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General health and its relationship with personality traits among mothers of children with special needs

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Abstract

Health and wellbeing of mothers of children with special needs as a vulnerable group in society is very important. Mental health is affected by many variables, the most important of which are personality traits. The aim of this study was to examine general health and its relationship with personality traits among mothers of children with special needs. This study used a comparative design. The statistical population of the current study included all mothers of children with special needs in Zahedan. The sample of the present study consisted of 240 mothers of children with cerebral palsy, autism, mental retardation, or physical retardation in Zahedan selected using convenience sampling method. To collect data, the 60-Item NEO personality inventory and the general health questionnaire were used. The results indicated a significant difference between mothers of children with cerebral palsy, autism, mental retardation, or physical retardation in terms of their general health. Among the NEO five-factor personality traits, neuroticism was positively correlated with general health while conscientiousness, extraversion, and agreeableness were negatively related to general health. However, no significant relationship was found between openness and mothers' general health. Moreover, the results showed that among the NEO five-factor personality traits, the subscales of neuroticism, conscientiousness, agreeableness, extraversion, and openness respectively played the most important roles in predicting the level of general health among the mothers. According to the results, it can be inferred that, compared to mothers of children with autism, mental retardation, or physical retardation, general health of mothers of children with cerebral palsy was at higher risk.

Keywords: Health, Personality, Cerebral Palsy

Introduction

Health is a state of complete physical, mental, and social well-being [1] and improving the level of health of various social groups is one of the most fundamental issues in every society that must be taken into consideration from physical, mental, and social perspectives [2]. Health is not merely the absence of a disease or an infirmity; however, it is a state of well-being based on which a person can deal with everyday stressors, be useful occupationally and educationally, and cooperate and participate with others as a part of a community [3].

Having a disease is a multi-dimensional experience that causes morbidity in many

areas, including mental, social, economic, and the like. As times goes by, the disease creates changes in specific aspects of life and its persistence ultimately leads to behavioral, emotional, and social communication disorders [4]. A recently carried out study indicated that people with high levels of psychological distress mostly complained about symptoms of physical diseases and the frequency of physical diseases can be regarded as a powerful predictor of the occurrence of damage to physical, psychological, and social functioning [5].

Although being a mother brings joy, pride, and personal growth, it has its own challenges [6]. These challenges can be accompanied by some negative complications, such that parents compared to those who do not have any children, experience higher levels of anxiety and depression [7]. In addition, the arrival of a baby to a family can create significant changes in the relationship between parents and affect their mental health. In this regard, parents may experience high levels of stress due to their attempts to create changes to adapt themselves to this new situation. Parents sometimes experience some negative changes in terms of stress, self-esteem, communication, and conflicts. However, having a child does not necessarily harm the marriage. In general, each individual has a certain tolerance threshold against the pressures of life. When too much pressure is imposed on a person, mental and emotional disorders inevitably occur [8]. A type of stress that can create enormous levels of psychological pressure, have long-term effects on family members, and put the foundation of a family at serious risk is having a disabled child [9].

In our society, mothers, compared to fathers, due to various reasons, such as spending more time with their children, are more involved in the issues related to their children. As a result, they interact more with their children and endure a lot of stress. Moreover, mothers who experience high levels of stress, compared to those who have to deal with low levels of stress, encourage less prosocial skills in their children [10]. Additionally, experiencing high levels of stress may lead parents to become irritable and punish their children. This may increase the possibility of the onset of conduct disorder [11], oppositional defiant disorder [12], antisocial behavior [13], and attention deficit disorder [14].

Given that some disabilities are more severe than the others are, some previously conducted studies considered the level of developmental functioning [15] or the frequency of behavioral disorders and problems [16] in children. In contrast, considering parents' perception of their child's condition, other studies examined parenting stress regardless of the existing situation [17] and indicated that the level of parenting stress was highly associated with the degree or severity of disability [18].

