COVID-19 Outbreak in China: Use of a Smartphone App (Social Media) for Rapid Assessment of Nursing Psychological and Physical Stress at the Epicentre of the Outbreak in Wuhan and Local Provinces and Follow-Up When Returned to Normal Residence and Duties

Ren Yang[1], Rong-Mei Li[2], Leonard M Shapiro[3*]

[1]Hospital of Chengdu University of TCM, Chengdu, Sichuan, China; [2]West China Hospital, Sichuan University, Chengdu, Sichuan, P.R. China; [3]Royal Papworth Hospital, Cambridge, UK

ABSTRACT

Introduction: Stress managing severely ill patients is known to can jeopardise the mental health of nurses. The presence of COVID-19 with its known risks to health care staff potentially exacerbates this distress. We sought to examine the mental health of female nurses who had volunteered to work in the epicentre of the pandemic in wuhan.

Methods: We undertook the initial survey (standard questionnaire) early in the disease on the 20/1/20 and a follow up was obtained on the return of the staff to their usual residence/work. We used a novel rapid and repeatable health care survey using the mini programmes in WeChat

Results and Discussion: The WeChat surveys produced a rapid and moderately prolific response. The vast majority were in Wuhan or surrounding districts. There was a significant reporting of unhappiness and emotional exhaustion which improved on follow-up and nursing felt that their work was valuable. They had real concerns for their own, colleagues and family safety

Conclusion: The use of a WeChat survey app proved most useful in obtaining rapid and repeatable surveys as this difficult time. I could be useful for the examination of staff wellbeing in similar situations.

Keywords: COVID-19; Coronavirus in China; Nursing staff; Psychology; Mental health

INTRODUCTION

Even before COVID-19 health care was stressful and burnout is common [1-3]. The coronavirus threatens to exacerbate stress felt by health care staff and it has been shown in similar situations that the distress persists for a considerable period after exposure. Nursing staff from throughout China volunteered to care for acutely unwell patients at the epicentre of the virus outbreak in a risk environment with clear knowledge of the danger for their own health. We examined the use of a widely available social media platform (Wechat) to rapidly assess the physical and psychological well-being of nursing staff working in the epicentre of the COVID-19 very soon after the outbreak and again when they returned to their normal activities in their usual place of residence [4,5].

METHODS

A WeChat group was established of the female nurse volunteers in Wuhan and surrounding districts. A questionnaire in mandarin was designed to assess physical and psychological well-being of nurses (Table 1). Within WeChat there is a mini programme which facilitates anonymised surveys and the questionnaire was transmitted to 443 whom 370 (83%) replied initially and 280 on follow-up (63%).

The first question asked for consent. The primary outcome measure was the prevalence of stress and anxiety and post-

traumatic stress disorder. Descriptive statistics were used to determine distributional properties. Pearson's chi squared and student's t-tests were used to compare categorical and continuous out-comes.

Table 1: Questionnaire to assess physical and psychological well-being of nurses.

