

## What factors enhance compliance of children during skin prick testing?

Deri prik testi yapılırken çocukların uyumunu artıran faktörler nelerdir?

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### ABSTRACT

**Objective:** Skin prick testing is the most frequently used method in the diagnosis of IgE-mediated reactions. Since skin prick testing is simple, quick, in expensive, and highly sensitive, it plays a crucial role in allergy diagnosis. Some children are more compliant during skin testing than others. This study was performed to investigate the differences between compliant and noncompliant children.

**Materials and Methods:** A total of 79 children between the ages of 4 and 16 (39 females and 40 males) were included in this study. As part of the procedure, a nurse asked the families of the subjects to complete a questionnaire. Some of the questions included the age and sex of the child, education level of the mother and father, family income level, the child's birth order, and number of siblings. Other information gathered included the child's previous hospitalizations, history of parenteral drug administration, and whether or not the family had informed the child about the upcoming skin test. Following completion of the questionnaire, the skin prick test was performed by the same nurse. Subject compliance was recorded on the survey form.

**Results:** 54.8% of the patients were compliant, while 39.4% were not. Statistically significant dif-

### ÖZ

**Giriş:** Deri prik testi IgE aracılıklı reaksiyonların tanısında en çok kullanılan yöntemdir. Basit, hızlı, ucuz ve yüksek oranda duyarlı olması nedeniyle allerji tanısında anahtar rol oynar. Deri prik testi yapılırken bazı çocuklar diğerlerine göre daha uyumludur. Çalışmamız, test esnasında uyumlu ve uyumsuz çocuklar arasında ne gibi farklar olduğunu saptamak amacıyla yapılmıştır.

**Gereç ve Yöntem:** Çalışmamıza yaşları 4-16 arasında değişen 39'u kız, 40'ı erkek 79 çocuk alındı. Çalışmanın bir parçası olarak hemşire tarafından hastaların ailelerine anket soruları soruldu. Çocukların yaş ve cinsiyetleri, anne ve babanın eğitim düzeyi, ailenin gelir düzeyi, kaçınıcı çocuk olduğu ve kardeş sayısı sorulan sorular arasındaydı. Toplanan diğer bilgiler arasında öncesinde hastanede yatış, parenteral ilaç kullanma öyküsü ve testten önce aile tarafından bilgilendirilip bilgilendirilmediği vardı. Anket formu doldurulduktan sonra aynı hemşire tarafından deri prik testi yapıldı. Çocukların uyumu anket formlarına kaydedildi.

**Bulgular:** Hastaların %54.8'i uyumlu, %39.3'ü uyumsuzdu. Yaşları, cinsiyetleri, anne ve babanın eğitim düzeyi, ailenin gelir düzeyi, kardeş sayısı, ka-

ferences between compliant and noncompliant children were not observed concerning age, sex, parental educational levels, family income level, number of the siblings, birth order, previous hospitalizations, or history of parenteral drug administration ( $p > 0.05$ ). However, it was found that the informing of a child by the family about the upcoming skin test had a statistically significant impact on his/her compliance during the test ( $p < 0.05$ ).

**Conclusion:** Our study demonstrated that being accurately informed by family regarding the upcoming procedures enhanced the compliance of children during diagnosis and treatment.

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**Key words:** Skin prick testing, patient information, compliance

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## INTRODUCTION

Skin prick testing is the most frequently used method in the diagnosis of IgE-mediated reactions. Since skin prick testing is simple, quick, inexpensive, and highly sensitive, it plays a crucial role in allergy diagnosis<sup>[1]</sup>. Some children are more compliant during skin prick testing than others. Compliance means the children who underwent skin prick testing don't cry, don't move during the test. Compliance of children during skin prick testing is important issue. If the children are noncompliant, performing skin prick testing is difficult and evaluation of the test results may be incorrect. And also medical personnel who performed the skin tests have more difficulty and consuming more energy during the tests. That means time and energy consuming. We wondered what factors effect compliance of children during skin prick tests. And we want to investigate the differences between compliant and noncompliant children.

