Psychological impact of COVID-19 on Chinese health-care workers

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Abstract

Background: The outbreak of the 2019-nCoV has dominated headlines throughout the world. The number of infections continue to rise, which has reached 30 thousand at the time of writing this editorial. Because of the high risk of nosocomial transmission, the medical health-care workers may be experiencing significant psychological stress.

Objective: This descriptive study aimed to identify hospital staff's psychosocial effects associated with working in a hospital environment during the 2019-nCoV outbreak.

Methods: 57 frontline clinicians working in Wuhan First Hospital and 157 medical training students working in Jiangsu Provincial Peoples Hospital during this outbreak participated in our survey. The questionnaire we adopted included questions regarding the participants' personal well-being, sociodemographic characteristics and the psychological status.

Results: 2019-nCoV had psychological impacts both on formal workers and medical students. The psychological effects include sleep disorders, anxiety and depression. There is no significant difference between the group of formal workers and medical students, and nearly 50% of the respondents reported pandemic-related mental disorders.

Conclusions: Our study indicates that the high risk of 2019-nCoV exposure cause huge psychological stress on healthcare workers. This finding emphasizes the need of promoting psychological crisis intervention for medical personnel during this epidemic disease outbreak.

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Original Manuscript

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Abstract:

Background The outbreak of the 2019-nCoV had dominated headlines throughout the world. The number of infections continued to rise, which had reached 30 thousand at the time of writing this editorial. Because of the high risk of nosocomial transmission, the medical health-care workers might be experiencing significant psychological stress. This descriptive study aimed to identify hospital staff’s psychosocial effects associated with working in a hospital environment during the

2019-nCoV outbreak.
Methods 57 frontline clinicians working in Wuhan First Hospital and 157 medical training students working in Jiangsu Provincial Peoples Hospital during this outbreak participated in our survey. The questionnaire we adopted included questions regarding the participants' personal well-being, sociodemographic characteristics and the psychological status.
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Conclusion Our study indicated that the high risk of 2019-nCoV exposure caused huge psychological stress on healthcare workers. This finding emphasized the need of promoting psychological crisis intervention for medical personnel during this epidemic disease outbreak.

Keywords: 2019-nCoV; psychology; frontline clinician; medical students

Introduction

A novel pneumonia associated with the 2019 coronavirus suddenly broke out in Wuhan, China in December 2019 [1]. The government reported that approximately five million residents left Wuhan and went to other provinces within China and thousands of people reached other countries before the lockdown The number of infections continued to rise, which had reached 30 thousand at the time of writing this editorial. Along with the rapid expansion of patients' number, the whole world's health-care system was landed in an awkward redicamentwas, and the healthcare workers and medical materials were facing severe shortage.[2] . What's more, the healthcare providers had a greater chance to be exposed to the virus [3]. Research on the impact of previous epidemic outbreaks had on the psychological well-being of health-care workers had shown that many health-care workers presented high levels of psychological distress [4]. Although the Chinese Government endeavored to guarantee the frontline clinicians' security, including organizing strict training, providing adequate medical facilities and discouraging off-work contact, little was known about the psychological effects of 2019-nCoV outbreak on hospital workers. The main objective of our study was to investigate whether medical personnel were experiencing significant psychological conflict between their duties and their concern for their own safety [5] and evaluated whether the psychological intervention was necessary.

Methods

Subjects

This was a cross sectional study, including 57 frontline clinicians working in Wuhan First Hospital and 157 medical students working in Jiangsu Provincial Peoples Hospital during the 2019-nCoV outbreak. Firstly, we released the online questionnaires among the Wuhan First Hospital first-line staff and collected 57 valid questionnaires on March 4th, 2020. Later, we conducted a survey among young medical students to investigate their psychological change associated with 2019-nCoV and collected 157 valid data. The questionnaire consisted of 4 main sections: basic demographic data, Athens insomnia scale, Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS). Owing to resource constraints, the distribution of the questionnaire was limited to only those who received the questionnaire on day 2 of data collection. We coded the response categories using the scoring method as recommended by Goldbergand Williams and calculated a total score. We used a

threshold score of greater than 50 to identify the presence of emotional anxiety and a threshold score of greater than 53 to identify the presence of emotional depression.

Procedures

On a voluntary basis, questionnaires were finished by all willing respondents (both doctors, nurses and medical students working in the hospitals during the crisis). We achieved the completed questionnaires at the computer terminal. Reminders to volunteers were sent out by email. Ethics approval for the study was obtained from Nanjing Drum Tower Hospital.

Statistical Analysis

We analyzed the data using IBM SPSS 25.0. Descriptive statistics were employed to organize the data collected from the survey. Correlational analysis was performed to evaluate the internal consistency.

