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Original Article

Predicting corona anxiety based on obsessive compulsive disorder and health literacy

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Abstract

The aim of this study was to predict corona anxiety based on practical obsessive-compulsive disorder and health literacy. This research is a descriptive and correlational study. The population of the study was the general population of Amol city during the first peak of Corona in 2021. A total of 174 individuals in the age group of 18 to 45 years of the general population were studied as the sample using the availability sampling. Three questionnaires of corona anxiety, obsessive-compulsive disorder and health literacy were used as data collection tools. The data was analyzed using SPSS software. Statistical analysis using Pearson correlation coefficient showed that there is a significant positive relationship between corona anxiety and obsessive-compulsive at the level of 0.01 and a significant negative relationship with health literacy at the level of 0.05. Also, the results of multiple regression analysis with simultaneous method showed that predictor variables could explain the degree of corona anxiety. People need to be informed that they need to obtain health information from the right sources and use it properly to improve their health by interpreting the information correctly. In general, it can be said that the level of awareness and information (health literacy) has an important role in improving health-based behaviors. Obsessive-compulsive disorder is also one of the variables related to corona anxiety, therefore, it is necessary to take preventive measures and interventions to control and reduce obsessive-compulsive disorder by psychologists and counselors. Therefore, in addition to increasing awareness and level of health literacy among the general public, measures should be considered to help reduce the incidence of symptoms such as OCD, which lead to anxiety.

Keywords

Corona anxiety
Obsessive-compulsive disorder
Health literacy

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Introduction

Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East respiratory syndrome (MERS- CoV) and severe acute respiratory syndrome (SARS-CoV) (World Health Organization, 2020; Sadati & Lankarani, 2020). At the end of 2019, in the city of Wuhan (Hubei, China) the first worldwide outbreak of Coronavirus pathogen, also known as Covid-19, was observed (Chinazzi et al., 2020). The Covid-19 pandemic has caused an unprecedented global crisis and led to a huge number of deaths, economic hardship and the disruption of everyday life (Cartenì, Francisco, & Martino, 2021). COVID-19 has also had significant negative effects on mental health and wellbeing. In

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particular, the spread of the virus has been associated with widespread anxiety among the public in many countries across the globe (Shigemura, Ursano, Morganstein, Kurosawa, & Benedek, 2020; Twenge & Joiner, 2020; Wang et al., 2020; Wheaton, Miner and Marx, 2021). Anxiety about COVID-19, which some call "chronophobia", is probably due to the novelty and uncertainty about the type and extent of the disease. In fact, like other epidemics, the COVID-19 epidemic is currently causing some psychological problems and affecting the lives of many people (Zemestani, Babamiri, Griffiths, & The Watch, 2021); as a result, research into the effects of the outbreak of COVID-19 has been prioritized by the World Health Organization.

Research on the psychological reactions to previous epidemics and pandemics suggests that various psychological vulnerability factors may play a role in coronaphobia (Asmundson & Taylor 2020). Factors and variables that can play a role in the development and maintenance of COVID-related anxiety include obsessive-compulsive disorder (OCD) and health literacy. Obsessive-compulsive disorder (OCD) is characterized by unwanted and distressing thoughts, images or urges (obsessions) and repetitive behaviors or mental acts that aim to decrease the resulting distress or according to rigid rules (compulsions; APA, 2013). Different studies suggest OCD to affect up to 3.1% of the general population and to be associated with substantial disability and decreased quality of life (Fontenelle, Mendlowicz, & Versiani, 2006; Ruscio, Stein, Chiu, & Kessler, 2010).

