Preplanned Studies

Online Survey on Accessing Psychological Knowledge and Interventions During the COVID-19 Pandemic — China, 2020

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Summary

What is already known on this topic?

The public was at elevated risk of mental health illnesses during the coronavirus disease 2019 (COVID-19) pandemic, so accessibility to psychological knowledge and interventions is vital to promptly respond to mental health crises.

What is added by this report?

During the pandemic period, 40,724 (71.9%) participants reportedly had access to psychological knowledge, and 36,546 (64.5%) participants had accessed information on psychological interventions. Participants who were male, unmarried, living alone, divorced or widowed, or infected with COVID-19 were less likely to access psychological knowledge and intervention.

What are the implications for public health practice?

Governments should pay more attention to formulate policies, popularize psychological education, and provide mental health services online or in the community.

The public was at elevated risk of mental health problems during the coronavirus disease 2019 (COVID-19) pandemic. In this article, we investigated the pattern and risk factors of accessing psychological information during the pandemic in China. From February 28 to March 11, 2020, a cross-sectional online survey was conducted in all provincial-level administrative divisions (PLADs) of China to obtain general demographic characteristics, access history for psychological knowledge and interventions, psychological status, and other information. Multivariable logistic regression was used to explore the influencing factors of accessing psychological information and intervention among the general population. A total of 56,679 people were included in the survey. During the pandemic period, 40,724 (71.9%) reported had access to psychological knowledge, and 36,546 (64.5%) people accessed information on psychological intervention. Governments and professionals need to pay more attention to increase the accessibility of mental health resources during the pandemic in the future.

COVID-19 has spread across the world and galvanized global action since its emergence in late December 2019 (*1*). The unpredictability and uncertainty of the COVID-19 pandemic, associated containment strategies, and financial losses are among the major stressors that undoubtedly contributed to widespread emotional distress and increased the risk for psychiatric illness associated with COVID-19 (*2*). The prevalence of depression, anxiety, insomnia, and other mental health problems was high among COVID-19 patients, healthcare workers, and the general population (*3*–*4*). The World Health Organization (WHO) Director-General estimated that the COVID-19 pandemic had impacted the mental health of millions of people, yet relatively few people have access to quality mental health services (*5*). The high burden of mental health problems calls for earlier psychological interventions and timely mental health responses during the COVID-19 pandemic (*2*).

China has started to address the increasing need for mental health services as the Healthy China Action 2030 plan implemented a series of programs including improving mental health literacy of residents (*6*). After the emergence of COVID-19, a series of mental health measures were undertaken to address the demands of COVID-19 mental health concerns by adapting mental health services from China, other national governments, and international organizations (*2*,*7*–*8*). This study assessed the demographics and access histories of psychological knowledge and interventions to provide evidence for policymakers and popularize psychological health resources for China's public in the COVID-19 era.

This cross-sectional online survey was conducted from February 28, 2020 to March 11, 2020. A questionnaire was designed during the pandemic and

delivered through an online e-health platform Joybuy, which is an e-commerce platform launched by Jingdong for the trading of medicine-related products as detailed in our previous study (*3*). Written informed consent was received online before the respondents began the questionnaire. A total of 56,932 participants provided informed consent and submitted the questionnaires, and after the quality control by age, 56,679 participants from all PLADs in China were included.

The access histories of psychological knowledge and interventions were measured by the following question: "Did you access the information about psychological knowledge/psychological interventions before or during the COVID-19 pandemic through the media (TV, mobile phone, internet, newspaper, etc.)?" Psychological knowledge refers to causes, diagnoses, symptoms, preventive measures, and basic coping strategies to alleviate the psychological effects of common mental disorders such as depression, anxiety, insomnia, and post-traumatic stress disorder. The timing "before the pandemic" referred to daily life before the pandemic, and "during the pandemic" referred to the period between the national state of emergency being declared and the time answering the questionnaire. Self-reported difficulties in accessing the information before and during the pandemic were measured using the visual analogue scale (VAS), which ranged from 0 (no difficulty at all) to 10 (very difficult).

