



## Original Article

# The impact of parental attitudes on alexithymia in children with chronic diseases

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### Abstract

**Objectives:** This paper investigated the effect of parental attitudes on alexithymia in children with chronic diseases.

**Methods:** This cross-sectional study was conducted at the pediatric outpatient clinics of a state hospital in the southern and central regions of Turkey. The study population consisted of 256 children with chronic diseases. Data were collected using a personal information form, the parental attitudes scale (PAS), and the alexithymia questionnaire for children (AQC). The data were analyzed using a t-test, analysis of variance, and logistic regression. All stages of the study adhered to ethical principles.

**Results:** Participants had a mean AQC score of  $20.07 \pm 5.83$ . They had a mean PAS "strictness/supervision," "acceptance/involvement," and "psychological autonomy" subscale score of  $30.75 \pm 2.55$ ,  $28.03 \pm 3.89$ , and  $21.13 \pm 4.09$ , respectively. The PAS "acceptance/involvement" subscale score was negatively correlated with the AQC total score and "difficulty identifying feelings" and "difficulty describing feelings" subscale scores ( $p < 0.05$ ). The regression analysis showed that the independent variables explained 20.1% of the dependent variable.

**Conclusion:** In the study, it was determined that the children's alexithymia level was above the medium level. It was determined that the difficulty identifying feelings, difficulty describing feelings, and alexithymia decreased with the increase in acceptance/ involvement, which indicates the democratic attitude commonly adopted by parents.

**Keywords:** Alexithymia; attitude; child; chronic disease; parent.

According to the World Health Organization, chronic diseases kill 41 million people every year, equivalent to 71% of all deaths globally.<sup>[1]</sup> Chronic diseases are becoming as common in children as in adults.<sup>[2]</sup> Advances in medicine and technology have reduced mortality rates and prolonged life expectancy in children with chronic diseases. Although this is a positive development, it also means that those children and their parents have to deal with psychosocial problems for longer periods of time.<sup>[3,4]</sup> Children with chronic diseases are at much higher risk for emotional and behavioral problems than their healthy peers.<sup>[5]</sup> Nap-van der Vlist et al.<sup>[4]</sup> (2021) also found that chronic

disease in children was associated with fatigue, poorer physical functioning, more depressive symptoms, and poorer social functioning. Although children with chronic diseases seem to be better adapted to adverse conditions, they are more likely to be diagnosed with mental or behavioral disorders.<sup>[3]</sup> In a systematic review by Natalucci et al.<sup>[6]</sup> (2018), it was reported that children and adolescents with chronic headaches had higher levels of alexithymia compared to control groups. Prevention of physical, psychological, and social problems in children with chronic diseases can only be possible through effective management and adaptation to chronic diseases.<sup>[5]</sup>

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Parental attitudes and behaviors play a key role in children's ability to adhere to chronic disease management and express their feelings. Children of caring, sensitive, supportive, and protective parents with secure attachments are more likely to adhere to chronic disease management and treatment.<sup>[7,8]</sup> According to Darling and Steinberg (1993), parental attitudes are a constellation of parents' behaviors and verbal–non-verbal expressions that determine the quality of parent-child communication.<sup>[9]</sup> Positive and constructive parenting encourages children to develop healthy personality traits, whereas destructive and harsh parenting leads to personality disorders in children.<sup>[10]</sup> Polloni et al.<sup>[11]</sup> (2022) reported that mothers of children with food allergies had high levels of anxiety and this increased alexithymia in children.

Alexithymia is defined as a personality trait in which one has limited imaginative capacity and difficulty identifying and communicating one's feelings and distinguishing them from physiological responses and thoughts.<sup>[12,13]</sup> There is a correlation between parental attitudes and alexithymia in children. Children with chronic diseases are a risk group for alexithymia.<sup>[6,14]</sup> However, there is a small body of research investigating alexithymia in children with chronic diseases. Aaron et al.<sup>[14]</sup> (2019) found that adolescents with chronic pain were at a higher risk of developing alexithymia and had more difficulty describing their feelings even when talking about symptoms of depression and anxiety than their healthy counterparts. Natalucci et al.<sup>[15]</sup> (2019) also reported a higher prevalence of alexithymia in children with migraines with aura than in healthy subjects.

Some studies have addressed the development of alexithymia in children with chronic diseases, but there is no research looking into the relationship between parental attitudes and alexithymia in children with chronic diseases. We think that parental attitudes may impact adherence to chronic conditions and the development of alexithymia. We also think that our results will help researchers and health-care professionals better understand the phenomenon and pave the way for further research. Therefore, this study was conducted to investigate the effects of parental attitudes on alexithymia in children with chronic diseases.

