



## A comparative study of depression and its relationship with physical health among families with and without COVID-19 patients in comprehensive health centers

Hedieh Azizi <sup>1</sup>, Hamideh Mancheri <sup>2\*</sup>, Najmeh Shahini <sup>3</sup>, Akram Sanagoo <sup>4</sup>, Mahin Tatari <sup>5</sup>

1. Student Research Committee, Golestan University of Medical Sciences, Gorgan, Iran

2. Nursing Research Center, Golestan University of Medical Sciences, Gorgan, Iran

3. Psychiatry Research Center, Golestan University of Medical Sciences, Gorgan, Iran

4. School of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran

5. Health Reproduction and Consultation Research Center in Midwifery, Golestan University of Medical Sciences, Gorgan, Iran

\* Correspondence: Hamideh Mancheri. Nursing Research Center, Golestan University of Medical Sciences, Gorgan, Iran. Tel: +981732456900;

Email: [drmancheri.h@goums.ac.ir](mailto:drmancheri.h@goums.ac.ir)

### Abstract

**Background:** The prevalence of the coronavirus has had various psychological effects on families with patients suffering from COVID-19, including depression. Depression can also affect the physical health of family members. This study was conducted with the aim of comparing the level of depression and its relationship with physical health among families with and without COVID-19 patients in comprehensive health centers.

**Methods:** This case-control study was conducted in 2022 in comprehensive health centers in Gorgan (Iran) among 98 families with and without COVID-19 patients, using simple random sampling. The data collection tools included the Beck Depression Inventory and the PHQ physical health questionnaire. The data were analyzed using descriptive statistics and tests such as the Mann-Whitney U test, Chi-square test, and Spearman's correlation test at a significance level of 0.05.

**Results:** The study revealed that the mean scores of depression and physical health in family members with COVID-19 patients were  $11.56 \pm 7.50$  and  $7.60 \pm 4.32$ , respectively, while in families without COVID-19 patients, they were  $8.01 \pm 4.67$  and  $3.98 \pm 3.43$ , respectively. The odds of depression (OR=5.11,  $p=0.001$ ) and physical symptoms (OR=4.68,  $p=0.002$ ) were higher in families with COVID-19 patients compared to those without. The findings also showed a direct and significant linear correlation between depression and physical health in both groups ( $p<0.001$ ,  $r=0.44$ ).

**Conclusion:** These findings increase the awareness of health managers about the prevalence of depression and physical health disorders among families with COVID-19 patients and can help provide economic, social, and psychological support programs for these families.

### Article History

Received: 11 April 2023

Received in revised form: 21 June 2023

Accepted: 14 June 2023

Published online: 15 July 2023

DOI: [10.29252/JGBFNM.20.1.15](https://doi.org/10.29252/JGBFNM.20.1.15)

### Keywords

Coronavirus

Depression

Physical fitness

Family health

Article Type: Original Article



### Highlights

#### What is current knowledge?

Most of the researches are focused on the anxiety and depression of patients, but in fact, during the pandemic of a disease like Covid, the fear of contracting the disease and dying due to it, along with daily stress and preoccupation, causes healthy people, like the patient's family, to suffer from anxiety and finally face depression.

#### What is new here?

The chances of depression and physical health disorders are higher in family members with a person with Covid-19 than in family members without a person with Covid-19.

### Introduction

In January 2020, the emergence of a highly transmissible viral disease, COVID-19, in the city of Wuhan, China, rapidly spread to become a global pandemic, leading to the World Health Organization (WHO) declaring a state of emergency on February 4, 2020 (WHO statement, January 2020) (1). As of the writing of this study, approximately 600 million people worldwide have been infected, and more than 6 million have died due to this virus. In Iran, around 7 million people have been infected, and approximately 140,000 have lost their lives (2). In Golestan province, the Health Deputy has reported 3,534 deaths with positive results as of this moment. This pandemic has not only impacted the significant economic, political, and social aspects of all countries worldwide, but it has also created significant psychological pressure on people. Therefore, understanding the psychological effects of this viral disease on the mental health of individuals at different levels of society is of great importance (3). Mental health can be a part of the health assessment axis (4). This aspect of health is influenced by various factors, including the onset of diseases, which can cause behavioral and psychological disorders and have a negative impact on patients and their families (5).