Questions	Response	Not at all	A little	Generally agree	Strongly agree	Fully agree	
I felt happy at work	Initial	29.46%	7.57%	45.14%	11.62%	6.22%	
	Follow-up	6.07%	11.07%	41.43%	35.71%	5.71%	P<0.01
Did I find my work valuable	Initial	0.81%	11.89%	13.51%	38.38%	35.41%	
	Follow-up	0.71%	3.57%	11.79%	23.93%	60.00%	P<0.01
Am I satisfied with my work	Initial	2.70%	9.73%	31.35%	32.97%	23.24%	
	Follow-up	2.14%	7.86%	23.93%	40.36%	25.71%	NS
When I'm dealing with a difficult job, I feel like I'm on top of things.	Initial	6.76%	13.51%	40.54%	30.27%	8.92%	
	Follow-up	4.64%	12.86%	37.86%	33.21%	11.43%	NS
Does my work mean anything to me?	Initial	1.62%	9.46%	20.54%	36.76%	31.62%	
	Follow-up	0.36%	3.21%	4.29%	17.14%	75.00%	P<0.01
Have I made a professional contribution in this area?	Initial	5.95%	17.30%	37.84%	25.68%	13.24%	
	Follow-up	5.00%	17.50%	22.14%	36.79%	18.57%	NS
Fear of work	Initial	35.14%	34.86%	21.89%	4.86%	3.24%	
	Follow-up	36.07%	17.86%	32.50%	7.86%	5.71%	NS
Exhaustion at work	Initial	17.57%	38.38%	24.32%	14.05%	5.68%	
	Follow-up	36.07%	28.21%	24.64%	7.86%	3.21%	NS
Lack of enthusiasm for work	Initial	46.49%	20.27%	25.41%	4.59%	3.24%	
	Follow-up	40.00%	23.93%	32.86%	1.79%	1.43%	NS
Emotional exhaustion at work	Initial	30.81%	34.32%	27.30%	5.41%	2.16%	
	Follow-up	43.93%	11.79%	3.93%	2.50%	2.14%	P<0.01
During the outbreak, I felt a lack of empathy for patients	Initial	75.95%	6.76%	9.73%	3.78%	3.78%	
	Follow-up	51.43%	30.00%	10.71%	4.29%	3.57%	NS
During the outbreak, I felt a lack of empathy for my colleagues	Initial	80.81%	5.68%	9.46%	2.16%	1.89%	
	Follow-up	82.86%	7.50%	4.64%	3.21%	1.79%	NS
Making me insensitive to the feelings/ emotions of others during the outbreak	Initial	67.30%	12.97%	15.14%	2.43%	2.16%	
	Follow-up	50.36%	22.86%	16.43%	6.79%	3.57%	NS

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The fight against the epidemic makes my conversations with patients less interesting	Initial	74.86%	8.38%	14.86%	0.54%	1.35%	
	Follow-up	79.29%	12.86%	4.29%	2.13%	1.43%	NS
Fighting the epidemic has reduced my contact with patients	Initial	69.19%	15.68%	11.89%	1.89%	1.35%	
	Follow-up	75.71%	11.79%	8.57%	2.50%	1.43%	NS
Fighting the epidemic has made me less connected to my colleagues	Initial	63.51%	21.62%	10%	3.24%	1.62%	
	Follow-up	88.21%	8.57%	2.14%	1.07%	0.00%	NS

RESULTS

There were 370 initial replies within 36 hours of broadcast (dates 18/1 to 19/1/20) of which were women aged 20-50 and 57% were aged 20-30. At follow-up (03/04/2020) there was a similar response time and age distribution.

Ninety six percent were in tertiary care (speciality) mostly in Wuhan or nearby fever/isolation environments and at follow up all had returned to normal duties and residence after a 14 day period of isolation in a hotel.

Most describe being very (29.5%) or relatively unhappy (7.6%) initially and at follow-up this fell to 6%and 11% respectively with a corresponding rise to reports of happiness (p<0.01).