To explore factors potentially associated with accessing psychological knowledge and interventions, univariate logistic regression was performed followed by multivariable logistic regression analysis to calculate the odds ratios (ORs) and 95% confidence intervals (95% CI) of possible confounders and adjusting for potential covariates. The statistical analyses were performed using SPSS statistical software (IBM Corporation, version 25.0).

The mean±SD age of the participants was 36.0±8.2 years, 27,149 (47.9%) of them were male, 44,274 (78.1%) were married or cohabiting. Additional demographic and characteristic information was presented in Table 1.

Overall, 40,724 (71.9%) of the participants accessed psychological knowledge during the COVID-19 pandemic, which was higher than the 33,553 (59.2%) before the pandemic, and 36,546 (64.5%) participants accessed information on psychological interventions, which was also higher than the 27,043 (47.7%) before the pandemic (Table 2). Individuals with and without mental health symptoms had higher rates of accessing both psychological knowledge and interventions during the pandemic than before the pandemic.

Multivariable logistic regression analyses showed that the participants who were male (OR=1.42, 95% CI: 1.36–1.49), unmarried (OR=1.16, 95% CI: 1.10–1.24), lived alone, divorced, or widowed (OR=1.22, 95% CI: 1.06–1.41), or infected with COVID-19 (OR=2.35, 95% CI: 1.27–4.34) had less chance to access psychological knowledge. Meanwhile, people who were older (aged 41–50 years: OR=0.80, 95% CI: 0.74–0.86; >50 years: OR=0.68, 95% CI: 0.60–0.77; reference group: 18–30 years), were frontline workers (OR=0.85, 95% CI: 0.80–0.91), had a family members served as frontline workers (OR=0.81, 95% CI: 0.77–0.85), experienced quarantine (OR=0.83, 95% CI: 0.79–0.87), traffic restrictions (OR=0.78, 95% CI: 0.73–0.82), community containment (OR=0.85, 95% CI: 0.78–0.93), have mental health symptoms (OR=0.78, 95% CI: 0.75–0.82) and accessed psychological knowledge (OR=0.30, 95% CI: 0.28–0.31) and interventions (OR=0.22, 95% CI: 0.20–0.23) before the pandemic were more likely to access psychological knowledge during the pandemic.

Similarly, the factors that deteriorated the odds of obtaining information on psychological interventions were being male (OR=1.44, 95% CI: 1.38–1.50), unmarried (OR=1.11, 95% CI: 1.05–1.18), living alone, divorced, or widowed (OR=1.22, 95% CI: 1.06–1.40), and infected with COVID-19 (OR=1.86, 95% CI: 1.00–3.45). The protective factors were being older (aged 41–50: OR=0.82, 95% CI: 0.76–0.88; >50: OR=0.71, 95% CI: 0.64–0.80), living in the countryside (OR=0.86, 95% CI: 0.78–0.94), being frontline workers (OR=0.79, 95% CI: 0.74–0.84), having a family members or friends that were frontline workers (OR=0.81, 95% CI: 0.77–0.85), experiencing quarantine (OR=0.86, 95% CI: 0.82–0.90), traffic restrictions (OR=0.76, 95% CI: 0.72–0.80), community containment (OR=0.80, 95% CI: 0.74–0.88), having symptoms of mental health disorders (OR=0.72, 95% CI: 0.69–0.76), and accessing psychological knowledge (OR=0.57, 95% CI: 0.54–0.60) and interventions (OR=0.12, 95% CI: 0.12–0.12) before the pandemic (Table 3).

DISCUSSION

This nationwide survey showed that about 71.9%

TABLE 1. Demographic characteristics and epidemic-related information for the sample during the COVID-19 pandemic — China, 2020.