Results

Demographics

Wuhan frontline clinicians:

A total of 54 doctors and nurses completed our survey voluntarily. The respondents comprised 45(83%) women and 9(17%) men. Among these medical staff, 26(48%) were single, 26(48%) were married and 2(4%) were divorced. Most of the respondents were nurses (n=45, [83%]) and doctors represented 17% of the sample. Among the doctors, 2(22%) were in senior title; 6(67%) were in middle title and 1(11%) was in primary title. Among the nurses, 2(4%) were in senior title; 3(7%) were in middle title and 40(89%) were in primary title. 22% of the sample had a master degree or above, and 42(78%) had a bachelor or associate degree. Among those investigated first-line medical staffs, 37(82%) that come from Nanjing to support Wuhan(table1).

Nanjing clinical medicine masters:

With the exception of the subjects had a history of anxiety, depression or sleep disorders, 157 clinical medicine master were included in our study. From the received data, we found that none of our study's participatants had any symptom of 2019-nCoV or a history of direct contact with this virus.

Sleep and psychological status

Compared with Nanjing clinical medicine master, Wuhan frontline clinicians had an extra exam item: Athens insomnia scale. In frontline clinicians group, the anxiety-related analysis showed that 9% participants had mild anxiety. Regarding to the depression-related results, 35% of the medical staff had mild depression and 7% had moderate depression. Both the anxiety and the depression rate were higher than the average. Futhermore, those who left the hometown and supported Wuhan got higher scores in Athens insomnia scale than those who worked in their original work unit. Synthesizing the results overall, we found that working experience which was represented by work-life, job title and age was significantly associated with survey results. Those with richer experience had lower anxiety and depression rates. The results also showed that nurses tended to have mental disorders.

When the risk of psychological symptoms was analyzed in a subsample of Nanjing clinical medicine master, we calculated that 47.1% had mild depression and 1.2% had moderate depression. As for the anxiety aspect, 4.0% had mild depression generally. The high risk of having psychological problems is evoking, which should gain psychologists' concern.

Discussion

The 2019-nCoV epidemic was one of the most virulent event that ever threatened health care system

all over the world [6]. The results of the present study showed that hospital staff were significantly anxious of the pandemic, and their degree of worry was moderately high. Their greatest concern was for infection and the potential consequences of the disease on their health [7]. At the time of writing this editorial, there had been over 3000 confirmed cases in healthcare group. The infection rate of medical personnel in hubei was eight times higher than that of the general population for many reasons. Firstly, hospitals were the focus of confirmed patients, so health care workers must be susceptible to be exposed to the virus, as well as high exposure dose [2]. It had been proved that the 2019-nCoV transmitted through respiratory droplets, contact, and fecal-oral, even the eye was possible transmission channel [8]. The generation of aerosol which only existed in hospital wards greatly exacerbated health care workers' risk of infection [8]. As a result of the perceived risk for being infected was moderately high, about 50% respondents had psychological disorders.

Our results showed that relative high rate of healthcare workers experienced moderately high levels of worry regarding of the pandemic, with nurses being more worried than doctors. This phenomenon was reasonable and could be explained by the following causes: 1) the nurses had more and closer touch with the patients, and operations such as suctioning, collecting throat swab made them be exposed to trauma. 2) the nurses were generally younger and lower educated than doctors so they were lack of rich clinical experience and inadequately mental health education in dealing with grim situation.

In this survey, the results revealed that the health-care workers that came from other cities had higher rates of sleep problems. It was comprehensible that the medical staffs from outside Hubei province were not familiar with this particular operation mode compared with local workers. What's more, it was inevitable to fear when they left family and friends, not to speak of going to a dangerous place on their own [9]. Psychological counseling work for frontline clinicians should be given attention, especially these who left their original working environment and assisted Wuhan.

In general, our research showed that no matter frontline clinicians or clinical medicine master all tended to have more depression problems than anxiety, and more researches needed to be done to search for reasons. There was no significant difference in the rate of psychological disorders between first-line clinicians and medical students. It was evident that first-line clinicians were at greater risk of infection, but they had a stronger mentality.

Fortunately, most designated hospitals admiting 2019-nCoV infected patients had established a shift system to allow medical staffs to get enough rest. The government and people in general were trying their best to provide adequate backup resource for the hospitals. It is hopeful that the psychological problems of medical workers can be alleviated, if enough attention can be given.

Ethics approval and consent

The studies involving human participants were reviewed and approved by The Ethics Committee of Nanjing Drum Tower Hospital. Written informed consent to participate in this study was provided by the participants.

Conflicts of interest

The authors declared no Conflicts of interest.

