ORIGINAL ARTICLE

Comparison of Mental Health Status between Two Periods during Coronavirus Disease 2019 Pandemic in Iranian Adult Population

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Abstract

Background: One unprecedented year after the coronavirus disease 2019 (COVID-19), the pandemic is no longer a short-term stressor; the unremitting/chronic effects of COVID-19 disease is likely to cause impaired physical and mental health upon population and the implemented public health and social measures to limit transmission and reduce mortality and morbidity from COVID-19 expose many people to social isolation, job loss, and economic recession. This study aims to compare mental status and four mental symptoms (somatization, anxiety, depression, and social functions) between two periods during the first year of the COVID-19 pandemic. **Materials and Methods:** Current study consists of two cross-sectional mental health surveys on the Iranian adult population carried out in two periods of March to April 2020 and December 2020 to February 2021 in two important Provinces of Iran (Fars and Khorasan Razavi). In the first survey, 1337 individuals participated in the study and completed the General Health Questionnaire-28, while in the second survey, 1205 participants completed the same questionnaire. **Results:** Among 1337 participants of the first survey, there were 876 (65.5%) females and 461 (34.5%) males with an average age of 37.41±10.58 years. In the second survey, there were 1205 participants with mean age of 33.79±19.57 years. The rates of females and males were 57.7% and 42.3%, respectively. Compared to the first survey, the second one showed that poor mental health condition that was 1.40 (95% confidence interval: 1.17-1.67) times higher based on the age, sex, education, marital status, economic, alcohol, cigarette, water-pipe, and sedative (P<0.001). **Conclusion:** Poor mental health status has increased during the first year of the COVID-19 pandemic. These results revealed that the COVID-19 pandemic was a chronic stressor faced by people every day; therefore, more robust mental health-related considerations must be implemented.

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Introduction

After one unprecedented year of coronavirus disease 2019 (COVID-19), which was first emerged in Wuhan, China, stats show the impacts of the pandemic on over 85 million confirmed cases all around the world [1]. The growing number of over 79000 currently reported cases and over 15000 deaths in the last 24 hours showed that this public health scenario had not finished yet [1]. As the pandemic wears on, uncertainty and fear would arise; moreover, the community health or social measures applied to constrain COVID-19 prevalence and its mortality rate have some adverse effects, including social isolation, job loss, and economic recession [2]. Currently, the pandemic is no longer a short-term stressor, and its unremitting/chronic effects are likely to cause impaired physical and mental health [3].

Iran is one of the prominent Middle Eastern developing countries. The first case of COVID-19 was officially declared on February 19, 2020 [4], and, at the time of writing, as of January 10, 2021, 1.2 million confirmed cases and 56000 deaths were reported in Iran [1]. The initial governmental public health and social responses to the coronavirus crisis were restrictions on gatherings and traveling, social distancing, stay-at-home, and wearing facial mask orders [5]. Despite all of these actions, the progression and transmission of the virus were beyond the anticipations and forced the government to apply more critical restrictions and controls such as multiple strict lockdowns, complete closures of schools, cultural places, and non-essential businesses, travel ban, and transportation limitations [6]. Now, after months of quarantine, prolonged social isolation and loneliness have become a great global mental health concern that could cause lifespan reduction, higher risks of physical and mental morbidities, and even suicidal ideations, especially in high-risk populations [7]. Before the pandemic, Noorbala *et al.* [8] had reported the results of a mental health survey that investigated the adult Iranian population through the General Health Questionnaire-28 (GHQ-28). Results showed that the likelihood of mental disorders was determined to 23.4% among participants, which consisted of 27.6% of women and 19.3% of men [8]. Based on our previous mental health survey carried out during March-April 2020, the first months of the COVID-19 outbreak, in one of the largest provinces of Iran, the rate of mental disorders was found two times higher than in other provinces [9]. Findings showed that 46.1% of participants were suspected of having poor mental health status [9].

