

Research Article

BEING MOTHER OF A CHILD WITH FOOD ALLERGY: STRESS, RESILIENCE AND MATERNAL FUNCTION

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Abstract

Aim: It was aimed to examine the relationship between stress, maternal function and resilience experienced by mothers of children with food allergy.

Methods: This cross-sectional study was conducted with 372 mothers whose child was diagnosed with food allergy/intolerance between March and December 2022 in the pediatric allergy outpatient clinic of a health practice and research center. The data collection tools were Introductory Information Form, Parenting Stress Scale Turkish Form, Barkin Maternal Function Scale and Mother Resilience Scale.

Results: The gender of the children was 59.5% female and the mean age was 8.00±7.56 months. 73.8% of the children had a diagnosis of food allergy and 26.2% of them had a diagnosis of food intolerance. The level of resilience increased as the maternal function of mothers of children diagnosed with food allergy ($r=0.623$, $p=0.000$) and intolerance ($r=0.767$, $p=0.006$) by the physician increased. There was no relationship between stress and maternal resilience and maternal function ($p>0.05$).

Conclusion: It is recommended to support parents of children with food allergies with special nutritional needs and allergic asthma/rhinitis symptoms, and to establish treatment and care programs.

Keywords: Child, Food allergy, Mother, Stress, Resilience.

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Besin Alerjisi Olan Çocuğun Annesi Olmak: Stres, Yılmazlık ve Annelik Fonksiyonu

Öz

Amaç: Besin alerjisi olan çocukların annelerinin yaşadığı stres, annelik fonksiyonu ve yılmazlığı arasındaki ilişkinin incelenmesi amaçlandı.

Yöntem: Bu kesitsel çalışma, bir sağlık uygulama ve araştırma merkezinin çocuk alerji polikliniğinde Mart-Aralık 2022 tarihleri arasında çocuğuna besin alerjisi/intoleransı tanısı konulan 372 anne ile yapıldı. Veri toplama formları Tanıtıcı Bilgi Formu, Ebeveynlik Stres Ölçeği Türkçe Formu, Barkın Annelik Fonksiyonu Ölçeği ve Anne Yılmazlık Ölçeği'dir.

Bulgular: Çocukların cinsiyetinin %59.5'i kız ve yaş ortalaması 8.00 ± 7.56 ay olarak bulundu. Çocukların %73.8'i besin alerjisi, %26.2'si besin intoleransı tanısı almıştı. Hekim tarafından besin alerjisi ($r=0.623$, $p=0.000$) ve intolerans ($r=0.767$, $p=0.006$) tanısı alan çocukların annelerinin annelik fonksiyonu arttıkça yılmazlık düzeyi de yükseliyordu. Stres ile annenin yılmazlığı ve annenin işlevi arasında ilişki yoktu ($p>0.05$).

Sonuç: Özel beslenme gereksinimli ve alerjik astım/rinit semptomları gösteren besin alerjisi olan çocukların ebeveynlerine destek olunması, tedavi ve bakım programlarının oluşturulması önerilmektedir.

Anahtar Kelimeler: Çocuk, besin alerjisi, anne, stres, dayanıklılık

1. INTRODUCTION

The prevalence of food allergy is high in young age groups and decreases with age worldwide. The estimated rate of food allergy varies between 2.5-5% in Sweden, France, Japan and Taiwan, and rises to almost 10% in developed countries such as Finland and Canada. In different studies conducted in the United Kingdom, they determined that the prevalence of food allergy symptoms was 4% at the age of one year and 5-6% at the age of three years (Prescott et al., 2013). As in the whole world, the incidence of food-borne allergies is increasing in our country (Düzgün et al., 2019). Allergen foods can be found in the diets of infants and children, and these allergens can play a role in the development of infective and allergic diseases such as asthma, bronchitis, rhinitis, dermatitis, which can affect the whole life (Sapan et al., 2013).

