Original

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Association of demographic characteristics with mental anxiety caused by the spread of the COVID-19 pandemic in candidate patients for cataract surgery

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Abstract

Introduction: The increasing outbreak of COVID-19 disease has challenged global public health and caused a pathological fear of its contracting. The unknown origin of COVID-19, long incubation period, high death rate, rapid transmissions, and the lack of definitive or preventive treatment caused great fear and anxiety among the world population.
Objectives: This study aimed to evaluate the correlation between demographic characteristics and mental anxiety caused by the COVID-19 pandemic among candidate patients for cataract surgery.
Patients and Methods: This descriptive-analytical study selected 258 candidates for cataract surgery patients referred to Shahid Dastgheib and Khalili hospitals in Shiraz. The data were collected using a demographic and the Corona Disease Anxiety Scale questionnaire. Analytical tests were used for data analysis, including Mann-Whitney U, Spearman's correlation, Kruskal-Wallis, and univariate and multivariate linear regression.
Results: Most participants were women with a mean age of 62.8 ± 15.9 years. There was no statistically significant correlation between age, education level, and history of COVID-19 with mental anxiety ($P > 0.001$). In contrast, gender and job indicated a statistically significant correlation. Housewives and retired people experienced higher levels of mental anxiety ($P < 0.001$). Multivariate linear regression explored that amongst all demographic characteristics, only female gender was an independent risk factor for patients' mental anxiety.
Conclusion: Considering the mental health of patients applying for surgery by gender status during the COVID-19 pandemic is very important.

Introduction

The respiratory disease caused by Coronavirus 2 appeared for the first time in the city of Wuhan, China, in 2019 (1). For this reason, World Health Organization (WHO) has named it COVID-19 (2, 3). The increasing outbreak of this disease has challenged global public health and caused a pathological fear of contracting it in people (4). The unknown origin of COVID-19, long incubation period, high death rate, rapid transmissions, lack of definitive or preventive treatment, and the prediction of some epidemiologists saying that more people will be contracting the disease are the cause of great stress and anxiety among different people (5). In addition to the physical complications caused by this disease, psychological illnesses such as anxiety, fear, depression, stigma, withdrawal, irritability, sleep disorder, and post-traumatic stress disorder have also been caused among people, which further reveals the necessity of maintaining people's mental health during the COVID-19 pandemic (6).

Surgery is always a significant experience for the patient and their family, and anxiety is a natural reaction (7). In patients undergoing cataract surgery due to the pandemic, the fear of contracting COVID-19 has increased their anxiety and added to the anxiety of the surgery, which considering the physiological changes it causes, such as increased blood pressure and heart rate, can be a risk factor

Key point

In a descriptive-analytical study on 258 candidate patients for cataract surgery during the COVID-19 pandemic, we found that amongst all demographic characteristics, only female gender was an independent risk factor for patients' mental anxiety.

for the patient. According to previous studies, high anxiety increases the probability of death up to 3 times (8). Previous studies have also shown that cataract surgery patients experience anxiety before and during the surgery, which can affect their mental and physical condition (9). Therefore, in this study, the answer to whether demographic characteristics can affect mental anxiety caused by the spread of the COVID-19 pandemic on candidate patients for cataract surgery has been investigated.

Objectives

During the COVID-19 pandemic, due to the epidemic nature of this disease and the fear and anxiety of it, it is necessary to maintain people's mental health. The current study aimed to investigate the correlation between demographic characteristics and mental anxiety caused by the COVID-19 pandemic amongst candidate patients for cataract surgery in Shahid Dastgheib and Khalili hospitals in Shiraz.

Patients and Methods

Study design and participants

This descriptive-analytical study was conducted on 258 candidate patients for cataract surgery referred to Shahid Dastgheib and Khalili hospitals from April 16, 2022, to June 21, 2022. The sampling method of this study was continuous sampling. The inclusion criteria included consenting to participate in the study, having a definitive diagnosis of cataract, and being a candidate for cataract surgery; the exclusion criteria were unwillingness to continue participation and having a history of mental illnesses.

Methodology

In this study, patients eligible to be included in the study were selected among candidate patients for cataract surgery. Following the health protocols and after introducing ourselves, obtaining their consent, stating the purpose of the study, and assuring the patients that their identities will not be mentioned and that these questions have no impact on the surgery procedures and the hospital bills, the demographic characteristics questionnaire and the Corona Disease Anxiety Scale were filled by the patients. Since many patients could not fill out the questionnaire due to vision problems, the researcher asked the questions and recorded the answers in the questionnaire.

