



The Anxiety and Depression Status of Mothers of Children with Food Allergy

Besin Alerjisi Olan Çocukların Annelerinin Anksiyete ve Depresyon Durumları

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ABSTRACT

Aim: The aim of the study was to evaluate anxiety and depression in mothers of food allergic children.

Material and Method: The study was conducted as a prospective-descriptive study. A total of 190 patients aged 0-2 years with a diagnosis of food allergy who were admitted to our pediatric allergy and immunology clinic between January-July 2023 and their mothers were included in the study. A questionnaire containing questions about clinical characteristics, sociodemographics of the children, and Beck Anxiety Scale, Beck Depression Scales were applied to the mothers.

Results: Mothers of children who had more than one food allergy attack per month in the last six months, mothers of children with multiple food allergies, and mothers with other children diagnosed with allergy had significantly higher anxiety levels. Anxiety levels of mothers with lower educational level were significantly higher ($p<0.05$). Mothers of children who had more than one food allergy attack per month in the last six months, mothers of patients with multiple food allergies and younger mothers had significantly higher depression scores ($p<0.05$).

Conclusion: Clinical conditions of the children such as number of attacks and presence of multiple food allergens affected the depression and anxiety levels of the mothers. Therefore, reducing the number of attacks with clinical control of food allergies will have a positive effect on both the health of the child and the health of the mother as a caregiver.

Keywords: Food allergy, mother, anxiety, depression

ÖZ

Amaç: Çalışmanın amacı, besin alerjisi olan çocukların annelerinde anksiyete ve depresyonu değerlendirmektir.

Gereç ve Yöntem: Çalışma prospektif-tanımlayıcı bir çalışma olarak yürütüldü. Besin alerjisi tanısı ile başvuran çocukların klinik özellikleri, sosyodemografik özellikleri değerlendirildi ve annelere Beck Anksiyete Ölçeği, Beck Depresyon Ölçekleri uygulandı.

Bulgular: Çocukların 114'ünde (%60.0) tekli besin alerjisi, 76'sında (%40.0) çoklu besin alerjisi vardı. Son 6 ayda ayda 1'den fazla besin alerjisi atağı geçiren çocukların anneleri, çoklu besin alerjisi olan çocukların anneleri ve alerji tanısı konmuş başka çocuğu olan annelerin anksiyete düzeyleri anlamlı derecede yüksekti. Eğitim düzeyi düşük olan annelerin anksiyete düzeyleri anlamlı derecede yüksekti ($p<0,05$). Son 6 ayda ayda 1'den fazla besin alerjisi atağı geçiren çocukların anneleri, birden fazla besin alerjisi olan hastaların anneleri ve daha genç yaştaki annelerin depresyon puanları anlamlı derecede yüksekti ($p<0.05$).

Sonuç: Çocukların atak sayısı ve birden fazla gıda alerjisinin varlığı gibi klinik durumları annelerin depresyon ve anksiyete düzeylerini etkilemiştir. Bu nedenle, gıda alerjilerinin klinik kontrolü ile atak sayısının azaltılması hem çocuğun sağlığı hem de bakım veren kişi olarak annenin sağlığı üzerinde olumlu bir etkiye sahip olacaktır.

Anahtar Kelimeler: Besin alerjisi, anne, anksiyete, depresyon

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INTRODUCTION

The most common food allergen types encountered in the community are milk, egg, soy, peanuts, nuts such as walnuts and hazelnuts, fish and seafood (1,2). Milk and egg allergy is more common in young children compared to adults (3).

Food allergies affect approximately 10% of the population (4). The frequency of food allergies is increasing, and it is more commonly seen in children than adults (5). In Europe and the United States of America (USA), 6% and 8% of children suffer from food allergies, respectively (6). This condition, which affects the whole world, has increased in our country in recent years (7).

In other allergic diseases such as atopic dermatitis and asthma, a history of food allergy may often accompany the first step of the atopic gait (8,9). Clinical manifestations of food allergy may range from mild symptoms such as urticaria to life-threatening anaphylactic shock reactions (6). There is no known single treatment for food allergies. Treatment should be managed by specialists according to the patient and the type of food allergy (4). While tolerance may develop to some food allergies in the following years, this condition may persist for life in some food allergies (10). In the follow-up of food allergies, parents should be educated about avoiding food allergens and families should be informed about the use of adrenaline autoinjector in case of anaphylaxis which may be life-threatening in food allergies (11).

Like other chronic diseases, food allergies require regular medical follow-up and intervention. This situation limits the daily life activities of the patients and their caregivers and may lead to mental disorders. A systematic review reported that parents of children with chronic diseases have worse mental health, especially in terms of anxiety and depression, when compared to the control group (12). Increased levels of stress and anxiety have also been reported in parents of children with food allergy in different studies in the literature (13, 14).