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Symptom Score	1	2	3	4
1. Anxiousness	100(63.7%)	50(31.8%)	3(1.9%)	4(2.5%)
2. Fear	128(81.5%)	24(15.3%)	2(1.3%)	3(1.9%)
3. Panic	125(79.6%)	27(17.2%)	3(1.9%)	2(1.3%)
4. Mental disintegration	142(90.4%)	14(8.9%)	1(0.6%)	0
5. Apprehension	68(43.3)	15(9.6%)	23(14.6%)	51(32.5%)
6. Tremors	151(96.2%)	5(3.2%)	0	1(0.6%)
7. Body aches and pains	124(79.0%)	23(14.6%)	10(6.4%)	0
8. Easy fatiguability, weakness	108(68.8%)	42(26.8%)	6(3.8%)	1(0.6%)
*9. Rest lessness	50(31.8%)	11(7.0%)	34(21.7%)	62(39.5%)
10. Palpitation	120(76.4%)	30(19.1%)	5(3.2%)	2(1.3%)
11. Dizziness	141(89.8%)	15(9.6%)	1(0.6%)	0
12Faintness	151(96.2%)	6(3.8%)	0	0
*13. Dyspnea	100(63.7%)	8(5.1%)	7(4.5%)	42(26.8%)
14. Paresthesias	150(95.5%)	6(3.8%)	0	1(0.6%)
15. Nausea &vomiting	126(80.3%)	27(17.2%)	4(2.5%)	0
16. Urinary frequency	132(84.1%)	21(13.4%)	4(2.5%)	0
17. Sweating	83(52.9%)	19(12.1%)	18(11.5%)	37(23.6%)
18. Face flushing	136(86.6%)	18(11.5%)	2(1.3%)	1(0.6%)
*19. Insomnia	38(24.2%)	14(8.9%)	38(24.2%)	67(42.7%)
20. Nightmares	111(70.7%)	44(28.0%)	2(1.3%)	0

Table 1. The distribution of Self-Rating Anxiety Scale (SAS) scores in 157 medical students

Table 2. The distribution of Self-Rating Depression Scale (SDS) scores in 157 medical students

Symptom	Score	1	2	3	4
1. Down-hearted		123(78.3%)	25(15.9%)	6(3.8%)	3(1.9%)
2.Moring severity		69(43.9%)	32(20.4%)	35(22.3%)	21(13.4%)
3. Easily cring		138(87.9%)	16(10.2%)	2(1.3%)	1(0.6%)
4. Insomnia		113(72.0%)	31(19.7%)	11(7.0%)	2(1.3%)
5. Inappetence		53(33.8%)	10(6.4%)	19(12.1%)	75(47.8%)
6. Sex decrease		54(34.4%)	13(8.3%)	24(15.3%)	66(42.0%)
7. Weight loss		140(89.2%)	16(10.2%)	1(0.6%)	0
8. Constipation		118(75.2%)	31(19.7%)	7(4.5%)	1(0.6%)
9. Palpitation		131(83.4%)	22(14.0%)	3(1.9%)	1(0.6%)
10. Exhaustion		113(72.0%)	38(24.2%)	5(3.2%)	1(0.6%)
11. Difficulty in thinking		45(28.7%)	14(8.9%)	28(17.8%)	70(44.6%)
12. Scare capacity		51(32.5%)	13(8.3%)	26(16.6%)	67(42.7%)
13. Uneasy		123(78.3%)	29(18.5%)	5(3.2%)	0
14. Despair		41(26.1%)	16(10.2%)	32(20.4%)	68(43.3%)
15. Evoked		119(75.8%)	29(18.5%)	7(4.5%)	2(1.3%)
16. Hesitation		48(30.6%)	27(17.2%)	37(23.6%)	45(28.7%)
17. Futility		39(24.8%)	18(11.5%)	41(26.1%)	59(37.6%)
18. Void		34(21.7%)	81(51.6%)	42(26.8%)	0
19. No value		145(92.4%)	10(6.4%)	1(0.6%)	1(0.6%)
20. Interest loss		40(25.5%)	10(6.4%)	28(17.8%)	79(50.35)

Table 3. Demographic characteristics of 54 frontline clinicians at Wuhan First Hospital

Characteristic	Respondents with mental disorders	Respondents without mental disorders	P value
n	**30**	**24**	
Sex			0.066
Male	2 (6.7%)	7 (29.2%)	
Female	28 (93.3%)	17 (70.8%)	
Age, yr			0.753
20–30	14 (46.7%)	11 (45.8%)	
30–40	14 (46.7%)	10 (41.6%)	
≥ 40	2 (6.7%)	3 (12.5%)	
Education			0.442
College or bachelor degree	25 (83.3%)	17 (70.8%)	
Master degree or above	5 (16.7%)	7 (29.2%)	
Occupation			0.270
Nurse	27 (90%)	18 (75%)	
Doctor	3 (10%)	6 (25%)	
Tenure in current occupation,			0.763
≤ 5	12 (40%)	9 (37.5%)	
5-15	16 (53.3%)	12 (50.0%)	
≥ 15	2 (6.7%)	3 (12.5%)	
Employment title			0.437
primary title	23 (76.7%)	17 (70.8%)	
secondary title	6 (20.0%)	4 (16.7%)	
senior title	1 (3.3%)	3 (12.5%)	
marital status			0.949
single	14 (46.7%)	12 (50.0%)	
married	15 (50.0%)	11 (45.8%)	
divorced	1 (3.3%)	1 (4.2%)	

Supplementary Files