



Psychological Status of Opioid Treatment Service Staff in Tehran, the Epicenter of COVID-19 Outbreak in Iran: A Longitudinal Cohort Study

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Abstract

Background: Coronavirus disease 2019 (COVID-19) is a severe acute respiratory syndrome that emerged in early December 2019. Global proliferation, abrupt increases in confirmed cases, and the risk of self-infection have caused significant stress and anxiety among staff working in opioid treatment services (OTS). The aim of our study was to determine the psychological status of staff working in OTS during the outbreak period of COVID-19 in Tehran.

Methods: In a short-term longitudinal survey, 621 staff members, including physicians, psychologists, nurses, and social workers, who were selected using probability-based online panel. Data was gathered using online questionnaires including the Patient Health Questionnaire-4 (PHQ-4), the Brief Fatigue Inventory (BFI), and the Jenkins Sleep Scale (JSS). Longitudinal assessment of anxiety, depression, fatigue and sleep problems in three periods including pre-outbreak, outbreak, and non-epidemic outbreak was done through the online panel. Data were analyzed by paired t-test and repeated measures correlation.

Results: The rates of anxiety, depression, fatigue, and sleep problems of the staff working in OTS during the outbreak period were significantly higher than that of the pre-outbreak period ($P < 0.001$), and it remained significantly higher during the non-epidemic outbreak and did not decrease significantly ($P > 0.05$). The correlation coefficient between the anxiety, depression, fatigue, and sleep problems was significant in all three periods and the highest correlation was in the outbreak period ($P < 0.001$).

Conclusion: Mental health problems of staff were common during the outbreak of COVID-19. Mental health problems of staff can limit the effectiveness of addiction treatment programs in the long time.

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Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a virus that caused Coronavirus disease 2019 (COVID-19). COVID-19 appeared in early December 2019 (1). On March 11, 2020, the World Health Organization (WHO) raised the global outbreak and the risk of infection to COVID-19 to "very high" and later announced the pandemic of COVID-19 (2-3-4-5). COVID-19 has about 58,000 deaths in Iran so far (03/14/2021). Tehran is the epicenter of COVID-19 in Iran and had the most deaths in this country.

Opioid use disorder (OUD) is a major concern in Iran, and opioid treatment services (OTS) including methadone maintenance treatment (MMT), buprenorphine maintenance treatment (BMT), Suboxone (buprenorphine/naloxone) and opium tincture maintenance treatment (OMT) programs are the most important treatment options for reducing individual and social harms using opioid drugs in Iranian society. Continuous OTS has many benefits for patients and the community. OTS is able to reduce the need for opioid drugs, drug use, and the risk of relapse, and has been shown to reduce the transmission of infectious diseases such as HIV / AIDS and hepatitis (6). Staff working in OTS in Tehran, the capital of Iran, continuously provided outpatient treatment services to patients during the epidemic period of COVID-19. Despite health recommendations from the Iranian Ministry of Health, including reducing the number of days and hours of treatment in health centers, the concerns of staff working in these centers, including physicians, psychiatrists, psychologists, nurses and social workers, have been palpable. Because COVID-19 spreads through different routes such as air and close interaction, it can cause infections in medical centers and hospitals. COVID-19 causes many medical staff to become infected in a short time while treating patients (7). It is even common for patients to hide their exposure to high-risk areas of the coronavirus in order to receive timely treatment. Thus, the risk of self-inflicted infection causes enormous psychological stress, leading to anxiety and depression in medical staff. Global proliferation and sudden increase in confirmed cases have caused significant stress and anxiety among front-line staff fighting with the pandemic of COVID-19 (7). Due to the high risk of infection, medical-psychiatric staff members are under great pressure when working with these patients (8). Mental health problems can develop in isolated and quarantined individuals, leading to

psychological and emotional distress (9). In addition, health care professionals who work continuously and in isolation in different parts of the hospital can experience the confinement phenomenon, which is a type of collective hysteria (10-11-12). Due to these critical conditions, feelings of illness or fear of death, disability, frustration, fatigue, exhaustion and burnout (persistent flow of psychological stressors and ineffectiveness of long-term coupling mechanisms) and negative emotions may occur, and along with life stressors, physical, mental and emotional health challenge the staff (8).

