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Mediating Role of Resilience in the Relationship Between Perceived Stress and Social Support with Self-Care among Asthmatic Patients

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Abstract

Background: Asthma is one of the inflammatory and chronic respiratory diseases associated with clinical symptoms of wheezing, coughing, and dyspnea.

Objective: The present study investigated the mediating role of resilience in the relationship between perceived stress and social support with self-care among asthmatic patients.

Methods: This correlational study was conducted using structural equation modeling. The statistical population consisted of all asthmatic patients referring to the asthma clinic of Sayyad Shirazi Hospital in Gorgan, Iran, 2021. According to the observed variables (75 questions), 375 individuals were considered that were selected by the convenience sampling method. In the end, 368 complete questionnaires were analyzed. The research instruments were Connor-Davidson Resilience Questionnaire (2003), Standard Perceived Stress Scale (1983), Perceived Social Support Scale (1988), and Self-Care Behaviors Questionnaire (2001). The collected data were analyzed in AMOS.22 and SPSS.22 software using the path analysis method.

Results: The results of model analysis using fit indicators showed that the final model modified with the data had a good fit (root mean square error of approximation=0.069, goodness-of-fit index=0.91). Furthermore, the results of mediating role showed that resilience had a significant mediating role in the relationship between social support and perceived stress with self-care among asthmatic patients (P<0.01).

Conclusion: It can be concluded that resilience had a mediating role in the relationship between perceived stress and social support with self-care among asthmatic patients.

Keywords: Asthma, Resilience, Self-care, Social support

Introduction

Asthma is one of the inflammatory and chronic diseases of respiratory pathways that is associated with clinical symptoms of wheezing, coughing, and shortness of breath (1). The asthmatic patient is a major health problem in most parts of the world who is still diagnosed and treated as a health problem and a large number of such patients die annually (2). The prevalence of asthma has been increasing over the past half-century (3). According to a 2007 report by the World Health Organization, 100-150 million people suffer from asthma worldwide, which is still increasing, and evidence suggests that psychological factors interfere with asthma preparedness and exacerbate or improve the disease process (4). In Iran, according to recent studies, the prevalence of asthma and chronic bronchitis has been reported to be 4.8-5.6% (5). The results of numerous studies have confirmed the complex interaction of biological and psychological factors in the incidence of various medical diseases, such as asthma (6).

Stressors and the nature of coping with them become important when it comes to psychosomatic diseases in psychology. Perceived stress is the most important source of stress that people face, especially patients around the world. Moreover, low resilience in these patients may be due to feeling-related dependencies that need the help of others to deal with the disease and its attacks, which prevents the development of resilience components, including leadership and tolerance of negative emotions, and causes asthma sufferers to have lower resilience levels compared to healthy individuals (7). In addition to individual structures and psychological abilities, social development and quality of social life are also important in psychosomatic diseases.

The findings of previous studies have shown that social support in the dimensions of emotional support, belonging support, instrumental support, informational support or evaluation, value support, and verification is one of the facilitators of self-care behaviors. The relationship between social support and mental health has been extensively

investigated (8). Based on the results of studies, social support is a valuable factor in coping with diseases. Numerous pieces of evidence have demonstrated that people with extensive social networks are better able to cope with diseases than those without proper social support (9). The findings of various studies have indicated that enjoying optimal social support encourages a person to follow up self-care behaviors and mental well-being (10). Additionally, the results of a study showed that adherence to self-care behaviors leads to a 50% reduction in complications due to various diseases (11).

Stress is also one of the most important determinants in the formation of psychosomatic diseases, such as asthma. The tradition of psychological stress emphasizes the perception and evaluation of organisms from possible damage caused by a confrontation with exciting environmental experiences. When people assess the demands of the surrounding environment beyond their own set of coping resources, they are exposed to stress (12). The selected patterns of stress assessment are not only the product of stimulus conditions or response variables but are also the product of people's interpretations of their relationships with their surroundings (13).

