

# Impact of COVID-19 Pandemic on the Mental Health of Rural Population in Iran

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## ABSTRACT

The COVID-19 pandemic, which has caused anxiety and fear in humans, has negatively affected the mental health of millions of people. This study aimed to assess the impact of the COVID-19 disease on mental health of Iranian rural households. A cross-sectional study was carried out on 375 rural households from October 2nd to 29<sup>th</sup>, 2020. Data was gathered using the Symptom Checklist 90 (SCL-90) questionnaire. Descriptive analysis and multivariable logistic regression were performed to evaluate the factors associated with mental health. High rates of paranoid ideation disorder (64.6%), interpersonal sensitivity (59.5%), and hostility (48.1%) were recorded among the Iranian rural population during the COVID-19 pandemic. Females tended to show more symptoms of obsessive-compulsive disorder, anxiety, and paranoid ideation. Additionally, gender, the number of children, amount of loans, loss of a family member or friend due to COVID-19, worry about food insecurity, exposure to news about COVID-19, and access to medical centers were significant predictors of mental health. These findings indicate the need for public policies centered on mental disorders in rural areas during the COVID19 pandemic and the need for measures to protect vulnerable groups in the rural population.

**Keywords:** Anxiety, Hostility, Obsessive-compulsive disorder, Paranoid ideation, Rural households.

## INTRODUCTION

The coronavirus pandemic is an infectious disease spread in more than 185 countries and has engaged the majority of the global population. In response, many countries have imposed restrictions that affect all elements of people's lives (Han *et al.*, 2020). People who are quarantined lose face-to-face contact and traditional social interventions and have an unpleasant experience (Zhang *et al.*, 2020). The loss of freedom, separation from loved ones, the uncertainty of the disease situation, and boredom can sometimes create dramatic impacts (Brooks *et al.*, 2020). The grief among those who have lost loved ones, distress of losing a job and financial security, the challenge of working from home while caring for

children, and the fear of illness, all have been complications on mental health (Nixon, 2020; Fegert *et al.*, 2020).

Past studies have shown that pandemics affect the mental health of people in a community (Stuijzand *et al.*, 2020; Paul *et al.*, 2021). Some epidemics such as SARS or Ebola have led to psychological problems such as depression, anxiety, and obsession (Mak *et al.*, 2010). In this regard, by looking at the behaviors of people in different communities during the coronavirus pandemic, we can see that many people have developed obsessive behaviors, such as using disinfectant spray constantly and every few minutes or having abnormal moods while eating (Benatti *et al.*, 2020; Shafran *et al.*, 2020; Chakraborty and Karmakar, 2020). In these circumstances, it is essential

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to maintain the mental health of individuals since, according to the WHO, this epidemic continues to exist, and so far, there is still no cure for it. At best, the total vaccines needed to vaccinate all the people in the world will be produced by the end of 2024 (Forman *et al.*, 2021).

So far, the Ministry of Health and Medical Education of Iran has verified 2,966,363 cases of infected patients and 81,063 deaths in the country till June 7th, 2021 (Ministry of Health and Medical Education, 2021). The Coronavirus has spread in most Iranian cities. However, in the rural areas, farmers, businesses, and communities are particularly affected. Rural residents often travel long distances to access health services, are less likely to have insurance for mental health services, and are less likely to identify an illness. There is a severe shortage of mental health specialists, and fewer trained professionals choose rural areas to work. Stigma is also a significant barrier to receiving mental health care for rural residents (Mohatt *et al.*, 2005; Nuvey *et al.*, 2020).

Despite this, so far, no study has been conducted on the effects of Coronavirus on the mental health of Iranian people living in rural areas. Moreover, it is essential to determine which factors modulate the stress response to the pandemic. There is also lack

of research to assess the symptoms of the mental disorder during this pandemic, particularly in Iranian rural households. Therefore, this study aimed to overcome this by providing helpful information to help to support the mental health of rural communities, especially those who might need further support during this challenging time (Figure1).