Previous studies have examined the knowledge and attitudes of medical staff in Chinese psychiatric hospitals during the outbreak period of COVID-19 (4). Also, in a study by Xu et al. (7), the levels of anxiety and depression in the surgery department staff during the outbreak period of COVID-19 in China were assessed. However, no research has been performed on the psychological status of staff working in the addiction service. The aim of our study was to determine the psychological status of staff working in OTS during the outbreak period of COVID-19 in Tehran.

Methods

This study was a short-term longitudinal survey study conducted during February to April 2020. For the present study, 621 treatment staff members including physicians, psychologists, nurses and social workers were selected through probability-based online panel from among the staff working in methadone maintenance treatment centers in Tehran, the capital of Iran. The inclusion criteria for these centers were; having an official license from one of the universities of medical sciences; being active during the outbreak of the disease, and conscious consent to participate in the research. Participants responded to a total of 17 items on three scales at three time periods (the pre-outbreak period: February 9th, 2020; the outbreak period: March 18th, 2020 and the non-epidemic outbreak period: May 10th, 2020, according to Pourmalek et al, (13). The questionnaires were provided to the participants via the panel, and were completed during an average of 3 minutes. The study findings were sent to the participants via email.

This study was part of a research project in the approval process by the Medical Ethics Committee of Iran University of Medical Sciences (IR.SBMU.RETECH.REC.1399.154). Informed consent was required before

completing the questionnaire. All stages of the research were performed in accordance with the 1989 revision of the Helsinki Declaration (14).

Data was gathered using online questionnaires including demographic characteristics (Gender Age Marital status Occupational status), the Patient Health Questionnaire-4 (PHQ-4), the Brief Fatigue Inventory (BFI), and the Jenkins Sleep Scale (JSS).

The PHQ-4 is an ultra-brief screening scale for anxiety and depression that has 4 items and is scored on a 3-item Likert scale. The score ranges between 0-12. The PHQ-4 is a tool used for detecting both anxiety and depression disorders (15).

The BFI is a useful tool for rapid assessment of fatigue. This tool consists of 9 items and is measured in the form of 0-10 numerical ranking scale. The score ranges between 0-90. These three items ask the patient about the severity of fatigue, and six items evaluate the fatigue rate in six different aspects of the patient's life (general activity, mood, ability to walk, normal work, relations with other people, and enjoyment of life) during the last 24 hours or a week (16).

The JSS is a 4-item questionnaire to which participants respond on a 6-point Likert scale that is easily scored. The score ranges between 0-20, and it takes little time to complete. In a study by Unal-Ulutatar and Ozsoy-Unubol (17), the validity of this scale was reported to be 0.98 and the internal consistency was 0.741.

The data normality was evaluated by Shapiro–Wilk test. The results showed that the data distribution of these individuals were normal. The paired t-test was used to examine the possible differences between staff scores over the three time periods. In addition, repeated measures correlation (rmcorr) test was used to examine the possible relationship between anxiety, depression, fatigue (and its subscales) and sleep problems. SPSS Statistics for Windows, version x.0 (SPSS Inc., Chicago, Ill., USA).

Results

In total, 621 participants including 103 (16.6%) physicians, 198 (31.9%) psychologists, 219 (35.3%) nurses and 101 (16.2%) social workers (mean age=44.32, SD = 8.71) completed the survey. The participants tended to be male (55.9%), aged 25 to 50 years (79.8%), and married (52.8%), as shown in (Table 1).

