

# THE INCIDENCE OF CONFIRMED ALLERGIES AMONG A GROUP OF TACTILE-DEFENSIVE CHILDREN

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## ABSTRACT

**Objective.** To explore the incidence of allergies in a group of tactile-defensive children.

**Method.** The study sample was 24 subjects, between the ages of 3 and 10 years. Tactile-defensive children were identified by using the Winnie Dunn Sensory Profile Caregiver Questionnaire. Blood samples were taken at pathology laboratories. Allergy awareness was investigated by means of a questionnaire.

**Results.** A high-positive result for IgE was found in 47.8% of the children, while 30.4% had a positive result for Phadiatop. The FX-5 paediatric food screen was positive for 33.3% of the children. This incidence was found to be statistically significant when compared with the upper limit of the norm of 8.0%.

**Conclusions.** Tactile-defensive children showed a higher incidence of allergy than the norm. Therefore tactile-defensive children should be screened for possible allergen load (total IgE) and for a specific food allergy (Cap RAST or Cap RAST paediatric food screen) because of their limited choice of food.

## INTRODUCTION

When children with feeding problems are referred to the first author (AS)'s dietetic practice, concerns are often expressed by the referring doctor about the possible incidence of food allergies. AS therefore requests allergy tests for children with suspected food allergies. She has noticed a higher incidence of allergies among tactile-defensive children. No documented research on the relation between allergies and tactile defensiveness could be found in the literature, although observations about a close relationship between sensory defensiveness, allergies and asthma have been reported in schoolchildren.<sup>1,2</sup> Sensory defensiveness includes tactile defensiveness, but refers to a more general problem of the tactile and other sensory systems.<sup>3</sup>

### What is tactile defensiveness?

Tactile defensiveness is an overreaction to experiences of touch. Dr Jean Ayres described tactile defensiveness in 1964 for the first time.<sup>4</sup> In 1982 Larson<sup>5</sup> described tactile defensiveness as a lack of integration of sensation perception for touch. Others described tactile defensiveness as an overreaction to touch experiences<sup>6</sup> or an observable aversion or negative behav-

our in response to certain types of sensation stimuli that most people do not experience as offensive.<sup>7</sup> In the Winnie Dunn Questionnaire (see 'Methods'), questions are asked about the following: 'reacts emotionally or aggressively to touch'; 'has difficulty standing in line or close to other people'; 'decreased awareness of pain and temperature'; 'expresses discomfort with dental work or toothbrushing'.<sup>8</sup>

### Occurrence of tactile defensiveness

Between 6% and 17% of babies show tactile defensiveness and in children with difficult temperaments, tactile defensiveness was present in 64-86%. Possibly 15% or more of the total population is sensory defensive, including tactile defensiveness.<sup>9</sup>

### Occurrence of allergies

In 2002 Fenemore and Potter reported an incidence of confirmed allergy of 19% in learning-disabled children and 25% in hyperactive children.<sup>10</sup> Food allergy affects about 5-8% of children.<sup>11,12</sup>

### What about food preferences?

Food allergies may cause gastro-intestinal symptoms that vary from severe cramps to a feeling of discomfort, and include diarrhoea or constipation. Children might not like or might avoid food they remember having had a reaction to, or parents might restrict foods because of possible allergies.<sup>13,14</sup>

In a study investigating the food choices of tactile-defensive children, different possible reasons for the picky eating patterns of these children were investigated.<sup>14,15</sup> For the purpose of this study only the incidence of allergies among tactile-defensive children is described.

### Allergy tests used in this study

**IgE** – used to give an indication of the allergy load the subjects are being subjected to.

**Cap RAST for paediatric food mix, FX-5** – used to identify allergy to cow's milk, egg white, codfish, wheat, peanut and soya bean.

**Cap Phadiatop Inhalant Screen** – used to screen subjects for possible allergy to inhaled allergens.

## METHOD

### Sample

The study sample consisted of 24 subjects, aged 3-10 years, white (n=21) or coloured (n=3) children. Subjects for the study were referred by occupational therapists or teachers, or were recruited through radio talks or newspapers and magazines. The study was done in Port Elizabeth, East London and Cape Town. Although the study included nontactile-defensive children as controls, the parents of the controls were not willing to subject their children to the blood tests. They were, however, willing to fill in the questionnaire about allergy awareness. The allergy tests are therefore compared with the norm for South Africa, but since there is no norm available for the awareness of allergies among South African parents, these results were compared with those of the control group.

The children of the study group were positively identified at the 99% confidence level as tactile defensive

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and the controls as nontactile defensive using the Winnie Dunn Sensory Profile Caregiver Questionnaire.<sup>8</sup> The Winnie Dunn sensory profile<sup>8</sup> provides a standard method for professionals to measure a child's sensory-processing abilities. There are 125 items in the questionnaire describing the child's responses to various sensory experiences.

