

What Do Child Daycare Center Teachers Know About Atopic Dermatitis?

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Abstract: Atopic dermatitis (AD) is the most common childhood inflammatory skin disorder. The purpose of this study was to elucidate the knowledge level of daycare center teachers about AD and related factors. Study subjects were 297 teachers (287 female, 10 male) from 20 randomly selected daycare centers in Istanbul. The knowledge level of teachers was assessed using a questionnaire with 21 questions about AD. The teachers were asked nine additional questions about demographic and other characteristics of the child care centers and about themselves. The mean age of the teachers was 26.4 ± 8.1 years (range 20–53 yrs). The mean score for the 21 questions was 71.4 ± 12.1 (68%) from a maximum of 105 points. The response rate of teachers rate for each question ranged from 54% to 90%. The completely true response rate for each question ranged from 3.0% to 66.7%. The knowledge level of the teachers was related to the number of children in the daycare center, but not to sex, age, education level, family history of atopy, teacher's monthly salary, location, or whether the daycare center was public or private. Although teachers in daycare centers have some knowledge about AD, widespread educational programs for teachers about AD may help to improve the understanding of the disease and the quality of life of affected children in daycare centers.

Atopic dermatitis (AD) is the most common childhood inflammatory skin condition, affecting 15% to 30% of children and 2% to 10% of adults (1). The prevalence of childhood AD in Turkey ranges from 2.1% to 13.6% (2–8).

The diagnosis of AD is based on the presence of the clinical features pruritus, eczematous dermatitis with typical distribution, and chronic or chronically relapsing course (9).

AD often starts in infancy; 45% of cases begin in the first 6 months of life, and 70% of children are affected before the age of 5 years (10). Approximately 30% of children with AD will develop asthma, and 35% will develop allergic rhinitis (11). AD has a great effect on the quality of life of children and their families (12).

Children age 2 to 6 years often spend much of their time in daycare centers. Although some schools have

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full-time nurses, some have part-time nurses or limited access to school nurses. Teachers generally take care of sick children when nurses are not available at daycare centers. They also make decisions regarding physical activities, avoidance of triggers such as frequent hand washing, and regular drug treatment such as emollients and moisturizers for AD. Early notice of symptoms allows for early diagnosis of AD. Teachers who are aware that itchy rashes and dry skin are the characteristic clinical features of eczema may guide parents to physicians for diagnosis. Recognition of AD may also help with early diagnosis of concomitant asthma and allergic rhinitis.

Approximately 40% of infants and young children with moderate to severe AD have food allergies (9), although some authors feel that this may be an overestimate because tolerance to food develops over time in most patients. Food additives can also provoke AD exacerbations. Knowledgeable teachers may prevent exacerbations by avoiding foods that can cause allergic reactions and frequent hand washing with soap.

Although there are limited reports about teachers' knowledge of asthma (13–22), there have been none about their knowledge of AD. The purpose of this study was to determine the knowledge of child

daycare center teachers about AD and associated factors.

MATERIALS AND METHODS

In this study, a self-administered questionnaire was used to assess the knowledge and attitudes of teachers about AD and its management. Questionnaires were given to 306 teachers working in 20 daycare centers in randomly selected inner city and suburban areas in seven districts of Istanbul. The knowledge level of teachers about AD was assessed using a questionnaire with 21 questions about symptoms, signs, location of skin lesions, treatment, and general questions about AD (Table 1). The teachers were asked nine additional questions about demographic and other characteristics of the daycare centers and themselves (Table 2).

When developing the questionnaire, our goal was to balance the ease of administration with comprehensiveness. To increase comprehensiveness, we used a multiple-choice format, which permitted us to expand the breadth of the material covered per question. To maximize the ease of administration, we composed short phrases for questions and responses.