## MATERIALS AND METHODS

### Conceptual Model

This cross-sectional study was conducted between October 2nd to 29th, 2020, in Lorestan Province in western Iran. The research population included 17,623 household heads living in rural areas. We used Cochran's formula to calculate the sample size, and 375 household heads were selected by the multistage cluster random sampling method. In the first stage, six counties (Khoram Abad, Aligoodarz, Borujerd, Kuhdasht, Nur Abad, and Pol Dokhtar) were randomly selected among the counties of Lorestan Province. Then, five districts were chosen from each county using a systematic sampling method. In the third stage, 10% of the villages in these

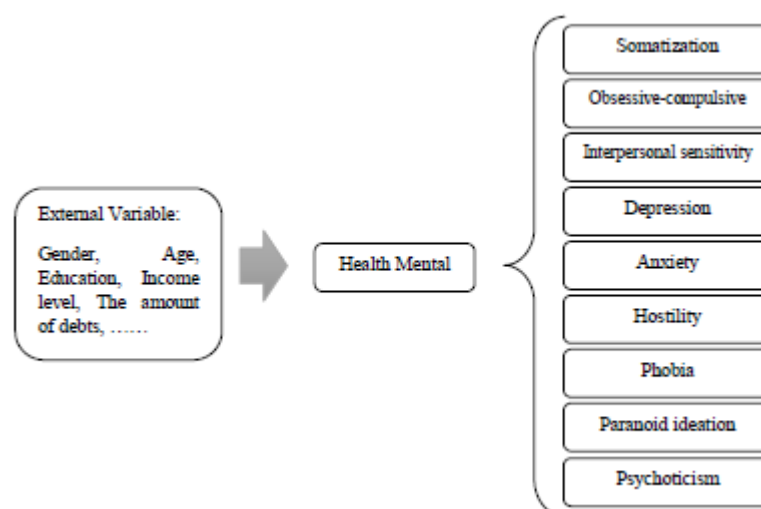


Figure 1. Conceptual model of study.

districts were chosen randomly and, finally, rural household heads in each village were selected using systematic sampling.

### Measure

Data was collected using a questionnaire consisting of two sections. The first section consisted of demographic information (e.g., sex, age, education level, income level, and loan amount). The second section consisted of Symptom Checklist-90-R (SCL-90-R). The mental health questionnaire was based on the validated Persian version of the Symptoms Checklist-90-Revised questionnaire. This scale is a self-report system inventory primarily designed for medical, clinical, and non-clinical samples, and it is based on the Hopkins Symptom Checklist (Derogatis *et al.*, 1974). The SCL-90-R was interpreted in terms of nine primary symptom dimensions of Psychoticism, Paranoid Ideation, Phobia, Hostility, Anxiety, Depression, Interpersonal Sensitivity, Obsessive-Compulsive, and Somatization. Each symptom is scored on a five-point Likert scale (0= Not at all, 4= Extremely), showing how often the participant has experienced these symptoms in the past seven days. Also, three global indices – Global Severity Index (GSI), the Positive Symptom Total (PST), and Positive Symptom Distress Index (PSDI) – provide a more general assessment of mental health. These indexes can be obtained as follows: GSI is obtained by the average scores of the total number of answered items; PST is the total number of items with non-zero responses, and PSDI is the sum of the non-zero scores divided by the PST. To determine the prevalence of psychological symptoms in each dimension, we used a cut-off point of 2.5. We took into consideration the average score of more than 2.5 in each dimension to determine mental disorder. We used a cut-off point of 0.7 for (GSI) score. This cut-off point has also been used in many studies conducted in Iran (Nojomi and Gharayee, 2007; Sohrabi *et al.*, 2019;

Sepehrmanesh *et al.*, 2014; Bayani *et al.*, 2007; Eskandari and Eskandari, 2019; Shafiee-Kandjani *et al.*, 2019). Using Cronbach's alpha coefficient, the reliability of this questionnaire in the present study was calculated as 0.85.

