

Short Communications

Is quarantine related to immediate negative psychological consequences during the 2009 H1N1 epidemic? [☆]

Yongguang Wang, M.Med., Ph.D.(cand.)^{a,b}, Baihua Xu, M.Psy.^{a,*}, Guoqiu Zhao, M.Med.^b, Rifang Cao, M.D.^b, Xiaoyan He, M.D.^b, Sufen Fu, M.D., M.Med.^c

^aDepartment of Psychology and Behavioral Sciences, Zhejiang University, Hangzhou, Zhejiang Province 310028, PR China

^bDepartment of Mental Health, Hangzhou Center for Disease Control and Prevention, Hangzhou, Zhejiang Province 310021, PR China

^cHangzhou Normal University, Hangzhou, Zhejiang Province 310036, PR China

Received 7 April 2010; accepted 1 November 2010

Abstract

Objective: To investigate whether being quarantined to contain H1N1 flu transmission is related to immediate negative psychological consequences or not.

Methods: Immediate psychological consequences were evaluated with the 20-item Self-Report Questionnaire (SRQ-20) and the Impact of Event Scale–Revised (IES-R) among 419 undergraduate students (176 being quarantined and 243 being nonquarantined).

Results: No significant difference was found between the quarantined group and the nonquarantined group for IES-R screening-positive rate or SRQ-20 screening-positive rate. Multinomial logistic regression analyses indicated that dissatisfaction with control measures was the significant predictor of both SRQ-20 positive screening (OR=2.22) and IES-R positive screening (OR=2.22).

Conclusion: These results are consistent with the conclusion that quarantine does not have negative psychological effects under these circumstances.

© 2011 Elsevier Inc. All rights reserved.

Keywords: 2009 H1N1 Flu; Immediate psychological consequences; Undergraduate student; Quarantine

1. Introduction

Immediate negative psychological impact and long-term psychiatric complications have been reported in SARS survivors [1–7]. Quarantine as an effective measure for preventing and controlling pandemic influenza has been confirmed [8,9]. However, previous literature also reported that quarantine can cause psychological harm during SARS outbreak [10]. On 25 August 2009, a mass infection of 2009 H1N1 flu was confirmed in Qiangjiang College of Hangzhou Normal University. This study aimed to examine

whether the immediate negative psychological consequences were related to quarantine or not.

2. Methods

A total of 444 undergraduate students were confirmed as nonsuspected H1N1 flu cases involved in the mass infection of the 2009 H1N1 flu. Twenty-five students were excluded because some required items were missing. Finally, 176 undergraduate students who were quarantined as close contacts for 7 days (i.e., quarantined group) and 243 nonsuspected individuals without any experience of quarantine (i.e., nonquarantined group) were included. The study was approved by the local ethics committee of Hangzhou Center for Disease Control and Prevention. Written consent was acquired. The survey was completed for all participants at the end of the quarantine period (i.e., 7 days after onset of the epidemic).

[☆] This work was supported by the Science and Technology Bureau of Hangzhou (20080333B16; 20090833B130) and by the Health Bureau of Zhejiang Province (2009B136).

* Corresponding author. Tel.: +86 571 88273337; fax: +86 571 88273326.

E-mail address: xubaihua305@126.com (B. Xu).

Table 2
Multinomial logistic regression model: ORs and 95% CIs for SRQ-20 positive screening and IES-R positive screening, respectively

	SRQ-20 positive screening		IES-R positive screening	
	OR (95% CI)	P	OR (95% CI)	P
Male gender (reference)				
Female gender	2.29 (1.26–4.17)	.007	0.74 (0.45–1.23)	.245
Being nonquarantined (reference)				
Being quarantined	0.80 (0.45–1.41)	.436	0.80 (0.49–1.32)	.379
Satisfaction with control measures (reference)				
Dissatisfaction with control measures	2.22 (1.28–3.85)	.005	2.22 (1.37–3.60)	.001
No perceived health hazards (reference)				
Perceived health hazards	1.69 (0.80–3.59)	.170	4.10 (1.73–9.69)	.001

control measures in the quarantined male group than in the nonquarantined male group (OR=0.54, 95% CI=0.29–0.99). Table 1 shows more details.

Multinomial logistic regression analyses indicated that dissatisfaction with control measures (OR=2.22, $P<.01$) and female gender (OR=2.29, $P<.01$) were the significant predictors of SRQ-20 positive screening. Perceived health hazards (OR=4.10, $P<.01$) and dissatisfaction with control measures (OR=2.22, $P<.01$) were the significant predictors of IES-R positive screening (presented in Table 2).