In this context, our study aimed to evaluate the relationship between clinical and demographic features of children aged 0-2 years having food allergy and the frequency of anxiety and depression in their mothers.

MATERIAL AND METHOD

This study was approved by the Health Sciences University Ümraniye Training and Research Hospital Clinical Researches Ethics Committee (Date: 22.12.2022, Decision No: 420). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. Informed consent was obtained from the mothers before they participated.

Study Design

Our study is a descriptive study with a prospective design. A total of 190 patients aged 0-2 years with a diagnosis of food allergy who were admitted to the pediatric allergy and immunology clinic of a tertiary care hospital between January 2023 and July 2023 and their mothers were included in the study. Patients older than two years of age were not included in the study. Patients with a previous psychiatric diagnosis and their mothers were excluded.

Measures

The clinical features of the children, and the sociodemographic features of their mothers were obtained via a questionnaire. Besides last part of the questionnaire included the Beck Anxiety Scale and Beck Depression Scale which evaluating the anxiety and depression levels of the mother respectively.

Beck anxiety scale: It is a questionnaire used for the determination of the frequency and severity of anxiety symptoms via self assessment. It contains 21 questions and each scored between 0-3 points. The sum of the scores is named as following: 0-7 points = no anxiety, 8-15 points = mild anxiety, 16-25 points = moderate anxiety, 26-63 points = severe anxiety. Its validity and reliability in Turkish population were performed (15).

Beck depression scale: It is a self assessment scale developed by Beck et al. in 1961. The scale is a questionnaire form consisting of 21 questions. The sum of the questions between 0-3 points gives us information about the depression level of the person. The sum of the scores is grouped as minimal depression if the score is between 0-9 points, mild depression between 10-16 points, moderate depression between 17-29 points, and severe depression between 30-63 points. The validity and reliability of the scale for the Turkish population were made (16).

Statistical Analysis

SPSS (Statistical Package for Social Sciences for Windows 25.0 program was used for data analysis and recording. Median and interquartile range (25th percentile-75th percentile), number (n) and percentages (%) were used for descriptive data. Mann Whitney U test was performed to compare continuous variables that did not fit the normal distribution. A p value of <0.05 was accepted as statistically significant.

RESULTS

Of the 190 patients with a diagnosis of food allergy included in the study, 83 (43.7%) were female and 107 (56.3%) were male. The median age of the patients was 9 months (6-24). Seventeen (8.9%) of the children had additional chronic diseases.

Of the children, 114 (60.0%) had single food allergy and 76 (40.0%) had multiple food allergies. When the diagnosed food allergens were questioned, 119 (62.6%) had cow's milk allergy, 128 (67.4%) had egg allergy, and 25 (13.2%) had nut allergy. Of the patients, 81 (42.6%) had less than 1 episode per month and 109 (57.4%) had more than 1 episode per month (**Table 1**).

Food allergen*	N (%)
Cow's milk allergy	119 (62.6)
Egg allergy	128 (67.4)
Nut allergy	25 (13.2)
Allergy to legumes	4 (2.1)
Seafood allergy	2 (1.1)
Red meat allergy	10 (5.3)
Vegetable and fruit allergy	8 (4.2)
Number of attacks	N (%)
Less than 1 per month	109 (57.4)
More than 1 per month	81 (42.6)

* More than one symptom can be exist, more than one food allergy can be diagnosed.

The median age of the mothers of the children was 31 years (28-34). Eighty nine (46.8%) were university graduates. Ninety-six (50.5%) of the mothers considered themselves inadequate about food allergy, 174 (91.6%) mothers stated that they obtained information from healthcare professionals (**Table 2**).

	N (%)
Internet	145 (76.3)
Sources of information on food allergy*	
Health Worker	174 (91.6)
Near Environment	56 (29.5)
Social Media	53 (27.9)
Self-assessment of food allergy knowledge level	
Inadequate	96 (50.5)
Adequate	94 (49.5)
Allergy in another child	
No	150 (78.9)
Yes	40 (21.1)
Mother's level of education	
Illiterate	2 (1.1)
Only literate	1 (0.5)
Primary school graduate	36 (18.9)
High school graduate	52 (27.4)
University graduate	89 (46.8)
Postgraduate graduate	10 (5.3)

**There may be more than one source

When the Beck Anxiety Scale data applied to the mothers of the patients were collected, the mean and median scores were calculated as 14.0 (7.0-27.0), respectively. According to the scoring data, 141 (74.2%) of the mothers had anxiety. 56 (29.5%) had mild anxiety, 35 (18.4%) had moderate anxiety, and 50 (26.3%) had severe anxiety. There was no anxiety in 49 (25.8%) of the mothers (**Table 3**).