Statistical descriptions of anxiety, depression, fatigue (with six subscales) and sleep problems are presented in Table 2. According to the statistics, the scores of anxiety, depression, fatigue, general activity, mood, ability to walk, normal work, relations with other people, enjoyment of life and sleep problems of the staff between the two periods of pre-outbreak and outbreak showed significant differences ($P < 0.001$). The differences in staff scores between the outbreak period and non-epidemic outbreak period were not significant ($P > 0.05$). (Fig. 1)

Statistical descriptions of rmcrr showed that there was a significant relationship between all the studied variables in the three periods of pre-outbreak ($P < 0.01$), outbreak ($P < 0.001$) and after outbreak ($P < 0.01$). Comparison of correlation coefficients showed that the correlation of the data was still significant in the non-epidemic outbreak period ($P < 0.05$). The results are shown in table 3, 4, and 5.

Table 1: The distribution of demographic characteristics of staff

Variables	Number	Percentage (%)
Gender		
Male	347	55.9
Female	274	44.1
Age (year)		
18–25	67	10.8
26–30	216	34.8
31–40	153	24.6
41–50	127	20.4
>50	58	9.4
Marital status		
Unmarried or divorced	293	47.2
Married	328	52.8
Occupational status		
Physician	103	16.6
Psychologist	198	31.9
Nurse	219	35.3
Social worker	101	16.2

Table 2: The mean (SD) score of anxiety, depression, fatigue and sleep problems of staff

Clinical characteristics	COVID-19 pre-outbreak period	COVID-19 outbreak period	Pairwise comparisons (pre-outbreak/ outbreak period)	COVID-19 non-epidemic outbreak period	Pairwise comparisons (outbreak period/ non-epidemic outbreak period)
Anxiety	5.32±0.69	8.94±2.23	<0.001	8.33±2.13	NS
Depression	4.93±0.54	7.33±2.87	<0.001	6.96±1.87	NS
Fatigue	6.42±1.59	8.36±2.96	<0.001	8.09±2.75	NS
General activity	8.33±3.11	6.09±1.83	<0.001	6.54±1.67	NS
Mood	6.39±2.02	4.33±0.89	<0.001	4.75±1.08	NS
Walking ability	7.68±2.08	5.19±0.54	<0.001	5.69±1.48	NS
Normal work	6.54±1.93	4.19±0.68	<0.001	4.67±0.97	NS
Relations	7.88±2.63	5.66±0.93	<0.001	6.04±1.39	NS
Enjoyment of life	6.93±1.88	4.39±0.61	<0.001	4.88±1.09	NS
Sleep problems	4.77±1.12	6.52±2.95	<0.001	6.12±2.11	NS

Notes: paired t-test was used. P-value < 0.05 was considered statistically significant. NS: not significant

Table 3: Correlation coefficient matrices between variables in the pre-outbreak period

Depression	0.42*								
Fatigue	0.40*	0.29*							
GA	0.43*	0.31*	0.37*						
Mood	0.30*	0.37*	0.31*	0.38*					
Walking ability	0.42*	0.37*	0.41*	0.32*	0.42*				
Normal work	0.36*	0.42*	0.29*	0.34*	0.35*	0.41*			
Relations	0.38*	0.33*	0.30*	0.32*	0.37*	0.41*	0.28*		
EOL	0.35*	0.30*	0.43**	0.30*	0.34*	0.37*	0.42*	0.31*	
Sleep problems	0.36*	0.38*	0.37*	0.31*	0.36*	0.40*	0.35*	0.38*	0.40*
	Anxiety	Depression	Fatigue	GA	Mood	Walking ability	Normal work	Relations	EOL

Note. Rmcorr was used. *: <0.01, P-value < 0.05 was considered statistically significant. GA: General activity, EOL: Enjoyment of life

Table 4. Correlation coefficient matrices between variables in the outbreak period