According to the systemic family approach, family members are seen as interdependent and directly and indirectly influence each other and other subsystems (6). This means that if one member of the family is affected by

psychological distress, it is not an individual problem but an interactive process between family members who have an inseparable relationship (4). According to research conducted, the contraction of COVID-19 by one of the family members causes stress and tension in both patients and their family members, which increases further if the patient is hospitalized. Those who care for COVID-19 patients at home experience high levels of stress and anxiety for various reasons, including fear of disease transmission and contraction, lack of sufficient support, lack of access to medical services, and some disturbing thoughts such as stigmatization (7).

Quarantine, social distancing, and changes to daily life caused by this virus can lead to a widespread clinical depression. Symptoms of depression include feelings of sadness, emptiness, fatigue, and irritability, and due to these conditions and social isolation, many of people's needs, such as sleep, appetite, and motivation, are affected. Since depression has been facilitated during this pandemic, families are struggling with these challenges and suffering (8). Quarantining patients is considered a primary measure for preventing the transmission of the virus, and many hospitals restrict visits from individuals infected with COVID-19. While these measures are necessary, they can be limiting and increase stress levels, particularly among families who are anxious and have many unanswered questions. Consequently, symptoms of depression and anxiety can develop within the family (9). Since family members are unable to visit their loved ones in person, they often engage in negative thinking and assume the worst-case scenarios (10). The World Health Organization (WHO) reported that in the first year of the COVID-19 pandemic, the global prevalence of anxiety and depression increased by 25% (11). Moreover, a study conducted in Iran found that the prevalence of depression among caregivers of COVID-19 patients was 47% and of moderate severity (7).

The negative psychological and social effects of the pandemic can continue even after it is over, making it essential to address them for both physical health and social stability (12). The interaction between physical and psychological health is complex (13). Mental health problems can disrupt physical health, social, and occupational functioning (14). Individuals with mental illnesses are at a higher risk of developing physical illnesses, and those diagnosed with physical illnesses are more likely to develop mental health problems. When both mental and physical illnesses coexist, the overall rate of complications,

healthcare service utilization, and poorer quality of life is higher (13). Hence, a pandemic can lead to numerous physical and psychological problems that require attention. However, failure to treat these disorders and neglecting them can lead to the worsening of chronic illnesses, the crisis of mental health conditions such as long-term depression, and even suicide (12).

Kong and colleagues reported a prevalence of depression in COVID-19 patients at around 28% (15). In another study by Rashidi and colleagues, a positive correlation between anxiety and depression was also reported (16). Fear of illness and death, along with daily stressors and concerns, can cause healthy individuals, such as the patient's family, to experience anxiety and, ultimately, depression (1).

Considering the negative impacts of depression and anxiety on individuals' performance, efficiency, and physical health, it is crucial to determine the prevalence of depression, its relationship with physical health, and identify individuals susceptible to psychological harm in different levels of society, especially among the families of patients who play a crucial role in improving health, managing complex conditions, and providing continuous care for patients. Hence, it is necessary to maintain individuals' mental health using appropriate psychological techniques and interventions (3). The aim of this study is to conduct a comparative investigation of the prevalence of depression and its relationship with physical health among families with COVID-19 patients and those without the disease in comprehensive health service centers.

## Methods

This study is a case-control study conducted in 2022 in Gorgan (Iran). The sample size was determined to be 98 individuals in each group, and a total of 196 samples were selected. The inclusion criteria for the case group were family members (spouse, mother, father, sister, brother, and child) of COVID-19 patients living in the same household, who were diagnosed and treated by an infectious disease specialist, had confirmed COVID-19, and at least one month had passed since their diagnosis. They also had no history of chronic respiratory diseases (COPD, asthma, lung cancer, etc.) based on their medical records. The case group members were 18 years of age or older and had no known mental illness based on self-report and medical records. The control group consisted of family members of non-COVID-19 patients who were selected based on random sampling. The inclusion criteria for the control group were individuals aged 18 years or older, no confirmed cases of COVID-19 in their family (spouse, mother, father, sister, brother, and child), and no history of mental illness based on self-report and medical records. Samples were selected using simple random sampling method through a table of random numbers. To select the samples, a list of COVID-19 patients was extracted from the NAB health system. For each selected case in each center, a family with no confirmed cases of COVID-19 was randomly selected as a control group from the list of families in the NAB system.

