Evaluation of the prevalence of illness anxiety disorder following the COVID-19 pandemic in Iran and its related factors: a cross-sectional study

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Abstract

Background and Aims: COVID-19 pandemic has generated a rise in psychological distress, such as illness anxiety disorder, apart from its negative physical effects. This study intends to the evaluation of illness anxiety disorder rate following the prevalence of COVID-19 in Iran and its associated factors.

Methods: In this study, 634 people were studied. The data collection method was performed via the virtual networks using a questionnaire, with the sampling method being convenient and nonprobable with the method of snowball. Evans illness anxiety disorder questionnaire was utilized in this investigation. The logistic regression model and the $\chi^2$ were used to evaluate the data.

Results: The prevalence of illness anxiety disorder was 12.1%. The chance to have an illness anxiety disorder in the people whose relatives had a history of COVID-19 was 5.32 times, and in those who had a relative with a history of COVID-19 had higher (odds ratio = 1.27). But, this connection in people who worked or studied in nonmedical fields, is several times more than those who are busy in the medical fields. In individuals of 30 years and older, the chance of patients in single people compared to married people was 5.20 times higher, but under the age of 30 years, the chance of illness anxiety disorder in single people was 0.91.

Conclusion: COVID-19 pandemic, also to the physical effects, may have psychological implications for people. Therefore, reducing the individual and social activities in terms of this disease, along with measures related to physical problems, diagnosis, timely treatment and proper psychological consequences, including illness anxiety disorder can be very fruitful.

Keywords

COVID-19, illness anxiety disorder, Iran, prevalence, risk factor
1 | INTRODUCTION

1.1 | Background/rationale

Illness anxiety disorder is a mental disorder whose diagnosis is usually difficult, which is known by a person's belief in the serious illness in itself and concerns. Despite the lack of pathological results in medical and neurological evaluations and various studies indicating no substantial issue as much as the current concern, this incorrect notion should endure for at least 6 months. Based on Freud's point of view, the acceptance of patient's role is actually a solution for the patient who can avoid disturbing obligations and postpone undesirable challenges. Some of the authors know this disorder to be a part of the obsessive-compulsive disorder spectrum. Illness anxiety disorder is a preoccupation with having a serious illness based on a misinterpretation of bodily symptoms. The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) defines illness anxiety disorder as having "four symptoms: captivation with or fears of having a serious disease, captivation or fears persisting after medical reassurance, preoccupation or fears interfering significantly with functioning, and symptoms fixed more than six months." Regarding the unwillingness of patients to assess mental health, the prevalence of illness anxiety disorder is less studied, but some studies done in this context reported its prevalence to be varying from 0.8% to 8.5% over the years of people's life. Based on DSM-IV, this disorder may begin at any age, but usually occurs early in adulthood; and it often begins in stressful times, such as the death of a person's relatives, the diagnosis of a disease in one popular person, or after recovery with a serious illness. Exposure to disease information via media can be effective to form this disorder.

The course of illness anxiety disorder is usually periodic. The periods of disease take months to years, and the periods of relaxation are seen in their intervals. There may have an obvious relationship between the exacerbation of illness anxiety disorder's symptoms and psychosocial stressors. Barsky showed that about 81.6% of the patients with illness anxiety disorder recovered after 4 years.

Coronaviruses are a wide range of the sources which cause pollution in humans. Before COVID-19, six different types of viruses caused infection in humans, among which, four types play a role in mild disease, and two other types called, Severe Acute Respiratory Syndrome (SARS), and Middle East Respiratory Syndrome (MERS), play a role to create severe respiratory diseases in humans. COVID-19 outbreak was observed in China during the midst of December 2019 in Wuhan, China. The incubation period of the disease is reported to be between 3 and 7 days and almost 14 days. During the incubation period, the disease can be transmitted, so the quarantine of individuals to reduce the amount of transmission seems necessary. In the study surveyed the prevalence of illness anxiety disorder, and willingness of people to seek healthcare across COVID-19 pandemic in Calabar Metropolis of Cross River State, Nigeria Of all the 182 (91.0%) respondents who displayed illness anxiety disorder, only 38 (19.0%) admitted having better healthcare seeking behavior while 144 (72.0%) would not want to seek healthcare except in critical conditions.