Factors	Total, N (%)	No. of people accessing psychological knowledge (%)	No. of people accessing information of interventions (%)
Overall	56,679	40,724 (71.9)	36,546 (64.5)
Age, years			
18–30	16,142 (28.5)	11,548 (71.5)	10,537 (65.3)
31–40	26,824 (47.3)	18,978 (70.8)	16,890 (63.0)
41–50	11,215 (19.8)	8,283 (73.9)	7,406 (66.0)
>50	2,498 (4.4)	1,915 (76.7)	1,713 (68.6)
Gender			
Female	29,530 (52.1)	21,847 (74.0)	19,767 (66.9)
Male	27,149 (47.9)	18,877 (69.5)	16,779 (61.8)
Area type			
Urban	52,839 (93.2)	37,862 (71.7)	33,896 (64.1)
Rural	3,840 (6.8)	2,862 (74.5)	2,650 (69.0)
Level of education			
Less than senior school	2,084 (3.7)	1,578 (75.7)	1,448 (69.5)
Senior school	7,456 (13.2)	5,780 (77.5)	5,227 (70.1)
College degree or higher	47,139 (83.2)	33,366 (70.8)	29,871 (63.4)
Marital status			
Married or cohabiting	44,274 (78.1)	32,213 (72.8)	28,870 (65.2)
Unmarried	11,135 (19.6)	7,626 (68.5)	6,892 (61.9)
Live apart, divorced, or widowed	1,270 (2.2)	885 (69.7)	784 (61.7)
Monthly family income, RMB			
≤5,000	13,016 (23.0)	9,665 (74.3)	8,771 (67.4)
5,000–7,999	13,663 (24.1)	10,050 (73.6)	9,056 (66.3)
8,000–11,999	12,829 (22.6)	9,270 (72.3)	8,240 (64.2)
≥12,000	17,171 (30.3)	11,739 (68.4)	10,479 (61.0)
History of chronic diseases			
Yes	3,274 (5.8)	2,359 (72.1)	2,068 (63.2)
No or unknown	53,405 (94.2)	38,365 (71.8)	34,478 (64.6)
History of mental disorders			
Yes	161 (0.3)	109 (67.7)	103 (64.0)
No or unknown	56,518 (99.7)	40,615 (71.9)	36,443 (64.5)
Family history of mental disorders			
Yes	396 (0.7)	272 (68.7)	238 (60.1)
No or unknown	56,283 (99.3)	40,452 (71.9)	36,308 (64.5)
Sleep disturbance			
Yes	15,981 (28.2)	11,756 (73.6)	10,642 (66.6)
No	40,698 (71.8)	28,968 (71.2)	25,904 (63.6)
Smoking			
Yes	6,965 (12.3)	5,111 (73.4)	4,543 (65.2)
No	49,714 (87.7)	35,613 (71.6)	32,003 (64.4)

TABLE 1. (Continued)