## MATERIALS and METHODS

A total of 79 children between the ages of 4 and 16 (39 females and 40 males) were recruited from Pediatric Allergy and Asthma Unit of Erciyes University, Faculty of Medici-

çinçü çocuk olduđu, hastanede yatış öyküsü ve parenteral ilaç kullanma öyküsüne göre uyumlu ve uyumsuz çocuklar arasında istatistiksel olarak anlamlı fark saptanmadı ( $p > 0.05$ ). Ancak ailelerin testten önce çocuđu bilgilendirmesinin test esnasındaki uyumunda istatistiksel olarak anlamlı fark yarattığı saptandı ( $p < 0.05$ ).

**Sonuç:** Çalışmamız, çocukların yapılacak işlemlerden önce aileleri tarafından doğru bilgilendirilmesinin tanı ve tedavi boyunca uyumu artırdığını göstermektedir.

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**Anahtar kelimeler:** Deri prik testi, hasta bilgilendirme, uyum

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ne, Kayseri, Turkey. As part of the procedure, a nurse asked the families of the subjects who need skin prick testing to complete a questionnaire. Some of the questions included the age and sex of the child, educational level of the mother and father, family income level, the child's birth order, and number of siblings (Table 1). Additionally, information was gathered concerning the child's previous hospitalizations, history of parenteral drug administration, and whether or not the family had informed the child about the upcoming skin prick testing.

Following completion of the questionnaire, the skin prick testing was performed by the same nurse with applicator. Subject compliance was recorded on the survey form. If the child cried and struggled during the test, we recorded the child as noncompliant. If the child didn't cry and move, we recorded the child as compliant.

All study procedures were done in accordance with a protocol previously approved by the Institutional review Board of Erciyes University. Written inform consent was obtained from all patients and control subjects before the procedure and all children gave assent.

**What factors enhance compliance of children during skin prick testing?**

Deri prik testi yapılırken çocukların uyumunu artıran faktörler nelerdir?

**Table 1. Characteristics of the patients**

Factors	Compliant (n= 46)	Noncompliant (n= 33)	p
Age (in years)*	9 (5-16)	8 (4-16)	> 0.05 <sup>#</sup>
Sex			
Male, n (%)	21 (45.7)	19 (57.6)	
Female, n (%)	25 (54.3)	14 (42.4)	> 0.05 <sup>‡</sup>
Is mother a smoker? n (%)	7 (15.2)	7 (21.2)	> 0.05 <sup>‡</sup>
Is father a smoker? n (%)	27 (58.7)	15 (45.5)	> 0.05 <sup>‡</sup>
Does mother work? n (%)	4 (10.9)	5 (15.2)	> 0.05 <sup>‡</sup>
Do you have sitter/nanny? n (%)	1 (2.2)	3 (9.1)	> 0.05 <sup>‡</sup>
History of hospitalization, n (%)	22 (47.8)	18 (54.5)	> 0.05 <sup>‡</sup>
History of parenteral drug administration, n (%)	17 (37)	15 (45.5)	> 0.05 <sup>‡</sup>
Is the regular follow-up? n (%)	33 (71.7)	22 (66.7)	> 0.05 <sup>‡</sup>
Was child informed about the test by his/her family? n (%)	25 (54.3)	29 (87.9)	< 0.05 <sup>‡</sup>
Age of mother	33.5 (25-49)	33 (25-50)	> 0.05 <sup>#</sup>
Age of father	38 (32-58)	39 (30-59)	> 0.05 <sup>#</sup>
Mother's educational level			> 0.05 <sup>‡</sup>
Primary school, n (%)	23 (50)	7 (21.2)	
Junior high school, n (%)	3 (6.5)	6 (18.2)	
High school, n (%)	10 (21.7)	14 (48.4)	
University, n (%)	7 (15.2)	6 (18.2)	
Number of siblings			> 0.05 <sup>‡</sup>
No siblings, n (%)	5 (10.9)	1 (3)	
One sibling, n (%)	16 (34.8)	13 (39.4)	
Two or more siblings, n (%)	13 (28.3)	15 (45.5)	
Father's educational level			> 0.05 <sup>‡</sup>
Primary school, n (%)	17 (37)	5 (15.2)	
Junior high school, n (%)	8 (17.4)	3 (9.1)	
High school, n (%)	8 (17.4)	13 (39.4)	
University, n (%)	13 (28.2)	11 (23.4)	
Birth order			> 0.05 <sup>‡</sup>
Firstborn, n (%)	20 (43.5)	17 (51.5)	
Second, n (%)	19 (41.3)	12 (36.4)	
Third or subsequent, n (%)	7 (15.2)	4 (12.2)	
Family monthly income level			> 0.05 <sup>‡</sup>
500 TL, n (%)	19 (41.2)	8 (24.2)	
500-1000 TL, n (%)	11 (23.9)	8 (24.2)	
1000-2000 TL, n (%)	13 (28.3)	11 (33.3)	
2000 TL and more, n (%)	3 (6.5)	4 (12.1)	