The analysis on age showed that illness anxiety disorder is associated with age where older persons showed more symptoms. This is in tandem with research which found rheumatic diseases and inflammatory joint disease (e.g., arthritis) were most feared by the aged (older groups) and translates to the fear of death which, by extension made the elderly scared of accessing healthcare.

1.2 | Objectives

COVID-19 disease outbreak has occurred in nations, including Iran. Therefore, people must be quarantined, and the emergence of illness anxiety disorder in some people is not unexpected. Therefore, the present study aims to determine the amount of illness anxiety disorder following the COVID-19 epidemic in Iran and its related factors.

2 | METHODS

2.1 | Study design and setting

In this cross-sectional study, from 30 June to 10 September 2020, 634 people were studied. The inclusion criteria included: age upon 12 years, ability to read and write, ability to answer questions, and access to a smartphone.

2.2 | Participants

The data collection method was performed via virtual networks using a virtual questionnaire given the pandemic of COVID-19 and the high contagability of this disease. Since data collection is in forming virtual social media, the sampling method was initially convenient and nonprobable in such a way that the questions were provided to the admins of virtual social media groups, and they were asked to provide the group members with some explanations about the way of voluntary responding to the questions and the purpose of collecting data; then, they were asked to provide the questionnaire to their friends and acquaintances with the method of snowball.

2.3 | Data measurement and variables

The questionnaire used in this study had 11 demographic questions which were the variables associated with COVID-19 prevalence and Evans illness anxiety disorder questionnaire. Based on the Likert scale, with questions, such as (You think, compared to your age group, to what extent, are you exposed to diverse diseases?) the questionnaire assesses the illness anxiety disorder, and we changed six questions
from Evans questionnaire based on the symptoms of illness anxiety disorder; then, used it to measure illness anxiety disorder during the COVID-19 epidemic. In this questionnaire, individuals are placed into groups of lack of illness anxiety disorder (0–30) and illness anxiety disorder (31–60) based on the score obtained.

2.4 | Study size

since at the time of conducting the study, no article was found on the prevalence of the illness anxiety disorder in Iran, therefore, the sample size of 392 people was calculated using the following formula and considering ($p = 0.5$).

$$n = \frac{Z^2 \cdot \frac{p(1-p)}{d^2}}{}.$$

Initially, after extracting the primary data, it was determined that 670 people participated in the study, but 21 of them completed less than 10 questions from the questionnaire; thus, they were excluded from the study. Subsequently, during the initial data analysis, it was determined that 15 others responded to less than 70% of the questionnaire questions; thus, they were also excluded from the study, resulting in a final sample size of 634 individuals.

2.5 | Statistical methods

After collecting data, the data were entered into SPSS.24 software and analyzed. Descriptive statistics (relative frequency, mean and standard deviation) were used to determine the amount of illness anxiety disorder. $\chi^2$ test was performed to assess the data about the association between sickness anxiety disorder and independent variables, and the logistic regression model was utilized to discover the factors linked with illness anxiety disorder as multiple variables. Also included in the multivariate model were all variables with a $p$ value less than 0.25 in the univariate analysis.

3 | RESULTS

A total of 632 people, 70.9% female and 28.5% male with mean age of 34.36 years, were studied in terms of illness anxiety disorder, followed by the prevalence of corona disease in Iran.