Data collection tools

The data collection tool in this study was a demographic checklist including age, gender, education, job, and the history of being infected by COVID-19, and Corona Disease Anxiety Scale (CDAS), which reliability and validity were prepared and confirmed by Alipour et al; the final version of this tool has 18 items and two components. Items 1 to 9 measure psychological symptoms (mental anxiety), while items 10 to 18 measure physical symptoms (physical anxiety). In this study, the mental anxiety component was used. This tool is scored on a four-level Likert scale (0=Never, 1=Sometimes, 2=Most often, 3=Always); Thus, the lowest and the highest scores that the respondents obtained in this questionnaire ranged from 0 to 27 scores, and the higher scores indicate a higher level of anxiety in the respondent. The overall mental anxiety score was calculated from the total scores of 9 questions. The reliability of this tool was obtained using Cronbach's alpha method for the first factor ($\alpha=0.879$), the second factor ($\alpha=0.861$), and the whole questionnaire ($\alpha=0.919$). Furthermore, Gottman's λ-2 value was obtained for the first factor (λ-2=0.882), the second factor (λ-2=0.864), and the whole questionnaire (λ-2=0.922). As a means to check the validity of the correlation with the criteria of the questionnaire, this tool was correlated with the General Health Questionnaire–28 (GHQ-28) questionnaire, with the results showing that the Corona Disease Anxiety Questionnaire with the total score of the GHQ-28 questionnaire and the anxiety component, physical symptoms, impairment in social functions and depression were equal respectively as 0.483, 0.507, 0.418, 0.333 and 0.269. All these coefficients were significant at the 0.01 level (10).

Statistical analysis

The research data was analyzed using Statistical Package for Social Sciences (SPSS) software version 26. Descriptive tests such as means, variance, standard deviation, and frequency (percent) were used due to the non-normal data distribution. Nonparametric tests including Mann-Whitney U, Spearman's correlation, and Kruskal-Wallis were also conducted. Normality of data distribution was determined using the Kolmogorov-Smirnov test. Univariate and multivariate linear regression were employed to explore the correlation between patients' demographic characteristics and mental anxiety scores. A *P* value less than 0.05 was considered statistically significant.

Results

Results demonstrated that most patients were women and non-academic education, with a mean age of 62.8 ± 15.9 years. Housewives were the most common job, and a history of being infected by COVID-19 was reported by most (Table 1).

The results showed that the job and gender patients' frequency distribution by mental anxiety score

Table 1. Demographic characteristics of participating patients

Variable	Sub-variable	Frequency	Percent
Gender	Female	146	56.6
	Male	112	43.4
Job	Housewives	120	46.5
	Employee	5	1.9
	Self-employment	66	25.6
	Retired	19	7.4
	Unemployed	48	18.6
Education levels	Illiterate	188	72.9
	Reading and Writing	70	27.1
	Undereducated	2.3	3.5
	High School Diploma	2.3	2.3
	Bachelor	2.8	2.3
	Masters and Higher	2.3	2.2
COVID-19 infected history	Yes	140	54.3
	No	118	45.7
Variable	**Mean (SD)**	**Min**	**Max**
Age (year)	62.8 (15.9)	52	91
Mental anxiety score	2.40 (2.83)	0	24

SD, Standard deviation; Min, Minimum; Max, Maximum.

demonstrated a statistically significant difference ($P<0.05$), and women's mental anxiety score was significantly greater than men. Regarding job, housewives, retired people, and employed individuals showed more mental anxiety scores. However, the mental anxiety score by age, education levels, and frequency of people with previous COVID-19 infection did not illustrate a statistically significant difference ($P>0.05$; Table 2).

To assess the correlation between mental anxiety score and demographic characteristics such as gender and job, univariate and multivariate linear regression were conducted. Univariate linear regression demonstrated that the correlation between gender and job with mental anxiety score was statistically significant, and housewives women experience more mental anxiety. When we adjusted variables for confounders, multivariate linear regression demonstrated that amongst all demographic characteristics, only female gender was an independent risk factor of mental anxiety for candidate patients for cataract surgery during the COVID-19 pandemic; job was not an independent risk factor (Table 3).

Discussion

The spread of COVID-19 resulted in being quarantined in homes and many educational and recreational facilities being closed, negatively affecting individuals' mental health. The results of studies in this field have shown that this new disease can change people's lives and threaten their physical and mental health (11). Due to its rapid transmission, the spread of COVID-19 has put global health in an emergency. This infectious disease has not only caused concerns regarding the public's physical health but also caused the emergence of several mental disorders (12). The current research was conducted to investigate the relationship between demographic characteristics and mental anxiety caused by the spread of the COVID-19 pandemic in patients who were candidates for cataract surgery referred to Shahid Dastgheib and Khalili hospitals in Shiraz. The results of this study illustrated that there is no statistically significant correlation between age and the mental anxiety caused by COVID-19 in candidate

