The immediate mental health impacts of the COVID-19 pandemic among people with or without quarantine managements

In China, the Corona Virus Disease 2019 (COVID-19) was first identified in the city of Wuhan and had spread rapidly across the whole country. To control COVID-19 pandemic, Chinese government had implemented a range of strict quarantine managements for different population. Patients with COVID-19 were isolated in hospital, whereas close-contacts and the frontline medical personnel were quarantined in hotel. Notably, all the residents were under home-quarantine during the peak of pandemic, except those who guaranteed the basic functions of a city. These critical control measures substantially mitigated the spread of COVID-19, with conceivable impacts on people's daily life. We, here, use a mental health survey data to test that whether the mental health problems were related to quarantine or not.

Data was gathered with a mobile app called "Sojump" (www.sojump.com) after obtaining informed consent (from Feb. 12, 2020 to Mar. 17, 2020). In total, 1443 participants with quarantine (i.e., 206 close-contacts and 320 frontline medical personnel under hotel-quarantine, and 917 public residents under home-quarantine) and 836 participants without quarantine were recruited (i.e., 538 non-frontline medical personnel and 298 community support workers). The survey was completed after more than 10 days in quarantine and the same month for the participants with and without quarantine, respectively. The current work was approved by the ethics committees of the Fifth Hospital of Ruian. The 20-item Self-Report Questionnaire (SRQ-20), 7-item Generalized Anxiety Disorder Scale (GAD-7), and 9-item Patient Health Questionnaire (PHQ-9), were administered to screen the general psychological symptoms (i.e., ≥ 7 in SRQ-20), anxiety (i.e., ≥ 5 in GAD-7) and depression (i.e., ≥ 5 in PHQ-9), respectively. The Cronbach's alpha for SRQ-20, GAD-7, and PHQ-9 was 0.884, 0.935, and 0.913, separately. In addition, participants were required to rate their subjective perception of impacts on daily life due to COVID-19 pandemic (0 – not at all; 1 – affected a little; 2 – affected a lot; and 3 – extremely affected).

No significant difference was found for the screening-positive rate of SRQ-20, GAD-7, and PHQ-9 between participants with and without quarantine (all $p \geq 0.303$). Logistic regression revealed that the screening-positive rate of SRQ-20 (OR = 3.593, 95% CI = 3.020–4.276), GAD-7 (OR = 4.686, 95% CI = 3.937–5.579), and PHQ-9 (OR = 4.313, 95% CI = 3.640–5.111) were significantly associated with impacts on daily life (all $p < 0.001$), but not the variable of with/without quarantine (all $p \geq 0.303$) or different-group (all $p \geq 0.614$). The characteristics for each group and the statistical results were shown in Table 1.

Consistent with other reports (e.g., Li et al., 2020; Wang et al., 2020; Zhang et al., 2020), our results show a relative high prevalence of mental health problems in our sample. However, these mental health problems were not related with the control measure of quarantine, but the impacts on daily life. This finding is unusual but not unique (e.g., Wang et al., 2011; Li et al., 2020). During the H1N1 epidemic, we also found no immediate negative psychological effect of quarantine in college students (Wang et al., 2011). Instead, the dissatisfaction with control measures significantly predicted their negative psychological consequences. We endorse that, if quarantine is essential, the officials should take measures to ensure that this experience is acceptable and tolerable. Further studies should pay more attention to identify the potential psychological risk factors associated with the mental health problems under quarantine.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Table 1
The characteristics for each group and the statistical results.

