Original Article

ISSN: 1735-0344 *Tanaffos 2013; 12(4): 23-27*

TANAFFOS

Impact of Maternal Mental Health on Pediatric Asthma Control

Zeinab Ghaempanah [1], Mohammad Reza Fazlollahi [1], Ahmad Ali Noorbala [2], Masoud Movahedi [3], Anoshiravan Kazemnejad [4], Zahra Pourpak [1,3], Mostafa Moin [1]

[1] Immunology Asthma and Allergy Research Institute, Tehran University of Medical Sciences ,Tehran, Iran, [2] Department of Psychosomatic disease, Imam Khomeini Hospital, Tehran University of Medical Sciences ,Tehran, Iran, [3] Department of Immunology Asthma and Allergy, Children Hospital Medical Center, Tehran University of Medical Sciences ,Tehran, Iran, [4] Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Received: 26 October 2013
Accepted: 25 December 2013

Correspondence to: Fazlollahi MR
Address: Immunology, Asthma and Allergy Research Institute, Tehran University of Medical Sciences, Tehran, IR. Iran
Email address: fazlollahi@tums.ac.ir

Background: Asthma like other chronic diseases is a stressful condition not only for children but also for their parents. Caring for a child with asthma combines the demands of parenting with the emotional and physical burdens of the child's chronic illness. Some studies have assessed the relations between parental mental health and asthma severity in children. This study aims to evaluate the mental health of mothers of asthmatic children and associations between maternal mental health and childhood levels of asthma control.

Materials and Methods: Eighty mothers with asthmatic children aged 7-12 yrs. completed a General Health Questionnaire (GHQ.28) containing questions about somatic symptoms, anxiety, social dysfunction, and severe depression. Level of asthma control in children was classified as "well controlled"," partly controlled" and "uncontrolled" by an asthma specialist.

Results: The results showed that mothers of asthmatic children reported the depression symptoms significantly more than the community cut-off point ($p<0.001$); also GHQ scores were not significantly different in three levels of asthma control in children (i.e. well controlled, partly controlled and uncontrolled).The results revealed that caring for a child with asthma had an impact on the mother's mental health and depression was prevalent among mothers of asthmatic children. In addition, improving asthma control level did not promote maternal mental health.

Conclusion: Inclusion of mental health and quality of life of parents in the classification of pediatric asthma control may be helpful. Our findings suggest that the physician's awareness of maternal depression and the presence of a psychotherapist for diagnosing and treating depression in mothers of children with asthma may be important for guiding effective interventions.

Key words: Mental health, Mother, Level of asthma control

INTRODUCTION

Approximately one million children suffer a chronic physical condition that requires ongoing and comprehensive care (1). Advances in technology have made it possible to provide some care services for patients at home. However, it requires parents to perform complex daily tasks. Caring for a child with a chronic illness combines the demands of parenting with emotional and physical responsibility (2). Parents of chronically ill children have reported more anxiety and depression, higher levels of parenting stress, and more limited social functioning than parents of healthy children (3).

The mother-child relationship is very important when it comes to mental health; because it is a closely

intertwined relationship that any change in one affects the other and this mutual relationship will continue. Maternal psychological disorders affect child's physical and psychological health and vice versa (4). In addition, mothers play an active role in caring for their children and usually suffer more stress than fathers (5). Thus, mothers are more vulnerable to depression (6). Asthma is a chronic inflammatory disorder affecting a large number of children. According to a systematic review in Iran, the prevalence of asthma symptoms was estimated to be 13.4% (7). Asthma like other chronic diseases is a stressful condition not only for children but also for their parents. Caring for a child with asthma may have an impact on the mother's mental health, and mother's mental health may affect her child's asthma (8). Shalowitz et al. found that maternal symptoms of depression have been associated with higher levels of asthma morbidity (9). Although some studies have assessed the psychological status of mothers with asthmatic children, the level of asthma control in children and their mothers' mental health status have not been extensively evaluated. Thus, the purpose of this study was to investigate the relationship of maternal mental health with the level of asthma control in children.