Depression	0.59**								
Fatigue	0.51**	0.49**							
GA	0.53**	0.52**	0.57**						
Mood	0.49**	0.54**	0.51**	0.57**					
Walking ability	0.54**	0.53**	0.58**	0.49*	0.56**				
Normal work	0.56**	0.59**	0.52**	0.57**	0.55**	0.61**			
Relations	0.58**	0.53**	0.51**	0.55**	0.58**	0.60**	0.50**		
EOL	0.53**	0.51**	0.62**	0.49**	0.51**	0.59**	0.56**	0.53**	
Sleep problems	0.56**	0.50**	0.57**	0.52**	0.59**	0.58**	0.49**	0.56**	0.53**
	Anxiety	Depression	Fatigue	GA	Mood	Walking ability	Normal work	Relations	EOL

Note. Rmcorr was used. **: <0.001, P-value < 0.05 was considered statistically significant. GA: General activity, EOL: Enjoyment of life.

Table 5. Correlation coefficient matrices between variables in the non-epidemic outbreak period

Depression	0.50*								
Fatigue	0.44*	0.40*							
GA	0.50*	0.46*	0.42*						
Mood	0.37*	0.45*	0.39*	0.45*					
Walking ability	0.43*	0.43*	0.45*	0.46*	0.42*				
Normal work	0.42*	0.40*	0.42*	0.41*	0.40*	0.43*			
Relations	0.42*	0.40*	0.39*	0.40*	0.44*	0.46*	0.38*		
EOL	0.44*	0.41*	0.48*	0.42*	0.46*	0.44*	0.47*	0.40*	
Sleep problems	0.46*	0.44*	0.45*	0.43*	0.46*	0.48*	0.45*	0.47*	0.46*
	Anxiety	Depression	Fatigue	GA	Mood	Walking ability	Normal work	Relations	EOL

Note. Rmcorr was used. *: <0.01, P-value < 0.05 was considered statistically significant. GA: General activity, EOL: Enjoyment of life

Discussion

The results showed that the rates of anxiety, depression, fatigue (with six subscales) and sleep problems of the staff working in methadone maintenance programs during the outbreak period were significantly higher than the pre-outbreak period. These scores remained significantly high and did not decrease significantly during the non-epidemic outbreak period. Also, the correlation coefficient between anxiety, depression, fatigue and sleep problems was significant in all three periods, and the highest correlation was in the outbreak period.

Studies have shown that epidemic diseases such as severe acute respiratory syndrome (SARS) have significant negative psychological effects on medical staff. Findings from the study of Xu et al. (7) show that the anxiety and depression of surgical staff during the outbreak period of COVID-19 have increased significantly and mental health problems have been appeared. In this regard and in consistent with our findings, the results study of Hassannia et al. (18) Show the prevalence of anxiety and depression was significantly higher in doctors and nurses compared with other occupations. Also, the results study of Tan et al. (19) was showed that prevalence of depression, stress, anxiety, and posttraumatic stress disorder (PTSD) is high among all health care workers. Furthermore, the results study of Lu et al. (20) was showed that compared to the non-clinical staff, medical staff with close contact with infected patients, showed higher scores on fear, Anxiety and Depression.

COVID-19 is spread through the air and close contact, and can cause infections in medical staff. The staff members working in methadone maintenance programs have an important position in this epidemic. Many patients in these centers are at high risk. COVID-19 causes many staff members of methadone treatment centers to become infected during patient interaction and counseling. Despite the epidemic outbreak, the number of patients in these centers did not decrease. Therefore, during the epidemic outbreak (March 18 to April 4, 2020), medical staff encountered patients who needed to receive maintenance medication and sometimes manage their craving symptoms, and inevitably had concerns about their risk of self-infection. Mental health problems affect the working status of staff and influence the treatment of patients.