According to the social protection shield hypothesis (i.e., protecting the individual against negative effects), high stress affects the health of the individual and has a protective role for the individual when he/she is experiencing severe stress. In low-stress conditions, little protection is needed, which takes place in at least two ways. The first way, which is cognitive evaluation, when a person is faced with a highly stressful situation, such as illness or financial crisis, those with high social support do not assess the situation as stressful as those who receive less support. The person who benefits from the social support of numerous individuals and thinks that one of those people can help him, feels less stressed and does not assess the situation as stressful. The second way involves adjusting the reaction against a situation that is assumed as stressful. Furthermore, the hypothesis of direct effect indicates that regardless of stress, social support is beneficial for health in any case and will increase resilience (14). Resilience is a process, ability, or consequence of successful adaptation to threatening conditions. In other words, resilience is a positive adaptation in response to unpleasant conditions.

According to the resilience model, it can be said that since asthmatic patients assess the risk factor high and the incidence factor of adequacy low, they, therefore, show a lower resilience level. People with low resilience levels are less resistant to stressful events and are consequently more susceptible to psychological damages (15). Stress before and after threatening conditions is a stressful factor for patients and a positive perception of this stress will help to increase resilience. Although stress is a positive stimulant in people's development, if it continues or patients lack an understanding of stress, it can affect their mental health and well-being and reduce their resilience (16). As can be seen, the internal relationship between psychological variables and constructs related to asthma is very close and has a lot of overlap. However, how their internal relationship and a causal relationship can lead to the prediction of immunization and prevention of asthma is a subject that has been less considered in previous pieces of research. The new field of research methodology under the title of structural equation modeling, while giving us a more comprehensive explanation of phenomena, can clarify the internal relationship between the effectiveness and the process of their formation, and eventually, lead to more effective preventive or reinforcing measures.

Objective

The present study investigated the mediating role of resilience in the relationship between perceived stress and social support with self-care among asthmatic patients.

Methods

This correlational study was conducted using structural equation modeling. The statistical population of this study included all asthmatic patients referring to Sayyad Shirazi Hospital, Gorgan, Iran, 2021. The samples were selected using the availability sampling method. To determine the sample size, the ratio of the sample size to the observed variables was used. Accordingly, five individuals were considered for each observed variable. According to the observed variables (items of the questionnaire), the sample size of 375 students was considered, and at the end, after removing incomplete questionnaires and screening the data, 368 questionnaires were analyzed. Regarding the ethical considerations, the research objectives and procedures were explained to all individuals orally, and they were informed of the right to leave the study at any time. Moreover, all participants were assured of anonymity and confidentiality in this study. This research was approved by the Ethics Committee of the Research and Technology of Shahid Beheshti University of Medical Sciences, Tehran, Iran (IR.SBMU.RETECH.REC.1399.588).

Connor-Davidson Resilience Questionnaire

This 25-item questionnaire, developed in 2003, is scored on a 5-point Likert scale (from 0=completely incorrect to 4=always true). The

mean score of this scale is obtained at 52; therefore, higher scores than 52 indicate higher resilience, while closer scores to zero represent lower resilience. The results of calculating the correlation of item-total correlation showed that except for item 3, coefficients were between 41% and 64%. In the present study, the reliability coefficient of the questionnaire was obtained by Cronbach's alpha coefficient method at 0.85, which showed the acceptable reliability of the questionnaire (17). Cronbach's alpha coefficient of this questionnaire was estimated at 0.79 in the present study.

coefficient (α=0.90) (18). In this study, the reliability coefficient of the Perceived Stress Questionnaire was obtained at 0.76, which was acceptable.

Perceived Social Support Scale

Multi-dimensional Scale of Perceived Social Support is a 12-item tool developed by Zimet et al. to assess perceived social support from three sources, namely family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant others (items 1, 2, 5, and 10) (19). This scale is a short, simple, and effective tool of time, and therefore, it has been used in various types of research. The multi-dimensional perceived social support scale has desirable internal consistency. The total alpha coefficient of the test is 0.91 and the alpha coefficient of its subscales ranges from 0.90 to 0.95 (19). Cronbach's alpha coefficient of this questionnaire was estimated at 0.85 in the present study.