Noteworthy results from a meta-analysis of the psychological and mental impact of COVID-19 showed an increase in the prevalence of stress, anxiety, and depression among the general population during the COVID-19 pandemic [10, 11]. As stated in Iran, anxiety [12], depression [13], post-traumatic stress disorder [14], obsessive-compulsive behaviors [15], substance abuse [16], suicidal ideation and attempts, and other symptoms of distress could be induced and/or exacerbated as a result of the various COVID-19-related factors such as fear, stress, anxiety, uncertainties, escalating number of mortalities [17], psychological impacts of the pandemic (such as the global economic recession [18]), increase of the prices of essential and health-related goods, decrease of the income, job loss [19], and the ongoing effects of sanctions and embargo [6, 20, 21].

Consequently, it was hypothesized that since other similar chronic stresses could induce serious physical, cognitive, and psychological symptoms [2], mental health deterioration was greater than expected; therefore, it would require more forceful measures. The current study evaluated a comparison of the mental health conditions and four major mental symptoms, including somatization, anxiety, depression, and social function during the first year of the COVID-19 pandemic.

Materials and Methods

The current study was carried out based on two cross-sectional studies that evaluated the mental health among Iranian adults from March to April 2020 (first period) and December 2020 to February 2021 (second period).

Due to limitations and hazards resulting from face-to-face interactions with the participants, an online questionnaire was applied. Participants were selected randomly from two larg provinces of Iran (Fars and Khorasan Razavi). The link of the questionnaire and online written consent were sent to these random phone numbers. The inclusion criteria were adults with the ability to use smartphones, reading and writing skills. All research participants announced their permission to participate in the study by completing the questionnaires; moreover, the privacy and confidentiality of collected data were ensured. In the first survey carried out from March to April 2020, 1337 participants completed GHQ-28. In the second survey, which was performed from December 2020 to February 2021, there were 1205 participants. GHQ-28 is a valid and reliable scale, which contains 28 questions. It is scored by implementing a Likert scale to evaluate the general mental health status and its main dimensions developed by Goldberg and Hillier (1979) [22, 23]. The validated Persian version was adapted by Noorbala *et al*.[8]; also, results of data collected from GHQ-28 showed that the proposed cut-off point for poor mental health status was more than 23, while Cronbach's alpha was determined to be 0.831 [24]. In addition, GHQ-28 assessed four main dimensions of mental health, including anxiety, social function, somatization, and depression. Each dimension contained seven items, and the cuff-off point for poor mental health was more than 10. Self-report questions about the sexuality, age, educational status, marital status, economic status–which contained the income level based on the self-reports of participants regarding their monthly costs–, history of smoking the cigarette and/or water-pipe, and the abuse of alcohol, sedative, and/or other drugs were included in the questionnaire. The above-mentioned factors were recognized as the main indicators of mental health conditions based on the published literature [25-27].

Ethics Approval and Consent to Participate
This study was approved by the ethics committee of Shiraz University of Medical Sciences (code: IR.SUMS.REC.1399.077). All the participants were asked to submit their written consent forms to participate in this study before completing the questionnaires. All the participants completed the questionnaires willingly and were ensured of the confidentiality of the collected data.

Statistical Analysis
The process of data analysis was carried out using a Statistical Package for Social Sciences Version 19.0 (SPSS Inc., Chicago, IL, USA). Univariate and multiple logistic regression were performed to compute the odds ratio (OR) and the corresponding 95% confidence interval (95% CI) of mental health statuses and dimensions based on periods. P-value less than 0.05 was considered to be statistically significant.

Results

Among 1337 participants of the first survey, there were 876 (65.5%) females and 461 (34.5%) males with the mean age of 37.41 ± 10.58 years. The number of individuals who participated in the second survey was 1205. The rates of females and males were 695 (57.7%) and 510 (42.3%); also, their mean age was 33.79 ± 19.57 years. As represented in Table-1, several factors were statistically significant between the mentioned periods, including age, marital status, educational and income level, and alcohol usage.