To collect data, the Beck questionnaire was used to measure depression and the PHQ-15 was used to measure physical health. Demographic characteristics such as age, gender, education, occupation, relationship with the patient, insurance status, economic status, and background disease status were taken into account.

The Beck questionnaire is one of the most common self-report tools used to assess the severity of depression symptoms in psychiatric patients and diagnose probable depression in normal individuals. Many studies have used this questionnaire to measure the severity of depression. The Beck questionnaire was developed in 1988 for rapid screening of depressed patients. The Beck 21-item questionnaire measures the severity of depression symptoms. Each question (symptom) is divided into four degrees of severity and is rated from zero to three. A score of zero indicates the lowest level and a score of 3 indicates the highest level of severity of experiencing a depression symptom. The total score for each questionnaire can range from 0 to 63. This questionnaire is used to assess the

severity of depression in individuals over the age of 13. Also, different questions can be used to focus on the type of symptoms in this disease. In a study, it has been reported that the question about pessimism in this test predicted suicidal ideation in 211 patients well. In this test, scores of 13-0 indicate minimum depression, 19-14 indicate mild depression, 28-20 indicate moderate depression, and 63-29 indicate severe depression. Beck and colleagues (1996) obtained a retest reliability of 0.93 for the Beck depression scale. In Iran, the Beck depression scale is widely used and its psychometric properties have been confirmed. For example, Dabson and Mohammadkhani (2007) reported a retest reliability of 0.93 and its convergent validity in the correlation between Beck depression scale scores and scores of Beck hopelessness, suicidal ideation, and the Hamilton depression scale (17).

The PHQ-15 questionnaire is part of the complete PHQ questionnaire and asks respondents about the occurrence of 15 physically distressing symptoms. The questions concern experiences of pain or physical disturbances over the past four weeks. These 15 physical symptoms include more than 90% of the physical symptoms raised in primary care centers, and studies have confirmed that these physical symptoms have a high frequency and require health care interventions either alone or in conjunction with other mental disorders. Each item in the PHQ-15 is scored and interpreted on a 3-point scale (0=not bothered at all; 1=bothered a little bit; 2=bothered a lot). The total score can range from 0 to 30, with higher scores indicating greater severity of physical symptoms. In this scale, the severity of physical symptoms is mild for individuals who score 9-4, moderate for those who score 14-10, and severe for individuals who score higher than 15. In studies conducted by Lee Sing and colleagues, the Cronbach's alpha coefficient was reported to be 79% for this questionnaire. In a test-retest study conducted by van Ravesteijn, the reliability of the first test with the second test was found to be 91.5%, indicating high reliability of this test. In our country, Iran, the reliability and validity of the PHQ-15 questionnaire has also been examined. The normalization of this questionnaire in Iran was performed by Abdolmohammadi and colleagues in 2017. The correlation coefficient between the scores of the PHQ-15 and the 90-SCL was 0.77, which was statistically significant ( $p=0.001$ ), and the internal consistency of the scale was calculated using the Cronbach's alpha coefficient to be 0.76, indicating high internal consistency which is consistent with the results of the study conducted by Sing Lee and colleagues (18).

After the approval of the research proposal and obtaining the ethics committee approval and receiving a letter of introduction from the Research and Technology Deputy of Golestan University of Medical Sciences, the researcher, with the necessary permits, visited comprehensive health centers to begin sample collection. The researcher visited one of the comprehensive health centers in Gorgan on various days of the week, inviting families affected and not affected by COVID-19 to participate in the study based on the inclusion criteria until the required sample size was reached. Initially, the study's objectives were explained to the families, and after obtaining their permission, the questionnaire was distributed.