| TABLE 1 | Demographic variables in the study population |
|----------|-----------------------------------------------|
|           | Illness anxiety disorder                      |        |
|           | No, N (%) | Yes, N (%) | $p$ value | OR(95% CI) univariate | B | $p$ value | OR(95% CI) multivariate |
| Age       |           |            |          |                      |   |          |                        |
| <30       | 197 (81.7)| 44 (18.3)  | <0.001   | 2.42 (1.47–3.97)     | 1.987 | <0.001   | 7.29 (2.87–18.54)     |
| ≥30       | 325 (89.5)| 30 (10.5)  | 1        | 1                     | 1   | 1        | 1                      |
| Gender    |           |            |          |                      |   |          |                        |
| Female    | 383 (85.5)| 65 (14.5)  | 0.001    | 3.01 (1.50–6.00)     | 1.143 | 0.013    | 3.13 (1.27–7.69)     |
| Male      | 170 (94.4)| 10 (5.6)   | 1        | 1                     | 1   | 1        | 1                      |
| Marital status |           |            |          |                      |   |          |                        |
| Single    | 180 (83.3)| 36 (16.7)  | 0.017    | 1.84 (1.11–3.05)     | 1.649 | 0.001    | 5.20 (1.91–14.12)     |
| Married   | 304 (90.2)| 33 (9.8)   | 1        | 1                     | 1   | 1        | 1                      |
| Education |           |            |          |                      |   |          |                        |
| Ph.D.     | 45 (84.9) | 8 (15.1)   | 0.484    | 1.34 (0.51–3.46)     | -   | -        | -                      |
| Masters   | 127 (88.2)| 17 (11.8)  | 1.04 (0.48–2.24) | -           | -   | -        | -                      |
| Bachelor  | 224 (89.6)| 26 (10.4)  | 0.90 (0.44–1.83) | -           | -   | -        | -                      |
| Associate Degree | 49 (84.5)| 9 (15.5) | 1.80 (0.76–4.25) | -           | -   | -        | -                      |
| High school diploma and less | 100 (88.5)| 13 (11.5) | 1        | 1                     | 1   | 1        | 1                      |
| Occupation |           |            |          |                      |   |          |                        |
| Housewife | 92 (82.1) | 20 (14.9)  | 0.099    | 2.93 (0.64–13.35)    | -   | -        | -                      |
| Nongovernmental | 114 (85.1)| 20 (14.9) | 2.36 (0.52–10.75) | -           | -   | -        | -                      |
| Student   | 98 (87.5) | 14 (12.5)  | 1.92 (0.41–9.01) | -           | -   | -        | -                      |
| Governmental | 187 (91.7)| 17 (8.3) | 1.22 (0.26–5.61) | -           | -   | -        | -                      |
| Unemployed | 27 (93.1)| 2 (6.9)   | 1        | 1                     | 1   | 1        | 1                      |
3.1 Prevalence of illness anxiety disorder

According to this study’s results, 2.4% of people had a moderate illness anxiety disorder, 9.7% had a mild illness anxiety disorder, 38.4% were in the boundary group, and 49.5% were classified in the healthy group. In total, illness anxiety disorder prevalence was determined at 12.1%.

Factors associated with illness anxiety disorder.

Table shows comparing the prevalence of illness anxiety disorder in terms of the demographic variables and the variables associated with Corona.

The results of this study indicate that age, sex, and marital status have a significant relationship with illness anxiety disorder prevalence, such that after the onset of COVID-19 pandemic, the risk of illness anxiety disorder is 2.42 times greater in people aged 30 than in those aged 30 or older, and the risk of the disease is 3.01 times greater in women than in men and 1.84 times greater in single individuals than in married individuals. Besides, having a history of underlying diseases, such as cancer, respiratory diseases, diabetes, and hypertension, and showed a significant relationship with illness anxiety disorder, in such a way that these people are 1.91 times, more likely than those without a history of developed diseases for illness anxiety disorder (Tables 1 and 2).

After examining the independent variables simultaneously in the multivariate model, in addition to the variables of age, sex, marital status, and the history of underlying diseases which had a significant relationship with illness anxiety disorder, the history of the disease of relatives, such as other members of the family, friends, acquaintances, colleagues and so on significantly increases the risk of illness anxiety disorder.

Another remarkable point is that two variables of age and marital status, as well as two other independent variables, namely, the history of the disease of relatives and medical jobs (education or work in medical domains), showed antagonism interaction.

As a result, the likelihood of having an illness anxiety disorder was 5.32 times greater in the subgroup of persons whose educational