Results achieved from the first survey revealed that the likelihood of weak mental conditions, somatization symptoms, distress symptoms, social malfunctions, and depression were 43.8%, 6.8%, 18.0%, 22.5%, and 4.8%, respectively. Furthermore, the findings of the second survey showed that the ratios of all of the above-mentioned factors were 51.6%, 9.6%, 18.3%, 26.5%, 7.1%, respectively.

Based on the univariate logistic regression analysis, the poor mental health status of the second survey was higher than the first one (OR=1.37, 95% CI: 1.17-1.60; P=0.01). Also, the somatization, social malfunction, and depression were increased in the second period (P<0.05). However, there was not any considerable change in the anxiety of both

Table 1. Demographic Characteristics Between Two Time Periods

Variables	Category	First period n (%)	Second period n (%)	P-value
Sex	Male	461 (34.5)	510 (42.3)	<0.001
	Female	876 (65.5)	695 (57.7)	
Marital status	Single	371 (27.7)	615 (51)	<0.001
	Married	966 (72.3)	590 (49)	
Education level	Under diploma	98 (7.3)	147 (12.2)	<0.001
	Diploma	273 (20.4)	368 (30.5)	
	Associate degree	68 (5.1)	29 (2.4)	
	Bachelor	570 (42.6)	576 (47.8)	
	Master degree or higher	328 (24.5)	85 (7.1)	
Income level	Lower income	282 (21.1)	254 (21.1)	<0.001
	Sufficient	668 (50)	448 (37.2)	
	Higher income	387 (28.9)	503 (41.7)	
Cigarette	Yes	174 (13)	190 (15.8)	<0.001
	No	1161 (87)	1015 (84.2)	
Water-pipe	Yes	167 (12.5)	220 (18.3)	<0.001
	No	1169 (87.5)	985 (81.7)	
Alcohol	Yes	197 (14.8)	231 (19.2)	<0.001
	No	1138 (85.2)	974 (80.8)	
Sedatives	Yes	247 (18.5)	155 (12.9)	<0.001
		1087 (81.5)	1050 (87.1)	
Age,y (mean±SD)		37.41±10.58	33.79±19.57	<0.001

surveys (P=0.799). Considering the important factors of age, sex, education, marital status, economic, alcohol, cigarette, water-pipe, and sedative, the poor mental health condition was 1.40 (95% CI: 1.17-1.67; P<0.001) times higher in the second survey compared to the first one (P<0.001). Somatization and depression were also increased by 1.76 (95% CI: 1.29-2.41; P<0.001) and 1.66 (95% CI: 1.14-2.42; P=0.009), respectively. However, anxiety and social malfunction were not significantly changed in both surveys (P>0.05, Table-2).

Discussion

It has been one year since the first detection of coronavirus symptoms in Wuhan, China. However, enough attention has not been paid to the change of mental health conditions since the beginning of the pandemic [28]. It

could be found from the current study that the mental health conditions of Iranians have worsened from the first period to the second period. Three mental health-related subscales, including the somatization, anxiety, and depression symptoms were also exacerbated between these two periods, while the social function was ameliorated. Reports achieved from 2003 Coronavirus SARS, which was a serious acute respiratory syndrome, outbreak indicated long-term dramatic psychosocial effects especially on survivors and health care workers [29, 30] such as fear, loneliness, boredom, anger, and stress-related mental disorders like generalized anxiety disorder and major depression [31-33]. Consequently, a global concern regarding mental health has arisen, and preparation for an integral mental health-related response to the future similar pandemics such as the ongoing COVID-19 pandemic seemed to be critical [34].

