

ORIGINAL ARTICLE

Effects of WeChat-based psychological interventions on the mental health of patients with suspected new coronavirus pneumonia: A pilot study

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Abstract

Objective: Suspected patients with new coronavirus pneumonia (NCP) may suffer from unique mental health problems. However, the shortage of medical personnel and the infectiousness of the disease have challenged traditional psychological interventions. This study investigated the effects of a new WeChat-based psychological intervention on the mental health of suspected NCP patients.

Methods: This study included 48 participants (control group = 24 vs. intervention group = 24). The control group received conventional NCP nursing, and the intervention group received conventional NCP nursing and the WeChat psychological interventions. Participants completed the Self-rating Anxiety Scale (SAS), Self-rating Depression Scale (SDS), and Acute Stress Disorder Scale (ASDS) on the day of, and the 14th day after, admission.

Results: There were no significant differences between the two groups ($p > .05$) regarding demographic characteristics, education, work status, anxiety, depression, or acute stress disorder on the day of admission ($p > .05$). On the 14th day after admission, the intervention group showed an improvement in anxiety ($p < .05$) and a significant improvement in depression and acute stress disorder compared with the control group ($p < .01$).

Conclusion: The WeChat-based psychological interventions can have a positive effect on the mental health problems of suspected NCP patients.

KEYWORDS

mental health, new coronavirus pneumonia, psychological interventions, suspected patients

1 | INTRODUCTION

Novel coronavirus pneumonia (NCP), also named 2019 Coronavirus Disease (COVID-19) by the World Health Organization (WHO) (Deng & Peng, 2020), is a new type of human infectious beta coronavirus pneumonia (Wu et al., 2020). Since the outbreak of this disease, it has been diagnosed in tens of thousands of individuals in

China; this was followed by cases in many countries around the world, including the United States, Italy, Spain, Germany, and so on. Many of these cases have been confirmed (Kang & Xu, 2020).

The spread of the epidemic has disrupted normal social life, but the general public lack an accurate understanding of the disease and dissemination of information to the public has been slow (Zhu et al., 2020). In this

context, the high rates of both NCP infection and mortality in severe cases have led to panic and anxiety (The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team, 2020; Zhan et al., 2020). Indeed, some diagnosed and suspected patients are likely to suffer from psychological problems, including stress, depression, and anxiety, following hospitalization, isolation, and discharge (Xiang et al., 2020).

There are more suspected patients than confirmed patients in China. The psychological problems of suspected patients have also received widespread attention from state and social agencies, and the need for psychological interventions for these conditions has gradually increased. The rapid rise of social networks and digital technologies, such as the Internet and smart phones, has led to the establishment of digital mental health services. The digital health intervention guidelines issued by the WHO on April 17, 2019, affirmed the effectiveness, acceptability, and feasibility of such approaches (WHO, 2019). Indeed, the uniqueness of NCP has rendered the development of a network-based psychological interventions approach a priority. In China, WeChat is the most widely used information software (Li, Xu, et al., 2016). Therefore, following the admission of suspected NCP patients to our hospital, we launched an online psychological intervention based on WeChat to explore its effects on the mental health of patients in the hope of improving their mental health.

2 | METHODS

2.1 | Setting and sample

Since the NCP outbreak, the authors' institution has been operating an isolation ward to contain suspected cases. According to the number of admitted patients, inclusion and exclusion criteria, we selected 48 patients hospitalized with suspected NCP from February 2, 2020, to February 29, 2020, for inclusion in this study based on the following criteria: (1) fulfillment of the diagnostic criteria for suspected patients according to the NCP diagnosis and treatment program issued by the National Health and Health Commission; (2) ages 18–80 years; (3) ability to use WeChat proficiently or through nurse training; and (4) reported ability to complete the measurement instruments on their own or with help from the nurses. We used the following exclusion criteria: (1) diagnosis of NCP during the intervention; (2) mental illness or developmental disability; (3) refusal to participate in the study; or (4) participation in other psychosomatic intervention surveys. Patients were divided into control ($n = 24$) and intervention ($n = 24$) groups

according to a random number table. All 48 patients finished the study, and no one declined or withdrew from the study.

2.2 | Ethical consideration

This study was approved by the Ethical Committee of the authors' institution (Approval no.2020CQSFLZXYEC-008) to protect the human rights of the research participants. The participants were given a full explanation of the purpose and procedure of the study. All participants signed informed consent for their participation in this study.