Gupta [19] compared the level of stress among parents of children with attention deficit/hyperactivity disorder, cerebral palsy, developmental disorders, Acquired Immune Deficiency Syndrom (AIDS), and asthma and concluded that parents of children whose disorders indicated more behavioral symptoms experienced higher levels of stress compared to others. According to what was mentioned earlier, it could be inferred that through examining and comparing the levels of mental pressure and general health among parents of children with special needs, the priority of therapeutic interventions in these parents can be determined. In addition to physical pressure, these people have to deal with high levels of anxiety that occur due to being encountered with high levels of pressure and stress [20]. Having a child with special needs creates anxiety and physical, mental, and psychological stress in the family. In particular, mothers and parents of children with developmental disabilities have to deal with high levels of stress [21], and they have to deal with mental disorders, a sense of worthlessness and guilt, impaired physical functioning, and fatigue [22]. Studies have shown that since mothers are more involved in their children's issues, they compared to these children's fathers experience higher levels of stress and anxiety [23]. Additionally, the results of a study demonstrated that mothers of children with severe physical disorders

suffered from physical problems [24].

This study is significant since as time goes by, mothers of children with special needs face issues related to compatibility, resilience, life satisfaction, personal and marital relationships and their personality may change. Among the personality changes that may occur, sensitivity and neurosis can be mentioned. These mothers feel that others put a label on their children and pity them. This feeling discourages them from interacting with other people. As a result, they prefer to spend most of their time at home and this may lead to depression, isolation, and discouragement. Therefore, the present study aimed to examine the level of psychological trauma that the mothers have in common with their children. Determining the extent of damage and indicating the possible damaged areas can aid us to consider proper measurements for this group of people. Along with long-lasting and sometimes permanent services (more than 25 years) that these children receive, their mothers can benefit from treatments considered for this group. Accordingly, the current study aimed to examine general health and its relationship with personality traits among mothers of children with special needs.

Method

This descriptive study followed a comparative design. The statistical population included all mothers of children with special needs in Zahedan, Iran (note that due to their special needs, the number of children was not known and the centers and hospitals that provided rehabilitation services did not have any exact data). The sample of the current study consisted of 240 mothers (61 mothers of children with cerebral palsy, 75 mothers of children with autism, 123 mothers of children mental retardation, and 60 mothers of children with physical retardation) in Zahedan referring to welfare and occupational therapy, speech therapy, and mental play therapy centers who were selected using convenience sampling method. Since this study was conducted on 4 groups of mothers, to be able to compare the groups, the least number of participants (N==60) was considered as the benchmark and the remaining questionnaires were excluded from the study. To collect the data, the 60-Item NEO personality inventory and the General Health Questionnaire (GHQ) were used.

The GHQ was developed by Goldberg in 1972 to find mental disorders in various centers and environments. The items of this questionnaire test a person's mental status in the last four weeks and include symptoms, such as abnormal thoughts and feelings and visible aspects of behaviors. Goldberg focused on four main areas, i.e. depression, anxiety and feelings of psychological distress, objectively observable behaviors, including items related to social dysfunction, and hypochondria [25].

This 28-Item questionnaire includes 4 subscales. Each subscale includes 7 items. The items related to each subscale are arranged consecutively; therefore, items 1 to 7 correspond the subscale of physical symptoms, items 8 to 14 associate with the subscale of anxiety and sleep disorder, items 15 to 21 relate to the subscale of social dysfunction, and items 22 to 28 relate to the subscale of depression. All items have 4 options and are scored in two ways. The first method of GHQ scoring is in a way that each item is scored in the following way (0, 0, 1, and 1). As a result, each respondent's score varies from 0 to 28. The second method of scoring is based on a four-point Likert-type scale ranging from 1 to 4. In this regard, a respondent's score ranges from 0 to 84. In both methods of scoring, lower scores show better levels of mental health [25]. In 1988, through conducting a study on 853 people and using the split-half method, Goldberg and William obtained the reliability of this questionnaire as 0.95. In another study, after administering the questionnaire to 72 university students in Hong Kong and using the Cronbach's alpha coefficient, the internal consistency of the questionnaire was obtained as 0.93 [26]. As cited in a study carried out by Taghavi, 103 patients who had heart attack were asked to complete the questionnaire twice with an 8-month interval. Analysis of the results indicated that the