### Statistical Analysis

We used descriptive (dispersion indexes) and inferential (multivariable logistic regression analysis) statistical tests to analyze the research data. Descriptive analysis was used to describe the characteristics of the participants. Multivariable logistic regression analysis was carried out to predict the association between affective factors and mental health. Logistic Regression estimates the probability of a binary outcome as a function of independent variables. After measuring mental health, participants were divided into two groups with mental health ( $Y= 1$ ) and without mental health ( $Y= 0$ ). The cut-off point of 2.5 was used to group dependent variables. Those with mental disorders symptoms exceeding the diagnostic threshold (2.5) were included in the mental disorders group. Also, after determining the factors affecting mental health, independent variables were entered into the model as variables zero and one. The estimates of the strengths of associations were shown by the Beta (Co-efficient) at a 95% Confidence Interval (CI). A P-value of  $\leq 0.05$  was considered to be significant. All statistical analyses were performed using the SPSS ver. 24 software.

## RESULTS

### Sociodemographic Characteristics

Table 1 shows the distribution of demographic features in the present research. Due to the use of a logistic regression model to identify the factors affecting the mental health of rural people,

**Table 1.** Descriptive statistics of variables used in the logit model.

| Variable   | Grouping   | Total<br>N (%) | Mental<br>health<br>N (%) | Mental<br>disorder N<br>(%) | P-value |
|--|------------|----------------|---------------------------|-----------------------------|---------|
| Gender   | Male =1    | 311(83)        | 178(85.6)                 | 133(76.1)                   | 0.001   |
|  | Female=0   | 64(17)         | 24(14.4)                  | 40(23.9)                    |         |
| Age  | > 40       | 229(61)        | 131(63)                   | 98(58.7)                    | 0.000   |
|  | ≤ 40       | 146(39)        | 69(37)                    | 77(41.3)                    |         |
| Marital status   | Married= 1 | 345(92)        | 192(92.3)                 | 153(91.6)                   | 0.102   |
|  | Single= 0  | 30(8)          | 16(7.7)                   | 14(8.4)                     |         |
| Number of children   | -          | 375(100)       | 1.09                      | 2.32                        | 0.006   |
| Access to medical centers  | Yes= 1     | 152(40.5)      | 103(49.5)                 | 49(29.3)                    | 0.001   |
|  | No= 0      | 223(59.5)      | 105(50.5)                 | 118(70.7)                   |         |
| lost income due to COVID-19  | Yes= 1     | 162(43.2)      | 51(31.3)                  | 111(66.5)                   | 0.001   |
|  | No= 0      | 213(56.8)      | 157(73.7)                 | 56(33.5)                    |         |
| Staying at home and maintain social distance                       | Yes= 1     | 207(55.2)      | 94(24.5)                  | 113(67.6)                   | 0.001   |
|  | No= 0      | 168(44.8)      | 114(75.5)                 | 54(32.4)                    |         |
| Experiencing the loss of a family member or friend due to COVID-19 | Yes= 1     | 16(4.3)        | 6(2.9)                    | 10(6)                       | 0.000   |
|  | No= 0      | 359(95.7)      | 202(97.1)                 | 157(94)                     |         |
| The amount of loans and debts                                      | High= 1    | 267(71.2)      | 158(76)                   | 109(65.3)                   | 0.000   |
|  | Low= 0     | 108(28.8)      | 50(24)                    | 58(34.7)                    |         |
| Shortage of masks and disinfectants during the COVID-19            | High= 1    | 112(29.8)      | 32(19.1)                  | 80(48)                      | 0.521   |
|  | Low= 0     | 263(70.2)      | 176(80.9)                 | 87(52)                      |         |
| Worry about food insecurity  | Yes= 1     | 230(61.3)      | 132(63.5)                 | 98(58.7)                    | 0.032   |
|  | No= 0      | 145(38.7)      | 76(36.5)                  | 69(41.3)                    |         |
| Exposure to news about COVID-19                                    | High       | 274(73)        | 175(84.1)                 | 99(59.3)                    | 0.002   |
|  | Low        | 101(27)        | 33(15.9)                  | 68(40.7)                    |         |
| Academic level   | > Diploma  | 233(62.1)      | 151(72.6)                 | 82(49.1)                    | 0.210   |
|  | ≤ Diploma  | 142(37.9)      | 57(27.4)                  | 85(50.9)                    |         |
| Monthly income   | > \$150    | 116(30.9)      | 66(31.7)                  | 50(30)                      | 0.040   |
|  | ≤ \$150    | 259(69.1)      | 142(68.3)                 | 117(70)                     |         |