| TABLE 2  | Independent variables associated with illness anxiety disorder in the study population |
|----------|--------------------------------------------------------------------------------------|
| variables          | Illness anxiety disorder | p value | OR (95% CI) univariate | B | p value | OR (95% CI) multivariate |
| Medical field or occupation |                      |          |                        |   |          |                          |
| Yes              | 200 (85.8) 33 (14.2) 0.219 1.36 (0.83–2.22) 0.004 0.991 1.004 (0.48–2.09) |
| No               | 330 (89.2) 40 (10.8) 1 1 |
| Underlying disease |                      |          |                        |   |          |                          |
| Yes              | 109 (81.3) 25 (18.7) 0.014 1.91 (1.13–3.24) 1.036 0.001 2.81 (1.49–5.30) |
| No               | 410 (89.3) 49 (10.7) 1 1 |
| Quarantine period |                      |          |                        |   |          |                          |
| More than a month | 306 (89.0) 38 (11.0) 0.601 1.01 (0.46–2.19) |
| 2–4 week         | 105 (86.8) 16 (13.2) 1.20 (0.50–2.88) |
| Less than 2 week | 67 (83.8) 13 (16.3) 1.50 (0.60–3.76) - - - |
| 0                | 72 (88.9) 9 (11.1) 1 |
| History of the disease of relatives |                      |          |                        |   |          |                          |
| Yes              | 72 (82.8) 15 (17.2) 0.112 1.64 (0.88–3.04) 1.672 0.002 5.32 (1.85–15.32) |
| No               | 481 (88.7) 61 (11.3) 1 1 |
| Reason to leave home |                      |          |                        |   |          |                          |
| Do not leave the house | 132 (89.2) 16 (10.8) 0.977 1 |
| walking           | 39 (86.7) 6 (13.3) 1.26 (0.46–3.46) |
| Excursion in the city by car | 43 (86.0) 7 (14.0) 1.34 (0.51–3.48) - - - |
| Going to work     | 157 (87.7) 22 (12.3) 1.15 (0.58–2.29) |
| Family visit      | 61 (88.4) 8 (11.6) 1.08 (0.43–2.66) |
| Shopping          | 92 (86.0) 15 (14.0) 1.34 (0.63–2.85) |
| Marital status × Age |                      |          |                        |   |          |                          |
| -                | -                - - - - -1.741 0.007 0.17 (0.04–0.62) |
| History of the disease of relatives × Medical field or occupation |                      |          |                        |   |          |                          |
| -                | -                - - - - -1.433 0.065 0.239 (0.05–1.09) |
background or line of employment did not include the medical sciences than it was in the subgroup of people whose background did not involve the medical sciences. But, in the subgroup of people whose educational degree or work was in the field of medical sciences, the chance of illness anxiety disorder in the people whose relatives had a history of COVID-19 compared to those whose relatives had not have a history of COVID-19 was 1.27 times higher (odds ratio [OR] = $e^{1.672-1.433} = 1.27$).

Similarly, in the subgroups of individuals of 30 years and older, the chance of patients in single people compared to married people was 5.20 times higher, but under the age of 30 years, the chance of illness anxiety disorder in single people compared to married people was 0.91 (OR = $e^{1.469-1.741} = 0.91$), that is, the chance of illness anxiety disorder at the subgroup of people under the age of 30 in married people was 9% higher than single people.

## 4 Discussion

Illness anxiety disorder prevalence was determined by 12.1%, which is less frequent than in other studies,10,11 for example, a survey which was conducted during the COVID-19 pandemic conditions from April 24 to May 18, 2020 during the period of social isolation was performed in Italy showed that 46.2% of the participants experienced hypochondria.12 This difference in illness anxiety disorder prevalence in COVID-19 pandemic period across studies may be due to the different methods employed, different participant subgroups, and at the time of the study, the length of time since the beginning of the epidemic, as well as the region’s circumstances due to the rate of epidemic deaths.13 In a study Iran, the mean scores of resilience and illness anxiety disorder were 72.38 ± 7.11 and 49.75 ± 8.13, respectively, indicating the moderate level of these two variables between nurses. Illness anxiety disorder in 18.91%, 61.22%, and 1.28% of the nurses were mild, moderate, and severe, respectively. There was a significant negative correlation between resilience and illness anxiety disorder. In this regard, control, positive acceptance of change, spiritual effects, trust in individual instincts, and perception of competence were detected as the predictors of nurses’ illness anxiety disorder.

Furthermore, in another study in Iran based on the obtained results, 186 out of 275 cases obtained a score from 1 to 20 and were included in the group of healthy individuals. Besides, 89 cases showed mild to severe symptoms of illness anxiety disorder. The results of the one-way analysis of variance indicated that the illness anxiety disorder score was significantly different in various groups of variables of age, job experiences, the application of protective means, history of COVID-19, and attention to preventive measures ($p < 0.05$).