Findings of malnutrition can be seen even in children diagnosed with food allergy, who are followed up regularly, and the mothers of these children can apply inadequate coping methods such as self-blame and applying a more strict diet than the recommended diet (Bakaniene et al., 2016). Food allergy treatment requires a process that requires changing eating habits that directly affect daily life. For this reason, mothers are faced with various burdens and stresses related to the allergy process, as they are primary care providers in raising children. In order to ensure the safety of the child and maintain the quality of life, it is necessary to have a correct understanding of food allergy and its treatment, to follow an elimination diet, to cope with anxiety and stress (Moen et al., 2019). In addition, mothers experience more stress during breastfeeding as they take more responsibility for compliance with diet, food preparation, label reading, and food selection. The main factors that increase the stress of families are the severity of previous reactions and the intense effort to avoid constantly allergic foods (Cummings et al., 2010). In this study, it was aimed to examine the relationship between the stress experienced by mothers of children with food allergy and resilience and maternal function of mothers.

2. MATERIAL AND METHODS

2.1. Design and participants

This cross-sectional study was conducted in the pediatric allergy outpatient clinic of a health practice and research center between March 2022 and April 2023. The universe of the study consisted of mothers with a child aged 0-18 months who applied to the pediatric allergy polyclinic in the mentioned institution and diagnosed with food allergy. When the number of applications to the pediatric allergy outpatient clinic with a food allergy complaint in the last year was calculated to be around 700 with a baby aged 0-18 months, the minimum sample size to be reached was 248 at the 95% confidence level and the 5%

confidence interval. This study was conducted with 372 mothers who met the inclusion criteria. Inclusion criteria: (1) A definitive diagnosis of food allergy/intolerance (2) The child's age between 0-18 months (3) The mother's consent to participate in the study.

2.2. Data Collection

An Information Form, Parenting Stress Scale, Barkin Maternity Function Scale and Mother Resilience Scale were applied to mothers who met the criteria for participation in the study by face-to-face interview method. A fifteen-minute interview was held with each participant. These mothers were invited to the family health center by telephone, home visits and advertisements posted on the institution boards. The obtained data were scored and recorded in digital environment. When the minimum sample size was reached, half of the minimum sample number was interviewed against any risk of missing data, and participant admission was terminated.

Information Form: There are questions prepared by the researchers in line with the literature, including the child's gender, age, allergy status, mothers' knowledge about allergies and information sources.

Parenting Stress Scale (PSS): The "Parenting Stress Scale" was developed to measure the stress of parents of children with normal developmental characteristics regarding being a parent. The scale consists of 18 items and is a single-dimensional structure that includes the parent, parent-child relationship and the child's characteristics. The Parenting Stress Scale is a Likert-type measurement tool that is evaluated as 0 (Doesn't describe at all), 4 (Describes very well). The range of scores that can be obtained from the scale is between 0-72, and the high score indicates the level of parenting stress. The internal consistency coefficient calculated for the reliability of the scale is 0.96 (Aydoğan & Özbay, 2017). The Cronbach Alpha coefficients of the scale was found to be 0.86.

Barkin Maternal Function Inventory (BMFI): The Barkin Maternal Function Inventory was developed by Barkin et al. (2010) to measure the functional status of the mother at the end of the birth. The validity and reliability study of the Turkish version of the Barkin Maternal Function Inventory was conducted by (Aydın & Kukulu, 2018). The reliability coefficient of the Barkin Maternal Function Inventory was found to be Cronbach Alpha 0.73. The Cronbach Alpha coefficients of the scale are 0.66 for the Self-Care dimension, 0.71 for the Mother Psychology sub-dimension, 0.62 for the Baby Care sub-dimension, 0.69 for the Social Support sub-dimension, and 0.50 for the Adaptation to Motherhood sub-dimension. The Barkin Maternity Function Inventory is a 7-point Likert-type scale consisting of 16 questions. The answers in the scale are numbered from 0 to 6. 0 "strongly disagree", 1 "disagree", 2 "somewhat disagree", 3 "undecided", 4 "somewhat agree", 5 "agree", 6 "strongly agree". The higher the scores, the higher the functional status is considered. BMFI is applied to mothers with babies younger

than 18 months (Aydın & Kukulu, 2018). The Cronbach Alpha coefficients of the scale are 0.63 for the Self-Care dimension, 0.70 for the Mother Psychology sub-dimension, 0.64 for the Baby Care sub-dimension, 0.67 for the Social Support sub-dimension, 0.55 for the Adaptation to Motherhood sub-dimension, and 0.75 for the total score.