descriptive statistics are presented based on two levels of mental health and mental disorders. Approximately 58.7% of the participants who had mental disorders were more than 40 years old. There was no significant association between marital status and mental health ( $P= 0.102$ ). Seventy percent of participants with a mental disorder had a monthly income of  $\leq \$150$ . Also, in participants with mental disorders, the average number of children was higher than those with mental health. There was no significant association between academic level and mental health ( $P= 0.210$ ). However, a significant association ( $P= 0.000$ ) was observed if participants lost income due to COVID-19. Mental disorders were seen in 66.5% of these participants. A significant association ( $P= 0.004$ ) was observed for participants who stayed at

home and maintained social distance; mental disorders were seen in 67.6% of these participants. A significant association ( $P < 0.001$ ) was observed for participants who experienced the loss of a family member or friend due to COVID-19. Also, 65.3% of participants with mental disorders had loans and debts; having debts was significantly associated with mental health. About 58.7% of participants with mental disorders were concerned about food insecurity.

### Mental Health Status

The means and standard deviation (raw scores) on the subscales of the SCL-90-R in the current sample are described in Table 2 and are as follows: Paranoia subscale ( $M= 2.76$ ,  $SD= 0.79$ ), Interpersonal Sensitivity

**Table 2.** The means and standard deviation for subscales of mental health.

| SCL-90-R dimensions                    | Total sample | Male      | Female    | P-Value |
|--|--------------|-----------|-----------|---------|
|  | Mean±SD      | Mean±SD   | Mean±SD   |         |
| Somatization                           | 0/58±0/76    | 0/59±0/33 | 0/57±0/01 | 0/247   |
| Obsessive-compulsive                   | 1/20±0/92    | 1/05±0/50 | 1/75±0/43 | 0/012   |
| Interpersonal sensitivity              | 2/58±0/97    | 1/41±0/62 | 2/37±0/53 | 0/087   |
| Depression                             | 1/10±0/66    | 1/17±0/69 | 0/88±0/35 | 0/507   |
| Anxiety                                | 1/09±0/79    | 0/96±0/66 | 1/53±0/01 | 0/001   |
| Hostility                              | 2/15±0/85    | 2/05±0/40 | 1/65±0/71 | 0/001   |
| Phobia                                 | 1/01±0/89    | 1/11±0/51 | 1/00±0/34 | 0/301   |
| Paranoid ideation                      | 2/76±0/79    | 1/35±0/74 | 1/87±0/53 | 0/033   |
| Psychoticism                           | 0/89±0/91    | 1/02±0/41 | 0/98±0/22 | 0/215   |
| Global Severity Index (GSI)            | 0/82±0/36    | 0/77±0/62 | 0/90±0/71 | 0/001   |
| Positive Symptom Total (PST)           | 45/30±0/33   | 37/06±0/8 | 50/18±0/7 | 0/001   |
| Positive Symptom Distress Index (PSDI) | 1/38±0/33    | 1/25±0/60 | 2/34±0/54 | 0/001   |

subscale (M= 2.58, SD= 0.97), Hostility (M= 2.15, SD= 0.85), Obsessive-Compulsive subscale (M=1.20, SD=0.92), Depression subscale (M= 1.10, SD= 0.66), Anxiety subscale (M= 1.09, SD= 0.79), Phobia subscale (M= 1.01, SD= 0.89), Psychoticism (M= 0.89, SD= 0.91), and Somatization subscale (M= 0.58, SD= 0.76). The results show that the paranoid ideation scale and interpersonal sensitivity have the highest score, respectively, and the somatization scale has the lowest score.