The response to each of the 21 questions was measured on a 5-point Likert scale (e.g., 1, strongly

TABLE 1. *Questionnaire for AD Knowledge*

	Disagree completely	Disagree somewhat	Unsure	Agree somewhat	Agree completely
Common atopic dermatitis symptoms or signs include					
Itchy rash	2 (0.7)	2 (0.7)	28 (9.7)	64 (22.2)	192 (66.7)
Dry skin	6 (2.1)	8 (2.9)	32 (11.4)	72 (25.7)	162 (57.9)
Diarrhea*	102 (37.5)	0 (0)	106 (39.0)	62 (22.8)	2 (20.7)
Fever*	76 (27.9)	0 (0)	98 (36.0)	86 (31.6)	12 (4.4)
Location of the skin lesions of atopic dermatitis					
Behind the knees	6 (2.1)	14 (5.0)	78 (27.7)	86 (30.5)	98 (34.8)
Front of the ankles	2 (0.7)	12 (4.2)	82 (28.7)	98 (34.3)	92 (32.2)
Folds of the elbows	4 (1.4)	14 (5.1)	104 (37.7)	90 (32.6)	64 (23.2)
Around the neck	2 (0.7)	12 (4.5)	128 (47.0)	78 (29.1)	48 (17.9)
Around the ears or eyes	26 (9.6)	82 (30.4)	124 (45.9)	30 (10.1)	8 (3.0)
Common atopic dermatitis treatments include					
Antihistamines (e.g. cetirizine, fexofenadine, loratadine)	8 (3.1)	10 (3.8)	140 (53.8)	52 (20.0)	50 (19.2)
Elidel cream (pimecrolimus cream 1%)	0 (0)	14 (5.1)	118 (43.4)	86 (21.9)	54 (19.9)
Topical corticosteroids (e.g., hydrocortisone butyrate 0.1%, mometasone furoate, fluticasone propionate, prednisolone 0.125% cream and ointment)	6 (2.2)	10 (3.6)	114 (41.6)	84 (30.7)	60 (21.9)
Moisturizer cream or lotion	6 (2.2)	12 (4.0)	86 (32.1)	108 (40.3)	56 (20.9)
Soaps with neutral pH	8 (3.0)	28 (10.6)	132 (50.0)	68 (25.8)	28 (10.6)
Immunotherapy*	40 (14.9)	20 (7.5)	156 (58.2)	42 (15.7)	10 (3.7)
General questions about atopic dermatitis					
Atopic dermatitis is a hereditary disease	42 (14.7)	26 (9.1)	116 (40.6)	68 (23.8)	34 (11.9)
There is a relation between atopic dermatitis and asthma	10 (3.5)	34 (11.8)	122 (42.4)	100 (34.7)	22 (7.6)
There is a relation between atopic dermatitis and allergic rhinitis	2 (0.7)	32 (11.2)	128 (44.8)	102 (35.7)	22 (7.7)
There is a relation between atopic dermatitis and food allergy	10 (3.5)	20 (6.9)	94 (32.6)	114 (39.6)	50 (17.4)
Woolen clothes are harmful for atopic dermatitis	4 (1.4)	6 (2.1)	86 (29.9)	108 (37.5)	84 (29.2)
Cotton clothes are harmful atopic dermatitis	56 (19.4)	24 (8.3)	94 (32.6)	82 (28.5)	32 (11.1)

*Deceptive question is a misleading questions used to differentiate real from coincidental answers.

TABLE 2. *Factors Affecting the Level of Teachers' Knowledge About AD*

Factor	n	Knowledge score for all questions (mean $\pm$ SD)	p
Sex			
Male	10	71.20 $\pm$ 4.83	0.89
Female	287	71.41 $\pm$ 12.31	
Education level			
High school, college	120	71.48 $\pm$ 10.81	0.84
University	153	71.78 $\pm$ 13.45	
Age, years			
<20	58	71.83 $\pm$ 9.63	0.44
20–40	193	71.01 $\pm$ 13.12	
>40	20	74.70 $\pm$ 13.58	
Location of child care center			
Inner city	108	71.83 $\pm$ 8.83	0.61
Suburb	189	71.17 $\pm$ 13.68	
Ownership of child care center			
Public	217	71.09 $\pm$ 13.48	0.30
Private	75	72.36 $\pm$ 7.20	
Working position of teacher			
Manager	24	75.75 $\pm$ 9.89	0.06
Teacher	253	71.03 $\pm$ 12.25	
Allergic diseases in teacher's family			
No	193	71.17 $\pm$ 10.50	0.43
Yes	96	72.35 $\pm$ 15.21	
Number of children in child care center			
<100	118	73.39 $\pm$ 7.93	
>100	153	70.14 $\pm$ 14.78	
Teacher's monthly salary, \$			
<600	223	70.73 $\pm$ 12.75	0.06
>600	30	75.27 $\pm$ 8.11	