Data analysis was performed using SPSS18 software with descriptive statistics such as mean and frequency distribution table. The normality of the quantitative variables was evaluated using the Shapiro-Wilk test. Independent t-test and Mann-Whitney U test were used to compare the means. Logistic regression was used to estimate odds ratios, and the Spearman correlation test was used to assess the correlation between quantitative variables. The qualitative variables were compared between the two groups using the chi-square test. The significance level was 0.05.

## Results

Of the 196 participants in the study, 98 were family members of COVID-19 patients, and 98 were family members of non-COVID-19 patients. The mean age

Table 1. Comparison of demographic characteristics between case and control groups

Variable	Case		Control		Total	P-Value*
	Frequency	(percentage)	Frequency	(percentage)		
Gender	Woman	71(52.6%)	64(47.4%)	135(100%)	0.37	
	Man	26(45.6%)	31(54.4%)	57(100%)		
Education	Diploma and less	29(47.5%)	32(52.5%)	61(100%)	0.54	
	University education	69 (52.3%)	63(47.7%)	132(100%)		
Job	Housewife	30(55.6%)	24(44.4%)	54(100%)	0.45	
	Employee	40(51.95%)	37(48.05%)	77(100%)		
	Self-employee	27(55.1%)	22(44.9%)	49(100%)		
Economic Situation	Good	5(33.3%)	10(66.7%)	15(100%)	0.35	
	Medium	57(52.8%)	51(47.2%)	108(100%)		
	Weak	26(53.1%)	23(46.9%)	49(100%)		
Underlying disease	Yes	17(44.7%)	21(55.3%)	38(100%)	0.52	
	No	67(51.5%)	63(48.5%)	130 (100%)		
Insurance	Yes	71(55.9%)	56(44.1%)	127(100%)	.045	
	No	16(38.1%)	26(61.9%)	42(100%)		

\*. Chi-square

Table 2. Spearman's correlation between the two variables of depression and physical health

Group	Physical health variable
Case	Depression variable r:0.44 P:0.000
Control	Depression variable r:0.54 P:.000

Table 3. Likelihood of depression and physical symptoms between case and control groups

Variables	Independent variables	B	S.E(B)	Sig	OR	95.0% C.I. for EXP(B)
Depression	Covid-19 (has versus does not have)	1.631	.465	0.001	5.108	2.055 12.697
	Age	.011	.022	.637	1.011	.967 1.056
	Insurance (has compared to does not have)	1.026	.591	.083	2.789	.876 8.882
Physical symptoms	Covid-19 (has versus does not have)	1.542	.495	.002	4.676	1.771 12.345
	Age	.015	.024	.522	1.015	.969 1.063
	Insurance (has compared to does not have)	.754	.596	.206	2.126	.661 6.842

of family members of COVID-19 patients was 38.56±9.09, and the mean age of family members of non-COVID-19 patients was 35.79±9.88. Independent t-test results showed that the mean age of families with COVID-19 patients was significantly higher. The comparison of the two groups in terms of demographic characteristics is presented in Table 1.

According to Table 1, among the variables, only having insurance showed a significant difference between the two groups. Our study results showed that the mean depression score in family members of COVID-19 patients (11.56±7.50) was slightly lower than the mean depression score in family members of non-COVID-19 patients (8.01±4.67). Also, the mean physical health score in family members of COVID-19 patients (7.60±4.32) was considerably lower than the mean physical health score in family members of non-COVID-19 patients (3.98±3.43).

The Mann-Whitney U test results indicated that the mean response variables between family members of COVID-19 patients and family members of non-COVID-19 patients had a statistically significant difference. The mean of all questionnaire variables was significantly higher in families with COVID-19 patients than in families without COVID-19 patients (P<0.001).

To determine the relationship between depression and physical health, the Spearman correlation test was used. According to the results in Table 2, a significant linear correlation was found between depression and physical health, which is a direct relationship, and the intensity of this relationship was good.