In fact, OCD is a chronic and debilitating mental disorder that is also resistant to treatment. This disorder is characterized by unwanted thoughts (obsessions) and repetitive forced behaviors or mental rituals (compulsive) (Bleuler & Braille, 1924). Given the recent coronavirus disease (COVID-19) pandemic declared by the World Health Organization, the unprecedented contagiousness and uncontrollability of an infectious illness in modern times, the enormous preoccupations of the general public (which has been exposed to often scary news through the media) and the explicit recommendations by the health authorities on how to deal with its potential threats (including washing hands frequent and avoiding physical contact with other people and specific surfaces), which often overlap in “appearance” with OCD symptoms, it is important for mental health professionals to think about the potential impact of COVID-19 in their practice. In this regard, we believe that the implications of the COVID-19 for the field of OCD and related disorders to be particularly relevant. First, there might be an increased number of individuals affected by OCD and fear of COVID-19 infection in the next few months or even years **(**Fontenelle & Miguel, 2020). Perhaps no group of individuals with mental illness is as directly affected by the worsening outbreak of COVID-19 as people living with obsessive-compulsive disorder (OCD). Paradoxically, they are ‘experts by experience’ in attempting to avert dangers through enacting compulsive behaviors. Chiefly, the spike in anxiety about the virus is fueling existing obsessive fears of contamination in some people with OCD and further triggering harmful compulsive actions (Fineberg et al, 2020).

research evidence has shown, which Fear of negative events plays a role in creating and maintaining symptoms. For example, people with OCD spend a lot of time washing their hands for fear of infection (Hauser, Ilder, & Dolan, 2016). With all these interpretations, lack of awareness and correct information about this epidemic can increase the level of anxiety in this area and ultimately lead to the occurrence and increase of obsessive-compulsive disorder in society. Health literacy, which is crucial for understanding and applying health information, remains an underestimated problem at the time of COVID-19 (Paakkari & Okan, 2020). Health literacy is vital for people to navigate the current pandemic (Sentell, Vamos, & Okan, 2020), given the surge of health reports related in this infodemic and rampant misinformation in various platforms (World Health Organization, 2020). Rapid development of coronavirus disease 2019 (COVID-19) into a pandemic has called for people to acquire and apply health information, and adapt their behaviour at a fast pace. However, the COVID-19 infodemic has highlighted that poor health literacy among a population is an underestimated public health problem globally (Zarocostas, 2020). On the other hand, the existence of contradictory information and news in this area has led to confusion, uncertainty and ultimately anxiety among people in the community; Therefore, having the right information and health literacy can be very useful and reduce the rate of this anxiety (Leung et al., 2020).

Given the above, the existence of a study is necessary to investigate the relationship between corona anxiety disorder and obsessive-compulsive disorder and also to assess the predictive power of corona anxiety disorder based on OCD and health literacy in Iranian context.

Method

Participants

This research is a descriptive and correlational study. The population of the study was the general population of Amol city during the first peak of Corona in 2020. Based on the research plan which was of correlation type and also according to the rule of minimum sample size for correlation research, it was 100 people (Delavar, 2011). A total of 174 individuals in the age group of 18 to 45 years of the general population were surveyed as a sample using the available sampling method. Three questionnaires of corona anxiety, obsessive-compulsive disorder and health literacy were used as data collection tools. The link of the questionnaires was sent by the researchers in the virtual environment (WhatsApp groups, etc.) to the people and the necessary explanations were given to answer the questions. The conditions for entering the research were: conscious desire to participate in the research, not having an acute physical and mental problem. Also, the criteria for leaving the research were: unwillingness to participate in the research, lack of proper completion of

questionnaires. Due to the subject of the research, there was no need to receive official approval from the ethics committee. Among the observed cases: there was no need to mention the name and surname in the questionnaires, by informing the participants about the objectives of the research, it was optional to participate in the study. Then the data are used by SPSS software version 20 and Descriptive statistical methods and Pearson correlation coefficient and regression were analyzed. Significance level in the tests was considered 0.05. Also, to collect data, demographic information including gender, level of education and marital status were recorded as self-reported.