Maternal Resilience Scale (MRS): The Maternal Resilience Scale, developed by Kaner and Bayraklı (2010) consists of 34 items. These are composed of eight subscales: Struggle, Self-efficacy, Social Support, Goal Motivation, Openness to Innovation, Anticipating Risks and Social Competence. It consists of Optimism-4 items, Struggle-10 items, Self-Efficacy-4 items, Social Support-4 items, Success-Purpose Motivation-3 items, Openness to Innovations-3 items, Risk Prediction-3 items, and Social Competence-3 items. In answering the Mother Resilience Scale, it is performed by placing an (X) mark on the answer option that best describes the individual. They describe me very well, well, moderately, somewhat, and not at all. The Cronbach Alpha coefficients of the scale were 0.61 for the Challenger dimension, 0.72 for the Self-efficacy sub-dimension, 0.74 for the Social Support sub-dimension, 0.68 for the Goal Motivation sub-dimension, 0.61 for the Openness to Innovations sub-dimension, 0.62 for the Risk Prediction sub-dimension. is 0.70 for the Social Competence sub-dimension and 0.79 for the total score.

2.3. Analysis

We used the SPSS (Statistical Package for Social Sciences) for Windows 25.0 program to analyze the data. We used number, percentage, min, max, median, mean, standard deviation to analyze the descriptive values. The conformity of the data used to the normal distribution was tested. Conformity to normal distribution was checked according to skewness and kurtosis values. The normal distribution of the data depends on the skewness and kurtosis values being between ± 1.5 . Independent t-test was used to compare the normally distributed data for the difference between two independent groups.

2.4. Ethics

Ethics committee approval was obtained before the research (IRB number: 2022-SBB-0025, Date: 22.02.2022/3). In addition, the mothers of the children to be included in the study were informed about the research and their written and verbal informed consent was obtained prior to their inclusion in the research.

3. RESULTS

In this study, 59.5% of the children were girls and the mean age was 8.00 ± 7.56 months (0-18 months). The mean age of the mothers was 29.80 ± 2.95 (25-37). Most of the mothers, 83.3% of them were university graduates and 57.1% were working (Table 1).

Table 1. Demographic characteristics of mothers and children (n=372)

	Mean±SD	Minimum-Maximum
Child age (month)	8.00±7.56	0-18
Mother age	29.80±2.95	25-37
	n	%
Mother education		
Highschool	36	9.5
Universtiy	309	83.3
Graduate	27	7.2
Mother employment		
Working	159	42.9
Not working	213	57.1
Gender of child		
Girl	221	59.5
Boy	151	40.5

Food allergy was diagnosed by the physician in 73.8% of the children. Food intolerance was diagnosed by the physician in 26.2% of the children. Most of the children were milk and dairy products (25.5%), eggs (18.6%) and foods such as hazelnut, peanut, almond and walnut (13.8%). When allergenic food is consumed in children, diarrhea (17.8%), palpitation (14.7%), skin rash (13.1%), restlessness (13.1%), mucus (sputum, secretion) stool (sticky) (11.5%), itching and skin rash (such as hives/urticaria) (10.5%) and difficulty in falling asleep (10.5%). 19.0% of the children had an additional condition of asthma and allergic rhinitis (constant runny nose and postnasal drip) accompanying food allergy symptoms. 95.2% of the mothers were applying food restriction in terms of allergenic food to their children. 92.9% of the mothers had knowledge about food allergy. Mothers' sources of information about food allergies were mostly the internet (50.0%) and health workers (43.2%) (Table 2).