## Research Questions

- Do parental attitudes affect the level of alexithymia in children with chronic diseases?
- Do sociodemographic characteristics of the child and family affect parental attitudes?
- Do the sociodemographic characteristics of the child and the family affect the level of alexithymia?

## Materials and Method

### Design, Setting, and Sample

This was a cross-sectional study. The study was conducted at the pediatrics polyclinic of a public hospital in the south of

#### What is presently known on this subject?

- The fact that a child has a chronic disease affects the attitudes of their parents.

#### What does this article add to the existing knowledge?

- The alexithymia levels of the children with chronic diseases participating in the study, which are above the average, are affected by parental attitudes.

#### What are the implications for practice?

- Parental attitudes and alexithymia should be assessed in children with chronic diseases, and children and parents should be supported.

Turkey. The study population consisted of all children aged 11–13 years with chronic diseases admitted to the pediatrics polyclinic. The sample size was determined using the formula for a known population. The sample size ( $n=254$ ) was calculated by taking into account the number of children aged 11–13 years with chronic diseases who applied to the pediatric outpatient clinic a year ago ( $n=745$ ).<sup>[16]</sup> The sample consisted of 256 children with chronic diseases (asthma [ $n=74$ ], epilepsy [ $n=55$ ], congenital heart disease [ $n=28$ ], diabetes [ $n=22$ ], Mediterranean anemia [ $n=21$ ], chronic renal failure [ $n=15$ ], muscular dystrophy [ $n=15$ ], juvenile rheumatoid arthritis [ $n=13$ ], and others [ $n=13$ ]). Participants were recruited using haphazard sampling. The inclusion criteria were (1) chronic disease, (2) aged 11–13 years, and (3) no physical (hearing, speech impairment, etc.) or mental impairment that would prevent data collection. Children who had communication problems and were not willing to cooperate were excluded from the study.

## Measurements

Data were collected using a personal information form, the parental attitudes scale (PAS), and the alexithymia questionnaire for children (AQC).

### Personal information form

The personal information form was based on a literature review conducted by the researchers.<sup>[4,17]</sup> The form consisted of items on children's demographic characteristics (age, sex, number of siblings, parents' education and employment status, perceived economic status, family history of chronic diseases, and perceived family relations) and their self-assessment on hospitalization for chronic illness and perceived ability to express feelings.<sup>[4,17]</sup> Three academics specialized in pediatric nursing were consulted for the intelligibility and relevance of the form, which was revised based on their feedback. A pilot study was conducted with ten children with chronic diseases. Based on the pilot study, no modification was made to the form.

### PAS

The PAS was developed by Lamborn, Mounts, Steinberg, and Dornbusch (1991) and adapted to Turkish by Yilmaz (2000).<sup>[18,19]</sup> The scale is used to assess how children aged 10–18 years

perceive their parents' parenting. It consists of 26 items and three subscales: acceptance/involvement (nine items), psychological autonomy (eight items), and strictness/supervision (eight items). The subscale "acceptance/involvement" determines how caring, affectionate, involved, and sensitive parents are in the eyes of their children. The subscale "psychological autonomy" assesses how democratic parents are and how much they encourage their children to express themselves. The subscale "strictness/supervision" determines how controlling children consider their parents. "Acceptance/involvement" and "strictness/supervision" scores higher than average indicate democratic parenting, whereas scores lower than the average indicate permissive/neglectful parenting. "Acceptance/involvement" lower than average and "strictness/supervision" higher than average indicate authoritarian parenting. "Acceptance/involvement" higher than average and "strictness/supervision" lower than average indicate permissive/indulgent parenting. The subscales "acceptance/involvement," "psychological autonomy," and "strictness/supervision" have a Cronbach's alpha of 0.72, 0.82, and 0.76, respectively, which were 0.67, 0.55, and 0.66 in this study.<sup>[18]</sup>

## AQC

The AQC was developed by Rieffe et al.<sup>[13]</sup> (2006) to assess the level of alexithymia in children. The questionnaire was adapted to Turkish by Koçak et al.<sup>[12]</sup> (2015) on sixth and seventh graders aged 11–13. The questionnaire consists of 20 items scored on a scale of 0 to 2 (0=Not true, 1=Sometimes True, 2=Often true). It consists of three subscales: Difficulty identifying feelings (DIF; Items 1, 3, 6, 7, 9, 13, and 14), difficulty describing feelings (DDF; Items 2, 4, 11, 12, and 17), and externally-oriented thinking (EOT; Items 5, 8, 10, 15, 16, 18, 19, and 20). Five items (4, 5, 10, 18, and 19) are reverse-scored (2=Not true, 1=Sometimes True, 0=Often true). Higher scores indicate higher levels of alexithymia.<sup>[13]</sup> Koçak et al.<sup>[12]</sup> (2015) reported the Cronbach's alpha of the Turkish version of the questionnaire as 0.78, which was 0.75 in this study.

