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The Prediction of Somatic Symptom Disorder based on Social Isolation and Fear of Contracting COVID-19: The Mediating Role of Perceived Anxiety

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Abstract

Introduction: This study aimed to predict somatic symptom disorder based on social isolation and fear of contracting corona with the mediating role of perceived anxiety.
Method: The design of the present study was descriptive-correlational and structural equation modelling. The statistical population of the study included Iranian adults who lived in Tehran in 2022. Among them, 437 adults were selected by convenience sampling method. Subjects filled Somatic Symptom Experience, Social Isolation, Fear of COVID-19, and Perceived Anxiety questionnaires. After data collection, the relationship between variables was examined using SPSS and AMOS software.
Results: The findings suggest that the social isolation is only directly related to somatic symptoms (P <0.01 and β =0.52). Fear of COVID-19 is directly related to somatic symptom (P <0.01 and = β =0.22). Perceived anxiety is directly related to somatic symptom (P <0.01 and = β =0.42) and social isolation and fear of COVID-19 indirectly correlated with the mediating role of Perceived Anxiety, linked to somatic symptom.
Conclusion: Social isolation and fear of COVID-19 (both directly and indirectly, by influencing Perceived Anxiety), which may indicate this factors plays a crucial role in somatic symptom.

Keywords: Medically Unexplained Symptoms, Social Isolation, COVID-19, Fear, Anxiety

Introduction

Today adulthood is characterized by a certain number of obligations and the assumption of responsibilities. somatic symptoms are very common in adults with different causes and can lead to mental and physical distress [1].

The main feature of somatic symptom disorder is that the patient is initially labeled as a non-psychiatric illness. Physicians often treat patients with symptoms for which there is no biological reason, and patients with somatic symptom disorders may be subjected to unnecessary tests and procedures [2]. he prevalence of this disorder is between 16.1% and 57.5% of patients. People with this disorder seek medical and non-medical help to ensure their health, and this causes the health care system to become exhausted with frequent tests [3]. In somatic symptoms disorders, the mental or emotional distress manifests in bodily symptoms [4]. Various factors play a role in somatic symptom disorder, among them, social isolation also plays a role in the occurrence and continuation of somatic symptom [5]. Social isolation is an objective measure based on the size of the social network and the frequency of social interactions in adults [6]. Perceived social isolation is a determinant of health status and results from the loss of effective interaction with others, especially nearby people [7]. Social relations and communicating with others are an integral part of people's

lives [8]. COVID-19 epidemic, is the biggest pandemic to date. Previous research has shown a wide range of psychological effects from infectious disease outbreaks [9]. Anxiety, somatization are among the main psychological issues that arise when contagious illnesses are spreading [10]. In order to prevent the transmission of the virus following health protocols and social isolation, and revealing the prevalence and severity of somatic symptoms and related factors during COVID-19 are very critical. Investigating the causes of somatization during the COVID-19 epidemic and its connections to anxiety is therefore urgently needed [11]. Previous studies indicate that anxiety and somatization frequently coexist [7]. Although the COVID-19 pandemic is ending as a health disaster, its psychosocial effects are becoming apparent [12].

anxiety is significant contributors in somatic symptoms [5]. High levels of anxiety and stress associated with major life changes in adulthood may lead to impaired somatic symptoms [1]. On the other hand, there is a high comorbidity between real or perceived anxiety and somatization states [13]. Anxiety is characterized by psychological tension, worry and physiological arousal and is an important indicator along with physical concerns [14]. In the relationship between anxiety and physical states, several paths are involved, including the psycho-physiological path that excessive stress affects the autonomic nervous system and cerebral cortex and leads to the emergence of psychosomatic symptoms and psychological problems [15].

The COVID-19 pandemic and social isolation have had a profound impact on the emotions, anxiety, and mental health of communities. In the stressful conditions of the corona epidemic and social isolation to prevent infection with this virus and the negative effects of these factors and the lack of social support, both adults and children can struggle with anxiety disorders in isolation [16,7].