Like a number of other studies in this field, the illness anxiety disorder in women was more common than in men.14-16 This finding can be attributed to reasons, such as the lower family and environmental support in women than in men.17

Another study on the impact of marital status on illness anxiety disorder during the COVID-19 pandemic period revealed that the likelihood of disease is higher in unmarried individuals than it is in married individuals.11 This finding supports the idea that since unmarried individuals spend more time worrying about their problems and appearances than married individuals, they are also more likely to develop illness anxiety disorder.11 But, the remarkable point in this study was different results from analysis in two age subgroups of under 30 years of age and over 30 so that the chance of illness anxiety disorder in the age group under 30 years old, in single subjects compared to married people was about four times higher, but vice versa, in the age group over 30 years old, the chance of disease in married people was 0.09 more than single people.

Other results of this study is that the chance of disease in people under the age of 30 was much higher than the chance of disease in people over 30 which may be due to the increase in concerns created after high group activities in younger people and more neglecting to preventive measures related to COVID-19 disease in this age group. But, the results of other studies in this area reported a chance of higher disease in the elderly than in the lower ages.10,18,19

According to other studies in this area,20,21 the history of underlying illnesses like cancer, respiratory illnesses, diabetes, hypertension, and so on was one of the factors that predicted the development of illness anxiety disorder. This is because patients with underlying illnesses experience more fears and anxiety than other patients, which may increase their risk of developing illness anxiety disorder.22,23 Because the results of the studies show the relationship among the illnesses like diabetes and high blood pressure with the severity of COVID-19, so other underlying diseases such as kidney diseases, stroke, and cancers may show the same connection; however, proving this needs further investigation.24,25

Another remarkable finding in this study is that in general, those who had a relative with a history of COVID-19 had a higher chance for illness anxiety disorder, but this connection in people who worked or studied in nonmedical fields, is several times more than those who are busy in medical fields; in confirming it, one can point to the results of another study which reports that the illness anxiety disorder score was higher in people with less work experience.19 Therefore, in this case, it can be justified that the history of relatives has caused fear in the individuals which can play an important role in the vulnerability to the disease and fear of their contamination, as far as another study concluded, being in touch with people infected with COVID-19, leads to more fear of people for relatives compared to themselves.14

Hence, another study conducted in Australia in 2013 showed that illness anxiety disorder prevalence among health sciences students was higher than the general population;26 and this higher prevalence probably was in terms of more familiarity of this group with different illnesses and their symptoms and ultimately the observation of the smallest symptom in the self on the presence of the disease, but the lower prevalence of illness anxiety disorder in personnel and medical subgroup students during the COVID-19 pandemic period may be attributed to issues such as infodemic, in a
way that the release of large volumes of information, especially in cyberspace which integrated with fake and false information, and creating public horror can ultimately lead to an increase in the level of psychiatric disorders and including illness anxiety disorder.

This research is not without limitations, for example, we can point to the fact that not all people have access to smartphones.

5 | CONCLUSION

COVID-19 pandemic, in addition to physical effects, may have psychological implications for people. One of these undesirable psychological implications is an illness anxiety disorder which can have many complications, including disturbance in job functions, impairment in daily affairs and personal work, and ultimately in terms of a high reference to doctors and buying unnecessary health products, it may impose many economic problems to the family and society. Therefore, to reduce the individual and social activities due to this disease, along with measures related to physical problems, diagnosis, timely treatment, and proper psychological consequences, including illness anxiety disorder, can be very fruitful.

AUTHOR CONTRIBUTIONS

Neda Mahdavifar: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Supervision; Writing – original draft; Writing – review & editing.

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Hamid Salehiniya: Conceptualization; Formal analysis; Funding acquisition; Investigation; Writing – original draft; Writing – review & editing.

CONFLICT OF INTEREST

There is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data of the study are available by the corresponding author upon reasonable request.

TRANSPARENCY STATEMENT

The lead author Hamid Salehiniya affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ETHICS STATEMENT

This study was approved by the ethics committee of the Sabzevar University of Medical Sciences in Iran, also informed consent was obtained for those eligible to enter the study.

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