2.3 | Intervention

The control group received routine nursing care for NCP, whereas the intervention group received routine nursing care as well as a WeChat-based psychological intervention implemented by an intervention team composed of psychological physicians and nurses from the isolation ward of our hospital. The intervention consisted of the following. (1) Twice-daily psychological counseling delivered via WeChat video communication. During these contact periods, patients were asked about emotional issues, such as irritability or depression, and staff members patiently, attentively, and empathically listened as they talked about their illness and life problems. (2) Health education designed to correct cognitive biases. We also used WeChat groups to provide daily updates regarding the epidemic and related policies to ensure that patients received external information in a timely manner, to alleviate panic and anxiety, and also to disseminate information about NCP, including the impact of negative emotions on the disease course, the relationship between psychological condition and illness, and the importance of mindfulness and self-confidence for healing. (3) Once-daily relaxation therapy to guide patients through breathing, muscle, and whole-body relaxation training via WeChat phone sessions. We also played relaxing music to improve physical and mental comfort and reduce anxiety. (4) Personalized WeChat tips were also offered based on the actual situation of each patient. These included reminders delivered through WeChat about important issues, including: medication regimens, work and rest, meal times and diet, self-protection (e.g., washing hands and wearing a mask), and appropriate in-room exercise. These reminders were designed to help patients develop good habits and promote the rapid recovery of physical and mental health.

2.4 | Measuring tools

Patients completed the 20-item Self-rating Anxiety Scale (SAS) to assess the severity of anxiety (Zung, 1971); the scale showed high reliability and effectiveness (Olatunji et al., 2006). According to the norms for China (Li, Jin, et al., 2016), a cumulative total score of less than 50 points is normal, whereas one of 50–59 points indicates mild anxiety, one of 60–69 points indicates moderate anxiety, and one of 70 points or higher indicates severe anxiety.

The 20-item Self-rating Depression Scale (SDS) was used to evaluate depression (Zung, 1965); the reliability and effectiveness of this scale have been good as shown in Fountoulakis' research (Fountoulakis et al., 2001). According to the norms for China (Jin & Zhang, 2017), a cumulative total score of less than 53 points is normal, one of 53–62 points indicates mild depression, one of 63–72 points indicates moderate depression, and one greater than 72 points indicates severe depression.

The 19-item Acute Stress Disorder Scale (ASDS) was employed to evaluate the severity of ASD symptoms (Bryant et al., 2000). The reliability and effectiveness of the ASDS have been greatly evaluated in studies (Wang et al., 2010). Higher scores reflect more prominent ASD symptoms, and scores higher than 56 are considered to reflect ASD.

Until the end of the intervention, there were no patients who were lost to follow-up or terminated the study. Questionnaires were distributed and collected on the day of, and 14th days after, admission in the isolation ward, and 288 valid instruments were eventually recovered, reflecting an effective response rate of 100%. No cases were excluded during data analysis.

2.5 | Statistical analysis

The data were statistically analyzed using SPSS 22.0 statistical software. Continuous data are expressed as means \pm SD. Discrete data were analyzed via Chi-square tests and continuous data were analyzed by *t* tests. $p < .05$ was set as the threshold for statistical significance.

3 | RESULTS

3.1 | Comparison of characteristics of the patients between the two groups

There were no differences in the gender, age, marriage status, education, occupation status between the two groups, as shown in Table 1, which showed the two groups possessed comparability.

3.2 | Comparison of anxiety, depression, and acute stress disorder score between the two groups

This study evaluated anxiety, depression, and acute stress disorder in two groups of suspected NCP patients on the day of admission and on the 14th day after admission. The results are shown in Table 2. There were no differences in SAS, SDS, or ASDS scores between the control and intervention groups at admission. However, the

TABLE 1 Comparison of anxiety, depression, and acute stress disorder score between the two groups ($N = 48$)

Items	Control group		Intervention group		X_2 or t	p	
	n	%	n	%			
Gender	Men	12	50	10	41.7	0.34 ^a	.562
	Women	12	50	14	58.3		
Age (years) mean \pm SD		37.80 \pm 14.30		47.40 \pm 16.02		-1.74 ^b	.089
Marriage status	Unmarried	2	8.3	2	8.3	0.36 ^a	.836
	Married	20	83.3	21	87.5		
	Divorce and widowed	2	8.3	1	4.2		
Education	Primary or below	4	16.7	3	12.5	4.25 ^a	.235
	Junior high	2	8.3	7	29.2		
	Senior or secondary	8	33.3	4	16.7		
	College or above	10	41.7	10	41.7		
Occupation	Staff	12	50	9	37.5	5.93 ^a	.205
	Farmer	4	16.7	8	33.3		
	Student	0	0	1	4.2		
	Others	5	20.8	1	4.2		
	Jobless	3	12.5	5	20.8		

^a χ^2 score.