Self-Care Questionnaire

The Self-Care Behaviors Questionnaire, developed by Shigog et al. (2001) measures self-care behaviors in asthmatic patients. This 24-item scale assesses the amount of information and knowledge of the individual and his behaviors to prevent asthma exacerbation and improvement. The scale scoring in each material is zero and one (right and wrong). The maximum score on this scale is obtained at 24, with a higher score showing more self-care. In the initial study conducted by

Standard Perceived Stress Scale

This 14-item questionnaire, designed by Cohen et al. (1983), is rated on a 5-point Likert scale (from 0=never to 4=always). Items 4, 5, 6, 7, 9, 10, and 13 are scored inversely. This questionnaire evaluates two subscales of negative and positive perceptions of stress. The items are designed in such a way that the respondent expresses his opinion about the uncontrollability and excruciating stress of his life during the past month. Cohen et al. confirmed the reliability of this instrument by calculating its internal consistency through Cronbach's alpha Shigog et al. (20), the reliability coefficient of the scale was reported as 0.70. The reliability of this questionnaire was measured using two methods of internal and re-test consistency, and its Cronbach's alpha coefficient was obtained at 0.71.

In descriptive statistics, central indicators, including mean, median, and façade, and dispersion indices, including variance and standard deviation, were calculated and a path analysis test was used in inferential statistics. It is worth noting that statistical assumptions, such as normality of variable distribution, the linearity of variable relationship were investigated, and then, the data were tested by SPSS 22 and AMOS 22 software for path analysis and model fitting.

Results

Out of 368 subjects, 43 (11.7%), 55 (14.9%), 63 (17.1%), 152 (41.3%), and 38 (10.3%) had undergraduate, diploma, postgraduate, bachelor's, education, and postgraduate and higher education, respectively. However, 17 patients (4.6%) avoided mentioning their educational level. Regarding the age of the participants, 39 (10.6%), 139 (37.8%), 108 (29%), 34 (9.2%), and 33 (8.9%) were 20-25, 26-30, 31-35, 36-40, and over 41 years old, respectively. Nevertheless, 15 (4.1%) patients did not respond to this option. Based on the results, 218 (59.2%) cases were married and 125 (34%) were single; nonetheless, 25 (6.8%) subjects did not respond to this option. Descriptive indicators of research variables are presented in Table 1.

Table 1- Descriptive indicators of research variables

Variables	M	SD	Min.	Max.	Skewness	Kurtosis
Social support	4.98	1.15	1.58	7	0.08	-0.78
Perceived stress	1.39	0.5	0.33	2.42	-0.12	-0.83
Resilience	3.46	0.5	2.8	4.48	0.45	-1.04
Asthma self-care	0.80	0.14	0.44	1	-0.55	-0.27

Table 2- Correlation matrix between research variables

Variables	Social support	Perceived stress	Resilience	Asthma self-care
Social support	1			
Perceived stress	-0.50*	1		
Resilience	0.41*	-0.59*	1	
Asthma Self-Care	0.30*	-0.55*	0.50*	1

*P<0.01

The results of Table 2 show the significant relationship between the perceived social support variable and perceived stress (r=-0.50, P<0.01). However, the relationship between the perceived social support variable and resilience was positive and significant (r=0.41, P<0.01). It was found that the relationship between the perceived stress and resilience was significant (r=-0.59, P<0.01). The relationship between the resilience and self-care was positive and significant (r=0.50, P<0.01). The goodness of fit indicators are presented in Table 3.