The following tools were used to measure research variables:

Instrument

Corona Virus Anxiety Scale:

This tool has been developed and validated to measure anxiety caused by the spread of Corona virus in Iran. The final version of this tool has 18 items and 2 components (agent). Items 1 to 9 measure psychological symptoms and items 10 to 18 measure physical symptoms. This tool is scored in the range of 4 Likert degrees (never= 0, sometimes= 1, most of the time= 2 and always= 3); therefore, the highest and lowest scores that the respondents get in this questionnaire are between 0 and 54. High scores in this questionnaire indicate a higher level of anxiety in individuals. The reliability of this tool was obtained using Cronbach's alpha method for the first factor for (a= 0.879) the second factor (a = 0.861) and for the whole questionnaire (a= 0.919) (Alipour, Ghadami, Alipour & Abdulzadeh, 2020). Cronbach's alpha in the present study was 0.85.

Health Literacy Questionnaire:

Health Literacy Questionnaire for urban population aged 18 to 65 years. This standard questionnaire has 33 main items and the ability of people in different dimensions of health literacy including reading skills (4 questions), access (6 questions), comprehension (7 questions), evaluation (4 questions) and decision making and using information. Measures health (12 questions). The scoring scale of this questionnaire is 5-point Likert, so that in questions related to reading skills; A score of 5 is assigned to the perfectly easy option, a score of 4 is assigned to the easy option, a score of 3 is assigned to the option is neither easy nor difficult, a score of 2 is assigned to the difficult option and 1 point is assigned to the completely difficult option. About the other 4 dimensions of health literacy; A score of 5 is assigned to the option always, a score of 4 to the option more often, a score of 3 to the option occasionally, a score of 2 to the option rarely, and a score of 1 to the option in no way (or no time). Individual scores were obtained between a minimum of 33 and a maximum of 165, with a higher score indicating good health literacy and a lower score indicating less health literacy in individuals. Algebra is obtained from the algebraic sum. Then to convert this score to a range of zero to 100, the formula for the difference in the raw score obtained from the minimum possible raw score divided by the difference in the maximum possible score from the minimum possible score is used. Scores of all dimensions (based on the range of zero to 100 are added and divided by the number of dimensions (5). Scores 0 to 50 as insufficient health literacy, 1.50 to 66 as insufficient health literacy, 1.66 to 84 as adequate health literacy and scores of 84.1 to 100 are considered excellent health literacy ((Montazeri et al., 2014). During a study to design and psychometrics, they paid and this questionnaire has a good validity and acceptable reliability. This questionnaire has advantages such as covering different dimensions of health literacy separately, using items with simple language and generality (Montazeri et al., 2014). Cronbach's alpha in the present study was 0.92.

Obsessive-Compulsive Questionnaire:

This questionnaire is designed to assess obsessive-compulsive disorder which includes 18 self-report options. Each question is graded from zero to four based on the amount of belief. The overall score is from zero to 72, with higher scores indicating a greater tendency to obsessive-compulsive disorder. This test has good internal stability (a = 0.77-0.88) and test-retest reliability (a = 0.76-0.62) (Raisi et al., 2015). Cronbach's alpha in the present study was 0.88.

Results

Participants in this study were 174 people aged 18 to 45 years in Amol city whose mean and standard deviation of age was calculated to be 26.27+ 9.93 years. Table 1 shows the demographic information of the study sample.

Table 1. Frequency distribution of demographic information of individuals

Variables	Subgroups	Frequency	Percentage
Sexual	Female	159	91.4
	Man	14	8.0
Level of Education	Cycle	18	10.3
	Diploma	27	15.5
	Kardani	13	7.5
	Bachelor	97	55.7
	Masters	13	7.5
	P.H.D	5	2.9

Marital status	Single	113	64.9
	Married	60	34.5

Table 2 shows the descriptive indicators of research variables in individuals. Since the significance level obtained in the Kalmograph-Smirnov test in the research variables is more than the criterion value of 0.01, as a result, was confirmed the hypothesis of normalization of the frequency distribution. Therefore, parametric tests can be used for statistical analysis.