Also, the results showed a significant difference among the mental health of rural households in terms of the gender variable. According to the results, there was a

significant difference in the mean scores of the four dimensions of mental status (obsessive-compulsive, anxiety, hostility, and paranoid ideation) between male and female samples. The average score of obsessive-compulsive, anxiety, and paranoid ideation dimensions in females was higher than the mean scores of males. In contrast, the males had a higher mean in terms of the hostility scale (Table 2).

Table 3 shows the prevalence of mental disorders in rural households. According to Table 3, 167 respondents (44.5%) were diagnosed with mental disorders. The most frequent disorder was paranoid ideation disorder (45.6% impairment and 19% severe

**Table 3.** Prevalence of Mental Disorders in Rural households during COVID-19.

| Variable                  | Healthy |           | Impairment |           | Severe impairment |           |
|---------------------------|---------|-----------|------------|-----------|-------------------|-----------|
|                           | Percent | Frequency | Percent    | Frequency | Percent           | Frequency |
| Somatization              | 82/3    | 308       | 15/2       | 57        | 2/5               | 10        |
| Obsessive-compulsive      | 60/8    | 228       | 27/8       | 104       | 11/4              | 43        |
| Interpersonal sensitivity | 40/5    | 151       | 46/8       | 175       | 12/7              | 49        |
| Depression                | 70/8    | 265       | 23/6       | 89        | 5/6               | 21        |
| Anxiety                   | 64/6    | 242       | 31/6       | 118       | 3/8               | 15        |
| Hostility                 | 51/9    | 194       | 40/5       | 152       | 7/6               | 29        |
| Phobia                    | 70/2    | 263       | 21/8       | 82        | 8                 | 30        |
| Paranoid ideation         | 34/2    | 128       | 45/6       | 171       | 19                | 76        |
| Psychoticism              | 69/5    | 261       | 25/9       | 97        | 4/6               | 17        |
| <b>Total</b>              | 55/50   | 208       | 40/1       | 151       | 4/4               | 16        |



impairment), and the least frequent disorder was morbid somatization disorder (15.2% impairment and 2.5% severe impairment).

### Association between the Mental Health and Socio-Economic Status

The multivariable logistic regression model was used to identify the factors that affect the mental health of rural households. Variables whose relationships were not significant in Table 1 were removed from the final model. Before estimating the model, the collinearity between the remaining variables was checked using VIF (Variance Inflation Factor). The value of the VIF coefficient for all variables in the mental health model was less than five, except the width from the origin and the lost income due to COVID-19. Therefore, after removing these two variables and recalculating the VIF coefficient, collinearity between the variables was solved.

Also, examination of the predictive value coefficient of the estimated model shows that 89.56% of the predictions of the observations have been done correctly and with high accuracy.

The sensitivity of the estimated model was calculated to be 94.62%, indicating the high

accuracy of the model in predicting the values of zero and one dependent variable. Also, a test of goodness of fit performed by the Hosmer and Lemeshow test indicated a good fit of the model (P values= 0.321). The value of the Pseudo R<sup>2</sup> statistic was estimated to be 0.27, indicating the good explanatory power of the model.

Table 4 shows the results of estimating the logistic regression model to identify factors related to the level of mental health of the rural population. The variables of gender, monthly income, access to medical centers have a direct and significant relationship with the mental health of rural people. The variables of the number of children, amount of debts and loans, worry about food insecurity, and experience of losing family has an inverse and significant relationship with participants' mental health.

## DISCUSSION

This study aimed to address the mental health in Iranian rural households during the COVID-19 pandemic. Based on the results, the most reported disorder in rural households was paranoid ideation disorder, so that 64.6% of samples had impairment to severe impairment. This finding is in line with the previous studies, which showed that