Factors	Total, N (%)	No. of people accessing psychological knowledge (%)	No. of people accessing information of interventions (%)
Alcohol consumption			
Yes	5,145 (9.1)	3,789 (73.6)	3,423 (66.5)
No	51,534 (90.9)	36,935 (71.7)	33,123 (64.3)
Infection status of COVID-19			
Confirmed or suspected	100 (0.2)	60 (60.0)	59 (59.0)
Uninfected	56,579 (99.8)	40,664 (71.9)	36,487 (64.5)
Have infected family members			
Yes	608 (1.1)	434 (71.4)	397 (65.3)
No	56,071 (98.9)	40,290 (71.9)	36,149 (64.5)
Close contact with patients infected with COVID-19			
Yes	219 (0.4)	157 (71.7)	143 (65.3)
No	56,460 (99.6)	40,567 (71.9)	36,403 (64.5)
Live in Hubei Province during pandemic			
Yes	2,352 (4.1)	1,662 (70.7)	1,522 (64.7)
No	54,327 (95.9)	39,062 (71.9)	35,024 (64.5)
Have you been to Hubei Province before the outbreak			
Yes	2,452 (4.3)	1,727 (70.4)	1,585 (64.6)
No	54,227 (95.7)	38,997 (71.9)	34,961 (64.5)
Participation of frontline work related to the outbreak			
Yes	9,725 (17.2)	7,680 (79.0)	7,111 (73.1)
No	46,954 (82.8)	33,044 (70.4)	29,435 (62.7)
Family members were frontline workers			
Yes	17,587 (31.0)	13,646 (77.6)	12,475 (70.9)
No	39,092 (69.0)	27,078 (69.3)	24,071 (61.6)
Experience of traffic restriction			
Yes	44,762 (79.0)	33,002 (73.7)	29,877 (66.7)
No	11,917 (21.0)	7,722 (64.8)	6,669 (56.0)
Experience of community containment			
Yes	53,076 (93.6)	38,444 (72.4)	34,578 (65.1)
No	3,603 (6.4)	2,280 (63.3)	1,968 (54.6)
Experience of quarantine			
Centralized or at home	16,454 (29.0)	12,555 (76.3)	11,389 (69.2)
No	40,225 (71.0)	28,169 (70.0)	25,157 (62.5)
Method of work during the pandemic			
Work at home	7,427 (13.1)	5,330 (71.8)	4,794 (64.5)
Work at institution	29,498 (52.0)	21,009 (71.2)	18,718 (64.5)
Not back to work	19,754 (34.9)	14,385 (72.8)	13,034 (66.0)
Mental health symptoms (depression, anxiety, insomnia, or acute distress)			
Any symptoms	26,680 (47.1)	20,059 (75.2)	18,402 (69.0)
No	29,999 (52.9)	20,665 (68.9)	18,144 (60.5)

TABLE 2. Access history and difficulty accessing psychological knowledge and interventions during the COVID-19 pandemic — China, 2020.

Factors	Before COVID-19 pandemic	During COVID-19 pandemic
Access to psychological knowledge (N, %)		
Total	33,553 (59.2)	40,724 (71.9)
People with mental health symptoms	16,381 (61.4)	20,059 (75.2)
People without mental health symptoms	17,172 (57.2)	20,665 (68.9)
Access to psychological intervention information (N, %)		
Total	27,043 (47.7)	36,546 (64.5)
People with mental health symptoms	13,708 (51.4)	18,402 (69.0)
People without mental health symptoms	13,335 (44.5)	18,144 (60.5)
Difficulty in getting access to psychological intervention information (mean±SD)		
Total	3.31±2.61	3.26±2.52*
People with mental health symptoms	4.01±2.53	4.07±2.43*
People without mental health symptoms	2.69±2.53	2.55±2.38*

* The difference between before and during the pandemic was statistically significant (p<0.05).

and 64.5% of participants had accessed psychological knowledge and interventions during the pandemic. This study identified the associated factors hindering the accessibility of psychological information and intervention during the COVID-19 pandemic among subpopulations, which provided information to improve the availability of mental health services and addressing the mental health wellbeing during the pandemic. Accordingly, the Chinese government has prioritized mental health services since the beginning of the pandemic (*7*), and the National Health Commission of China has published several guiding documents and guidelines for emergency psychological crisis interventions for the COVID-19 epidemic (*9*).

Participants infected with COVID-19 reported less accessibility to information and interventions, and confirmed patients may focus on their own physical condition so they neglect their mental health. The Chinese government implemented programs to improve access to psychological counseling, social work services, and comprehensive psychological rehabilitation for COVID-19 patients, isolation personnel, and their families in the post-pandemic period (*10*). Moreover, more choices for psychological treatment and interventions should be provided for individuals with mental health problems, especially the integration of more online and field psychological resources in the future.