reliability coefficient was 0.90 [26]. Taghavi obtained the reliability of this questionnaire using test-retest reliability, split-half method, and Cronbach's alpha coefficient, the results of which were as follows: 0.93, 0.70, and 0.90, respectively [26]. Moreover, in the current study, the validity of this questionnaire was assessed using concurrent validity and factor analysis. The concurrent validity of the GHQ obtained through conducting it concurrently with Middlesex hospital questionnaire was 0.55. The Neo-personality inventory-revised is one the newest questionnaires developed to assess personality traits based on the perspective of factor analysis. This inventory reflects five main factors and it is considered as a comprehensive integrated model based on factor analysis. The extent of its application in examining healthy people's personality traits and in clinical affairs has made it one of the most appropriate personality assessment tools. Since this inventory has been conducted on different age groups and in various cultures, it can be regarded as one of the most comprehensive personality assessment tools. In the last fifteen years, this inventory was carried out among various healthy adults and clinical samples. The NEO-Personality Inventory-Revised replaced the NEO Five-Factor Inventory that was developed by Costa and McCrae in 1985 [27].

This inventory measures 5 personality traits and 6 subordinate dimensions. Each subordinate dimension evaluates 30 characteristics. Considering all these characteristics, this inventory provides a comprehensive assessment of personality. This inventory has two forms including self-report form (S), which is appropriate for men and women of all ages and includes 240 5-point Likert-type items (ranging from totally agree to totally disagree) scored by the respondent himself/herself, and observer-report form (R) or the revised version that is scored based on the observer's viewpoint. The latter form also includes 240 items; however, it starts with a third person pronoun. This form can also be used independently to assess personality and as a complement to the self-report form (S). This inventory is based on a Likert-type scale (ranging from totally disagree to totally agree) [28].

Costa and McCrae conducted the NEO Five-Factor Inventory on 208 American students within three months and indicated that the reliability coefficients of the questionnaires varied from 0.75 to 0.83 [27]. They also examined the long-term reliability of this inventory. Their 6-year study carried out to check the reliability of neuroticism, extraversion, and openness to experience indicated that the reliability coefficients of these subscales ranged from 0.68 to 0.83. The reliability coefficients of agreeableness and conscientiousness examined within two years were respectively 0.79 and 0.63 [27]. The normalization of this inventory was conducted by Kiamehr [29] on a group of 2000 university students studying at Universities in Tabriz and Shiraz, the results of which showed that the correlation coefficients of the main subscales were between 0.56 and 0.87. The Cronbach's alpha coefficients of neuroticism, extraversion, openness, agreeableness, and conscientiousness were respectively 0.86, 0.73, 0.56, 0.68, and 0.87. To assess the content validity of this test, the correlation between the self-report form (S) and the observer-report form (R) was examined. The subscale of extraversion had the greatest correlation (0.66) and the subscale of agreeableness had the least correlation (0.45). As cited in a study conducted by Kiamehr [29], using internal consistency method, Atashrouz indicated that the Cronbach's alpha coefficients of neuroticism, extraversion, openness, agreeableness, and conscientiousness were 0.74, 0.55, 0.27, 0.38, and 0.77, respectively [29].

To analyze the obtained data, correlation coefficient, regression analysis, and multivariate analysis of variance (MANOVA) were applied. For data analysis, software SPSS-20 was used. And a meaningful level $p<0.001$

Results

Among the statistical population, a group of 240 mothers of children with special needs

was selected. The age range of children with special needs was 4 to 9 years and the mean age of children with cerebral palsy, autism, mental retardation, and physical retardation was 7.14 ± 3.42, 6.99 ± 3.45, 7.09 ± 3.41, and 6.42 ± 3.89, respectively. Moreover, the mean age of mothers of children with cerebral palsy, autism, mental retardation, and physical retardation was 26.35, 29.42, 26.16, and 24.36, respectively. The minimum level of education of the mothers was middle school. The results demonstrated that there was no difference between the participants in terms of age.