## Data Collection

The sample consisted of children admitted to the pediatric outpatient clinic for general follow-up. The research was conducted between October 2018 and June 2019. The researcher collected the data through face-to-face interviews in the measurement room where a nurse makes anthropometric measurements (body weight and height and blood pressure and oxygen saturation) before the examination. The data were collected after the anthropometric measurements were made, and consent was obtained from parents and children. Participants were let into the room one by one to prevent interaction. All distractions were (music, phone, etc.) eliminated. Some participants requested that their parents accompany

them during data collection. Therefore, they were allowed to have their parents in the room during the interviews. The data were collected using the personal information form, followed by the PAS and AQC. Each interview took 15–20 min.

## Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics, Turkey, version 22.0) at a significance level of 0.05. The Kolmogorov–Smirnov test, Q-Q graphs, and histograms were used for normality testing. The data were analyzed using descriptive statistical methods (mean, frequency, percentage, and standard deviation), student t-test, and One-way analysis of variance (ANOVA). The relationship between quantitative data was determined using Pearson's correlation analysis. Linear regression analysis was used to analyze the effect of scale scores on each other.

## Compliance with Ethical Standards

The study was approved by the Atatürk University Faculty of Nursing Ethics Committee (No: 2018–6/7). Permission was obtained from the hospital. Children and their parents were briefed about the research purpose, procedure, safety, and duration. They were also informed that the data would not be shared with third parties, that the participation was voluntary, and that they could withdraw at any time. Verbal and written consent was obtained from those who agreed to participate. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

## Results

Participants had a total AQC score of  $20.07 \pm 5.83$ . They had a mean EOT, DIF, and DDF score of  $7.63 \pm 1.95$ ,  $6.14 \pm 2.88$ , and  $5.54 \pm 2.36$ , respectively. Participants had a PAS "acceptance/involvement," "psychological autonomy," and "strictness/supervision" subscale score of  $28.03 \pm 3.89$  (min: 15; max: 36),  $21.13 \pm 4.09$  (min: 12; max: 34), and  $30.75 \pm 2.55$  (min: 18; max: 32), respectively (Table 1). Parental attitudes were assessed based on the mean PAS subscale scores. Ninety participants (38.7%) had a mean "acceptance/involvement" subscale score below average. One hundred fifty-three participants (59.8%) had a mean "psychological autonomy" subscale score below average. Sixty-six (25.8%) participants had a mean "strictness/supervision" subscale score below average.

Acceptance/involvement was negatively correlated with DIF ( $r = -0.195$ ;  $p < 0.01$ ), DDF ( $r = -0.145$ ;  $p < 0.05$ ), and AQC total score ( $r = -0.182$ ;  $p < 0.01$ ) (Table 2).

**Table 1. Distribution of AQC and PAS scores**

Scale	Min-Max	Mean±SD	Cronbach's alpha	
<b>AQC</b>				
Difficulty identifying feelings	0-14	6.14±2.88	0.663	
Difficulty describing feelings	0-10	5.54±2.36	0.665	
Externally-oriented thinking	3-12	7.63±1.95	0.463	
AQC total	5-37	20.07±5.83	0.747	
<b>PAS</b>				
Acceptance/involvement	15-36	28.03±3.89	0.657	
Psychological autonomy	12-34	21.13±4.09	0.545	
Strictness/supervision	18-32	30.75±2.55	0.776	
PAS total*	-	-	0.656	
	<b>Below mean</b>		<b>Above mean</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
<b>PAS</b>				
Acceptance/involvement	99	38.7	157	61.3
Psychological autonomy	153	59.8	103	40.2
Strictness/supervision	66	25.8	190	74.2

\*: PAS total score not calculated based on the validity and reliability results. AQC: Alexithymia questionnaire for children; PAS: Parental attitudes scale; Min-Max: Minimum-maximum; Mean±SD: Mean±standard deviation.