MATERIALS AND METHODS

This study was carried out in the Immunology, Asthma and Allergy Research Institute (IAARI) from December 2011 to June 2012. The study sample comprised of 80 mothers of 7-12 year-old asthmatic children that were followed up for at least 2 years by an asthma specialist. The outcomes of interest were the maternal mental health and level of asthma control. According to GINA guidelines, severity of asthma was classified as well controlled, partly controlled, or uncontrolled (10). Sociodemographic information of children and their mothers, including maternal age, occupation, educational level and age of the child were retrieved from their medical records.

We measured maternal mental health using the General Health Questionnaire (28-item). GHQ-28 is probably the most popular screening tool for rapid screening of adults suffering from various forms of mental disorders. This instrument is a 28-item measure of emotional distress, which is divided into four subscales: somatic symptoms (items 1-7), anxiety (items 8-14), social dysfunction (items 15-21), and severe depression (items 22-28). The GHQ-28 is a widely used questionnaire and is internally consistent with α=0.85. (11).This questionnaire has been translated into Farsi and has been validated in some studies (12, 13, 14). Noorbala et al. found that it had a high internal consistency (0.82 to 0.86) for Farsi speakers (13). Sensitivity and specificity values for GHQ–28 were 84.7% and 93.8%, respectively and the estimated interclass correlation between the test–retest scores was 0.85 (12, 14). Response options were scored using a 4-point scale from 0 (not at all) to 3 (much more than usual) (13).

Ethics

This study was approved by the Research Committee and Ethics Committee at IAARI, Tehran University of Medical Sciences. Informed consent was obtained from all participants.

Data analysis

Statistical analyses were performed by SPSS for Windows. All data were presented as mean ± SD. Based on the study of National Health Survey in Iran, we used a cut-off point of 6 for each subscale and 23 for the total score of GHQ (14);higher scores have been shown to reflect clinically significant symptoms of psychiatric distress (11). The GHQ scores were compared with cut off points, using one sample t-test. To examine differences in mean scores of the GHQ subscales between the three groups of asthmatic children, ANOVA and for multiple compressions Tukey's HSD test (as a post-hoc test) were performed. A $P<0.05$ level of significance was considered for all tests.

RESULTS

Eighty mothers enrolled in this study with a mean age of 34.8 years. Regarding education, 18 (22.5%) had middle school education, 45(56.2%) had high school diploma and 17 (21.3%) had higher educations. Questions about parenting status revealed that all patients were the biological children of mothers and were living in two-parent families.

The mean age of children was 9.09 years (range7 to 12 years), with the predominance of girls (51.4%). The majority of children (66.3%) were classified as well-controlled asthma, 20% of patients had partly controlled and 13.7% had uncontrolled asthma.

Table 1 illustrates the results of descriptive statistics of scores for the four subscales of GHQ-28, showing that social dysfunction gained the lowest score (6.07±4.55) among the subscales, while depression has the highest score (8.26±3.11).

Table 1. Mean (SD) scores of GHQ-28 scales.

GHQ-28 scales	Mean ±SD	Cut off point	P value
Somatic symptoms	6.67± 4.90	6S	0.222
Anxiety	6.70 ±4.58	6	0.176
Social dysfunction	6.07 ±4.55	6	0.883
Depression	8.26 ±3.11	6	0.001*
Total score	27.82 ±17.14	23	0.925

Table 2 presents the differences between the GHQ scales and the level of asthma control in the 3 groups of well controlled, partly controlled and uncontrolled asthma. Except depression, there were no significant differences between the GHQ components (somatic symptoms, anxiety, social dysfunction and total scores) and cut off point criteria. In GHQ, 50% of mothers scored more than 6 in depression scale; whereas this rate for somatic symptoms, anxiety and social dysfunction was 43.7%, 45% and 43.7, respectively. No statistically significant differences were found between the three groups of asthmatic children in the GHQ scales (P<0.05).

Table 2. Comparison of maternal mental health and the level of asthma control in children.

