

Evaluation of anxiety and depression in mothers of children with asthmaFatemeh Behmanesh¹, Fatemeh Moharreri², Atefeh Soltanifar², Mahdis Hamzeh³, Elahe Heidari⁴

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Abstract

Background: Asthma is the most common chronic disease in childhood. Parents have an important role in managing asthma in children. Studies have shown a higher degree of depression and anxiety and lower family performance in mothers of asthmatic children in comparison with the control group.

Objective: The aim of this study was to evaluate the parenting styles and also depression, anxiety and stress parameters in mothers of children with asthma.

Methods: This case-control study was performed on 45 mothers of 3 to 15 years old asthmatic children in the allergy clinic of Mashhad University of Medical Sciences, Mashhad, Iran, during the years of 2014 to 2016. The control group was 45 mothers of non-asthmatic children who were matched for the age of their children with the case group in the same population. The parenting styles, as well as depression and anxiety of mothers were evaluated using parenting scales, and the depression-anxiety-stress scales (DASS). The mothers were also asked to fill a strengths and difficulties questionnaire (SDQ) for their children. Furthermore, parenting styles in the case group were compared to mothers of children without asthma as the control group. The data were then analyzed by SPSS 11.5, using Chi-square, ANOVA, and independent-samples t-test.

Results: The results of this study showed that 21 mothers (74.6%) were normal, but 12 mothers (26.7%) had a mild -, 9 (20%) a moderate - and 3 (6.7%) a severe degree of abnormality according to DASS. Independent-samples t-test showed a significant difference between the case and control groups regarding depression in mothers and laxness ($p < 0.001$), over reactivity ($p < 0.013$) and verbosity ($p < 0.031$) in children with asthma.

Conclusion: The results of this study demonstrated that anxiety and depression are partially frequent in mothers of children with asthma, and parenting styles are less affective in these families.

Keywords: Parenting styles; Depression; Anxiety; stress; Asthma

1. Introduction

Asthma is the most prevalent chronic disease in children (1). Childhood asthma is the most common cause of emergency department visits and hospitalizations in the United States (2). Furthermore, nearly 5 million people in the United Kingdom are diagnosed with asthma (3). Totally, the number of allergic diseases, especially asthma, is increasing at an alarming rate. An asthmatic child has to bear the great burden of this common chronic disease, physically and emotionally (4). The aim of patient treatment focuses on both survival and quality of life, which is more important in chronic diseases (5). It is a disorder that may have psychosomatic cause (6). People with asthma have higher levels of anxiety with excessive dependence. Family members of patients with asthma usually suffer from mood disorders, harmful stress disorder, substance abuse, and antisocial personality disorder. Family and the social environment can affect the incidence and severity of clinical presentation of the disease (7). Family members,

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especially the mother, play an important role in the control and management of asthma in childhood (8). Asthma is defined as a suppressed cry for the mother (9). Therefore, the family's - and especially mother's mental health is a very important factor in management of the disease (10). Patients with asthma have a series of personality characteristics such as emotional instability, sensitivity to rejection, lack of endurance and persistence in difficult conditions, hence; parents who care for asthmatic children require effective parenting methods (8). Having a child with a chronic disease puts emotional pressure on parents. Usually, the mother is much more affected so mothers bear greater emotional pressure than other family members (8). Many studies have focused on quality of life of these children or their mothers (8, 13-15, 19-21); yet, very little has been done about investigating the anxiety and depression in mothers of asthmatic children. Since anxiety and depression in mothers can interfere in the management of asthma in children, in this study, the rate of these disorders has been studied among mothers of children with asthma. The results of this study can help to improve the management of disease in asthmatic children.

2. Material and Methods

2.1. Design and setting

This cross-sectional study was conducted at Mashhad University of Medical Sciences, wherein the study population consisted of 45 mothers of children with asthma referred to the allergy clinics of Ghaem and Sheikh Hospitals during the years of 2014 to 2016.

2.2. Selection criteria

2.2.1. Inclusion criteria

The inclusion criteria were as follows:

- 1) At least three months of disease onset in children has to be passed.
- 2) Approval of asthma by a pediatric allergy and asthma specialist.
- 3) Informed consent of mothers to participate in the study.
- 4) The children's age range should be between 3 and 15 years.
- 5) The type of childhood asthma should be grade 3 (moderate persistency) or 4 (severe persistency).
- 6) Mothers should be able to understand and fill in the questionnaire correctly.