When the Beck Depression Scale data applied to the mothers of the patients were collected, the mean and median scores were calculated as 13.0 (8.0-19.0),

respectively. According to the scoring data, 57 (30.0%) of the mothers had minimal depression, 64 (33.7%) had mild depression, 59 (31.1%) had moderate depression, and 10 (5.3%) had severe depression (**Table 3**).

	N (%)
No Anxiety	49 (25.8)
Anxiety level	
Mild Anxiety	56 (29.5)
Moderate Anxiety	35 (18.4)
Severe Anxiety	50 (26.3)
Depression level	
Minimal depression	57 (30.0)
Mild depression	64 (33.7)
Moderate depression	59 (31.1)
Severe depression	10 (5.3)

When the anxiety-related conditions of the mothers were evaluated, the anxiety levels of the mothers of children who had more than one food allergy symptom exacerbation/attack per month in the last six months were significantly higher than those who had less than one attack per month ($p < 0.001$). The anxiety levels of the mothers of patients with multiple food allergies were significantly higher than those of the mothers of patients with single type of food allergy ($p = 0.008$). The anxiety level of mothers with a high school and below was significantly higher ($p = 0.001$). Mothers who had other children with a diagnosis of allergy had significantly higher levels of anxiety than mothers who did not have other children with a diagnosis of allergy ($p = 0.030$). The anxiety score of the mothers who found the level of knowledge inadequate was also significantly higher ($p = 0.033$) (**Table 4**).

No significant difference was found between the child's gender, age at presentation (month), maternal age, presence of another chronic disease in child and anxiety levels of the mothers ($p > 0.05$) (**Table 4**).

When the factors associated with the depression scores of the mothers were evaluated, the depression levels of the mothers of children who had more than one food allergy symptom exacerbation/attack per month in the last six months were significantly higher than those who had less than one attack per month ($p = 0.026$). The depression level of the mothers of patients with multiple food allergies was significantly higher than that of the mothers of patients with a single type of food allergy ($p = 0.043$). Mothers aged 31 years and younger had significantly higher levels of depression than mothers older than 31 years ($p = 0.014$). No significant correlation was found between the child's gender, age, presence of another chronic disease in child, mother's educational status, having another child diagnosed with allergy and level of knowledge about food allergy and the depression level of the mothers ($p > 0.05$) (**Table 5**).

Table 4. Factors associated with mothers' anxiety scores

	Anxiety score	p
Gender		0.594
Female	13.0 (6.0-29.0)	
Male	14.0 (7.0-26.0)	
Age (months)		0.801
≤9	14.0 (7.0-25.0)	
>9	14 (7.0-28.0)	
Number of attacks		<0.001
Less than 1	11.5 (5.0-23.0)	
More than 1	20.0 (11.0-34.0)	
Chronic disease		0.053
No	14.0 (7.0-25.0)	
Yes	32.0 (11.0-38.0)	
Total number of food allergens		0.008
One	12.0 (6.0-23.0)	
More than 1	18.0 (9.0-31.5)	
Mother's education level		0.001
High school and below	20.0 (10.0-30.0)	
Undergraduate/graduate	12.0 (5.0-20.0)	
Age of mother (years)		0.390
≤31	15.0 (8.0-27.5)	
>31	13.0 (7.0-23.0)	
Another child diagnosed with allergies		0.030
No	13.0 (7.0-25.0)	
Yes	20.0 (10.0-35.0)	
Self-assessment of knowledge		0.033
Inadequate	15.0 (9.5-27.0)	
Adequate	12.0 (5.0-25.0)	

Table 5. Factors associated with mothers' depression scores

	Depression score	p
Gender		0.982
Female	13.0 (9.0-19.0)	
Male	14.0 (8.0-20.0)	
Age (months)		0.576
≤9	13.0 (9.0-19.0)	
>9	14.0 (7.0-19.5)	
Number of attacks		0.026
Less than 1	11.5 (8.0-18.0)	
More than 1	15.0 (11.0-21.0)	
Chronic disease		0.085
No	13.0 (8.0-19.0)	
Yes	18.0 (11.0-22.0)	
Total number of food allergens		0.043
One	12.0 (8.0-18.0)	
More than 1	15.0 (11.0-20.0)	
Mother's education level		0.807
High school and below	14.0 (8.0-20.0)	
Undergraduate/graduate	13.0 (8.0-19.0)	
Age of mother (years)		0.014
≤31	15.0 (10.0-20.0)	
>31	12.0 (6.0-18.0)	
Another child diagnosed with allergies		0.994
No	13.0 (9.0-19.0)	
Yes	14.5 (8.0-20.0)	
Self-assessment of knowledge		0.068
Inadequate	14.0 (9.0-21.0)	
Adequate	13.0 (8.0-18.0)	

DISCUSSION

According to the literature, parents of children with chronic diseases have been reported to have higher levels of depression and anxiety than parents with healthy children (18). Food allergies are an important public health problem due to their increasing prevalence and disease burden (19, 20). As caregivers, mothers of children with food allergy may be negatively affected mentally as seen in parents of children with other chronic diseases (21). In this context, in the present study, we evaluated depression and anxiety levels and related factors in mothers of children with food allergies under two years of age.