Parenting Stress Scale mean score was above the mean score (55.45 ± 7.45 , 42-72). The mean maternal function score of the mothers was also above the mean score (82.04 ± 15.05 , 53-112) and the highest score was in the Social Support sub-dimension (24.83 ± 2.42 , 19-28). The mean resilience score of the mothers was above the mean score (141.21 ± 18.32 , 105-170) and the Self-efficacy sub-dimension had the highest mean score (49.7 ± 10.43 , 32-70) (Table 3).

Table 2. Information on children's food allergies (n=372)

	n	%
Diagnosis of food allergy/food intolerance in the child		
Food allergy diagnosis by physician	274	73.8
Diagnosis of food intolerance by physician	98	26.2
Allergen foods*		
Milk and milk products	95	25.5
Egg	69	18.6
Hazelnuts, peanuts, almonds and walnuts	51	13.8
Fish	28	7.6
Wheat flour	9	2.6
Banana	20	5.5
Tomatoes	30	8.3
Lentil	8	2.1
Cocoa	12	3.4
Chicken	28	7.6
Strawberry	17	4.8
Symptoms seen when allergenic food is consumed*		
Skin rash	48	13.1
Itching and skin rash (such as hives/urticaria)	39	10.5
Swelling on the lips and around the eyes	9	2.6
Stomach ache	34	9.4
Vomiting	31	8.4
Shortness of breath	8	2.1
Cough	11	3.1
Feeling of congestion in the throat	5	1.6
Tongue swelling	17	0.5
Chest pain	17	4.7
Palpitation	54	14.7
Diarrhea	66	17.8
Mucus (sputum, secretion) stool (sticky)	42	11.5
Discomfort	48	13.1
Difficulty falling asleep	39	10.5
Presence of an additional condition of asthma and allergic rhinitis (constant runny nose and postnasal drip) accompanied by food allergy symptoms in the child		
Yes	71	19.0
No	301	81.0
Applying food restriction in terms of allergenic food in the child		
Yes	354	95.2
No	18	4.8
Knowledge of food allergy		
Yes	345	92.9
No	27	7.1
Sources of information about food allergy		
Internet	186	50.0
Relatives, family elders	20	5.4
Health personnel	160	43.2
Courses, training seminars, etc.	6	1.4

*Participants ticked more than one option

Table 3. Distribution of mean scores of Parenting Stress Scale, Barkin Maternal Function Scale, and Maternal Resilience Scale (n=372)

	Mean±SD	Minimum-Maximum
Parenting Stress Scale		
Total score	55.45±7.45	42-72
Barkin Maternal Function Inventory		
Self care	9.80±5.03	3-21
Baby care	10.90±2.30	6-14
Social support	24.83±2.42	19-28
Adaptation to motherhood	12.78±5.77	3-21
Total score	82.04±15.05	53-112
Parenting Stress Scale		
Bellicosity	20.71±5.97	6-28
self-efficacy	49.7±10.43	32-70
Social support	15.97±3.08	6-20
Goal motivation	17.61±2.26	3-21
Openness to innovation	12.11±2.44	8-15
Anticipating risks	11.35±2.96	4-15
Social competence	13.0±1.96	8-15
Total score	141.21±18.32	105-170

As the maternal function of mothers of children diagnosed with food allergy by the physician increased, resilience levels increased ($r=0.623$, $p=0.000$). As the maternal function of mothers of children diagnosed with food intolerance by the physician increased, resilience levels increased ($r=0.767$, $p=0.006$). As the maternal function of mothers of mothers whose children had food allergy symptoms accompanying asthma and allergic rhinitis increased, resilience levels increased ($r=0.670$, $p=0.000$). 0.629 , $p=0.000$). As the maternal function of mothers with knowledge about food allergy increased, resilience levels also increased ($r=0.688$, $p=0.000$) (Table 4).