Logistic regression was performed with age and insurance status as covariates to predict the likelihood of depression and physical symptoms in family members with a COVID-19 patient compared to those without a COVID-19 patient. COVID-19 infection had a statistically significant effect on depression and physical symptoms when controlling for age and insurance status. The odds of depression and physical symptoms in families with a COVID-19 patient were 11.5 times and 68.4 times higher, respectively, than in families without a COVID-19 patient when controlling for age and insurance status (Table 3).

## Discussion

The findings of this study showed that the mean depression score in family members with a COVID-19 patient was significantly higher than the mean depression score in family members without a COVID-19 patient, and the odds of developing depression in families with a COVID-19 patient were higher than in families without a COVID-19 patient, which is consistent with the results of the study by Gallagher et al. (2020). In their study, the reported prevalence of depression was 16.7% in family members with a COVID-19 patient and 12.1% in family members without a COVID-19 patient, and the odds of developing depressive symptoms were higher in family members with a COVID-19 patient compared to those without (19). Le Shi et al. (2020) also showed that family members of confirmed or suspected COVID-19 patients had a higher chance of developing depression (20). One possible explanation for this is that families of COVID-19 patients who are at risk of infection and transmission are susceptible to anxiety and fear about their own infection or the worsening condition of the patient, which can chronically lead to the development of depressive symptoms.

Noguchi et al. (2021) reported that family caregivers had a higher chance of developing depressive symptoms compared to non-caregivers and reported the persistence of these symptoms (21). Since caregivers of COVID-19 patients may experience more psychological disorders due to fear of contracting COVID-19, this factor may have contributed to the increased psychological disorders in caregivers.

Dorman et al. (2020) presented high levels of anxiety and lower levels of depressive symptoms in patients and their relatives. Their studies showed that 57.7% of relatives suffered from anxiety and 52.2% suffered from depression at the time of their family member's COVID-19 infection, where anxiety was significantly more prevalent than depression among relatives (22). One possible explanation for this is that due to the close timing of the research with the emergence of COVID-19, long-term effects of anxiety that may lead to depression were less evident.

Jafari et al. (2022) also reported an increase in depression, anxiety, and stress among caregivers during the COVID-19 pandemic (23). Despite the fact that our study showed a significant difference in the mean depression score among family members with a COVID-19 patient compared to family members without a COVID-19 patient, a study by Strzelecki et al. (2022) showed that both caregivers and non-caregivers experienced increased sleep problems and depressive symptoms during the pandemic. Therefore, the conditions of caring for COVID-19 patients did not have a significant impact on the development of depressive symptoms (24). This difference may be due to the fact that less than half of Strzelecki's sample (46.3%) described themselves as unpaid caregivers, while caregivers in our study were members of the patient's family who were all providing unpaid care.

Another finding of this study was that a significant linear correlation was found between depression and physical health in both groups, which was a direct relationship, and its severity was good. Consistent with this study, Shahini et al. (2021) showed that during the COVID-19 pandemic, the prevalence of physical symptoms in individuals with mood disorders was significantly higher in Gorgan (25). In this regard, Kocalevent et al. (2013) also reported a correlation between physical health, as measured by the PHQ-15 tool, and depression (26). Additionally, Shi et al. (2020) reported a higher chance of insomnia in the families or friends of confirmed or suspected COVID-19 patients (19).

The interaction between physical and mental health is complex, and mental health problems can disrupt physical health. Studies by Doherty et al. (2014) showed that individuals with mental illnesses are at a higher risk of developing physical illnesses, and conversely, individuals diagnosed with physical illnesses are at a higher risk of developing mental health problems (13).

In the present study, demographic characteristics such as age, gender, education, occupation, insurance status, and economic status were considered, and only a significant difference in insurance frequency was found between the two groups. It was found that the families with a COVID-19 patient had a higher frequency of insurance. Given that being deprived of insurance services can cause a lot of anxiety about the expenses associated with COVID-19, it is likely to lead to psychological problems in caregivers. However, in this study, despite the higher frequency of insurance in families with a COVID-19 patient, they showed higher levels of both depression and physical symptoms. Nevertheless, none of the studies have specifically addressed this characteristic, as most studies have been conducted on the impact of COVID-19 on insurance companies.