Table 3- Fitting indicators for the modified model (n=368)

Index	X^2	Df	X^2/DF	GFI	AGFI	NFI	IFI	CFI	RMSEA
Values	644	231	2.78	0.91	0.80	0.92	0.95	0.94	0.069

Table 4- Direct effects of research variables

Dependent/Independent	Beta	P-value	t	Standard error of estimation	R^2
Social support for self-care	0.09	0.147	1.54	0.01	0.81
Perceived stress on self-care	-0.64	0.001	-3.24	0.14	
Resilience in self-care	0.33	0.001	3.31	0.02	0.38
Perceived stress on resilience	-0.58	0.001	-3.85	0.62	
Social support for resilience	0.14	0.001	3.18	0.04	

Table 4 shows the test of hypotheses about the direct effects of variables on each other. In this table, standard beta coefficients, significance level, t-statistics, standard error of estimation, and explained variance (standardized operating load square) for direct effects have been reported. The results of Table 4 indicate that the relationship between social support and asthma self-care was non-significant (t=1.54, P=0.147). Moreover, there was a negative and significant relationship between perceived stress and self-care (t=3.24, P=0.001). A direct and significant relationship was observed between resilience and self-care (t=3.31, P=0.000). There was a negative and significant relationship between perceived stress and resilience (t=-3.85, P=0.000). However, a positive and significant relationship was found between social support and resilience (t=3.18, P=0.001). As a result, only one of the direct pathways in the non-significant model was obtained. The results of the model test are presented in the following research questions.

Table 5- Indirect effects of variables on each other

Total effect	P-value	Standard error of estimation	Indirect effect	Dependent/Independent
Social support for self-care	0.14	0.02	0.004	0.05
Perceived stress on self-care	-0.83	0.02	0.09	-0.20