Given the circumstances, as well as the intensity, complexity, and effects of somatic symptom disorder and its predictive factors, it is necessary for research to conceptualize structural relationships of the predictive variables and somatic symptom disorder. This study aimed to identify somatic symptom disorder based on social isolation and fear of contracting the coronavirus by taking into account the mediating role of perceived anxiety. Considering the mediating role of perceived anxiety in the structural relationships of the hypothesized model, the main question of the present study is whether social isolation and the fear of getting infected with corona have the potential to predict physical symptom disorder or not. To test the structural relationships based on existing theories and research findings for example De Nardi et al. [17], Gendler [18], Afshari et al. [19], the researchers used Structural Equation Modeling (SEM). The hypothetical research model is shown in Figure 1.

Method

This research was a correlational-descriptive study in which the relationship between variables was examined by Structural Equation Modeling using Amos software. Meyers et al. [20] suggest that the general rule for structural equation models is that a sample size of between 200 and 400 is considered appropriate. Therefore, to select a representative and accurate sample, 500 adult participants in the age range of 18 to 60 population of Tehran were selected by convenience sampling. Accordingly, 63 incomplete data were excluded from the analysis process and therefore the analysis was performed on 437 people were selected from among the participants based on the entry and exit criteria. The questionnaires were provided to the participants through an online link between April and July 2022 (Due to the quarantine conditions of Corona).

The inclusion criteria included were age range, literacy for reading and writing and Exclusion criteria were history of physical and mental illness that overlaps with somatization disorder such as (fibromyalgia, irritable bowel syndrome, panic disorder, generalized anxiety disorder, depression disorders, illness anxiety disorder, delusional disorder, body dysmorphic disorder, and obsessive-compulsive disorder) that assessed by asking the participants about these conditions. To observe ethics, after explaining the research objectives and procedure, the researcher distributed the research tools among those students who announced their readiness to participate. They were also assured that their information would be confidential and they could leave the study whenever they desired.

The tools used in this study were as follows:

Somatic Symptom Experience Questionnaire (SSEQ): This questionnaire was created by Herzog et al. with the aim of diagnosing patients with physical symptoms disorder based on DSM-5 [21]. There are 13 items on this scale, including four subtests: health concerns component (including questions 2, 4, 7, 9, 10), illness experience (including questions 1, 5), problems interacting with doctors (including questions 3, 6, 8), and the effects of the disease (including questions 11, 12, 13). The measure is scored using a 5-point Likert scale that ranges from never (1) to constantly (5). With a Cronbach's alpha coefficient of 0.90 and alpha coefficients for the components measuring health worries of 0.86, illness experience of 0.75, difficulty engaging with doctors of 0.74, and disease outcomes of 0.78, this scale demonstrated strong internal consistency. Higher scores in patients with somatic disorders compared to other patients and the ability to predict lower health-related quality of life. In the Persian version, Cronbach's alpha was 0.85 [22].

Social Isolation Questionnaire: This questionnaire was created by Chalabi and et al. [23] created and assessed the social isolation questionnaire, which has 19 multiple-choice items including: social isolation (questions 1 through 6), deprivation (questions 7 through 10), social despair (questions 11 through 15), and decreased social tolerance (questions 16 to 19). The questions (1-19-18-17-16-15-14-4-2-1) are rated inversely according to the Likert scale, which ranges from strongly disagree (1) to strongly agree (5). If the scores of the questionnaire are between 19 and 38, the variable level is weak in this society. If the scores of the questionnaire are between 38 and 76, the variable amount is at an average level. If the

scores are above 76, the variable rate is very good. The reliability coefficient of this scale was shown to be 0.72. Cronbach's alpha coefficient for the loneliness component is 0.79, for helplessness, it is 0.85, while it is 0.73 and 0.78 for social despair and decreased social tolerance, respectively.