	Well controlled (n=53)	Partly controlled (n=16)	Uncontrolled (n=11)	P value
Somatic symptoms	6.01 ±4.83	7.31 ±4.46	8.90 ±5.46	0.191
Anxiety	6.67± 4.75	6.18± 3.90	7.54 ± 4.96	0. 663
Social dysfunction	5.67± 4.55	6.75 ±4.07	7.0 ±5.36	0.673
Depression	8.69± 5.56	7.0±4.63	8.90 ±5.52	0.551
Total score	22.58± 17.40	24.62±17.83	21.36± 9.81	0.833

DISCUSSION

This study had two main findings. First, the mothers of asthmatic children suffered from depression; whereas, no significant differences were found in somatic symptoms, anxiety, and social dysfunction scales between them and the healthy population in Iran. Second, maternal mental health was not associated with level of asthma control in children and control of asthma in children does not appear to improve maternal mental health.

To our knowledge, this is the first study to examine the association between maternal mental health and level of asthma control in children. Some studies have assessed the relationship between parental mental health and asthma severity in children (15-18). For example, severity of child's asthma and age were associated with maternal report of disruption (19).Brown et al. reported that the disease severity of an asthmatic child may decrease the asthma-associated quality of life of parents (20). However, the classification of asthma severity is no longer recommended and assessing asthma control for adjusting treatment is more important. Our data showed that in spite of promoting the level of asthma control in children, asthma probably leaves irreversible impacts on maternal mental health. Thus, in spite of the efforts of the medical team to improve asthmatic child's status, the mother's mental health problems resulting from the child's illness remain. A number of explanations could contribute to this association; mothers of children with asthma may feel overwhelmed by the anticipation of an attack or management of the disease in their children (21). Some researchers have also postulated that mothers of children

with a chronic illness such as asthma may have significant stressors that influence reporting higher levels of depression. (22).Insufficient information about asthma is an important problem among mothers and it may affect their mental health.

Furthermore, our results showed that symptoms of depression were more prevalent among mothers of asthmatic children. These findings are consistent with those of a previous study showing that a child with a chronic illness increases the risk factors of depression among mothers, with about 50% reported point prevalence rate (23). There are several reasons for the possible association of depressive symptoms in mothers with having asthmatic children. Pak and Allen stated that maternal depression has negative impact on child's growth, development, behavior, mental health, safety, and health care (24). Maternal psychological distress diminishes the mother's ability to cope with her child's asthma and is a marker for greater negative impact of the child's illness on the family (25).

Since the psychosocial status of children and their families is affected by asthma, the clinician's awareness of the children's family health status is important for guiding effective interventions. The current study confirms that health care providers should assess not only physical but also psychological symptoms. Therefore, assessing and treating maternal depression may also be crucial. Thus, family-based assessment and intervention including children and mothers may be efficacious in health care programs.

This study had some limitations. Considering the self-report nature of data, bias may exist. Moreover, a tendency for correlation exists among the self-reported variables. Because of our cross-sectional design, we could not make statements about causality. Finally, we did not have socioeconomically matched groups that would have helped establish the appropriateness of decision for maternal mental health status. Future studies on asthma, particularly among children, should continue to explore the relationships between level of asthma control and psychosocial functions in parents and children. Pediatricians and other health care providers should keep in mind that these associations exist and in some children with asthma, especially with uncontrolled asthma may need psychosocial interventions.

CONCLUSION

Depression is prevalent among mothers of asthmatic children; hereupon the consideration of maternal mental health as an effective factor on children's health status is necessary. In our study, improving the level of asthma control did not promote maternal mental health; thus, inclusion of mental health and quality of life of parents in classification of pediatric asthma control may be helpful.

REFERENCES

1. Global Initiative for asthma Global Strategy for Asthma Management and Prevention. National Institute of Health National Heart, Lung and Blood Institute Publication No 02-3659,2011
2. Popp JM, Robinson JL, Britner PA, Blank TO. Parent adaptation and family functioning in relation to narratives of children with chronic illness. *J Pediatr Nurs* 2014; 29 (1): 58-64.
3. Ygge BM, Arnetz JE. A study of parental involvement in pediatric hospital care: implications for clinical practice. *J Pediatr Nurs* 2004; 19 (3): 217- 23.
4. Im YJ, Park ES, Oh WO, Suk MH. Parenting and relationship characteristics in mothers with their children having atopic disease. *J Child Health Care* 2013.
5. Knafl K, Zoeller L. Childhood chronic illness: A comparison of mothers' and fathers' experiences. *Journal of Family Nursing* 2000; 6(3): 287-302.
6. Szabó A, Mezei G, Kovári E, Cserháti E. Depressive symptoms amongst asthmatic children's caregivers. *Pediatr Allergy Immunol* 2010; 21 (4 Pt 2): e667- 73.
7. Entezari A, Mehrabi Y, Varesvazirian M, Pourpak Z, Moin M. A systematic review of recent asthma symptom surveys in Iranian children. *Chron Respir Dis* 2009; 6 (2): 109- 14.