Table 2. Mean, standard deviation of research variables along with the results of Kolmogrov-Smirnov test to check for normality

Variables	mean	Standard deviation	Minimum	Maximum	Significance level of K-S test
Corona anxiety	10.53	5.97	0	29	0.098
Obsessive compulsive	19.99	11.28	1	59	0.165
Health literacy	122.12	19.65	79	164	0.887

Given that one of the presuppositions of Pearson correlation test and linear regression is the linearity of the relationship between the variables; As a result, before performing these tests, one must make sure that the relationship between the variables is linear. One of the most widely used methods for checking the linearity of a relationship is the use of scatter plots. By examining the diagram, one can find the approximate relationship between the two variables and direction (linear or nonlinear, positive and negative) and the intensity of the relationship. Examination of the diagram shows that there is almost a linear and positive relationship between the variables.

Another assumption of multiple regression analysis is the multiple linearity assumption that must be considered before performing the analysis. The subject of multiple alignment shows a high correlation between independent variables. To test this hypothesis, two statistics of tolerance and variance inflation factor are used. If the tolerance value for a particular variable is 0.01 or less, it indicates multiple alignment. Another way to calculate the tolerance of a variable is to measure the variance inflation factor for each independent variable. Larger values of variance inflation factor indicate higher variance. Regression weight is a predictor variable. Variance inflation factor greater than 10 indicates multiple alignment. In this study, tolerance values (0.97) and variance inflation factor (1.02) are within the desired ranges, which indicates that there is no multiple linearity between independent variables. Also another assumption considered in the regression is the independence of errors (difference between values Real and values predicted by the regression equation) of each other.

It is not possible to use regression if the hypothesis of error independence is rejected and the errors are correlated with each other. The Durbin-Watson test is used to check the independence of observations (independence of residual values or errors) from each other. The value of this statistic is always between 0 and 4. The assumption of error independence in the present study was 1.87 which is between 1.5 and 2.5, so is accepted the assumption of independence between errors or no correlation between errors.

Given the validity of the assumptions, it is possible to use Pearson correlation and linear regression tests. The results of Pearson correlation coefficient in Table 3 showed that there is a significant positive relationship between corona anxiety and compulsive obsession at the level of 0.01 and a significant negative relationship with health literacy at the level of 0.05.

Table 3. Pearson correlation coefficient matrix of corona anxiety with Obsessive Compulsive and health literacy

Variable	1	2	3
1. corona anxiety	1		
2. obsessive-compulsive	0.376**	1	
3. health literacy	-0.194*	-0.152*	1

*p<0/05 **p<0/01

The default of multiple alignment with Pearson correlation coefficient was also examined (Table 3) and the correlation between research variables was less than 0.80. Therefore, this assumption was also confirmed. Considering the significance between the research variables and the observance of the assumptions, regression analysis was used to predict the corona anxiety variables through the variables of obsessive compulsive and health literacy, the findings of which are presented in Tables 4 and 5.

According to the contents of Table 4, the results of regression analysis indicate that the variables of obsessive compulsive and health literacy; The corona anxiety criterion variable is significantly predicted with F= 16.37 at the level of P= 0.0001. The multiple correlation between the variables was 0.40, which means that this regression model shows that 16% of the variance of the corona anxiety variable can be explained by the predictor variables. Table 5 shows the coefficients for the variables separately. As can be seen in this table, the regression model has a fixed value with a non-standard coefficient (B = 11.96) and a standard coefficient of variable obsessive-compulsive (B= 0.35) at the level of P= 0.0001 and health literacy (B= -0.14) is significant at the level of P = 0.050.

Table 4. Results of regression analysis to predict corona anxiety based on obsessive-compulsive and health literacy

Source of change	Total squares	Degrees of freedom	Average squares	Ratio F	Significance level	Multiple correlations (R)	Determination coefficient (R^2)	Modified coefficient of determination (R^2)	standard error
Regression	992.88	2	496.44	16.37	0.0001	0.40	0.16	0.15	5.50
Remaining	5184.41	171	30.31						

Table 5. Standard and non-standard coefficients of variables predicting corona anxiety

Predictive variables	Non-standard coefficient	standard error	Standard coefficient	Statistics of T.	Significance level
Constant	11.96	2.87	---	4.16	0.0001
obsessive-compulsive	0.18	0.03	0.35	5.009	0.0001
Health literacy	-0.04	0.02	-0.14	-1.97	0.050