Initially and at follow-up the nurses report their work is satisfying and valuable and important to them as individuals. However, the data suggests that on return there was an increase in the sense of being valuable from 35.4 to 60% (p<0.01) (Figure 1).
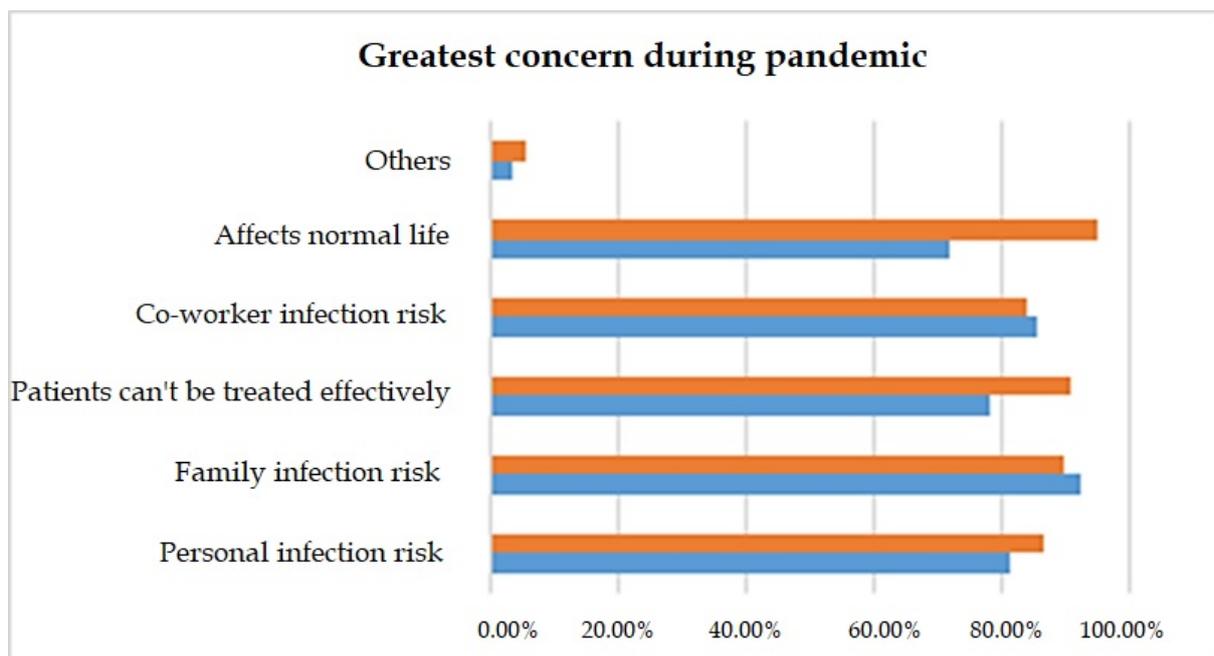
Figure 1: Responses to questions of concerns during pandemic initial response in red, follow-up in blue.

- There was no change is reporting of physical exhaustion similarly for enthusiasm for working.
- Paradoxically despite the personal risks, most report not being scared of working and this did not significantly change on follow-up.
- The reporting of not being emotional exhausted fell from 30.8 to 44% on follow-up (p<0.1).
- There was a very real fear of personal, family and co-worker risk of infection and inability to effectively treat the patients but this did not significantly change on follow-up.

- The nurses reported that they retained empathy and contact with patients and staff. However, there is a concern of increasing fatigue and 'burnout'.

DISCUSSION

The use of social media offers an opportunity to rapidly assess staff attitude and their physical and psychological well-being in an uncertain and high risk situation [1-5].

WeChat is the world's largest social media platform with over one billion users predominantly in China. It is now used as the primary method of communication between health care workers.

Within this App is a mini programme which facilitates conducting surveys. Having established an appropriate WeChat group, a survey can be delivered rapidly and in this study we had all the replies within 36 hours. A similar response was found to the follow-up survey with a reasonable response. This method, offers an opportunity to obtain rapid and repeated assessment of staff moral and the immediate nature of this survey method allows prompt attention to the very real concerns that staff in any country would have in the face of this untreatable potentially global pandemic. This technique allows for the rapid and repeated assessment of isolated staff. This survey tool could be useful to inform training on psychological and physical stress and how to develop resilience and suggests that such training should be designed in preparedness in the event of another outbreak.

In the longer term looking at Nurses stress resilience and burnout, this form of App based questionnaire could be a useful tool in informing our training on psychological stress, burnout and developing resilience. Nursing staff are a real risk of burnout and there are many anecdotal reports that mental health had declined during this pandemic. For example it could be demonstrated that there is an increase in the scores since the outbreak happened. This is a strong argument for saying stress resilience training for hospital staff is necessary. Also, there may be important that a proactive training programme that should be developed that could be designed to prepare medical staff for the event of another outbreak. It is planned to use similar techniques in a large number of medical staff across multiple regions in china.

CONCLUSION AND LIMITATIONS

Considerations of reliability and repeatability of his type of survey are uncertain. Staff who had nobly volunteered were under considerable stress, so there may have been a societal bias with nurses wishing to provide a positive response in this time of a national emergency and may felt 'unable' or inhibited to express their real concerns.

The repeat study when the nurses return to normal duties showed only small changes to attitudes to work.

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CONFLICT OF INTEREST

None declared.

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