4. DISCUSSION

We aimed to examine the relationship between stress experienced by mothers of children with food allergy, resilience and maternal function of mothers. 73.8% of the children had a diagnosis of food allergy and 26.2% of them had a diagnosis of food intolerance. The level of resilience increased as the maternal function of mothers of children diagnosed with food allergy ($r=0.623$, $p=0.000$) and intolerance ($r=0.767$, $p=0.006$) by the physician increased. The resilience levels of the mothers of the mothers whose children had an additional disease accompanied by food allergy symptoms, asthma and allergic rhinitis ($r=0.670$, $p=0.000$) and who applied food restriction in terms of allergen food to their child ($r=0.629$, $p=0.000$) increased as the maternal function increased. There was no relationship between stress and maternal resilience and maternal function ($p>0.005$).

Table 4. Results of partial correlation analysis between parenting stress, maternal function and resilience according to children's food allergy characteristics (n=372)

Children's food allergy characteristics	Correlations	
Presence of a diagnosis of food allergy/food intolerance in the child		
Food allergy diagnosis made by physician	Parenting stress (1)	1-2, $r=-0.193$, $p=0.298$
	Maternity function (2)	1-3, $r=-0.033$, $p=0.858$
	Maternal resilience (3)	2-3, $r=0.623$, $p=0.000$
Diagnosis of food intolerance by physician	Parenting stress (1)	1-2 $r=-0.396$, $p=0.228$
	Maternity function (2)	1-3, $r=0.120$, $p=0.724$
	Maternal resilience (3)	2-3, $r=0.767$, $p=0.006$
The presence of an additional condition such as asthma and allergic rhinitis (constant runny nose and postnasal drip) accompanied by food allergy symptoms in the child		
Yes	Parenting stress (1)	1-2 $r=-0.289$, $p=0.097$
	Maternity function (2)	1-3, $r=0.067$, $p=0.706$
	Maternal resilience (3)	2-3, $r=0.670$, $p=0.000$
No	Parenting stress (1)	1-2 $r=-0.059$, $p=0.889$
	Maternity function (2)	1-3, $r=-0.409$, $p=0.315$
	Maternal resilience (3)	2-3, $r=0.548$, $p=0.160$
Applying food restriction in terms of allergenic food in the child		
Yes	Parenting stress (1)	1-2 $r=-0.217$, $p=0.179$
	Maternity function (2)	1-3, $r=-0.048$, $p=0.768$
	Maternal resilience (3)	2-3, $r=0.629$, $p=0.000$
No	Parenting stress (1)	1-2 $r=-0.189$, $p=0.291$
	Maternity function (2)	1-3, $r=0.167$, $p=0.256$
	Maternal resilience (3)	2-3, $r=0.170$, $p=0.260$
Availability of knowledge about food allergy		
Yes	Parenting stress (1)	1-2 $r=-0.269$, $p=0.098$
	Maternity function (2)	1-3, $r=-0.065$, $p=0.695$
	Maternal resilience (3)	2-3, $r=0.688$, $p=0.000$
No	Parenting stress (1)	1-2 $r=0.734$, $p=0.476$
	Maternity function (2)	1-3, $r=0.832$, $p=0.374$
	Maternal resilience (3)	2-3, $r=0.234$, $p=0.850$

In this study, mothers' parenting stress scale mean score was found to be high. Being the parent of a child with food allergy can cause stress and badly affect daily life (Chooniedass et al., 2020). Factors beyond the parent's control, such as food-food interaction (for example, in restaurants), reliance on third parties for their child's health (for example, teachers), lack of consistency in food labeling, may cause the parent to experience difficulties in compliance with treatment and intense stress (Hoehn et al., 2017). In studies conducted in the literature, stress levels of parents with food allergy children are high (Aika et al., 2017; Beken et al., 2019).