**Table 4.** Multivariable logistic regression for conservation mental health.

| Variable   | Parameter estimate | SE    | P-value | Odds ratio | 95.0% CI for EXP (B) |       |
|--|--------------------|-------|---------|------------|----------------------|-------|
|  |                    |       |         |            | Lower                | Upper |
| Gender   | 0.077              | 0.233 | 0.001   | 1.54       | 0.18                 | 12.03 |
| Number of children   | -0.987             | 0.140 | 0.021   | 1.05       | 0.31                 | 6.45  |
| Monthly income   | 1.045              | 0.456 | 0.115   | 2.21       | 1.06                 | 4.11  |
| Amount of debts and loans  | -2.512             | 0.067 | 0.003   | 3.45       | 1.22                 | 7.66  |
| Exposure to news about COVID-19                                    | 1.112              | 0.115 | 0.032   | 1.09       | 0.64                 | 6.89  |
| worry about food insecurity  | -0.072             | 0.049 | 0.020   | 0.98       | 0.12                 | 3.42  |
| Access to medical centers  | 1.453              | 0.227 | 0.005   | 2.65       | 1.65                 | 9.43  |
| Staying at home and maintain social distance                       | -2.056             | 0.897 | 0.104   | 1.32       | 0.21                 | 4.37  |
| Experiencing the loss of a family member or friend due to COVID-19 | -0.656             | 0.543 | 0.040   | 1.88       | 0.54                 | 5.43  |

Log pseudo Likelihood= -56.2205; Prob> Chi<sup>2</sup>= 0.0021; Pseudo R<sup>2</sup>= 0.2732

paranoid ideation levels increase during epidemics (Sfendla and Hadrya, 2020; Ji *et al.*, 2017; Li *et al.*, 2015). The individuals with clinical paranoia have an unfounded suspicion that others are trying to harm, exploit, or deceive them. Paranoia involves unjustified doubts about the loyalty or trustworthiness of other people (Kirk *et al.*, 2013). In the current situation, during the outbreak of the COVID-19 pandemic, any person can be considered a threat to our lives since the COVID-19 can spread by infected individuals who have no symptoms – pre-symptomatic carriers (Tan *et al.*, 2020). On the other hand, whether or not an individual is deemed trustworthy is based on numerous factors, and one important source of information is their face (Willis and Todorov, 2006). However, wearing a face mask to protect against the novel Coronavirus and hiding the face has deprived people of this opportunity.

The other disorder observed among rural households was interpersonal sensitivity, and 59.5% of the samples had a disorder in this regard. Increased inter-personal sensitivity was reported during the previous Ebola outbreak (Li *et al.*, 2015) and other epidemics, such as SARS, swine flu, and avian influenza (Peng *et al.*, 2005). People with high Interpersonal Sensitivity (IS) are particularly vulnerable to fears of being left alone and isolated. They are concerned about the behavior of others and are afraid of negative evaluation by others (Boyce *et al.*, 1993). Due to the Coronavirus pandemic, people feel that they might be criticized for not taking protective measures or might be rejected because of others being afraid of them.

Hostility was the other behavioral disorder observed in 48.1% of rural households. This finding is in line with the previous studies that reported a higher level of hostility during the COVID-19 pandemic (Duan *et al.*, 2020; Bartos *et al.*, 2020; Pérez-Fuentes *et al.*, 2020). Scientists have found biological evidence that stress and hostility feed off each other, contributing to a "cycle of violence" that can be tragic. Thus,

stressful life events such as COVID-19 could cause aggression and violent behavior since they produce a negative outcome. These events make people behave in ways that lead others to attack them (Felson, 1992; Centeio *et al.*, 2015). Chronic stress often occurs in the face of uncertainty and a lack of control over situations. Coronavirus has caused rapid changes in people's lifestyles (e.g., study, work, and social gatherings) and disrupted plans due to travel restrictions and social (physical) distancing measures in our efforts to slow the spread of transmission. People are naturally concerned about their own and their loved ones' health and safety, and there is still a great deal of uncertainty. Moreover, much of the information people receive about Coronavirus from social media may be inaccurate or may be only partially true. All of these experiences have caused stress and increased hostility in people.