Among the children with cerebral palsy, 15 (25%) only received one type of service (physiotherapy and occupational therapy or phototherapy) and the remaining 45 children (75%) received more than one type of service. Among the children with autism, 17 (34.28%) received one type of service and the remaining 43 children (66.71%) received more than one type of service. Among the children with mental retardation, 21 (35%) received more than three types of service and the remaining 39 children (65%) received one type or two types of service simultaneously. Among the children with physical retardation, like those with mental retardation, 21 (35%) received more than three types of service and the remaining 39 people (65%) received one type or two types of service simultaneously.

In all these groups, most of the mothers were housekeepers and most of the fathers were self-employed. Moreover, most of the children had been diagnosed with their problems before 2 years of age and they had received various kinds of services for more than 3 years. The results of demographic information showed that in terms of the mothers' age, level of education, and occupation, there were no significant differences between the participants.

The results of Lambda's test conducted to check significant differences between the mothers of children with cerebral palsy, autism, mental retardation, and physical retardation with regard to the level of general health are presented in Table 1.

Table 1 *The results of Lambda's test in relation to the difference in the mothers' general health*

Effect	Value	F	Hypothesis df	Error df	Sig.
Wilk's Lambda	1.96	42.465	8.00	867.07	0.001

As indicated in Table 1, the results show that the value of Wilk's Lambda test is significant. Furthermore, considering the significance of F, it can be concluded that there is a linear relationship between the levels of mental health among these four groups. The results of multivariate analysis of variance carried out to compare the mothers' general health are represented in Table 2.

As demonstrated in Table 2, the differences in the mean values of psychosomatic symptoms, anxiety and sleep disorder, social dysfunction, and severe depression for the mothers of children with cerebral palsy, autism, mental retardation, and physical retardation are significant at 99% confidence level ($p<0.001$). The differences in their mean values indicate that, the mean values of the mothers of children with cerebral palsy on psychosomatic symptoms and social dysfunction are higher compared to other groups. Moreover, the mean scores of mothers of children with autism and mental retardation on anxiety and sleep disorder are higher compared to the mothers of children with cerebral palsy and physical retardation. In addition, the mean value of the mothers of children with physical retardation on severe depression is higher than the mean scores of mothers of children with cerebral palsy, autism, and mental retardation. Furthermore, the results show that the mean score of the mothers of children with cerebral palsy on general health is greater than the mean scores of the mothers of children with autism, mental retardation, and physical retardation. This means that the mothers of children with cerebral palsy experience a lower level of general health compared to the mothers of children with autism, mental retardation, and physical retardation.

Table 2 *The results of multivariate analysis of variance conducted to compare the mothers' general health*

Indicators Subscales	Groups	N	M	SD	Df	Error df	F	Sig.
Psychosomatic symptoms	Cerebral palsy	60	7.65	4.34	3	1.29	38.59	0.001
	Autism	60	6.08	4.23				
	Mental retardation	60	6.32	3.76				
	Physical retardation	60	7.19	4.97				
Anxiety/sleep disorder	Cerebral palsy	60	6.62	4.02	3	1.29	41.97	0.001
	Autism	60	7.43	3.54				
	Mental retardation	60	7.39	4.90				
	Physical retardation	60	6.91	4.27				
Social dysfunction	Cerebral palsy	60	7.37	4.72	3	1.29	25.21	0.001
	Autism	60	6.13	3.65				
	Mental retardation	60	7.04	4.25				
	Physical retardation	60	7.21	4.87				
Severe depression	Cerebral palsy	60	7.11	4.87	3	1.29	17.96	0.001
	Autism	60	6.71	4.87				
	Mental retardation	60	5.49	3.17				
	Physical retardation	60	7.23	3.96				
Overall score of general health	Cerebral palsy	60	25.24	9.08	3	1.29	702.47	0.001
	Autism	60	22.06	9.97				
	Mental retardation	60	23.49	9.17				
	Physical retardation	60	23.74	9.33				

To examine the relationship between the mothers' personality traits and general health, the correlation coefficient and regression analysis were applied. The results of the correlation coefficient conducted to check this relationship are presented in Table 3.