The mean age in families with a COVID-19 patient was significantly higher than in families without a COVID-19 patient, which was consistent with the findings of Gallagher et al. (19). It seems that families with a COVID-19 patient, due to their higher average age, may face various social and family responsibilities related to work and productivity, which can cause psychological and physical problems for them. Also, in this age group, individuals with self-employment tend to worry about financial problems and consequences after quarantine and staying at home.

Although the economic situation in our study did not show a significant difference between the two groups, the results of Rehman et al. (2021) showed that individuals who do not have sufficient resources to maintain quarantine were more affected, and family wealth had a negative correlation with stress, anxiety, and depression (27). The reason for this difference may be due to the method of clarifying this characteristic. In our study, a self-report method was used, and in Rehman's study, the Family Affluence Scale (Currie et al., 2008) was used (28).

Given that in our study, there was no significant difference in gender frequency between the two groups, Bucciarelli et al. (2022) reported that women experience fewer short-term symptoms, but suffer from long-term COVID-19 symptoms, such as depression, decreased physical activity, and worsening lifestyle habits (29). Additionally, the studies of Dadfar et al. (2020) showed that women have higher scores on the PHQ-15 questionnaire compared to men, indicating more physical disturbance (30).

The study by Mirhosseini et al. (2022) conducted in Shahroud showed that variables such as lower levels of education among family members and caregivers were predictive factors that exacerbate the burden of care. The increased caregiving burden puts them at risk of psychological distress such as depression and anxiety (31). Similarly, Kocalevent et al. (2013) reported that the

scores on the PHQ-15 questionnaire were higher among individuals with lower levels of education compared to those with higher levels of education (26). The reason for this may be that depression can be inversely related to the level of awareness.

In our study, there was no significant difference in the frequency of occupation between the two groups. However, Gallagher et al. (2020) found a significant difference in occupation and disability between the two groups, which was not consistent with our study (19). The reason for this difference may be due to differences in the research population and the cultural and social context.

## Conclusion

Based on the research results, most nurses suffer from moderate alarm fatigue; The COVID-19 crisis can lead to both psychological and physical problems, ultimately putting the health of healthy individuals such as the patient's family at risk. This study showed that the average depression score in family members with a COVID-19 patient is significantly higher than the average depression score in family members without a COVID-19 patient, and a significant linear correlation was found between depression and physical health in both groups. Given the negative effects of depression on performance, efficiency, and the risks it poses to physical health, it is recommended to support these individuals in promoting their psychological and physical well-being. Furthermore, it is recommended to investigate the impact of family support for COVID-19 patients on their psychological and physical well-being.

## Acknowledgement

This study was approved by the Student Research Committee of Golestan University of Medical Sciences. We would like to express our gratitude and appreciation to the Research and Technology Deputy and the Health Deputy of Golestan University of Medical Sciences, the staff of the comprehensive health centers in Gorgan city, and all the participants in this study.

## Funding source

The authors received no financial support for the research, authorship, and/or publication of this article.

## Ethical statement

This study received ethical approval from the Ethics Committee of Golestan University of Medical Sciences (Ethics code: IR.GOUMS.REC.1401.098). After explaining the study objectives and ensuring the confidentiality of personal information, the questionnaire was distributed with their permission.

## Conflict of interest

The authors declare that there is no conflict of interest in this study.

## Author contributions

Hedieh Azizi, Hamideh Mancheri, Najmeh Shahini, and Akram Sanagoo all contributed to the design, implementation, and analysis of the study.