\* The median (interquartile range).

<sup>#</sup> Mann-Whitney U test.<sup>‡</sup> Chi-Square test.

### Statistical Analysis

The data showed a normal distribution. Mann-Whitney test was used to identify a relationship between age, age of mother and age of father. The other parameters were compared by chi-squared tests. A *p* value of less than 0.05 was considered as significant.

### RESULTS

Demographic and clinical data are given in Table 1.

54.8% of the subjects were compliant and 39.8% noncompliant (Table 1). No statistical difference was found in regard to age, sex, educational level of the mother or father, family income level, number of the siblings, birth order, previous hospitalizations, or history of parenteral drug administration (*p* > 0.05). Likewise, for the parents' smoking habits, drug addiction history, and psychiatric disease history in the family, there was no difference between compliant and noncompliant children (*p* > 0.05). The only factor which was shown to make a statistically significant difference, leading to a higher rate of child compliance during the test, was the informing of the child by the family about the upcoming skin test (*p* > 0.05). Additionally, the fact that this difference was greater in noncompliant children was noteworthy. When the families were asked how they had informed their children, it was found that the noncompliant children had been misinformed or uninformed, whereas those who had been properly informed complied to the treatment.

### DISCUSSION

Many descriptions have been given for compliance. Haynes et al. reported that compliance is the content to which a person's behavior, such as taking medications, coincides with medical or health advice<sup>[2]</sup>. Compliance can be seen as an manner and as a demeanor. Various factors affect compliance such as age, gender, health status, economic and physician variables. Patient knowledge is highly correlated with compliance<sup>[3,4]</sup>.

Skin prick testing is a regularly used, rather simple process of observing symptoms<sup>[5,6]</sup>. In this study, no serious problems were encountered during test administration while working with compliant children. However, in the case of noncompliant children, administering the test led to both a loss of time and energy. Therefore, what factors lead children to be compliant or not?

Our observation prior to this study led us to believe that there were two groups of generally noncompliant children: those from families with higher educational levels and boys. However, following the statistical analysis, no significant difference could be determined related to either of these factors. The only significant difference found was that the children who had been informed correctly before hand were more compliant. This is of vital importance from the point of preventing loss of both time and energy.

In the field of medicine as a whole, it has been demonstrated that information given to patients concerning their illness, its treatment, and the administered methods of observing symptoms helps to increase appropriate patient behavior. Furthermore, this approach decreases mortality and morbidity rates and increases quality of health service<sup>[3]</sup>. In a study of asthma patients, when the factors affecting the compliance and the use of a metered dose inhaler were investigated, it was seen that there was an important relation between a patient's compliance and their educational level, attitude toward use of the medicine, and knowledge about asthma<sup>[7]</sup>. In a different study, it was recommended that family physicians enhance medication adherence by providing good information about treatment and counseling strategies<sup>[8]</sup>.

In a study carried out on patients with optic neuritis, it was shown that the patients could perceive the optic neuritis better following an informative meeting, and they accepted the treatment choices appropriate to their situation<sup>[9]</sup>.

These studies show that right information is very important about the patient's compliance

and consistently the results of our study suggest that when families properly inform their children about the procedure before going to the hospital, compliance increases. This finding has reminded us of the importance of patient education and led us to believe that families should be instructed to accurately inform their children regarding the procedures prior to coming to the hospital. Implementation of this practice should lead to increased compliance to the procedures, resulting in an easier and more positive experience for both patient and medical personnel.

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