As presented in Table 3, the results show that neuroticism is significantly and positively correlated with all the four subscales of general health and the mothers' overall score on general health ($p<0.001$). This shows that the mothers who get high scores on neuroticism experience low levels of general health. Additionally, the results of the correlation matrix prove that conscientiousness, extraversion, and agreeableness are significantly and negatively correlated with all the four subscales of general health and the mothers' overall score on general health ($p<0.01$). This indicates that the mothers who get high scores on conscientiousness, extraversion, and agreeableness experience high levels of general health. Moreover, openness is not significantly related to the subscales of general health and the mothers' overall score on general health.

To determine the role of each predictive variable (the subscales of NEO five-factor personality traits) in predicting the criterion variable (the mothers' general health), the regression analysis was used, the results of which are presented in Table 4.

As demonstrated in Table 4, the results show that neuroticism, conscientiousness, extraversion, and agreeableness are respectively entered the regression equation as predicting variables of the mothers' general health. The results show that these variables are able to determine and predict the mothers' general health and the F-value, which is significant at $p<0.001$, confirms their predictive role.

Table 3 *The correlation matrix of personality traits with the subscales of mental health*

Variables	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness	Psychosomatic symptoms	Anxiety and sleep disorder	Social dysfunction	Severe depression	Overall score of general health
Neuroticism	1.001									
Extraversion	-0.476	1.001								
Openness	-0.328	0.831	1.001							
Agreeableness	0.601	-0.345	0.079	1.001						
Conscientiousness	-0.467	0.218	0.403	-0.523	1.001					
Psychosomatic symptoms	0.219	-0.540	0.205	-0.217	0.924	1.001				
Anxiety and sleep disorder	0.603	-0.302	0.312	0.103	-0.267	-0.454	1.001			
Social dysfunction	0.259	0.435	0.260	-0.413	0.634	-0.475	0.356	1.001		
Severe depression	0.421	-0.405	0.087	-0.257	0.186	0.218	-0.753	-0.688	1.001	
Overall score of general health	0.872	-0.347	0.079	-0.692	-0.018	-0.463	0.264	0.266	0.931	1.001

Table 4 *The results of regression analysis of the predictive variables and the criterion variable*

Variable	R	R^2	Adjusted R^2	SE	F	DF	Sig
Neuroticism	0.407	0.197	0.197	4.465	687.839	1.869	0.001
Conscientiousness	0.513	0.234	0.234	3.856	601.689	3.486	0.001
Extraversion	0.562	0.249	0.249	4.768	568.366	4.546	0.001
Agreeableness	0.598	0.284	0.284	3.457	497.569	5.906	0.001

Table 5 *The results of t-test conducted to examine the role of the predictive variables in predicting mothers' general health*

Variable	B	SEB	Beta coefficient	T	Sig.
Neuroticism	0.892	0.092	0.548	19.588	0.001
Conscientiousness	0.529	0.082	-0.154	-13.978	0.001
Extraversion	-0.402	0.036	-0.097	-11.795	0.001
Agreeableness	-0.176	0.017	-0.062	-7.221	0.005

According to Table 5 and given the obtained coefficients, it can be mentioned that an increase or a decrease in the mothers' scores on neuroticism, conscientiousness, openness, and agreeableness can predict their general health. The t-values, which are significant at $p<0.001$ for the predictive variables of neuroticism, conscientiousness, and agreeableness and significant at $p<0.005$ for the predictive variable of extraversion, confirm the abovementioned predictive role. Given the results of the regression analysis, it can be inferred that neuroticism, conscientiousness, agreeableness, and extraversion play significant roles, in sequence, in predicting the mothers' general health.

Discussion

The results showed significant differences between the mothers' mean scores on the subscales of general health, that is the mean scores of the mothers of children with cerebral palsy on psychosomatic symptoms and social dysfunction were higher than those of other mothers and the mean scores of the mothers of children with autism and mental retardation on anxiety and sleep disorder were higher than those of the mothers of children with cerebral palsy and physical retardation. Moreover, the mothers of children with physical retardation got higher scores on severe depression compared to the mothers of children with autism, cerebral palsy, and mental retardation. Furthermore, the results indicated that the overall score of the mothers of children with cerebral palsy was higher than those of others were. This finding is in line with the results of studies conducted to examine the level of general health among mothers of children with special needs [15-19]. The most important challenge with which these families face is that people put a label on their children. Since most of the people do not have enough information on mental disorders including autism and mental retardation and the general population has low tolerance for out of norms behaviors, these families often become sensitive to the negative attention paid to their children in public places. Indeed, these families always have the concern to make a balance between their children's needs compared with normal children. This is why they become more anxious and their anxiety affects their sleep. In the current study, the levels of anxiety and sleep disorder among the mothers of children with autism and mental retardation were higher than those of the mothers of children with cerebral palsy and physical retardation were.