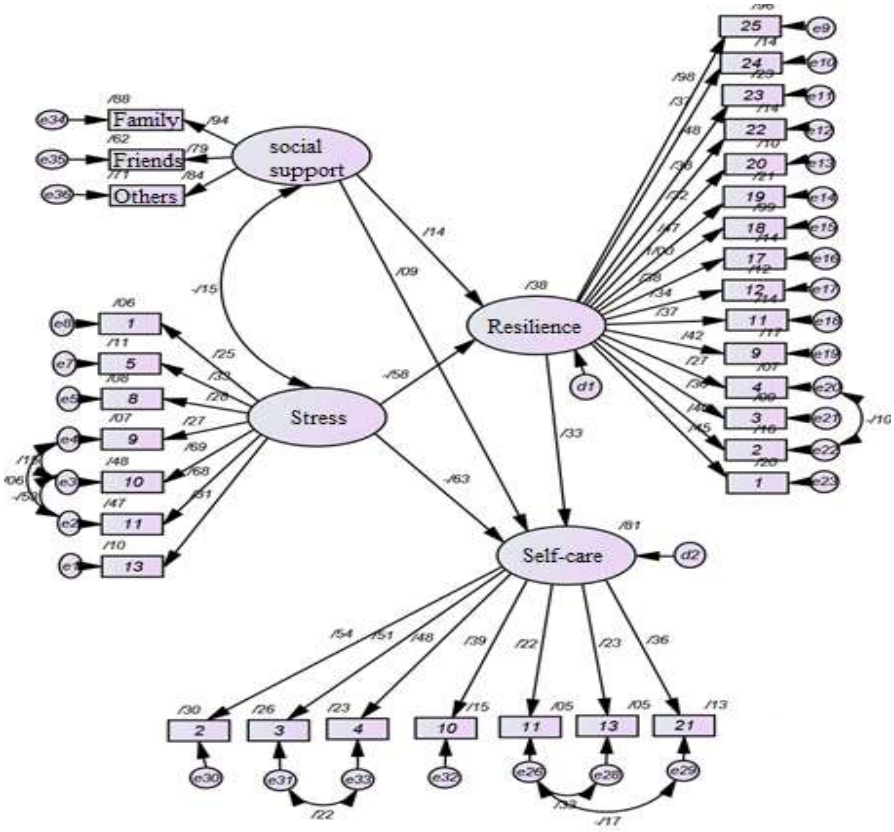

Figure 1- Final modified model

According to Figure 1 and the obtained fitness indicators, the proposed model was well adapted to the collected data, and the research model could explain the relationship between variables well. The obtained relationships between predictive variables and asthma self-care showed that the social support variable with a path coefficient of 0.09 lacked the predictive power of the self-care variable. Perceived stress variable with a path coefficient of -0.63 and resilience variable with a path coefficient of 0.33 had the predictive power of asthma self-care variable. Additionally, considering the fit values of the modified (final) model mentioned above, it can be said that the model presented in this study was accepted. Path coefficients between the final pattern variables and their significance level showed that the mentioned variables explained asthma self-care.

Discussion

The present study investigated the mediating role of resilience in the relationship between perceived stress and social support with self-care in asthmatic patients. According to the obtained fitness indicators, the proposed model showed a good fit and consistency with the collected data, and the research model was able to explain the relationship between variables well. The obtained relationships between predictive variables and asthma self-care indicated that the perceived support variable lacked the predictive power of the self-care variable. The perceived stress variable and resilience variable had the predictive power of the asthma self-care variable. Moreover, considering the values of the fitting indicators of the modified (final) model, it can be said that the model presented in this study was accepted.

Path coefficients between the variables of the final pattern and their significance level showed that the mentioned variables explained asthma self-care. In previous pieces of research, the internal relationship between variables has not been studied as a model, rather, the relationships of variables have been studied separately. The results obtained in this study are relatively consistent with those of studies conducted by Glasberg et al. (21), Feng et al. (14), Yildiz and Aşti (15), and Gülaçtı (16). The findings of several studies on psychological factors in asthma have shown the effect of stress and psychological pressures on asthma incidence. Based on the results of numerous studies, stress can be a common stimulant of asthma. Numerous people feel shortness of breath, anxiety, fear, and worry with stress, and if they have an asthma background, they will face an asthma attack.

Stress causes disorders called psychosomatic diseases. Psychosomatic disorders are physical diseases that stress and psychological and emotional pressures have an effect on their incidence and severity. Respiratory, cardiovascular, digestive, skin,

and endocrine systems are among the body's devices that are vulnerable to psychological factors and severe stress. Asthma is also one of the respiratory tract diseases that can be caused or exacerbated by stress. People who do not have sufficient compatibility or lack the knowledge to compromise properly in life are more likely to be affected by psychosomatic diseases.

Access to the sample group with asthma from specific research communities made it difficult to conduct the research. The results of this study can only be extended to the study population in Gorgan (asthmatic patients), and therefore, caution should be taken in generalization. The present study was field-changing and it was difficult to control the differences between the studied groups in terms of various variables. Since the data collection tool was a questionnaire, there was a possibility of socialization of the responses, which threatened the internal and external validity of the research. A confounding variable was related to the questionnaires since they were time-consuming for asthmatic patients to fill out (they could not answer with patience when completing the questionnaire).

Considering demographic variables, such as education, socioeconomic status, for social support and mental health of asthmatic patients will provide more reliable results. In future studies, it is recommended to develop stronger models to investigate the internal relationship between variables concerning self-care in asthmatic patients. It is also suggested to use other standard tools to measure the desired variables in future studies to validate the results of this study.

Based on the findings, resilience had a significant mediating role in the relationship between perceived social support and self-care. Therefore, considering that intervention was out of control to increase social support, resilience training for people with asthma can help to empower their cognitive to improve their self-care. In this respect, the results of resilience training courses are recommended for people with asthma. The findings of the present study showed that perceived stress had a significant role in self-care directly and indirectly. According to these findings, stress management programs and stress coping skills will be fruitful for individuals with asthma to improve their well-being.

Conclusion

It can be concluded that resilience had a mediating role in the relationship between perceived stress and social support with self-care among asthmatic patients.

Ethical considerations

This article was derived from the thesis of the first author with the code of ethics approved by the Vice-Chancellor for Research and Technology of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1399.588).

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