**Table 2. Correlation between AQC and PAS scores**

AQC	PAS					
	Acceptance/ involvement		Psychological autonomy		Strictness/ supervision	
	r	p	r	p	r	p
Difficulty identifying feelings	<b>-0.195</b>	<b>0.002**</b>	-0.078	0.211	0.036	0.568
Difficulty describing feelings	<b>-0.145</b>	<b>0.020*</b>	-0.104	0.097	0.030	0.635
Externally-oriented thinking	-0.043	0.496	-0.077	0.219	0.026	0.677
AQC total	<b>-0.182</b>	<b>0.003**</b>	-0.117	0.062	0.047	0.453

\*: p<0.05; \*\*: p<0.01. AQC: Alexithymia questionnaire for children; PAS: Parental attitudes scale; r: Pearson's correlation coefficient.

Table 3 shows the distribution of AQC and PAS scores by demographic characteristics and some variables. More than half the participants (52%) were 11-year-old girls. Most participants (91.4%) had two or more siblings. Most parents (mothers: 59.4%; fathers: 51.2%) had a primary school degree. Most mothers (85.2%) were unemployed, while most fathers (88.3%) were employed. Most children (63.6%) perceived their economic status as middle. More than half the children (69.9%) had been hospitalized due to an illness for a while. More than half the children (65.2%) had no family history of chronic illness. Most children (76.6%) defined their family relations as "good." More than half the children (55.9%) thought that they had difficulty expressing their feelings. Most children (80.9%) regarded their parents as overprotective (Table 3).

### Comparison of AQC Scores by Demographic Characteristics

There was no difference in terms of age, sex, number of siblings, parents' education and employment status, and family history of chronic diseases AQC scores ( $p>0.05$ ). Participants who perceived their economic status as "low" had a significantly higher mean DIF score than those who perceived their economic status as "middle" ( $p<0.05$ ). Participants who had been hospitalized before had a significantly higher mean DDF score than those who had not been hospitalized before ( $p<0.05$ ). Participants who defined family relations as "neither good nor bad" or "bad" had a significantly higher mean DIF score than those who defined family relations as "good" ( $p<0.01$ ). Participants who thought they had difficulty expressing their