The prevalence of mental disorders was higher among parents who had a child compared to those who did not have any children [2]. Studies have indicated that parents' mental disorders were closely associated with the severity of the disability and the type of the problem [30] and women are exposed to two major kinds of stress, the stress caused by biological identity and the stress caused due to professional responsibilities. Women's

reproductive action is the basis of the stress syndrome in women and the other source of stress in women is their professional and housekeeping responsibilities. Taking care of the elderly, children, and children with special needs is among the latter kind of stress [31]. Therefore, mothers of children with special needs experience higher levels of stress compared to mothers of normal children [32]. Increasing the level of parenting stress affects parents' ability in taking care of their child [33]. Having a child with special needs creates mental disorders, including anxiety and physical, mental, and psychological stress, in the family. In particular, mothers and parents of children with developmental disabilities experience high levels of stress [21], and they have to deal with mental disorders, a sense of worthlessness and guilt, impaired physical functioning, and fatigue [22]. Studies have shown that since mothers are more involved in their children's issues, they compared to these children's fathers experience higher levels of stress and anxiety [23]. These findings are consistent with the results obtained from the present study.

The results showed that the mothers of children with special needs participating in this study suffered from severe depression. Depression is the most prevalent mental disorder. The prevalence of depression is nearly 7% to 21% among women [34]. Some previously conducted studies have shown a significant relationship between negative stress and the onset of depression and indicated that 20% to 50% of people who were exposed to high levels of stress experienced depression [35]. In this regard, since mothers of children with special needs experience high levels of stress, they are more likely to suffer from depression. Previous studies have demonstrated that the prevalence of depression among mothers of children with developmental disorders, compared to mothers of normal children, was higher [36]. Moreover, it seems that these children's behavioral problems can be more stressful than the children's disability itself for their mothers [37]. Mothers of children with special needs, compared to mothers of normal children, are more likely to experience depression.

The results of this study indicated that the level of depression in these mothers was higher than the level of their anxiety. This finding is in line with the results of studies conducted by Zamani, Habibi, and Darvishi [38], Zamani and Habibi [39], and Hastings [23]. Having negative feelings and dealing with the negative consequences of their children's special condition, such as putting a label on them, are among the main reasons for depression among the mothers of children with special needs. The depression caused because of the abovementioned factors may expand to other members of the family and create a psychological trauma that is often ignored. These factors can be considered as the main reasons for the isolation of the family, which may lead to depression [39].

The innovation of this study was that it was conducted on four groups of mothers who suffered from high levels of emotional pain; therefore, the results were unpredictable. Lack of access to families of children who suffer from various types of mental disorders with different severity and to mothers and children in different age groups was among the limitations of the current study. Additionally, the obtained results can be generalized to those mothers who attempt to solve their child's problem. Finally, the sample only included women. Therefore, these findings can only be generalized to mothers of children with mental disorders. It is recommended that future studies be conducted on people at different age ranges with various types and severity of mental disorders.

Conclusion

According to the results, it can be inferred that, compared to the mothers of children with autism, mental retardation, and physical retardation, the level of general health among the mothers of children with cerebral palsy was lower. Moreover, it can be concluded that investigating mothers' personality traits can aid us to examine the possibility of changes in various dimensions of their general health.

Therefore, based on the results obtained from this study, paying attention to the importance of providing essential trainings related to mental health for mothers of children with special needs is highly recommended.

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Contribution

Study Design: HJ
Data Collection and Analysis: HJ
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Conflict of Interest

"The authors declare that they have no competing interests."

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