Fear of Corona Questionnaire (FDCS): This questionnaire was prepared in 2020 by Vesey et al. [24] in Iran. The purpose of it was to evaluate the psychometric properties of the short scale of fear of contracting a disease (the Covid-19). This scale includes five questions which is rated on a Likert scale from 1 to 5, with 1 being extremely low, 2 being low, 3 being moderate, 4 being high and 5 being very high. High scores indicate high levels of fear of COVID-19. Its Cronbach's alpha coefficient is estimated at 0.81.

Perceived Anxiety Questionnaire: This scale developed by Cohen et al. [25] in 1983, was based on the perceived stress scale. It has 14 items with options including "none," "low," "moderate," "high," and "very high" are rated on a five-point Likert scale (0, 1, 2, 3, and 4, respectively). Includes two subscales: a) Negative perception of stress includes items: 1, 2, 3, 4, 11, 12, and 14. b) Positive perception of tension includes items 5, 6, 7, 8, 9, 10, and 13. The reliability coefficients of the scale's internal consistency, as measured by Cronbach's alpha, vary from 0.84 to 0.86. According to Ahmadian's research from 2011, the components of positive perception of tension (0.71) and negative perception of tension (0.75) have reliability coefficients of internal consistency. Additionally, an alpha value of 0.84 was found for the questionnaire's overall scores.

Results

The present research was conducted in 78.9% female and 21.1% male with the age mean (standard deviation) of 31.093 (10.210). The 205 participants were single (46.9%) and 209 participants were married (47.8%), 21 participants were divorced (4.8%), and 2 participants were widowed (0.5%). By using the bootstrap technique and the assumptions of univariate normalcy (by examining skewness and kurtosis), multivariate normality, and normality, a significance test was conducted (Mahalanobis test). The values of skewness and kurtosis of the research variables are based on the values obtained from the data collected at the error level of 0.001, the values were in the range of (-3.29, +3.29), the data distribution for the relevant variable with the help of tolerance coefficient and variance inflation coefficient (VIF) It was diagnosed as normal. the assumptions of collinearity in this study were examined, and the assumption of collinearity is valid for the research data because each predictor variable's variance inflation factor is below 10 and the tolerance coefficients of the research variables are both less than 0.1. The data analysis approach linked to the Mahalanobis distance of each participant was utilized in this study to assess if the hypothesis of the normality of the multivariate distribution had been established. The chi-square value in this study is 13.82; data over that value are excluded. The scatter plot of standardized error variances was used to assess the hypothesis of homogeneity of variances.

Table 1 shows a significant link ($p<0.05$) between the research's criterion variable, somatic symptoms, predictor factors, and mediator variable. On this basis, it is possible to conclude that there is a positive correlation between somatic symptoms and social isolation, perceived anxiety, and fear of catching the coronavirus, which has a 99% confidence level ($p<0.01$).

Through the use of structural equation modeling and the Amos program, the conceptual model of the study was evaluated (Figure 2). Based on the data in Table 2, the acquired fit indices reflect the adequate fit of the data with the model.

Table 3's findings from structural modeling demonstrated that all links, assumptions, and research trajectories were verified.

Table 1. The Correlation Atrix, Mean (Standard Deviation) and Cronbach's Alpha of Variables

Variable	Skewness	Kurtosis	1	2	3	4	5	6	7	8
1. Somatic symptom	0.08	-0.67	1							
2. Fear of corona	0.39	-0.76	0.28**	1						
3. Reduced Tolerance	0.06	-0.24	0.24**	0.12**	1					
4. Social despair	0.44	-0.51	0.34**	0.11*	0.41**	1				
5. Helplessness	0.63	-0.36	0.37**	0.21**	0.39**	0.53**	1			
6. Social isolation	0.49	-0.20	0.28**	0.05	0.32**	0.55**	0.41**	1		
7. Negative perception	0.32	-0.37	0.40**	0.20**	0.30**	0.52**	0.39**	0.44**	1	
8. Positive perception	-0.10	-0.27	0.36**	0.15**	0.52**	0.50**	0.41**	0.49**	0.60**	1

