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Letter to the Editor

Anxiety, depression and insomnia: A cross-sectional study of frontline staff fighting against COVID-19 in Wenzhou, China



The outbreak of COVID-19 infection happened last December in China and attracted worldwide attention. Wenzhou, a commercial hub in Zhejiang Province, is one of the most affected cities in terms of the number of COVID-19 cases apart from those in the hardest-hit Hubei Province at the end of January. A severe epidemic outbreak, such as severe acute respiratory syndrome (SARS), Ebola, and middle east respiratory syndrome (MERS), always correlates with a high prevalence of mental health problems among people, especially the frontline staff against epidemic (Li et al., 2015; McAlonan et al., 2007). Compared with the other epidemic outbreaks in 21st century, COVID-19 is the most serious pandemic characterized by human-to-human transmission, asymptomatic carrier transmission and high transmission efficiency (Huang et al., 2020), which makes frontline staff more vulnerable to mental health problems. With the declaring a citywide lockdown in Wenzhou (Gong et al., 2020), beside medical staff, more frontline staff such as community workers, police officers, as well as volunteers, have been recruited to fight against COVID-19. However, studies exploring the prevalence of mental health problems among frontline staff during the COVID-19 outbreak in China are limited. The present study was to examine the characteristics of anxiety, depression and insomnia of frontline staff and identify the associated factors during the COVID-19 epidemic.

A cross-sectional study was conducted in Wenzhou, China. Data were collected in February 2020 via Wen Juan Xing (www.wjx.cn), which is a widely used web-based survey platform in China. During the COVID-19 epidemic, a total of 972 frontline staff in Wenzhou participated in the study. According to the risk of exposure to COVID-19, 498 (51.2%) of subjects were assigned to the high-risk group, including frontline medical staff working for confirmed cases and other frontline staff (such as community workers, police officers, as well as volunteers) working for suspected cases; 474 (48.8%) were assigned to low-risk group, including medical staff (doctors, nurses) who treated non-COVID-19 patients and support staff. The study was approved by the Ethics Committee of the Wenzhou Medical University. The questionnaires were anonymous and all participants took part in the study voluntarily. Generalized Anxiety Disorder Scale-7 item, the Patient Health Questionnaire-9 item, Insomnia Severity Index and several short demographic questions, including gender, age, education level, marital status, Party member, risk of exposure to COVID-19 and health status, were applied.

Chi-square analyses were used to identify the differences in categorical variables between groups, and two-tailed t-tests (for continuous data) were carried out to determine the differences in continuous variables between groups. Multivariate logistic regression analysis was

performed to identify the associated factors of anxiety, depression, and insomnia in frontline staff fighting against COVID-19, and adjusted odds ratios (OR) and 95% confidence intervals (CIs) for OR were calculated. All statistical analyses were performed with the use of SPSS statistics package (version 18.0) and all reported P-values are 2-tailed with statistical significance set at 0.05.

The main finding of the present study was that, in general, out of 972 frontline staff, 438 (45.1%) subjects had symptoms of anxiety on the GAD-7 ($M = 6.71$, $SD = 5.80$), 313 (32.2%) subjects endorsed depressive symptoms on the PHQ-9 ($M = 5.16$, $SD = 5.23$), and 380 (39.1%) subjects had symptoms of insomnia on the ISI ($M = 3.87$, $SD = 4.70$). The prevalence of moderate and above moderate level of anxiety, depression and insomnia in the frontline staff were 16.9%, 10.3% and 11.2% respectively, and as high as 60% of subjects suffered from at least one mental health problem during the COVID-19 epidemic. The most commonly occurring form of mental health problems was comorbidities of anxiety, depression, and insomnia (202; 20.8%) compared to anxiety alone (116; 11.9%), insomnia alone (100; 10.3%), and comorbidities of anxiety and depression (71; 7.3%). Health status, education level, Party membership, and the risk of exposure to COVID-19 were significantly associated with anxiety, depression or insomnia among frontline staff.

To our knowledge, this is the first attempt to evaluate synthetically anxiety, depression and insomnia in a large sample of typical frontline staff in the high COVID-19 epidemic area of China. The present study indicated that one out of two frontline staff was with at least one type of mental health symptoms during the COVID-19 epidemic. The comorbidity of anxiety, depression and insomnia is the most commonly reported feature of mental health symptoms, especially three overlapping patterns of mental health symptoms. Health status, education level, Party membership, and the risk of exposure to COVID-19 were significantly associated with anxiety, depression or insomnia among the frontline staff. On the basis of all these information, there is an obvious demand of intervention and treatment activities to prevent and reduce the occurrence of mental health problems among the frontline staff, government should proactively implement psychological interventions for the different subpopulations in frontline staff during and after the outbreak of COVID-19 infection.

There are some limitations in our study. First, the questionnaires were published via WeChat and the respondents were all from Wenzhou, Zhejiang Province, which is one of the worst hit cities except Hubei Province. So a selective-bias exists in our study, which means that our study does not completely reflect the mental health status of frontline staff in other regions of China, especially in areas with

<https://doi.org/10.1016/j.psychres.2020.113304>

Received 11 April 2020; Received in revised form 5 July 2020; Accepted 13 July 2020

Available online 15 July 2020

0165-1781/ © 2020 Published by Elsevier B.V.

relatively mild outbreaks. Secondly, data were self-reported in nature and respondents might exaggerate or conceal mental health problems, which may be subject to reporting bias.

Funding

This work was supported by the Scientific Research Foundation of Emergency Prevention and Control of COVID-19 in Wenzhou (grant no. ZY202002).

Declaration of Competing Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Acknowledgments

We extend a special note of gratitude to the frontline staff against COVID-19 in Wenzhou for their assistance. We especially thank Wenzhou Medical University undergraduates and postgraduates who helped with data collection and data entry.

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