^b t score.

TABLE 2 Comparison of anxiety, depression, and acute stress disorder score between the two groups ($N = 48$)

Items		Control group	Intervention group	<i>t</i>	<i>p</i>
		Mean \pm SD ($n = 24$)	Mean \pm SD ($n = 24$)		
SAS score	Admission	51.04 \pm 8.70	52.25 \pm 10.26	-0.44	.662
	14th day	46.50 \pm 7.18	41.29 \pm 6.95	2.55	.014 ^a
SDS score	Admission	45.54 \pm 6.03	43.88 \pm 6.83	0.90	.375
	14th day	41.71 \pm 7.61	33.88 \pm 6.44	3.85	.000 ^b
ASDS score	Admission	50.29 \pm 6.93	49.29 \pm 6.18	0.53	.600
	14th Day	46.75 \pm 5.12	42.79 \pm 3.71	3.07	.004 ^b

Abbreviations: ASDS, Acute Stress Disorder Scale; SAS, Self-rating Anxiety Scale; SDS, Self-rating Depression Scale.

^a $p < .05$ vs. control group in SAS Score.

^b $p < .01$ vs. control group in SDS and ASDS score.

situation changed on the 14th day after admission. Compared with the control group, the intervention group had a statistically significantly lower SAS score. The SDS and ASDS scores of the intervention group were also significantly lower than those of the control group.

4 | DISCUSSION

The current epidemic is very serious, and doctors, nurses, patients, and the general public urgently need different levels of psychological interventions (Jiang et al., 2020). Indeed, national psychological guidelines have been issued to guide local governments in efforts to provide appropriate mental health education for different groups of people. Crisis intervention services designed to help the public view the epidemic in terms of the known scientific facts have also been established to reduce the psychological impact and harm of the epidemic and promote social harmony and stability. This study, which was performed in response to the national call to action, took the lead in implementing a psychological intervention for suspected patients through WeChat. The results showed that, 14 days after admission, the intervention group were significantly less anxious and depressed and significantly less likely to show ASD symptoms than the control group.

The NCP epidemic has become a pandemic (Cucinotta & Vanelli, 2020). At this point, China is not the only country in which medical personnel are overworked and exhausted. Indeed, the healthcare systems of other developed countries are also severely strained (Tanne et al., 2020), and many countries have mobilized retired medical personnel to try to solve the problem of understaffing. However, this approach has had only limited success. One new trend in healthcare delivery involves using information technology to test new

nursing models; this not only saves personnel but also enables patients to get better care. Our research suggests that an online psychological intervention through WeChat can have a beneficial impact on the mental health of suspected patients, and we recommend its use in additional groups, such as confirmed patients and front-line medical and other workers so that more people can receive early mental health intervention.

Although the epidemic has been effectively controlled in China, its lasting psychological impact on diagnosed and suspected patients—and even on the general public—cannot be ignored. The WeChat-based psychological interventions can be used to provide long-term effective psychological intervention for suspected NCP patients when they are released from quarantine; this will become the focus of our next study. However, the epidemic in this area is not as severe as Wuhan, and the sample size becomes a limit of this study.

5 | CONCLUSION

The NCP epidemic is ongoing, creating a major global demand for mental health services. This study adopted a WeChat-based network psychological intervention and found that it can reduce the anxiety, depression, and stress of suspected NCP patients. Although this is a pilot study with a small sample size, it provides a basis for future studies of larger conclusive randomized controlled trials and long-term studies.

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CONFLICT OF INTEREST

There are no conflicts of interest.

AUTHOR CONTRIBUTIONS

Jing Hu made significant contributions to the concept and design of this research, conducted data analysis and drafted the manuscript. Zhiyue Cai participated in data collection and manuscript revision. Xiaoli Ma made a significant contribution to the conception and design, rigorously reviewing the manuscript and supervising the entire process. All authors read and approved the final manuscript.

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