## References

- Safarinia M, Alizadefard S. The prediction of mental health based on the anxiety and the social cohesion that caused by Coronavirus. *Social psychology research quarterly*. 2019;9(36):129-41. [View at Publisher][Google Scholar]
- World Health Organization. Emergency: Coronavirus disease (COVID-19) pandemic. 2021. [View at Publisher][Google Scholar]
- Mohammadi MT, Shayad S. Psychological impacts of covid-19 outbreak on mental health status of society individuals: A narrative review. *Journal of Military Medicine*. 2020;22(2):184-92. [View at Publisher][Google Scholar]
- Zargar F, Ashouri A, Asgharipour N, Aghebati A. The comparison of family functioning in patients with major depressive disorder and physically ill patients with no-psychiatric disorder in Isfahan. *Journal of research in behavioural sciences*. 2007;5(2):99-106. [View at Publisher][Google Scholar]
- Jahangasht Kh. Social Stigma: The Social Consequences of COVID-19. *J Mar Med*.2020; 2(1): 59-60. [View at Publisher] [DOI]
- Robbins MS, Szapocznik J, Alexander JF, Miller J. 5.07-Family Systems Therapy with Children and Adolescents. *Comprehensive clinical psychology*. Elsevier Ltd. 1998;149-83. [View at Publisher][Google Scholar]
- Namazinia M, Miri Kh, Sarbooz-Hoseinabadi T, Abedi A. Depression, anxiety and stress of caregivers of patients with covid-19 who referred to the 9 Dey hospital of Torbat Heydariyeh city in 2019. *Journal of Torbat Heydariyeh University of Medical Sciences*. 2022;10(3):30-9. [View at Publisher][Google Scholar]
- Kanter J, Manbeck K. COVID-19 could lead to an epidemic of clinical depression and the health care system isn't ready for that, either. *The Conversation/Australia Health + Medicine*; 2020. [View at Publisher]
- ClinicalTrials.gov. Study Record Detail. Stress Related Disorders in Family Members of COVID-19 Patients Admitted to the ICU. 2021. [View at Publisher]
- BECKER'S Clinical Leadership & Infection Control. Patient safety &outcomes; Families of COVID-19 patients in intensive care may face own health challenges 2020. [View at Publisher]
- World Health Organization. COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. 2022.[View at Publisher]
- Centers for Disease Control and Prevention. Your Health. About COVID-19. Stress & Coping. 2021. [View at Publisher]
- Doherty AM, Gaughran F. The interface of physical and mental health. *Soc Psychiatry Psychiatr Epidemiol*. 2014;49(5):673-82. [View at Publisher][Google Scholar][DOI][PMID]
- Kim YS, Park YS, Allegrante JP, Marks R, Ok H, Cho KO, et al. Relationship between physical activity and general mental health. *Preventive medicine*. 2012; 55(5):458-63. [View at Publisher][Google Scholar][DOI][PMID]
- Kong X, Zheng K, Tang M, Kong F, Zhou J, Diao L, et al. Prevalence and factors associated with depression and anxiety of hospitalized patients with COVID-19. *MedRxiv*. 2020;23(14):20043075. [View at Publisher][Google Scholar][DOI]
- Rashedi V, Roshanravan M, Borhaninejad V, Mohamadzadeh M. Coronavirus Anxiety and Obsession and Their Relationship With Depression and Activities of Daily Living in Older Adults. *Iranian Journal of Ageing*. 2022;17(2):186-201.(Persian) [View at Publisher][Google Scholar][DOI]
- Rahimi Ch. Application of the beck depression inventory-II in Iranian University students. *Clinical Psychology and Personality* .2014;21(10):173-88. [View at Publisher][Google Scholar][DOI]
- Abdolmohammadi K, Ghadiri Sourman Abadi F, Sadat Seyed Pourmand N, Falsafinejad MR. The validation of somatization inventory in the students of Tabriz Universities (Iran). *Qom University of Medical Sciences Journal*. 2018;11(12):61-7. [View at Publisher][Google Scholar]