### Ethical clearance

The Ethics Committee of the University of Port Elizabeth approved the study. Written consent was obtained from the parents of the children stating that all results would be handled confidentially and that no names would be used when discussing results.

### Allergy tests

Parents participating in the study of 'Food choices of tactile defensive children'<sup>15</sup> and who were willing to have blood samples taken from their participating child were referred to the rooms of specified local pathologists for blood sampling for the allergy tests. All blood samples were taken by registered nurses. The following allergy tests were done: IgE, Phadiatop inhalant screen and Cap RAST FX-5 paediatric food mix. Skin tests were not done because of the children's negative reaction to touch.

### Allergy awareness

The parents of the participating children were interviewed about their allergy awareness, to determine whether the child had:

- been tested for allergies in general before
- been tested specifically for food allergies before
- been tested for allergies using blood tests before
- been tested for allergies using skin tests before
- been told by a professional or nonprofessional that they were allergic (without lab tests)
- been diagnosed as having a negative reaction to food
- a negative reaction to certain food persistently
- a past or current history of respiratory problems, e.g. asthma, hay fever.

### Data analyses

Results for blood tests were captured on a Microsoft Excel spreadsheet file. Data were analysed statistically using descriptive statistics to determine measures of central tendency, dispersion and distribution and inferential statistics (*chi*-square goodness of fit test, *chi*-square test of independence, t-test).

## RESULTS

Because of tactile defensiveness and children's reactions, special methods were used by the nurses for drawing of blood. Twenty-four tactile-defensive children had blood tests done for IgE, FX-5 paediatric food mix and Phadiatop.

The pathology laboratories reported the IgE results as negative, low-positive or high-positive (Table I). Phadiatop and FX-5 were reported as 'negative' when results were less than 0.35 and as 'positive' when the results were greater than 0.35.

The results of the blood tests for this group of 24 tactile-defensive children were as follows (Table II):

- For IgE 47.8% tested high-positive and 34.8% low-positive (a total of 82.6% tested positive).

**Table I. Interpretation of IgE values**

	Atopic disease not likely	Atopic disease possible or may develop	Atopic disease highly probable
	Negative	Low-positive	High-positive
Age			
4 years	0 - 10	10 - 50	>50
6 years	0 - 14	14 - 70	>70
10 years	0 - 21	21 - 100	>100

**Table II. Results of blood tests on children from the tactile-defensive group**

	Negative	Low-positive	High-positive
IgE	17.4%	34.8%	47.8%
	Negative	Positive	
Phadiatop	69.6%	30.4%	
FX-5 paediatric food mix	66.7%	33.3%	

- 30.4% tested positive for Phadiatop.
- The FX-5 paediatric food screen was positive for 33.3% of the children. This incidence was found to be statistically significant ( $\chi^2=20.93$ ; d.f.=1;  $p<0.01$ ) when compared with the upper limit of the South African norm of 8.0%.<sup>10</sup> Only 17% of the children tested positive on both Phadiatop and FX-5, while all the children who tested positive on either Phadiatop or FX-5 had positive IgE values.

The results of the questionnaire filled in by parents showed that the majority (65.5%) of tactile-defensive children had never been tested for general or food allergies before. Parents of 25% of the tactile-defensive children perceived that their children still had a negative reaction to the specific food, and would avoid it. The incidence of respiratory symptoms, e.g. asthma and hay fever, seems to fall within the normal distribution of children. None of these results was shown to be statistically significant.

## CONCLUSION

This study shows a higher incidence of allergies among tactile-defensive children compared with the norm. Smith and co-workers showed that tactile-defensive children eat only a limited selection of food.<sup>14,15</sup> Children with picky eating behaviour should therefore be screened for possible allergen load (total IgE) and for an allergy to a specific food (Cap RAST or Cap RAST-paediatric food screen).

The aetiology of tactile defensiveness is still unclear. The fact that 82.6% of tactile-defensive children have increased IgE levels raises the question of whether allergy is perhaps a contributing factor to tactile defensiveness. The possibility that cytokines may be present that stimulate subcutaneous pain receptors at a sub-threshold level continuously, but reach threshold when the person is touched, even softly, needs further research. Fenemore and Potter<sup>10</sup> found an incidence of confirmed allergy of 19% in learning-disabled children and 25% in hyperactive children. Since tactile-defensive children often show similar behaviour to learning-disabled or hyperactive children<sup>9,16</sup> further research is needed to identify whether allergies are possibly responsible for the common characteristics in these different groups of children. A further possibility is that

tactile-defensive children may sometimes be diagnosed as being hyperactive or having learning disabilities, and may therefore form part of the groups tested by Fenemore and Potter.

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