disagree; 2, disagree; 3, not sure; 4, agree; 5, strongly agree), which was adapted and formulated from the Knowledge, Attitude, and Self-Efficacy Asthma Questionnaire (KASE-AQ) (23). Teachers' responses were scored and added up in discrete values from 0 to 105 based on their knowledge and confidence about their responses and subsequently converted to a percentage of responses that agreed with the expected answer. In addition, the response rate for each question about AD was evaluated from a maximum of 5 points (Tables 1 and 3). According to the Likert scale, a completely true response was accepted as 5 marks when the response was true. Putting all of the questions in the same score made it easier to evaluate the results. Although several general knowledge questionnaires have been developed specifically for children with allergies and their caregivers, we preferred to adapt the KASE-AQ, which has multiple-choice responses. Most other published questionnaires have true or false responses with a third option to cover uncertainty. Although simpler to complete, these questionnaires are less likely to evaluate the knowledge.

One-way analysis of variance and the independent-sample *t* test were used to determine differences in the

TABLE 3. *Teachers' Knowledge About AD (Teacher Response Score Rate for Each Question)*

Question	Mean score	%
Common atopic dermatitis symptoms or signs include		
Itchy rash	4.5	90
Dry skin	4.3	86
Diarrhea*	3.5	70
Fever*	3.2	64
Location of the skin lesions of atopic dermatitis		
Behind the knees	3.9	78
Front of the ankles	3.9	78
Folds of the elbows	3.7	74
Around the neck	3.6	72
Around the ears or eyes	2.7	54
Common atopic dermatitis treatments include		
Antihistamines (e.g., cetirizine, fexofenadine, loratadine)	3.5	70
Elidel cream (pimecrolimus cream 1%)	3.7	74
Topical corticosteroids (e.g., hydrocortisone butyrate 0.1%, mometasone furoate, fluticasone propionate, prednisolone 0.125% cream and ointment)	3.7	74
Moisturizer cream or lotion	3.7	74
Soaps with neutral pH	3.3	66
Immunotherapy*	3.1	62
General questions about atopic dermatitis:		
Atopic dermatitis is a hereditary disease	3.1	62
There is a relation between atopic dermatitis and asthma	3.3	66
There is a relation between atopic dermatitis and allergic rhinitis	3.4	68
There is a relation between atopic dermatitis and food allergy	3.6	72
Woolen clothes are harmful for atopic dermatitis	4.0	80
Cotton clothes are harmful for atopic dermatitis	3.0	60

*Deceptive question is a misleading question used to differentiate real from coincidental answers.

level of AD knowledge. The level of statistical significance was set at $p < 0.05$. Statistical analysis was performed using SPSS 10.0 (SPSS, Inc., Chicago, IL).

RESULTS

Of 206 teachers who worked at the 20 daycare centers, 297 (287 female, 10 male; mean age 26.4 ± 8.1 years [range 20–53 yrs]) filled in the questionnaire (overall response rate 97.1%). Nine teachers did not participate to the study, five of whom declined to participate and four of whom were absent during the study period.

The mean score for the 21 questions was 71.4 ± 12.1 (68.0%) out of a maximum of 105 points. The teachers' response rates for each question ranged from 54% to 90% (Table 3). The rate of teachers with a completely true response for each question ranged from 3.0% to 66.7% (Table 1).

The response rate and the rate of teachers with completely true responses were 90.0% and 66.7%, respectively, for itchy rash and 86.0% and 57.9%, respectively, for dry skin. The response rates and completely true response rates for other symptoms or signs are given in Tables 1 and 3.

The response rates about the location of the skin lesions were as follows: behind the knees, 78.0% (completely true response rate 34.8%); in front of the ankles, 78.0% (completely true response rate 32.2%); on the folds of the elbows, 74.0% (completely true response rate 23.2%); around the neck, 72.0% (completely true response rate 17.9%); and around the ears, 54.0% (completely true response rate 3.0%).