In this study, it was found that the mean maternal function score of the mothers was above the mean score and the highest score was in the Social Support sub-dimension. The primary person caring for a

child in the first years of life is usually the mother. Mothers of children with food allergies have to read food ingredient labels, and simple tasks such as shopping for food can become time-consuming and often expensive occupations. It may be necessary for mothers to receive professional and social support to increase their maternal functions and cope with their emotions (Chooniedass et al., 2020). In a qualitative study with 32 mothers with a one-year-old child stated that the child's food allergy caused significant stress and difficulty in adapting to motherhood for the mother, and this was due to the delay in adaptation to new foods in the child's diet and waking up at night due to itching due to atopic dermatitis (Alanne et al., 2012).

In this study, the mean score of resilience of the mothers was found to be above the mean score and the self-efficacy sub-dimension was found to be the highest mean score. Mothers of children with food allergies prepare special meals for their children, which can cause a great burden (Chow et al., 2015). However, differences in food allergy symptoms, complexity of coping methods, and various information from the media can cause heavy burdens on parents (Aika et al., 2017; Alanne et al., 2012). King et al. (2009), in their qualitative study with parents with children with food allergies, stated that parents stated that having a child with food allergy can affect the whole family and requires constant vigilance. Rouf et al. (2012) in their qualitative study with eight mothers with food allergy children stated that they feel pressure and experience difficulties in adapting to motherhood because mothers are primarily responsible for the safety and health of their children.

In this study, as the maternal function of mothers of children diagnosed with food intolerance increased, so did their resilience levels. Eating is also an important part of daily life. In their qualitative study with parents, Pitchforth et al. (2011) reported that parents of children with food intolerance have a general need to create "safe spaces" for their children and to take on a "protective role" to prevent their children from being exposed to accidents.

In this study, as the maternal function of the mothers of the children diagnosed with food allergy by the physician increased, the resilience levels increased. In order to ensure the safety of the child and maintain the quality of life, parents must have a correct understanding of food allergy and its treatment, apply an elimination diet, and cope with problems (Aika et al., 2017). Broome et al. (2015) examined the experiences of parents with a food allergy child and the strategies used to effectively manage a child's diagnosis using the grounded theory method. In the study, after a child was diagnosed with food allergy, parents questioned their self-efficacy and ability to be successful in their parenting role (Broome et al., 2015). MacKenzie et al. (2015) stated in their focus group interview with 17 mothers with food allergy

children that mothers try to maintain their children's normalcy, encourage their independence, and that they should struggle with food allergy themselves.

In this study, the mothers who applied food restriction in terms of allergenic food to their children increased their resilience levels as their maternal function increased. Parents with a food allergy baby may feel helpless because of the possibility of harming their baby and the great responsibility for nutrition. With great desperation, they may begin comprehensive elimination diets. This situation can cause symptoms that can disrupt the mother-baby bond (Beken et al., 2019). Dieting can play a negative role in the mother-infant relationship, as it can be a situation that a nursing mother finds difficult to implement in her daily routine (MacKenzie et al., 2015).

In this study, as the maternal function of mothers with knowledge about food allergy increased, their resilience levels also increased. Mothers of children with food allergies want to understand how to provide a nutritionally adequate, allergen-safe diet while living a normal life (MacKenzie et al., 2015). Therefore, mothers with a child with food allergy need information about the treatment of the child, tests, personalized information about the foods that cause allergies, as well as the management of symptoms and avoidance of risks (Aika et al., 2017; Beken et al., 2019). In the literature, the training given to parents with food allergy children increases maternal adjustment and participation in treatment (Cuervo-Pardo et al., 2015).

5. CONCLUSION

In line with the results of the study, as the maternal function of the mothers of the children with food allergy increased, the resilience levels also increased. In particular, resilience and maternal function were higher in mothers of children who followed an allergen food-specific diet and had signs of allergic asthma/rhinitis. Mothers felt more combative as their children had health problems to deal with. It is recommended that parents of children with food allergies who have special dietary needs and allergic asthma/rhinitis symptoms be supported, and that treatment and care programs should be established.

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Conflict of Interest

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