Anxiety was observed in 74.2% of the mothers in our study. In a study in the literature, anxiety was reported in 44% of mothers of children aged 0-8 years with food allergy (22). Although a lower rate of anxiety was reported in this study according to our study, unfortunately, anxiety levels are high in mothers of children with food allergy. The higher rate in our study may be related to the inclusion of children aged 0-2 years and the use of different scales to assess anxiety between studies.

When the anxiety-related conditions of the mothers were evaluated in our study, the anxiety levels of mothers of children who had more than one food allergy attack per month in the last six months, mothers of children with multiple food allergies and mothers who had another child diagnosed with allergy were found to be significantly higher. Anxiety levels of mothers with lower educational level were significantly higher. In a study conducted in our country, anxiety scores of mothers of children with food allergy were found to be significantly higher compared to the control group. In the same study, no effect of maternal education level on anxiety scores was found (23). In our study, approximately half of the mothers (50.5%) considered themselves inadequate about food allergy knowledge. Anxiety scores were significantly higher in mothers who considered their knowledge level inadequate. The relationship we found between education level and anxiety scores may be related with the knowledge level of mothers. In the literature, it has been reported that parents with children diagnosed with food allergy have unmet information needs that persist even after clinic visits (24). In further studies, it is necessary to measure the knowledge levels of mothers objectively in addition to their self-assessment of their knowledge levels. Trainings should be planned for parents with up-to-date data on food allergies.

In the literature, high rates of depression have been reported in mothers of children with chronic diseases (25, 26). In one study, the prevalence of depression in mothers of children with asthma was reported to be 43.8% (27). In our study, according to depression scores,

31.1% of the mothers had moderate depression and 5.3% had severe depression. In a study conducted in our country, depression scores of mothers of children with food allergy were reported to be higher compared to the control group without food allergy (28). Mothers with children with chronic diseases such as food allergy may not be able to spare time for their own needs and activities that may be good for their mental health due to the responsibilities and duties related to the care of the child. Studies and our study show that anxiety and depression levels are high in mothers of children with food allergy. There are many studies evaluating mental disorders in individuals with chronic diseases. However, further qualitative and quantitative studies are needed to explain the high levels of depression and anxiety in mothers of children with food allergy.

When the factors associated with the depression scores of the mothers were evaluated in our study, the depression scores of the mothers of children who had more than one food allergy attack per month in the last 6 months, the mothers of patients with multiple food allergies and younger mothers had significantly higher depression scores. According to our study results, it can be interpreted that children with multiple allergies and number of attacks have worse clinical conditions related to food allergy and their mothers have higher levels of depression. It should be kept in mind that the management of chronic diseases in children affects the health of the mothers as well as the health of the child. On the other hand, the mental well-being of the mother may also be effective on the disease control of the child (29). Therefore, the health of the child and parents should be evaluated together in the management of food allergies and appropriate interventions should be planned for parents as well as the child in areas of need. In the literature, a higher risk of depression has been reported in younger mothers (30). The high depression score in younger mothers in our study is consistent with the literature in this context. Situations related to the adaptation of young mothers to the motherhood process may explain this situation.

Limitations and Strengths

Although the fact that our study was conducted in a single center creates a limitation in terms of the generalizability of the results, we think that participants with different characteristics were included in the study by collecting the data in a tertiary hospital. Another limitation of the study is the fact that perinatal depression may present in mothers of children aged 0-2 years even they have no food allergy. Since our study includes mothers of children in these ages, the depression and anxiety levels can be over estimated in our study. The sample size of our study is large compared to similar studies in the literature. In addition, the number of studies on mental health in mothers of

children with food allergy is limited in the literature. Since our study provides data on both depression and anxiety levels, we think that we have made an important contribution to the literature in this field.

CONCLUSION

According to the results of our study, high levels of depression and anxiety were observed among mothers. The clinical conditions of the children, such as the number of attacks and multiple food allergen exposures, affected the levels of depression and anxiety of the mothers. Therefore, reducing the number of attacks with clinical control of food allergies will have a positive effect on both the health of the child and the health of the mother as a caregiver. In clinical practice, it is important to inform parents while treating children with food allergy and to refer those who need mental support to the relevant clinics.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by the Health Sciences University Ümraniye Training and Research Hospital Clinical Researches Ethics Committee (Date: 22.12.2022 , Decision No: 420).

Informed Consent: Informed consent was obtained from mothers.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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