The findings in this study were subject to at least three limitations. First, this was an online survey, and a convenience sampling method was used. Although this study had extensive geographic coverage across China and a large sample size, it was conducted among internet users who were young and highly educated; thus, the representativeness of the sample might be limited. Second, people's accessibility information comes from a single self-reported question and there were no repeated verification problems and detailed resources included in this questionnaire, so the accessibility of psychological resources should be addressed in the future. Third, because this was a cross-sectional study, the associations could only be established at the population level. Future studies, especially large cohort studies of the population, are needed.

Mental health literacy is a target of the Healthy China Action and Healthy China 2030 Plan and a call to action for the general population. Governments, researchers, and educators should pay more attention to formulating policies, popularizing psychological education, and providing mental health services online and in the community.

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TABLE 3. Multivariable logistic regressions of risk factors associated with accessing knowledge and intervention during the COVID-19 pandemic — China, 2020.

Variables	Risk of not accessing psychological knowledge		Risk of not accessing psychological interventions	
	aOR* (95% CI)	*p*-value	aOR* (95% CI)	*p*-value
Age, years				
18–30	1 (Reference)		1 (Reference)	
31–40	0.97 (0.92–1.03)	0.280	1.00 (0.95–1.06)	0.952
41–50	0.80 (0.74–0.86)	<0.001	0.82 (0.76–0.88)	<0.001
>50	0.68 (0.60–0.77)	<0.001	0.71 (0.64–0.80)	<0.001
Gender				
Female	1 (Reference)		1 (Reference)	
Male	1.42 (1.36–1.49)	<0.001	1.44 (1.38–1.50)	<0.001
Areas types				
Urban	–		1 (Reference)	
Rural	–	–	0.86 (0.78–0.94)	0.001
Marital status				
Married or cohabiting	1 (Reference)		1 (Reference)	
Unmarried	1.16 (1.10–1.24)	<0.001	1.11 (1.05–1.18)	<0.001
Live alone, divorced, or widowed	1.22 (1.06–1.41)	0.006	1.22 (1.06–1.40)	0.006
Infection status of COVID–19				
Uninfected	1 (Reference)		1 (Reference)	
Confirmed or suspected	2.35 (1.27–4.34)	0.006	1.86 (1.00–3.45)	0.049
Participation of frontline work related to the outbreak				
No	1 (Reference)		1 (Reference)	
Yes	0.85 (0.80–0.91)	<0.001	0.79 (0.74–0.84)	<0.001
Family members were frontline workers				
No	1 (Reference)		1 (Reference)	
Yes	0.81 (0.77–0.85)	<0.001	0.81 (0.77–0.85)	<0.001
Experienced traffic restriction				
No	1 (Reference)		1 (Reference)	
Yes	0.78 (0.73–0.82)	<0.001	0.76 (0.72–0.80)	<0.001
Experienced community containment				
No	1 (Reference)		1 (Reference)	
Yes	0.85 (0.78–0.93)	0.001	0.80 (0.74–0.88)	<0.001
Experienced quarantine				
No	1 (Reference)		1 (Reference)	
Centralized or at home	0.83 (0.79–0.87)	<0.001	0.86 (0.82–0.90)	<0.001
Mental health symptoms				
No	1 (Reference)		1 (Reference)	
Yes	0.78 (0.75–0.82)	<0.001	0.72 (0.69–0.76)	<0.001
Access to psychological knowledge before pandemic				
Yes	1 (Reference)		1 (Reference)	
No	0.30 (0.28–0.31)	<0.001	0.57 (0.54–0.60)	<0.001
Access to psychological interventions before pandemic				
Yes	1 (Reference)		1 (Reference)	
No	0.22 (0.20–0.23)	<0.001	0.12 (0.12–0.12)	<0.001

* Odds ratio adjusted for age, gender, living areas, education, marriage, income, sleep disturbance, smoke, alcohol, infection status of COVID-19, experience of traffic restriction, community containment and quarantine, participation of frontline work, situations of work, exposing experience, mental health symptoms, and the situations of access to psychological knowledge and information of psychological intervention before the pandemic.

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