- Gallagher S, Wetherell MA. Risk of depression in family caregivers: unintended consequence of COVID-19. *BJPsych open*. 2020;6(6):E119. [View at Publisher][Google Scholar][DOI][PMID]
- Shi L, Lu Z, Que J, Huang XL, Liu L, Ran MS, et al. Prevalence of and Risk Factors Associated with Mental Health Symptoms Among the General Population in China During the Coronavirus Disease 2019 Pandemic. *JAMA Netw Open*. 2020;3(7):e2014053. [View at Publisher][Google Scholar][DOI][PMID]
- Noguchi T, Hayashi T, Kubo Y, Tomiyama N, Ochi A, Hayashi H. Association between family caregivers and depressive symptoms among community-dwelling older adults in Japan: a cross-sectional study during the COVID-19 pandemic. *Arch Gerontol Geriatr*. 2021;96:104468. [View at Publisher][Google Scholar][DOI][PMID]
- Dorman-Ilan S, Hertz-Palmor N, Brand-Gothelf A, Hasson-Ohayon I, Matalon N, Gross R, et al. Anxiety and depression symptoms in COVID-19 isolated patients and in their relatives: *Front psychiatry*. 2020;11:1042. [View at Publisher][Google Scholar][DOI][PMID]
- Jafari-Oori M, Ebadi A, Moradian ST, Jafari M, Dehi M, Fard FG. Psychiatric distress in family caregivers of patients with COVID-19. *Archives of psychiatric nursing*. 2022;37:69-75. (Persian). [View at Publisher][Google Scholar][DOI][PMID]
- Strzelecki AM, Moloney ME, Brooks AT, Weafer J. Alcohol use, sleep, and depression among family caregivers in the time of COVID-19. *Alcohol*. 2022;102: 35-42. [View at Publisher][Google Scholar][DOI][PMID]
- Shahini N, Ghasemzadeh M, Javan M, Salimi Z. Evaluation of the COVID-19 pandemic effect on the development of somatic symptoms in patients with mood disorders: a case-control study. *New Microbes New Infect*. 2021;43:100917.(Persian) [View at Publisher][Google Scholar][DOI][PMID]
- Kocalevent R-D, Hinz A, Brähler E. Standardization of a screening instrument (PHQ-15) for somatization syndromes in the general population. *BMC psychiatry*. 2013;13:1-8. [View at Publisher][Google Scholar][DOI][PMID]
- Rehman U, Shahnawaz MG, Khan NH, Kharshing KD, Khursheed M, Gupta K, et al. Depression, anxiety and stress among Indians in times of Covid-19 lockdown. *Community Ment Health J*. 2021;57:42-8. [View at Publisher][Google Scholar][DOI][PMID]
- Currie C, Molcho M, Boyce W, Holstein B, Torsheim T, Richter M. Researching health inequalities in adolescents: the development of the Health Behaviour in School-Aged Children (HBSC) family affluence scale. *Social science & medicine*. 2008;66(6):1429-36. [View at Publisher][Google Scholar][DOI]
- Bucciarelli V, Nasi M, Bianco F, Seferovic J, Ivkovic V, Gallina S, et al. Depression pandemic and cardiovascular risk in the COVID-19 era and long COVID syndrome: gender makes a difference. *Trends Cardiovasc Med*. 2022;32(1):12-7. [View at Publisher][Google Scholar][DOI][PMID]
- Dadfar M, Asghamejadfarid AA, Hosseini AF, Esfahani MN, Lester D, Kalibatseva Z. Measuring somatic symptoms with the PHQ-15: A

- comparative study of three Iranian samples. *Mental Health, Religion & Culture*. 2020;23(3-4):289-301.(Persian) [[View at Publisher](#)][[Google Scholar](#)][[DOI](#)]
31. Mirhosseini S, Grimwood S, Basirinezhad MH, Montazeri R, Ebrahimi H. Psychological distress as a predictor of the burden of care in family caregivers of COVID-19 patients in Iran: A community-based cross-sectional study. *Health Sci Rep*. 2022;5(6):e942.(Persian) [[View at Publisher](#)][[Google Scholar](#)][[DOI](#)][[PMID](#)]

**How to Cite:**

Azizi H, Mancheri H, Shahini N, Sanagoo A, Tatari M. A comparative study of depression and its relationship with physical health among families with and without COVID-19 patients in comprehensive health centers. *J Res Dev Nurs Midw*. 2023;20(1):15-9.



© The author(s)