Discussion

Since the outbreak of COVID-19, people have reacted differently to the anxiety associated with this epidemic. Also, various vulnerable factors may play a role in people's psychological reactions to this disease (Zemestani et al., 2021) and according to the contradictory information and news published in the mass media, having high health literacy can occur or Prevent the anxiety caused by the epidemic of this disease and minimize its negative effects. Also, with the prevalence of COVID-19 worldwide, governments have been forced to impose some restrictions at various levels, which make it difficult to understand without health literacy; Therefore, having health literacy helps people to better and more understand the reasons for these restrictions and the recommendations that are made, and to think more about the results of their actions (Pakari & Okan, 2020). A systematic review of previous studies shows that despite the impact of health literacy structures and attitudes toward COVID-19 on citizens' health-oriented behavior in foreign studies such as Li et al. (2021), Silva & Santos (2021) and Tien et al. (2020), no comprehensive research has been done in this field in Iran. Finally developing health literacy is more important than ever to preparing people for situations that require timely and appropriate responses that can minimize the prevalence of COVID-19 epidemic.

In general, health literacy is an important determinant of health, and the concept of monopoly, by influencing health outcomes, encourages people to participate and take action in their health care, in addition, it improves health literacy, health and well-being. Health literacy, while reducing health inequalities, helps create individual and social resilience and allows individuals to make better health decisions and have higher levels of efficiency. Low health literacy is also associated with higher mortality, more depression, lower drug adherence, poverty, lack of education, and lower economic and social status (Silva & Santos, 2021). In conclusion, it should be emphasized that people with low health literacy often experience more health challenges and problems (Yazdani et al., 2017).

Studies have also shown that regular hand washing, which is one of the most obvious symptoms of OCD and is common among people during the epidemic and has been highly emphasized by health officials as well as the media, can cause or increase The level of OCD disorder among people in the community; However, little research has been done on people who report symptoms of OCD during the COVID-19 epidemic (Stein, Costa, Lachner, Miguel, Reddy, Shaw, & Simpson, 2019). Therefore, the present study aimed to predict the extent of corona anxiety based on obsessive-compulsive disorder and health literacy.

As well as social restrictions, another important way to slow down the spread of the virus is practicing a good hygiene. For example, celebrities, public figures, governments, and other authorities dealing with health-related affairs are prompting people to wash hands repeatedly. While this type of advice is helpful in reducing the infection, it may have a negative impact on people with OCD causing a worsening of symptoms. In fact, among the wide variety of types of obsessions and compulsions, fear of dirt, feeling of being contaminated and excessive washing are the most common ones affecting about 50% of patients (Brady et al., 2010). Patients with OCD try to resist these thoughts and urges to wash themselves, but they often fail to do so (Kumar & Somani, 2020). Due to the general fear of getting infected and the emphasis on washing hands in health advisories, symptoms of OCD might worsen, as shown by the long-term excessive handwashing emerged in the post-quarantine phase reported by some researchers (Reynolds et al., 2008).

Furthermore, more frequent cleaning habits started as a normal protective behavior might lead to contamination-related obsessions and compulsive actions, mostly in vulnerable people who have other types of obsessions and compulsions.

In fact, one of the four basic dimensions of OCD, especially in the dimension of pollution, is the exaggeration of the threat, and the severe expression of COVID-19-related health problems, as we encounter in the media and in everyday life, may increase the perception of threat in people with OCD. In addition, the need for regular cleaning, often seen in people with OCD, is directly related to COVID-19-related fear and anxiety (Banerjee, 2020).

Because it can increase the range of anxiety and worry of these patients. As Arbuthnott, Louise, & Bailey (2015) showed, people prone to anxiety are often overly

sensitive to the early signs and symptoms of anxiety and tend to interpret the symptoms negatively as signs of a relapse or abnormal flow. In addition, anxiety about the virus mainly causes obsessive fear of infection in some people with obsessive-compulsive disorder and stimulates harmful coercive measures. For these people, the corona virus becomes exactly what they think it is (Feinberg et al., 2020).