Table 2. Structural Model Fit Indices

Indices	Acceptable value	Result	Interpretation
GFI (Goodness of Fit Index)	larger than 0.90	0.94	acceptable fit
RMSEA (Root-Mean-Square Error Appraisal)	less than 0.08	0.07	acceptable fit
CFI (Comparative Fit Index)	larger than 0.90	0.93	acceptable fit
AGFI (Adjusted Goodness of Fit Index)	larger than 0.50	0.90	acceptable fit
Chi-square/DF (Chi-square/Degree of Freedom)	between 1-5 intervals	3.65	acceptable fit
Chi-square	larger than 5	142.33	acceptable fit

Table 3. Direct, Indirect, and Total Path Coefficients between Research Variables in the Research Model

Paths	result in	b	β	S.E	P
Path coefficient of perceived anxiety→Somatic symptoms	Confirmed	0.22	0.42	0.09	P<0.01
Path coefficient of social isolation→Perceived anxiety	Confirmed	1.90	0.84	0.16	P<0.01
Path coefficient of fear of Corona→ Perceived anxiety	Confirmed	0.12	0.08	0.06	P<0.05
Direct path coefficient of social isolation→Somatic symptoms	Confirmed	0.20	0.16	0.23	P<0.05
Direct path coefficient of fear of Corona→Somatic symptoms	Confirmed	0.15	0.18	0.05	P<0.05
Indirect path coefficient of social isolation→Somatic symptoms	Confirmed	0.42	0.35	0.22	P<0.01
Indirect path coefficient of fear of Corona→Somatic symptoms	Confirmed	0.02	0.03	0.02	P<0.05
Total path coefficient of social isolation→Somatic symptoms	Confirmed	0.62	0.52	0.07	P<0.01
Total path coefficient of fear of Corona→Somatic symptoms	Confirmed	0.18	0.22	0.04	P<0.01

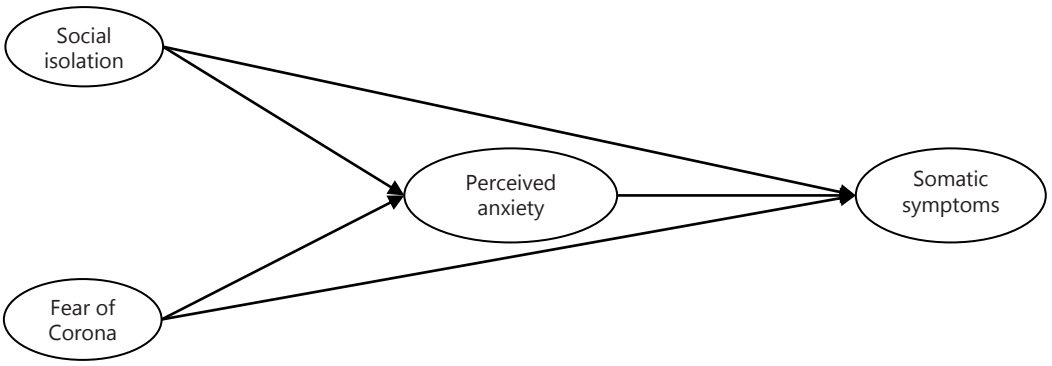

Figure 1. Hypothetical model in prediction of somatic symptom disorder based on social isolation and fear of contracting corona with the mediating role of perceived anxiety.