2.2.2. Exclusion criteria

The exclusion criteria were set as: children and mothers with the risk of any severe physical or mental disorders, patients with history of psychiatric drug consumption, as well as children with chronic respiratory, gastrointestinal or hematologic disease.

2.3. Instrument and data collection

According to inclusion and exclusion criteria, a total of 45 children with asthma and their mothers were enrolled in this study. After enrollment, they were asked to fill their family status, depression and anxiety, parenting scale and the children's strengths and difficulties questionnaire (SDQ). SDQ is a novel emotional and behavioral screening questionnaire, which can be successfully used. The SDQ can be used for various purposes, particularly for clinical assessment, and evaluation of outcomes (11). The validity and reliability of the Persian version of this questionnaire was investigated before implementation (12). The Family status questionnaire included demographic data, marital status and education level of mothers. The SDQ also included evaluation of hyperactivity, emotional and social criteria. This survey questionnaire helps to categorize the problems of children in any of these areas, wherein these problems had been classified into normal, borderline and abnormal classification. Moreover, a depression and anxiety questionnaire included 43 questions and the results of the survey were reported in 4 categories (no problem, mild depression, medium, and severe depression and anxiety). A parenting scale questionnaire also contained thirty questions that are scored from 1 to 7. This questionnaire helps to measure inefficient parental discipline including negligence or laxness, excessive reaction or over reactivity, verbosity and NF (Items not on a factor). The questionnaires were also completed by the mothers of healthy children as the control group, and then comparison of these parameters was performed between the two groups.

2.4. Sample size calculation and statistical analysis

The sample size was calculated according to a study by Liu et al. and based on the formula for comparison of the proportions of two samples, and considering the confidence interval of 95% and power of 80% (13). After collection of information, the desired data were analyzed using SPSS 11.5 (SPSS Inc., Chicago, Illinois, USA) statistical software. First, data were described by descriptive statistical methods including central and distribution indexes and frequency distribution. Afterwards, Chi-square test and independent-samples t-test were used to compare qualitative

and quantitative variables, respectively. ANOVA test was also used to compare the variables in multiple modes. In all calculations, $p < 0.05$ was considered as a significant level.

3. Results

The mean age of children was 6.87 ± 2.78 years ranging from 3 to 15. Of 45 children in the case group, 29 (64.4%) were boys and 16 (35.6%) were girls. But, there were 24 boys and 21 girls in the control group. Demographic data of the participants are summarized in Table 1. Among 45 participating mothers, 43 (95.6%) were married, one (2.2%) was divorced and one (2.2%) had remarried. Education level of 31 (68.8%) mothers was up to pre-university level, and 14 people had an academic degree. In the depression anxiety stress scales (DASS) questionnaire, the mean score was 35.15 ± 23.58 ranging from 5 to 100. In terms of stress criteria, 21 cases (46.7%) were in the normal range and 24 cases (53.3%) were in abnormal range (12 patients with mild, 9 with moderate and 3 with severe depression, anxiety and stress). According to the Pearson test, no significant correlation was found between the age and stress in mothers of children with asthma ($p=0.21$). Also, ANOVA test did not show significant difference between education levels and stress score among the participating mothers ($p=0.17$). In addition, no significant correlation was found between the employment status and stress, anxiety and depression in mothers of children with asthma ($p=0.36$). Evaluation of the strengths and difficulties in children showed that 4 children were in abnormal range of emotional states, while the number of children in abnormal range was 10 (22.2%) for demeanor, 7 for over reactivity, and 5 for problems with peers. One child was also in abnormal range for sociability: hence, 7 children (15.6%) were in abnormal range for the overall measures. The mean value of laxness, over reactivity, not on a factor, and verbosity of both the case and control groups are demonstrated in Table 2. Comparison of the groups of mothers with and without an asthmatic child showed that there is a correlation between the stage of asthma in their children and depression in mothers ($p=0.038$). Also, comparison of these groups showed that laxness value was 5.64 and 5.45 in the groups of mothers with and without anxiety, respectively. In addition, the mean values of over reactivity, and verbosity were 5.80 and 5.71 in the case group and 4.70 and 5.41 in the control group, respectively. Comparison of the mothers in the case and control groups in terms of parenting criteria showed that there is significant difference regarding the laxness ($p=0.0009$), over reactivity ($p=0.013$), verbosity ($p=0.031$), and NF ($p=0.028$) between the groups; hence, a significant difference was found in overall measures between the case and control groups ($p < 0.0003$).