The response rates concerning treatment were as follows: antihistamines, 70.0% (completely true response rate 19.2%); Elidel cream, 74.0% (completely true response rate 19.9%); topical corticosteroids, 74.0% (completely true response rate 21.9%); moisturizer cream or lotion, 74.0% (completely true response rate 20.9%); soaps with neutral pH, 66.0% (completely true response rate 10.6%); and immunotherapy, 62.0% (completely true response rate 14.9%).

The mean response rate about AD being a hereditary disease was 62.0% (completely true response rate 11.9%). These rates were 62% (completely true response rate 7.6%), 66% (completely true response rate 7.7%), and 68% (completely true response rate 17.4%) for its relationship with asthma, allergic rhinitis, and food allergy, respectively. The mean response rate about woolen clothes was 80.0% (completely true response rate 29.2%).

The knowledge level of the teachers was related to the number of children in the daycare center ($p = 0.02$) but was not related to the sex ($p = 0.89$), education level ($p = 0.84$), age ($p = 0.44$), working position ($p = 0.067$), salary ($p = 0.06$), or family history for atopy ($p = 0.43$) of the teachers, or to the location ($p = 0.61$) or ownership ($p = 0.30$) of the daycare center.

DISCUSSION

Teachers are primarily responsible for caring for children during school hours. Their awareness of symptoms of childhood illnesses and allergies is important. Although there are limited reports about teachers' knowledge level regarding asthma (13–22), there is no similar information regarding AD.

In our study the mean knowledge response score for all questions was 71.4 out of a maximum of 105 points (68.0%). These results indicate that teachers in

Istanbul generally have adequate knowledge about AD.

Although the mean of teachers' response scores for each question ranged from 54% to 90%, for completely true responses these rates ranged from 3.0% to 66.7%. These results show that although teachers had some knowledge about AD, they were not sure about their knowledge. Educational programs for teachers in daycare centers may increase their knowledge about AD, and they may be more familiar with AD if educational programs about common allergic diseases are included in their training.

Teachers' knowledge about AD symptoms or signs may be important. The ability of the teacher to consider AD in a child who has itchy rashes and dry skin may help early diagnosis through contacting parents with these concerns. In our study the teachers' completely true response rates for itchy rash and dry skin were satisfactory.

The distribution and skin reaction patterns of AD vary with patient age and disease activity. In infancy AD is generally more acute and involves the face, scalp, and extensor surfaces of the extremities. In older children the rash is generally limited to the classic areas such as flexural folds of the extremities (9). In our study children were 2 to 6 years of age, and at this age the lesions are located in the classic areas. Although the mean response rates regarding the location of AD skin lesions were between 54% and 78%, these rates ranged from 3% to 34.8% for completely true responses. Although teachers knew that AD skin lesions generally occur in the flexural folds of the extremities, most of them did not know that the lesions can be found around the ears and eyes. Awareness of teachers about the typical distribution of skin lesions may be increased with educational programs for early diagnosis of AD.

The knowledge level of teachers about AD treatment was not satisfactory. Mean response rates for questions regarding treatment ranged from 66% to 74%, and completely true response rates were between 10.6% and 21.9%. Although 74% of the respondents correctly answered the question concerning Elidel, only 66% of the respondents correctly answered the question concerning soaps with neutral pH. This is particularly important because frequent use of liquid soaps can cause eczematous skin lesions on the hands of susceptible children.

Although the mean response rates regarding general questions about AD ranged from 62.0% to 80.0%, the completely true response rates ranged from 7.6% to 29.2%. Although the best known item

was the question concerning woolen clothes, the least known was the question concerning the relation between AD and asthma.

Teachers working in daycare centers with more than 100 students were more knowledgeable than teachers working in centers with fewer students. Teachers working in crowded daycare centers have a greater chance to meet allergic children, and thus they may be more experienced about allergic diseases than those working in centers with fewer students.

In conclusion, teachers in daycare centers had some knowledge about AD, but it was not satisfactory. Daycare center-based educational programs for teachers would improve their knowledge level and awareness about AD and other allergic diseases, which could improve their understanding of the disease and the quality of life of affected children in daycare centers.

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