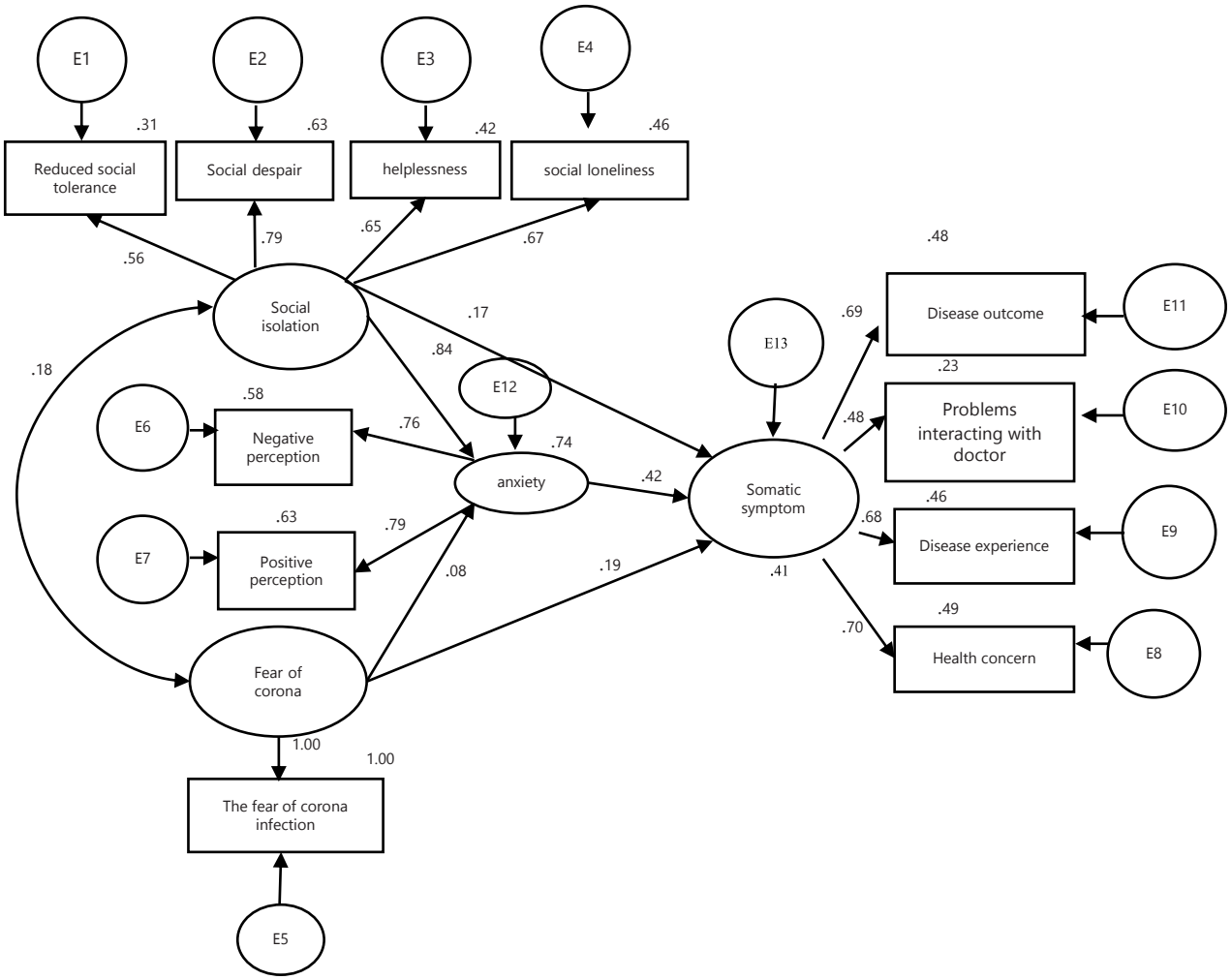

Figure 2. Structural model of research using standard data.

Discussion

With consideration for the mediating function of perceived anxiety, the current study sought to determine the link between social isolation and fear of corona with somatic symptoms.