Effective reduction and management of COVID-19 require the staff self-efficacy improvement, removing barriers in the field of action, and accurate and practical assessment of the extent of disease progression. Repetition and clarification of mental health concerns among medical staff can lead to the establishment of incorrect cycles that limit the effectiveness of treatment interventions in the long run. The awareness and mental health of the staff of methadone centers in the face of patients with COVID-19 are important in providing desirable therapeutic services (9). To reduce concerns, methadone treatment centers are recommended to develop rules for the use and management of protective equipment. Psychological counselors can also be used to address concerns raised by the staff in the workplace. Keeping employees healthy is essential to better control infectious diseases.

This study had several limitations. First, this study was conducted in Tehran, possibly limiting the generalization of findings to other city. Second, the results of this study are based on a self-reported questionnaire and self-reported practices might not represent actual practices.

Conclusion

In summary, this study suggests that mental health problems of staff are common during the COVID-19 epidemic. Although the best way to do this during the epidemic season is unknown, it is expected that the use of psychological interventions would help better respond to future unexpected infectious disease outbreaks.

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Ethical statement:

This study was part of a research project approved by the Medical Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1399.154). All stages of the research were performed in accordance with the 1989 revision of the Helsinki Declaration.

Conflict of interest:

The authors declare that there is no conflict of interest.

Author contributions

Study concept and design: Bijan Pirnia, Hasan Mosazadeh; analysis and interpretation of data: Babak Lotfi and Fariborz Pirnia; drafting of the manuscript: Hasan Mosazadeh; critical revision of the manuscript for important intellectual content: Bijan Pirnia; statistical analysis: Parastoo Malekanmehr; administrative, technical, and material support: Kambiz Pirnia and Fariborz Pirnia; study supervision: Bijan Pirnia and Fariborz Pirnia.

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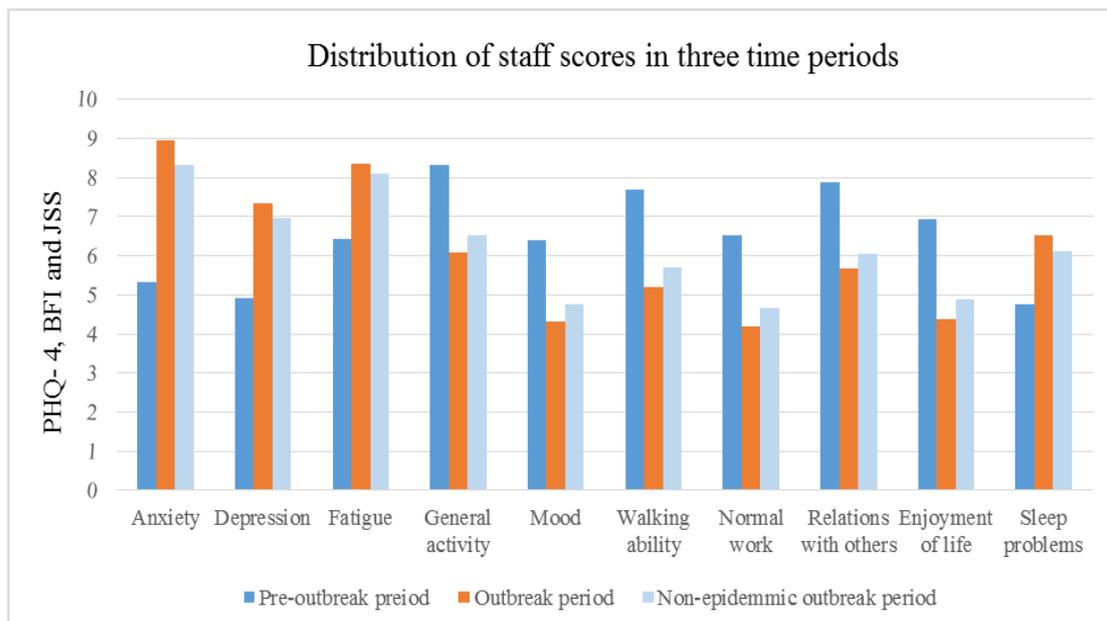


Fig.1. The comparison of distribution of staff scores in three time periods

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