Table 2. The demographic characteristics distribution by mental anxiety

Variable	Sub-variable	Mental anxiety score		P value
		Mean	SD	
Gender	Female	4.08	2.9	<0.001*
	Male	1.2	1.6	
Job	Housewives	4.04	3.06	<0.001**
	Employee	2.8	1.9	
	Self-employment	1.6	2.06	
	Retired	3	2.66	
	Unemployed	1.41	2.7	
Education	Illiterate	188	72.9	0.993**
	Reading and Writing	70	27.1	
	Undereducated	2.3	3.5	
	High School Diploma	2.3	2.3	
	Bachelor	2.8	2.3	
	Masters and Higher	2.3	2.2	
COVID-19 infected history	Yes	2.9	2.7	0.252*
	No	2.6	2.9	

Variable	Age		Mental anxiety score		P value
	Mean	SD	Mean	SD	
Age (year)	62.8	15.9	2.4	2.3	0.691***

* Mann-Whitney U, ** Kruskal-Wallis, *** Spearman's correlation.

Table 3. The correlation between demographic characteristics and mental anxiety score using univariate and multivariate linear regression

Variable	Univariate Regression				Multivariate Regression			
	B	*P* value	95% CI		B	*P* value	95% CI	
			Lower	Upper			Lower	Upper
Gender	-2.884	< 0.001	-3.492	-2.276	-2.985	< 0.001	-3.910	-2.060
Job	-0.670	< 0.001	-0.877	-0.462	0.043	0.775	-0.251	0.336

patients for cataract surgery. In contrast females had a significantly higher mean anxiety than males. In a study in line with our findings, Zerat-Herfeh et al investigated the negative consequences of the coronavirus, stating that women experienced more anxiety than men during the COVID-19 pandemic (13). Moreover in a study that aimed to investigate the anxiety caused by COVID-19 in healthcare professionals by Rahmanian et al results indicated that among the demographic variables, gender, specifically female gender, is related to an increase in the anxiety level caused by COVID-19, which is in line with results of this study. In contrast the mentioned study stated that the relationship between age and mental anxiety is insignificant, which is in line with our study (12). In another study, in line with the present study, it has been stated that mental anxiety caused by COVID-19 in male students was significantly lower in females (14). Su et al noted in their review study that the emergence of mental anxiety is related to younger ages, which contrasts with our study's results (15). Hadian et al reported a significant relationship between gender and the level of mental anxiety induced by COVID-19 and stated that the level of anxiety is higher in women than in men (16). The mean age of women in this research was about 60 years, and this age range women are in the menopause stage, and the hormonal imbalance can be effective in adding to the already existing anxiety of COVID-19 in women.

In this study, the relationship between job, having a history of being infected by COVID-19, and the education level with mental anxiety caused by COVID-19 was insignificant. Consistent with our study, Rahmanian et al stated that the level of education and history of COVID-19 is not associated with anxiety caused by COVID-19 (12). In Hadian and his colleagues' study, a significant relationship between the job and the level of mental anxiety caused by COVID-19 was reported, which is inconsistent with our study (16).

During the COVID-19 lockdown, since working people such as clerks were more occupied with work compared to retired and housewives, they followed the news about the disease less often and experienced lesser anxiety induced by the disease; meanwhile, the housewives who had more time to follow the news experienced more anxiety. Regarding education and anxiety, there is a duality in treatment since increasing the education level in individual increases awareness, thus increasing the anxiety or decreasing the anxiety because of high awareness; this also applies to people with low education in such a way that a low education leads to low awareness thus leading to higher or lower anxiety. Having a prior history of COVID infection may have reduced the anxiety in people considering experiencing similar conditions, which was not the case in this study, and this finding had no significant relationship with mental anxiety.

Considering the COVID-19 pandemic, which affected the essential economic, political, and social aspects of the world, discussions of psychological effects such as anxiety of this infectious disease on people's general and mental health are highly important (17). Accordingly, discussing mental health concerns is crucial in preventing and maintaining the pandemic (18). In order to improve the mental health of patients who are candidates for surgery, special attention must be paid to their level of anxiety before the operation and to providing practical solutions to reduce it.

Conclusion
Results demonstrated that amongst all demographic characteristics, only female gender was an independent risk factor for patients' mental anxiety; therefore, we conclude that considering the mental health of patients applying for surgery by gender status during the COVID-19 pandemic is very important.

Limitations of the Study
In cases where the patient's physical condition was critical, and hospitalization was needed before the surgery, the sample was excluded from the research. Individual, social, mental, and familial differences were some of the uncontrolled variables that might affect this research's results.

Authors' contribution
Conceptualization: Najmeh Parsai.
Data curation: Najmeh Parsai and Jamshid Eslami.
Formal analysis: Fatemeh Vashahi Torfi.
Investigation: Jamshid Eslami and Mohamad Khaledi.