The findings of this study supported the first research hypothesis regarding the relationship between social isolation and fear of the corona and the mediation of perceived anxiety with somatic symptoms, and they also demonstrated an acceptable fit between the structural model of the study and the data. The conclusions of earlier studies, such as those of Ho et al. [10], Liu et al. [26] ,Gendler et al. [18], Shelvin et al. [27], Shangan et al. [11], Smith et al. [7] and Demetris et al. [5] are compatible with the results of this research. It is impossible to decide or interpret the structural model's outcomes accurately without depending on the measurement model. Correct inferences may be drawn from the structural model's findings thanks to the measurement model's acceptable and desired fit in the current investigation. Ho et al. [10] claim that during the COVID-19 illness epidemic, a broad and deep spectrum of psychological impacts has been observed that can have an impact on people. . Regardless of exposure, individuals may feel helpless, fearful of becoming ill or dying or blame other sick people, which might lead to a mental collapse. According to another claim made by smith et al. [7] research on the previous epidemics has shown that when disease outbreaks happen, they frequently induce fear and worry in the community and alter the main practice of medicine.

In the second hypothesis that social isolation has a significant relationship with somatic symptoms, the research results showed that social isolation has a positive and significant relationship with somatic symptoms disorder. These results are in line with the research findings of Hutten et al. [28], Cassipo et al. [29], Wang et al. [9], and Mushtaq et al. [30]. Humans are social beings. Perlman [31] asserts that social communication is a fundamental human need, and Cassipo [29] asserts in the Evolutionary Theory of Loneliness (ETL) that a lack of social connections has long-term negative effects on both mental and physical health. These factors can be used to explain this finding (including somatic symptoms). As a result, it may be said that a lack of social interaction will result in mental and physical diseases, including bodily symptoms. Over time, this self-perpetuating loneliness cycle raises the danger for both physical and mental health. In general, it can be explained that loneliness and social isolation is related to bodily symptoms like headache, discomfort, and dizziness, according to a lot of study evidence, including the studies of Graver [32], according to Dimsdale [33].

According to the third theory, somatic symptom disorders and dread of corona are Positively and meaningfully associated. These results are consistent with those of Horn et al. [34] and Shangguan et al. [11]. According to Ballering

et al. [35] who explain this finding, after recovering from the disease of Covid-19, a significant part of people who have been infected with this disease still experience psychological and cognitive symptoms and physical symptoms; Therefore, it can be argued that the higher the prevalence or the fear of contracting the corona virus or being hospitalized due to this disease and the greater the awareness of the signs of physical symptoms the rate of incidence and infection of people Physical symptoms also increase. In another argument from Turco et al. [36] the results suggest that despite a sharp decrease in pediatric admissions due to the Covid-19 pandemic, admissions for physical symptom disorders in the pediatric emergency department have increased, indicating the impact of the pandemic on pediatric psychiatric disorders. Somatic symptom disorders are very common in the general pediatric population with major symptoms such as abdominal pain, headache, and seizures. According to the subtypes of physical symptom disorders, major manifestations of gastrointestinal symptoms during the covid-19 pandemic have been identified according to other pattern manifestations. That is, it can be said that after the end of the quarantine policies and after the relative reduction of the spread of Corona, people with symptoms of physical symptoms caused by Covid-19 or the fear of it will cause the appearance of physical symptoms in people.

The fourth hypothesis is supported by the fact that felt anxiety and the disorder of bodily symptoms are significantly related. The findings demonstrated a positive and substantial association between somatic symptom dysfunction and felt anxiety. The findings of Gavurova et al. [37] Hadlandsmyth et al. [38] Pan et al. [39], Goren et al. [40] and Xiang et al. [15] agree with one another. It may be claimed that anxiety is significantly associated with the disorder of somatic symptoms, and that anxiety can be viewed as the start of the disorder of somatic symptoms to explain this conclusion since according to Hadlandsmyth et al. [38] the intensity of disordered physical sensations rises as anxiety levels rise because increased awareness and changed perception of physical emotions occur when anxiety levels rise. However, it has been reported that Brodmann's bilateral medial area 8 mediates the relationship between catastrophizing and anxiety in somatic symptom disorder, suggesting that the dorsal prefrontal cortex may be a potential neural site linking catastrophizing and anxiety in somatic symptom disorder. This is in contrast to the findings of pan et al. [39] regarding the physiological basis of the relationship between anxiety and somatic symptom disorder. The prefrontal cortex is thought to have a function in encouraging the onset of somatic symptoms by analyzing incoming information about the disease and the experience of worry. Additionally, according to Bakhuis, the common etiology theory states that common etiology elements (such as environmental, psychological, and biological factors) independently contribute to the development of both somatic symptoms and the illnesses of anxiety.