4. Discussion

We found no immediate negative psychological effect of quarantine in our sample. This finding is inconsistent with the previous research on the immediate effects of SARS by Hawryluck et al. [10], but consistent with reports on the long-term effects of SARS [15]. We speculate that many factors might account for this inconsistency, including the knowledge and understanding of quarantine, and greater morbidity and mortality rate during SARS outbreak. Our results show that dissatisfaction with control measures was significantly associated with both IES-R screening-positive rate and SRQ-20 screening-positive rate. Furthermore, for the greater morbidity and mortality rate during SARS outbreak, individuals involved in SARS outbreak would be likely to experience more stress than the subjects involved in the 2009 H1N1 flu epidemic. The quarantine might also have different psychological effects under different stressful circumstances.

This study has two main limitations. Firstly, since the survey was completed at the end of the quarantine period,

no conclusion can be drawn regarding the long-term psychological effect of quarantine. Secondly, since our sample is undergraduate students, the highly selective study population limits the generalizability of the conclusions to a general population.

In conclusion, our findings suggest that a conclusion of negative psychological effect of quarantine should be considered cautiously.

References

- [1] Cheng SKW, Tsang JSK, Ku KH, Wong CW, Ng YK. Psychiatric complications in patients with severe acute respiratory syndrome (SARS) during the acute treatment phase: a series of 10 cases. *Br J Psychiatry* 2004;184:359–60.
- [2] Chua SE, Cheung V, McAlonan GM, Cheung C, Wong JW, Cheung EP, et al. Stress and psychological impact on SARS patients during the outbreak. *Can J Psychiatry* 2004;49:385–90.
- [3] Cheng SKW, Wong CW. Psychological intervention with sufferers from severe acute respiratory syndrome (SARS): lessons learnt from empirical findings. *Clin Psychol Psychother* 2005;12:80–6.
- [4] Mak IW, Chu CM, Pan PC, Yiu MG, Chan VL. Long-term psychiatric morbidities among SARS survivors. *Gen Hosp Psychiatry* 2009;31:318–26.
- [5] Lee DT, Sahota D, Leung TN, Yip AS, Lee FF, Chung TK. Psychological responses of pregnant women to an infectious outbreak: a case-control study of the 2003 SARS outbreak in Hong Kong. *J Psychosom Res* 2006;61:707–13.
- [6] Sim K, Huak Chan Y, Chong PN, Chua HC, Wen Soon S. Psychosocial and coping responses within the community health care setting towards a national outbreak of an infectious disease. *J Psychosom Res* 2010;68:195–202.
- [7] Kwek SK, Chew WM, Ong KC, Ng AW, Lee LS, Kaw G, et al. Quality of life and psychological status in survivors of severe acute respiratory syndrome at 3 months postdischarge. *J Psychosom Res* 2006;60:513–9.
- [8] Krumkamp R, Duerr HP, Reintjes R, Ahmad A, Kassen A, Eichner M. Impact of public health interventions in controlling the spread of SARS: modelling of intervention scenarios. *Int J Hyg Environ Health* 2009;212:67–75.
- [9] Gupta AG, Moyer CA, Stern DT. The economic impact of quarantine: SARS in Toronto as a case study. *J Infect* 2005;50:386–93.
- [10] Hawryluck L, Gold WL, Robinson S, Pogorski S, Galea S, Styra R. SARS control and psychological effects of quarantine, Toronto, Canada. *Emerg Infect Dis* 2004;10:1206–12.
- [11] Chen S, Zhao G, Li L, Wang Y, Chiu H, Caine E. Psychometric properties of the Chinese version of the Self Reporting Questionnaire 20 (SRQ-20) in community settings. *Int J Soc Psychiatry* 2009;55:538–47.
- [12] Su-ran GUO, Zi-qiang XIN, Liu-na GENG. Reliability and validity of Chinese version of the Impact of Event Scale-Revised. *Chin J Clin Psychol* 2007;15:15–7 [Article in Chinese].
- [13] Styra R, Hawryluck L, Robinson S, Kasapinovic S, Fones C, Gold WL. Impact on health care workers employed in high-risk areas during the Toronto SARS outbreak. *J Psychosom Res* 2008;64:177–83.
- [14] Feinstein A, Owen J, Blair N. A hazardous profession: war, journalists and psychopathology. *Am J Psychiatry* 2002;159:1570–5.
- [15] Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis* 2006;12:1924–32.