	Participants with quarantine				Participants without quarantine			Statistics		
	Overall	CC (Hotel-quarantine)	FMP	PR (Home-quarantine)	Overall	CSW	nFMP	With vs. without quarantine	Among groups	Multiple comparisons
	(n = 1443)	(n = 206)	(n = 320)	(n = 917)	(n = 836)	(n = 298)	(n = 538)			
Gender										
The ratio of female	859 (59.5%)	105 (51.0%)	204 (63.7%)	550 (60.0%)	502 (60.0%)	109 (36.6%)	393 (73.0%)	$\chi^2 = 0.059$, $p = 0.808$	$\chi^2 = 114.821$, $p < 0.001$	nFMP > FMP/PR/CC > CSW, all p < 0.05
Age-bracket								$\chi^2 = 1.268$, $p = 0.260$	$\chi^2 = 0.340$, $p = 0.560$	/
≤30 years old	330 (22.9%)	49 (23.8%)	85 (26.6%)	196 (21.4%)	181 (21.7%)	30 (10.1%)	151 (28.1%)			
31–40 years old	629 (43.6%)	85 (41.3%)	150 (46.9%)	394 (43.0%)	346 (41.4%)	122 (40.9%)	224 (41.6%)			
41–50 years old	354 (24.5%)	61 (29.6%)	83 (25.9%)	210 (22.9%)	236 (28.2%)	97 (32.6%)	139 (25.8%)			
≥51 years old	130 (9.0%)	11 (5.3%)	2 (0.6%)	117 (12.8%)	73 (8.7%)	49 (16.4%)	24 (4.5%)			
Educational level								without > with $\chi^2 = 223.825$, $p < 0.001$	$\chi^2 = 319.992$, $p < 0.001$	FMP/nFMP > CSW > PR > CC, all p < 0.05
Primary school level	68 (4.7%)	40 (19.4%)	0 (0%)	28 (3.1%)	5 (0.6%)	5 (1.7%)	0 (0%)			
Second school level	487 (33.8%)	135 (65.5%)	7 (2.2%)	345 (37.6%)	65 (7.8%)	56 (18.8%)	9 (1.7%)			
High school level	888 (61.5%)	31 (15.1%)	313 (97.8%)	544 (59.3%)	766 (91.6%)	237 (79.5%)	529 (98.3%)			
Impacts on daily life								$\chi^2 = 1.402$, $p = 0.236$	$\chi^2 = 2.208$, $p = 0.137$	/
Not at all	379 (26.3%)	63 (30.6%)	94 (29.4%)	222 (24.2%)	235 (28.1%)	80 (26.8%)	155 (28.8%)			
Affected a little	818 (56.7%)	94 (45.6%)	178 (55.6%)	546 (59.5%)	471 (56.4%)	149 (50.0%)	322 (59.9%)			
Affected a lot	203 (14.0%)	44 (21.4%)	42 (13.1%)	117 (12.8%)	108 (12.9%)	55 (18.5%)	53 (9.9%)			
Extremely affected	43 (3.0%)	5 (2.4%)	6 (1.9%)	32 (3.5%)	22 (2.6%)	14 (4.7%)	8 (1.5%)			
Rate of screening-positive										
SRQ-20	216 (15.0%)	14 (6.8%)	41 (12.8%)	161 (17.6%)	112 (13.4%)	58 (19.5%)	54 (10.0%)	$\chi^2 = 1.061$, $p = 0.303$	$\chi^2 = 32.252$, $p < 0.001$	PR/CSW > CC/nFMP, all p < 0.05
GAD-7	320 (22.2%)	38 (18.4%)	63 (19.7%)	219 (23.9%)	174 (20.8%)	82 (27.5%)	92 (17.1%)	$\chi^2 = 0.579$, $p = 0.447$	$\chi^2 = 17.262$, $p = 0.002$	all p greater than 0.05
PHQ-9	319 (22.1%)	26 (12.6%)	68 (21.3%)	225 (24.5%)	174 (20.8%)	77 (25.8%)	97 (18.0%)	$\chi^2 = 0.522$, $p = 0.470$	$\chi^2 = 21.686$, $p < 0.001$	PR/CSW > CC, PR > nFMP, all p < 0.05

Notes for Table 1: CC, group of close-contacts; FMP, group of frontline medical personnel; PR, group of public residents; CSW, group of community support workers; nFMP, group of non-frontline medical personnel; Pearson chi-square test for ratio; linear-by-linear association test for distribution; Bonferroni correction for multiple comparisons.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.bbi.2020.04.045.

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