Moreover, the results show significant differences in the levels of mental disorders between females and males. The average score of obsessive-compulsive, anxiety, and paranoid ideation dimensions in females was higher than the mean scores of males. Females are more prone to mental disorders, including depression, anxiety, PTSD, and stress during the pandemic (Lei *et al.*, 2020; Gao *et al.*, 2020). A previous study also showed that having experienced anxiety disorder for women is much higher than for men (Mazza *et al.*, 2020). Many factors can affect higher rates of diagnosed anxiety in women, including the hormone fluctuations, brain chemistry, and different coping styles of men and women (Bahrami and Yousefi, 2011; Hosseini and Khazali, 2013; McHenry *et al.*, 2014; Lebron-Milad and Milad, 2012).

Individuals suffering from the symptoms of obsessive-compulsive disorder often interpret good physical symptoms as harmful and hence experience health anxiety. In these individuals, overestimating the threat may include symptoms based on health anxiety obsessions by becoming ill or contaminating others (Cisler *et al.*, 2010).



These individuals have contamination as their primary fear. Fear of contamination is often associated with mandatory habits such as regular hand washing, cleaning, and taking appropriate measures to reduce exposure to contaminated sources (French and Lyne, 2020). Given that personal hygiene (e.g., regular hand washing, use of masks and gloves) and maintaining social distancing is one of the most important ways to prevent the spread of the Covid-19 virus, the risk of practical obsessions is considered very likely during an epidemic (Tanir *et al.*, 2020). The pressure and stress created by the Coronavirus increase the risk of obsessive-compulsive disorder among people, to the point that this cleanliness is done extremely, and disrupts their daily life.

The results of logistic regression analysis showed that determinant factors affecting the mental health of rural people are gender, the number of children, amount of loans, experiencing the loss of a family member or friend due to COVID-19, worry about food insecurity, exposure to news about COVID-19, and access to medical centers. This finding is consistent with studies that have reported mental disorders are more severe in females (Qiu *et al.*, 2020; Özdin and Bayrak Özdin, 2020), elder people (Perrin *et al.*, 2009), in people with more debt (Fernald *et al.*, 2008), in those experiencing the loss of their loved ones, and in those who are more exposed to news about COVID-19 (Hong *et al.*, 2020; Gao *et al.*, 2020; Moghanibashi-Mansourieh, 2020).

This study found that older individuals more likely exhibited a greater number of mental disorder symptoms during the COVID-19 pandemic. This finding may in part be because they are constantly hearing that older people are at higher risk for severe illness than younger people. They may also have health conditions like lung or heart diseases, diabetes, or conditions that affect their immune system. This finding is consistent with previous studies that have found patients with chronic medical conditions and a history of psychiatric illnesses show more symptoms of anxiety

and stress disorders (Mazza *et al.*, 2020; Ozamiz-Etxebarria *et al.*, 2020; Mueller *et al.*, 2020; Özdin and Bayrak Özdin, 2020). However, this contrasts with studies that have found younger people show more mental disorders symptoms such as anxiety, depression, and stress during the COVID-19 pandemic (Ozamiz-Etxebarria *et al.*, 2020; Hwang *et al.*, 2020; Lei *et al.*, 2020).

Also, the results showed that with increasing debts, people are more likely to have mental disorders. This finding is consistent with the previous studies that have suggested debt was associated with mental disorders, and individuals reporting higher amounts of indebtedness were more likely to experience mental disorder symptoms, such as depression, anxiety, and anger (Walsemann *et al.*, 2015; Meltzer *et al.*, 2013; Cooke *et al.*, 2004; Drentea and Reynolds, 2012). Millions have lost their jobs during the pandemic, and their livelihoods are at risk (Lord, 2020). Trade restrictions, border closures, and confinement measures have prevented farmers from accessing the markets, including buying inputs and selling their products. Thus, rural households are forced to resort to negative coping strategies such as distress selling assets and predatory lending that put their mental health in danger.

Another finding of the study revealed that people with more children are less likely to be mentally healthy. This result can have several reasons. Parents of primary-school-age children have reported an increase in their child's emotional, behavioral, and restless/attentional difficulties during the epidemic (Pearcey *et al.*, 2020). With the closure of schools, the responsibility of parents has multiplied. Parents are worried about their children's use of cyberspace. Most children do not have the knowledge and skills to maintain their security on the Internet, and according to UNICEF, millions of children are at risk online. Also, parents who have more children face more financial pressure to meet the needs of their children.