Table 1. Demographic data of study population.

No	Case group	Control group
Male	29	24
Female	16	21
Mean age	6.87 ± 2.78	

Table 2. Measurement of study variable in the case and control groups.

Variables*	Groups	Minimum	Maximum	Mean	p-value
LX	Case group	1.55	5.64	3.64	0.0009
	Control group	2.09	4.45	3.09	
OR	Case group	1.80	5.80	3.67	0.013
	Control group	1.30	4.70	3.20	
VB	Case group	2.57	5.71	4.31	0.031
	Control group	2.57	5.43	3.95	
NF	Case group	7.00	21.00	15.62	0.028
	Control group	7.00	22.00	13.93	

* LX: laxness, OR: over reactivity, VB: verbosity, NF: not on a factor

4. Discussion

In this cross-sectional study, we found that depression and anxiety are more prevalent among mothers of children with asthma compared to the control group and also, there is a correlation between the stage of asthma in the children and depression in mothers. In terms of parenting criteria, a significant difference was found in overall measures between the case and control groups. To date, several studies have been conducted on the prevalence of depression and anxiety in mothers of children with different types of disease. Kheyraadi et al. (14) selected 100 mothers of children with diabetes type1 asthma and without a chronic disease in three groups. The frequency of depression was studied in these groups, and the results showed that depression is higher among the mothers of chronically ill children compared to the mothers of healthy children (14). Another study in Turkey demonstrated a higher prevalence of depression and anxiety in mothers with asthmatic children compared to the control group (13).

Also, the results of some studies have shown that the prevalence of depression and anxiety can be as high as 40% among mothers of children with asthma (15). Consistent with our findings, the results of studies have shown that depression is significantly high among mothers of children with asthma compared to the general population. Therefore, regardless of race or society, chronic illnesses especially asthma, can have a negative effect on the mother's emotional health. On the other hand, studies showed that emotional problems in mothers has an adverse effect on the mental health of families, and can affect family performance. The negative performance of the family can also in turn cause health problems in children (13). Our findings showed that anxiety and depression can affect parenting methods; therefore, emotional problems should be considered in these groups of mothers, and treatment of depression and anxiety of these mothers can help to improve the management of children with asthma and also improve parenting style. Asthma treatments are shown to reduce blood serotonin, and this reduction may cause children to be more prone to attention deficit hyperactivity disorder (ADHD) (16). Reports have shown that the prevalence of behavioral problems and ADHD is up to 22% and 15%, respectively. Consistent with these results, our findings have also shown that behavioral problems and ADHD among patients with asthma is similar to that of the general population (17, 18). This difference can be explained with difference in methodology; our study was conducted with real patients but the study by Pretorius was discussed based only on a hypothesis. Nevertheless, findings have also shown that depression of the mothers of these children is associated with behavioral problems and ADHD (19), which can explain our findings too. In a study conducted on 271 mothers of boys aged between 7 to 9 years old, it was shown that parenting style with intimacy is the most important factor in the prevention of anxiety, depression, isolation and physical complaints in children (20). In our study, the parenting style of mothers of children with asthma was more authoritarian and less permissive, indicating that parenting was more effective in the control group. In summary of all the research, we can mention that although, the focus should be on the treatment of physical illnesses, this should not prevent physicians from paying attention to the psychological and emotional burden of the illness, which matters more to chronic illnesses.

5. Study limitations

This study had a few limitations. All the mothers in our study were selected from an outpatient clinic, which means that inpatient cases with severe, persistent asthma were not included in our survey. Thus, these findings do not represent the mothers of children with very severe disease. Moreover, the samples were selected from one clinic of allergy, which absolutely reduces the generalizability of the results. Therefore, we suggest more multicentral researches in future, with larger sample sizes.

6. Conclusions

The results of this study demonstrated that depression and anxiety are more prevalent among mothers of children with asthma; hence, these findings can help to improve the management of children with asthma and also to improve parenting style. However, further studies with accurate methodology and large sample size are required to confirm these results.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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