Since studies have shown that people with obsessive-compulsive disorder have deficits in cognitive flexibility (Andres et al., 2008), cognitive flexibility is the ability to change cognitive motives to adapt to variable environmental stimuli (Dennis & Vanderwell, 2010) and the individual's ability to inhibit a dominant but inefficient and inappropriate response and the ability to achieve alternative alternatives is more distant (Eskandari Pajoohinia & Abouisani, 2016). Because low cognitive flexibility reduces a person's tolerance, people with obsessive-compulsive disorder may not be able to behave optimally in anxiety situations (Sanagoye Moharear & Mirshekari, 2019). Low cognitive flexibility reduces a person's ability to adapt to disturbing and limiting behavioral events, and people with obsessive-compulsive disorder, who have cognitive flexibility deficiencies, rely on their immutable beliefs, which often have negative consequences. They insist and this insistence makes them feel out of control and as a result these people can hardly forget those early learnings that damage their adaptation to new conditions (Jafari 2019).

The results of statistical analysis of the present study using Pearson correlation coefficient have also shown that there is a significant and positive relationship between anxiety associated with COVID-19 and obsessive-compulsive disorder at the level of $P < 0.01$. The results also showed that there was a significant negative relationship between COVID-19-related anxiety and health literacy level at the level of $P < 0.05$. The results of multiple regression analysis with simultaneous method in this study showed that predictor variables were able to explain the degree of corona anxiety well. These results are somehow in line with the results of Nissan et al. (2020); Because they also concluded in their research that anxiety caused by COVID-19 can lead to the onset, persistence and persistence of OCD in individuals (Nissen, Hozgard, & Thomson, 2020). Also, the results of research by Knowles et al. (2021) showed that there is a significant relationship between fear of infection, obsessive hand washing and in general obsessive-compulsive behaviors and anxiety caused by the disease and obsessive behaviors predict anxiety due to the disease (Knowles & Olatoni, 2021). The results of the present study are also in line with the results of other studies in the field of adolescents and adults (Tanir et al, 2020).

Finally, the results of the present study show that there is a significant negative relationship between health literacy and anxiety related to COVID-19 and having high health literacy can lead to a reduction in anxiety caused by the COVID-19 epidemic; Because having high health literacy leads to the correct understanding and analysis of information in the field of disease and to make the right decisions in the event of an epidemic. Also, according to the results of the present study, which showed that there is a significant positive relationship between obsessive-compulsive disorder (OCD) and anxiety associated with COVID-19 and OCD has been able to significantly predict and explain the anxiety caused by the epidemic. Anxiety associated with COVID-19 is found to exacerbate the disorder in patients with certain symptoms, such as frequent hand washing and non-contact with individuals and at various levels, which has been strongly emphasized by health officials and the media. OCD overlaps, exacerbating the disorder and increasing anxiety levels about the epidemic. Therefore, in addition to increasing awareness and level of health literacy among the general public, measures should be considered to help reduce the incidence of symptoms such as OCD, which follow anxiety.

Conclusion

In general, the results showed that there is a significant positive relationship between corona anxiety and obsessive-compulsive disorder and a significant negative relationship with health literacy. Predictive variables were also able to explain corona anxiety. Given the importance of the subject, the need for current research and such research is felt. Given that there may be limitations in any research, the present study is no exception. Among the limitations, we can mention the implementation of research among people in the age group of 18 to 45 years in Amol. Also, in this study, a questionnaire was used to collect data, and due to the fact that the questionnaires had a self-report aspect, there may be bias in the answers. The questionnaires were also completed according to the corona conditions in cyberspace, which could be another limitation. Therefore, it is suggested that this study be performed in one age group and in person in other areas to lead to more accurate conclusions. In addition to raising the level of health literacy among the general public, workshops can also help reduce the symptoms of anxiety disorders such as OCD, and use media and social media to raise awareness. And the level of public health literacy. It is also suggested that the Department of Health, in collaboration with academic elites, psychologists and counselors, set up free online and telephone counseling centers to improve health-oriented behaviors during the Covid-19 pandemic.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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