References
1. Moradkhani S, Chegeni M, Mousapour R, Karrabi K, Charebakhshi F, Safa K, et al. Correlation Of Initial Chest CT Finding of Covid-19 Patients with Their Death Risk. JCMR. 2021;12:144-7. doi: 10.5455/ jcmr.2021.12.04.23.
2. Shadkam A, Mahdavi AA, Raoufi M, Mardanparvar H, Fatehi Z. The prevalence of single pulmonary nodules as the first sign of COVID-19 pneumonia in CT scans of patients suspected to COVID-19. Medicina Balear 2022;37:28-32. doi: 10.3306/ AJHS.2022.37.05.28.
3. Ghaseminejad S, Chegini Ma, Sarikhani-Khorrami E, Fardi M, Ramezani E, Kalvandi A, et al. Association of laboratory abnormalities before the beginning of drug treatment with mortality of hospitalized patients with Covid-19. Journal of Complementary Medicine Research. 2021;12:92-7. doi: 10.5455/jcmr.2021.12.04.14.
4. Aboulfathiyarmohammadyar Z. Use of Pharmaceutical Nanotechnology in Treatment of Covid-19: A Systematic Review Study. J Pharm Negat. 2022;Special issue 3:184-92. doi: 10.47750/pnr.2022.13.S03.031.
5. Chegeni MA, Dalband A, Rasta S, Zandiyeh F, Zeraatpishe M, Zaremoghadam E. Prevalence of fear and anxiety due to covid-19 in medical staff and non-medical population: a systematic review study. J Pharm Negat. 2022;Special issue 3:960-5. doi: 10.47750/pnr.2022.13.S03.148.
6. Shahyad S, Mohammadi MT. Psychological impacts of Covid-19 outbreak on mental health status of society individuals: a narrative review. J Military Med. 2020;22:184-92. doi: 10.30491/JMM.22.2.184.
7. Ghardashi F, Saleh MA, Hasanabadi H, Setayesh Y. Study of the relationship between pre-operative waiting time and anxiety in patients. J SUMS. 2004;10:76-84.
8. Mahmoudi H, Ebadi A, Salimi SH, Najafi Mehri S, Mokhtari Noori J, Shokrollahi F. Effect of nurse communication with patients on anxiety, depression and stress level of emergency ward patients. J Crit Care Nurs. 2010;3:3-4.
9. Marback R, Temporini E, Kara Júnior N. Emotional factors prior to cataract surgery. Clinics (Sao Paulo). 2007;62:433-8. doi: 10.1590/s1807-59322007000400010.
10. Alipour A, Ghadami A, Alipour Z, Abdollahzadeh H. Preliminary validation of the Corona Disease Anxiety Scale (CDAS) in the Iranian sample. J Health Psychol. 2020;8:163-75.
11. Asgari M, Ghadami A, Aminaei R, Rezazadeh R. Psychological effects of covid 19 and its psychological effects: a systematic review. J Educ Psychol. 2020;16:167-77.
12. Rahmanian M, Mosalanezhad H, Rahmanian E, Kalani N, Hatami N, Dost ER, et al. Anxiety and stress of new coronavirus (COVID-19) in medical personnel. Horizon of Medical Education Development 2021;12:70-80. doi: 10.22038/ HMED.2020.51423.1076.
13. Zeraat Herfeh F, Ahmadian Ranjbar R. Negative Consequences of COVID-19 Pandemic on the Life of the Elderly: A Qualitative Study. J Aging Psychol. 2021;7:93-106. doi: 10.22126/ jap.2021.5900.1488.
14. Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, Chen JC, et al. Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. Eur Child Adolesc Psychiatry. 2020;29:749-58. doi: 10.1007/s00787-020-01541-4.
15. Su TP ,Lien T, Yang C, Su YL, Wang J, Tsai S, et al. Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: a prospective and periodic assessment study in Taiwan. J Psychiatry Res. 2007;41:119-30. doi: doi: 10.1016/j. jpsychires.2005.12.006.
16. Hadian-Ghahderijani M, Zamani-Alavijeh F, Ghafouri-Ghahderijani M, Khoshgoftar M. Evaluation of Perceived Anxiety Caused by COVID 19 Pandemic with its Related Factors in the Staff of Isfahan Health Centers, Iran, in 2020. J Health Sys Rec. 2022;18:216-22. doi: 10.48305/jhsr.v18i3.1466
17. Li S, Wang Y, Xue J, Zhao N, Zhu T. The Impact of COVID-19 Epidemic Declaration on Psychological Consequences: A Study on Active Weibo Users. Int J Environ Res Public Health. 2020;17. doi: 10.3390/ijerph17062032.
18. Banerjee D. The COVID-19 outbreak: Crucial role the psychiatrists can play. Asian J Psychiatr. 2020;50:102014. doi: 10.1016/j.ajp.2020.102014.