Moreover, the results showed that people who were concerned about food insecurity were more likely to have a mental disorder. This finding is in line with several recent studies that reported restrictions and quarantine measures due to COVID-19 have more raised concerns about food insecurity, reflected in hoarding behaviors, stockpiling of groceries, panic-buying, and rapid changes in diets and food consumption habits (Pulighe and Lupia 2020; Sukhwani *et al.*, 2020; Coopi, 2020). A high-risk perception toward COVID-19 or other civil disturbances will lead to purchase intention of goods that no longer follow the common sense (Long and Khoi, 2020; Banerjee, 2020). There are always people who have anxiety about the risks uncontrollably and may exhibit violent acts, such as concentrating all resources to store commodities, medicine, and food.

Moreover, the results showed that people who experience losing loved ones during an epidemic have less mental health. During the COVID-19 pandemic, the family and close friends of a person who died of COVID-19 may experience stigmas, such as social avoidance or rejection. Stigma can lead to labeling, stereotyping, and other negative behaviors toward others. Some persons may avoid contacting the mourner and their family members, while in a normal situation they would reach out to them. Grieving the loss of a loved one while dealing with the anxiety and fear related to the coronavirus pandemic can be particularly unbearable.

### CONCLUSIONS

Based on the results of this study, paranoid ideation, interpersonal sensitivity, and hostility mental disorders had a higher prevalence among rural households during the COVID-19 pandemic. The results also showed that obsessive-compulsive, anxiety, and paranoid ideation disorders were more prevalent in rural women than men. The results of this study can be a guide for the authorities to pay more attention to the

mental health of the rural populations while combating COVID-19. Good access to mental health services is essential during the pandemic, particularly for rural areas. In these areas, mental health centers are often far away, an expert workforce is harder to come by, and cultural complexities make barriers and further hurdles. More attention and assistance should also be given to vulnerable groups in the rural population, such as women, the elderly, and those suffering from loss of loved ones due to coronavirus.

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## تأثیر همه گیری کووید-۱۹ بر سلامت روان جمعیت روستایی در ایران

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### چکیده

بیماری همه گیر کووید-۱۹ که باعث اضطراب و ترس در انسان می شود، بر سلامت روان میلیون ها انسان تأثیر منفی گذاشته است. این مطالعه با هدف ارزیابی تأثیر کووید-۱۹ بر سلامت روان در میان خانوارهای روستایی ایران انجام شده است. این مطالعه مقطعی بین ۲ تا ۲۹ اکتبر سال ۲۰۲۰ بین ۳۷۵ خانوار روستایی انجام شد. اطلاعات با استفاده از پرسشنامه-SCL-90 Symptom Checklist 90 (90 جمع آوری گردید. برای ارزیابی عوامل مرتبط با سلامت روان از تجزیه و تحلیل توصیفی و رگرسیون لجستیک چند متغیره استفاده شد. شیوع نرخ بالای اختلال ایده پردازی پارانوئید (۶۴/۶ درصد)، حساسیت بین فردی (۵۹/۵ درصد) و خصومت (۴۸/۱ درصد) در جمعیت روستایی در طی بیماری همه گیر کووید-۱۹ در ایران گزارش شده است. بعلاوه، نتایج نشان داد که جنسیت، تعداد فرزندان، میزان وام ها، از دست دادن عضوی از خانواده یا دوستان به دلیل کووید-۱۹، نگرانی در مورد عدم امنیت غذایی، قرار گرفتن در معرض اخبار مربوط به کووید-۱۹ و دسترسی به مراکز پزشکی پیش بینی کننده های قابل توجهی از سلامت روان بودند. این یافته ها نشان دهنده نیاز به سیاست های عمومی متمرکز بر اختلالات روانی در مناطق روستایی در طی بیماری همه گیر کووید-۱۹ و انجام اقدامات لازم برای گروه های آسیب پذیر در جمعیت روستایی است.