced, which will further diminish their sources of social support, resulting in an increase in the probability of mental problems. Besides, according to the report of the aid specialists in Hubei Province, they are all temporarily living in the hotels designated by the government, one person living in one room, and they need to avoid gathering as much as possible after returning from work. Therefore, most people can only live alone in a narrow space, and this monotonous living environment will inevitably lead to inevitable depression. Therefore, the above results suggest that we need to pay more attention to the mental health level of healthcare workers in Hubei Province, and may need to provide them with appropriate relaxation training and positive suggestion training, so as to assist them better through the involvement of Hubei Province.

Because there are some differences in the psychological characteristics and expression ways between men and women, this study compared and analyzed the sleep, anxiety and depression scale of healthcare workers in Hubei Province according to different genders. After analysis, we found relatively extraordinary results that the sleep quality of men was worse than that of women, and their anxiety level was higher. From the previous research results, we found that in the face of the SARS outbreak, the anxiety severity of women in the population is generally higher than that of men [16]. Wang and others also found that women healthcare workers may be more prone to anxiety and depression than men in mental status changes [17]. However, our research results

are different from others, and the specific situation needs specific analysis. We can see that the previous research object is the general public or the local healthcare workers, and no one has analyzed the mental health of the particular group of healthcare workers aiding Wuhan. The reason for the male sleep deviation and massive anxiety maybe, on the one hand, due to the fact that the age of male aid workers is generally older, their physical strength and energy recovery level will not be as fast as that of young women, so they are more prone to fatigue and insomnia; on the other hand, more of these men have already married, so long-term absence from home and less communication with spouse or children will make it difficult for them to release the negative emotions caused by stress expeditiously, in the case of chronic stress. There is bound to be an increment in anxiety levels. Additionally, since numerous women belong to the nurse group, and they are youthful, their estrogen level secretion is in an intense period, so it is also a protective factor for their emotions. Women are more inclined to express their emotions at any time, so less negative emotions will be overstocked. From the above results, we can see that in the past, we need to pay more attention to the mental wellbeing of female health workers. However, male health workers may also require psychological counselling, and learn to actively express emotions, in order to diminish their anxiety level further.

Conclusions

Finally, through this study, we can discover that there is a specific lopsidedness in mental health level and sleep of healthcare workers in Hubei Province. Male anxiety performance and sleep disorders may be more prominent, which suggests that we may also need to provide appropriate psychological intervention for these particular groups, so as to assist them to put into their original working position after returning from Hubei Province.

Declarations

Ethics approval and consent to participate:

The research has got the institutional review board (IRB) approval of West China Hospital, and all the subjects were recruited in the principle of voluntary.

Consent for publication:

Not applicable.

Availability of data and materials:

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

Competing interests:

The authors declare that they have no competing interests.

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Not applicable

Authors' contributions:

Peng Zhou was a major contributor in writing the manuscript, and he also was responsible for recruited the subjects in this survey. Na Du was responsible for the corresponding part of this manuscript, and she designed the investigation. Yingjie OuYang collected and analyzed the data, and she also translated this article to English. All authors read and approved the final manuscript.

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