According to the fifth hypothesis, perceived anxiety significantly mediates the relationship between social isolation and somatic symptom disorder. Based on the findings, perceived anxiety positively and significantly mediates the relationship between social isolation and physical symptoms. According to the results, perceived anxiety significantly and favorably modulates the link between somatic symptoms and social isolation. This result agrees with studies by Segrin et al. [41], Afshari et al. [19] and Nuyen et al. [42]. In describing the results of this research, it can be said that following Hutten [28], higher levels of loneliness and social isolation are linked to anxiety and more somatic symptoms. Loneliness is also linked to a higher likelihood of being diagnosed with a disorder involving somatic symptoms. according to prior study findings. However, Graver [32] argues that loneliness is linked to more severe cases of sadness, anxiety, and somatic symptoms. Based on this discovery, it is possible to infer that social isolation, loneliness, or a lack of social interaction would result in somatic symptoms in people, with anxiety acting as a mediator.

In the sixth hypothesis, perceived anxiety significantly mediates the relationship between the fear of corona and somatic symptoms. The findings of this study demonstrated that perceived anxiety considerably and positively modulates the link between corona fear and somatic symptoms. These findings are in agreement with the research results of Huang et al. [43] , Di Nardi et al. [17], Gendler et al. [18] , Villarreal-Zegarra et al. [44], Shevlin et al. [27], Alnaser et al. [45] , Tull et al. [12] is aligned. To explain this conclusion, it may be said that people who view the COVID-19 illness symptoms as being brought on by other people or by the media have a perceived fear about coming into contact with the virus, which has an impact on people's somatic symptoms. On the other hand, it may be stated that moderate to high levels of anxiety connected to COVID-19 are strongly related to general somatic symptoms, particularly digestive problems and exhaustion, based on the findings of Villarreal-Zegarra et al. [44] and Shevlin et al. [27]. Numerous studies, such as those by Hinz et al. [46] on prior infectious disease outbreaks like SARS, indicate that heightened anxiety in the general population during quarantine has been linked to an increase in the reporting of somatic symptoms. Additionally, during the COVID-19 outbreak, physical and psychological symptoms were widespread in the general population. According to Shelvin's theory, somatic symptoms, anxiety are all closely related. In light of the research's findings, it can be concluded that the measurement model's fit demonstrates the accuracy of the research's fictitious model. According to the structural model's fit, somatic symptom disorders are directly influenced by social exclusion, coronavirus fear, and perceived anxiety. The mediation of perceived anxiety, social isolation and fear of developing corona play a part in assessing somatic symptoms.

Conclusion

These results have practical implications in codifying

interventions based on social isolation, fear of corona and perceived anxiety in predicting somatic symptoms. In addition, it is suggested to consider interventions and treatments based on the fear of contracting Corona, social isolation and perceived anxiety for improvement and prevention of somatic symptoms

Conflict of Interest

The authors declare no conflicts of interest.

Ethical Approval

On 2022-3-14, the National Committee of Ethics in Biomedical Research at Semnan University of Medical Sciences examined and approved the research's ethical code, which was given the code number IR.SEMUMS.REC.1400.310. Additionally, participation was anonymous and voluntary and a written informed consent was obtained before administering questionnaires.

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