Table 2. The Comparison of Mental Symptoms Severity and Dimensions in COVID-19 Pandemic by Logistic Regression

	Variables	No n (%)	Yes n (%)	Unadjusted odds ratio (95% CI)	P-value	Adjusted odds ratio (95% CI)	P-value
Mental disorders							
Time	First period	752 (56.2)	585 (43.8)	1	-	1	-
	Second period	583 (48.4)	622 (51.6)	1.37 (1.17 to 1.6)	<0.001	1.4 (1.17 to 1.67)	<0.001
Somatization							
Time	First period	1246 (93.2)	91 (6.8)	1	-	1	-
	Second period	1089 (90.4)	116 (9.6)	1.46 (1.1 to 1.94)	0.01	1.76 (1.29 to 2.41)	<0.001
Anxiety							
Time	First period	1097 (82)	240 (18)	1	-	1	-
	Second period	984 (81.7)	221 (18.3)	1.03 (0.84 to 1.26)	0.799	1.13 (0.9 to 1.42)	0.278
Social function							
Time	First period	1036 (77.5)	301 (22.5)	1	-	1	-
	Second period	886 (73.5)	319 (26.5)	1.24 (1.03 to 1.49)	0.02	1.16 (0.95 to 1.41)	0.148
Depression							
Time	First period	1273 (95.2)	64 (4.8)	1	<0.001	1	-
	Second period	1120 (92.9)	85 (7.1)	1.51 (1.08 to 2.11)	-	1.66 (1.14 to 2.42)	0.009

CI: Confidence interval, Adjusted by age, sex, education, marital status, economic, alcohol, cigarette, water-pipe, and sedative

One year after the COVID-19 outbreak, the pandemic has changed into a chronic stressor with emerging adverse effects [2]. The previous national mental health surveys on the adult population in 2015 carried out in Iran showed that the likelihood of mental disorders was higher among 23.4% of the cases [8, 35, 36]. Findings revealed that the Iranian mental health conditions were exacerbating during the pandemic, which is in line with most previous studies [7, 9, 16].

Depression
The government imposed nationwide restrictive rules from November to December 2020. A two-week closure of non-essential services, workplaces, and businesses was also applied due to the escalating number of COVID-19 patients, subsequent rise in mortality, and shortage of intensive care unit beds. Commuting into and out of the cities were forbidden, and intra-city transportations were also banned from early night to early morning to avoid the night gatherings. Feelings of loneliness, social detachment, boredom, and restriction of freedom were other concerns in addition to the grief resulting from morbidity and mortality of relatives and sorrowful news [37-39]. These were the notable factors that played a vital role in the exacerbation of mental health conditions from March to December 2020.

Somatization
The aggravation of somatization during the pandemic was another remarkable finding,

which could be compared with results achieved from previous mental health surveys during pandemics [16, 30, 32, 40]. COVID-19 is a disease with a wide range of symptoms; moreover, the incubation period could range from days to weeks, and 30 to 40 % of the infections are asymptomatic [41, 42]. After one year, the disease characteristics, as well as uncertainties about the natural history, disease course, and treatment, could be transformed into chronic unremitting stress and induce everlasting anxiety, irresistible fear of contagion, sense of uncertainty about physical health status, and psychosomatic symptoms [2, 43].

Anxiety and Social Function
Furthermore, social function and anxiety symptoms did not significantly change from the first to the second period. Results showed that despite the existence of knowledge about the virus, multiple mental health tips, and advice of specialized public health agencies [44], COVID-19 is still recognized as a predominant stressor, and people all around the world are still dealing with the pandemic and its complications. However, it is believed that the mentioned knowledge in addition to the advancement of various online facilities and infrastructures, including distance learning, online shopping, telehealth, and telecommunication could gradually relieve the degree of anxiety in general population and ameliorate the social function [45].

Limitations
The first limitation of this study was mainly due to the restricted access to the respondents, such as the limitation in conducting face-to-face interviews due to the pandemic. Second, there was a lack of essential data such as the previous medical history, drug history, etc. Hence, we recommend considering these parameters in future studies.

Conclusion

The current study reported an increase in the general population's psychological symptoms of somatization and depression during the first year of the COVID-19 pandemic. These results also revealed that currently, the COVID-19 pandemic is a chronic everyday stressor, and more robust considerations about mental health conditions are highly required.

Acknowledgments

Conflict of Interest

The authors declare that they have no competing interests.

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