8. Shalowitz MU, Mijanovich T, Berry CA, Clark-Kauffman E, Quinn KA, Perez EL. Context matters: a community-based study of maternal mental health, life stressors, social support, and children's asthma. *Pediatrics* 2006; 117 (5): e940- 8.
9. Shalowitz MU, Berry CA, Quinn KA, Wolf RL. The relationship of life stressors and maternal depression to pediatric asthma morbidity in a subspecialty practice. *Ambul Pediatr* 2001; 1 (4): 185- 93.
10. Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention (NIH Publication 02-3659.2008.[www.ginasthma.org]
11. Goldberg DP et al. Manual of the General Health Questionnaire. Windsor, England: NFER Publishing, 1978.
12. Ghasemkhani M, Akhondzadeh SH, Eskandari R. Assessment of Psychological Distress among Workers of a Confectionary Iran J Psychiatry.2007;2:115-119
13. Malakouti SK, Fatollahi P, Mirabzadeh A, Zandi T. Reliability, validity and factor structure of the GHQ-28 used among elderly Iranians. *Int Psychogeriatr* 2007; 19 (4): 623- 34.
14. Noorbala AA, Bagheri Yazdi SA, Yasamy MT, Mohammad K. Mental health survey of the adult population in Iran. *Br J Psychiatry* 2004; 184: 70- 3.
15. Kaugars AS, Klinnert MD, Bender BG. Family influences on pediatric asthma. *J Pediatr Psychol* 2004; 29 (7): 475- 91.
16. Verkleij M, van de Griendt EJ, Kaptein AA, van Essen-Zandvliet LE, Duiverman EJ, Geenen R. The prospective association between behavioural problems and asthma outcome in young asthma patients. *Acta Paediatr* 2013; 102 (5): 504- 9.
17. Cloutier MM, Schatz M, Castro M, Clark N, Kelly HW, Mangione-Smith R, et al. Asthma outcomes: composite scores of asthma control. *J Allergy Clin Immunol* 2012; 129 (3 Suppl): S24- 33.
18. Nagakumar P, Thomas H. Management of severe asthma in children. *Paediatrics and Child Health* 2013; 23(7): 291-5.
19. Sawyer MG, Spurrier N, Whaites L, Kennedy D, Martin AJ, Baghurst P. The relationship between asthma severity, family functioning and the health-related quality of life of children with asthma. *Qual Life Res* 2000; 9 (10): 1105- 15.
20. Brown ES, Gan V, Jeffress J, Mullen-Gingrich K, Khan DA, Wood BL, et al. Psychiatric symptomatology and disorders in caregivers of children with asthma. *Pediatrics* 2006; 118 (6): e1715- 20.
21. Ortega AN, Goodwin RD, McQuaid EL, Canino G. Parental mental health, childhood psychiatric disorders, and asthma attacks in island Puerto Rican youth. *Ambul Pediatr* 2004; 4 (4): 308- 15.
22. Bartlett SJ, Krishnan JA, Riekert KA, Butz AM, Malveaux FJ, Rand CS. Maternal depressive symptoms and adherence to therapy in inner-city children with asthma. *Pediatrics* 2004; 113 (2): 229- 37.
23. Lim J, Wood BL, Miller BD. Maternal depression and parenting in relation to child internalizing symptoms and asthma disease activity. *J Fam Psychol* 2008; 22 (2): 264- 73.
24. Pak L, Allen PJ. The impact of maternal depression on children with asthma. *Pediatr Nurs* 2012; 38 (1): 11-9, 30.
25. Nagano J, Kakuta C, Motomura C, Odajima H, Sudo N, Nishima S, et al. The parenting attitudes and the stress of mothers predict the asthmatic severity of their children: a prospective study. *Biopsychosoc Med* 2010; 4: 12.