**Table 3. Distribution of AQC and PAS scores by demographic characteristics and some variables (n=256)**

Demographic characteristics	n	%	AQC				PAS						
			DIF	DDF	EOT	AQC total	Acceptance/ involvement	Psychological autonomy	Strictness/ supervision				
			Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD				
Age (year)													
11	133	52.0	5.90±2.95	5.42±2.40	7.59±1.99	19.68±6.01	28.29±3.74	21.20±3.98	31.16±2.03				
12	42	16.4	5.83±2.70	5.74±2.60	8.10±1.78	20.33±5.76	28.38±3.39	20.17±3.89	30.64±2.52				
13	81	31.6	6.70±2.83	5.62±2.18	7.47±1.95	20.58±5.57	27.41±4.30	21.52±4.33	30.12±3.17				
F;p			2.258;0.107	0.358;0.699	1.516;0.221	0.655;0.520	1.523;0.220	1.557;0.213	4.280;0.015*				
Gender													
Female	133	52.0	6.04±2.94	5.35±2.33	7.47±1.99	19.60±5.91	28.14±4.09	21.23±3.94	30.91±2.32				
Male	123	48.0	6.26±2.83	5.74±2.38	7.80±1.89	20.58±5.71	27.90±3.66	21.02±4.27	30.57±2.78				
t;p			-0.616;0.538	-1.337;0.182	-1.363;0.174	-1.341;0.181	0.494;0.622	0.407;0.684	1.067;0.287				
Number of siblings													
One	22	8.6	5.41±3.14	4.64±2.57	6.95±1.88	17.68±6.30	29.18±2.98	22.05±5.25	31.27±1.07				
Two or more	234	91.4	6.21±2.85	5.62±2.32	7.70±1.94	20.29±5.74	27.91±3.94	21.05±3.96	30.69±2.64				
t;p			-1.252;0.643	-1.878;0.463	-1.717;0.907	-2.024;0.403	1.461;0.321	0.869;0.049**	2.004;0.05				
Mother's education (degree)													
Illiterate	46	18.0	7.04±3.06	5.85±2.18	7.78±2.15	21.50±6.12	27.37±4.12	21.59±4.06	29.59±3.80				
Primary school	152	59.4	6.02±2.78	5.49±2.45	7.52±1.92	19.77±5.77	27.67±3.78	20.98±4.11	30.84±2.27				
High school	43	16.8	5.86±2.82	5.53±2.26	7.84±1.80	20.00±5.67	29.55±3.14	21.60±3.78	31.30±1.72				
Bachelor's	15	5.9	5.47±3.23	5.00±2.30	7.73±2.05	18.93±5.74	29.20±4.95	19.86±4.82	31.66±1.04				
KW;p			5.719;0.126	1.314;0.726	0.989;0.804	3.591;0.309	12.285;0.006*	4.040;0.257	8.699;0.034**				
Father's education (degree)													
Illiterate	20	7.8	7.60±3.32	6.50±2.24	8.15±2.23	23.10±6.55	26.65±4.36	19.95±3.85	28.80±4.79				
Primary school	131	51.2	6.14±2.84	5.51±2.34	7.40±1.98	19.8±5.67	27.85±3.91	21.07±3.91	30.77±2.25				
High school	76	29.7	5.86±2.67	5.36±2.34	7.84±1.79	19.79±5.6	28.51±3.46	21.60±4.31	30.97±2.22				
Bachelor's	29	11.3	5.90±3.14	5.41±2.53	7.76±1.94	19.9±6.29	28.48±4.32	20.96±4.42	31.37±1.91				
KW;p			5.762;0.124	3.450;0.327	4.001;0.261	5.949;0.114	3.839;0.279	4.454;0.216	4.401;0.221				
Mother's employment status													
Unemployed	218	85.2	6.16±2.87	5.56±2.34	7.62±1.94	20.08±5.79	27.95±3.75	21.23±4.14	30.71±2.59				
Employed	38	14.8	6.08±3.01	5.42±2.51	7.68±2.00	20.00±6.13	28.45±4.60	20.58±3.80	30.97±2.35				
t;p			0.152;0.880	0.322;0.747	-0.176;0.860	0.080;0.936	-0.722;0.471	0.904;0.367	-0.595;0.553				
Father's employment status													
Unemployed	30	11.7	7.00±2.95	5.73±2.12	7.50±2.11	20.90±5.58	27.50±4.04	20.87±4.28	29.47±4.07				
Employed	226	88.3	6.03±2.86	5.51±2.39	7.65±1.93	19.96±5.86	28.10±3.87	21.17±4.07	30.92±2.24				
t;p			1.736;0.084	0.489;0.625	-0.397;0.692	0.830;0.407	-0.791;0.430	-0.379;0.705	-2.965;0.003**				

Table 3. Cont.

Demographic characteristics	n	%	AQC			PAS							
			DIF	DDF	EOT	AQC total	Acceptance/ involvement	Psychological autonomy	Strictness/ supervision				
			Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD				
Perceived economic status													
High	58	22.7	5.86±2.98	5.55±2.17	7.59±1.85	19.83±5.57	28.12±4.01	21.91±3.74	31.07±2.13				
Middle	163	63.6	5.96±2.79	5.45±2.49	7.62±2.01	19.71±6.00	28.31±3.53	20.89±4.29	30.67±2.69				
Low	35	13.7	7.49±2.87	5.91±2.05	7.77±1.85	22.17±5.05	26.57±4.92	20.97±3.59	30.54±2.58				
F;p			4.528;0.012*	0.563;0.570	0.108;0.897	2.681;0.070	2.940;0.055	1.376;0.255	0.636;0.530				
Hospitalization due to illness													
Yes	179	69.9	6.21±2.92	5.75±2.32	7.69±1.92	20.42±5.83	28.02±3.99	20.86±3.88	30.82±2.36				
No	77	30.1	6.00±2.82	5.04±2.39	7.49±2.00	19.25±5.77	28.04±3.66	21.77±4.50	30.57±2.97				
t;p			0.525;0.600	2.224;0.027*	0.751;0.454	1.487;0.138	-0.031;0.975	-1.630;0.104	0.717;0.474				
Family history of chronic disease													
Yes	89	34.8	6.04±3.07	5.22±2.57	7.60±2.01	19.65±6.46	28.15±3.90	21.11±3.96	30.16±3.17				
No	167	65.2	6.20±2.79	5.70±2.23	7.65±1.92	20.29±5.47	27.96±3.89	21.14±4.17	31.06±2.10				
t;p			0.403;0.688	1.541;0.125	0.224;0.823	0.839;0.402	-0.356;0.722	0.058;0.954	2.727;0.007**				
Perceived family relations													
Good	195	76.6	5.84±2.85	5.58±2.43	7.65±2.01	19.80±5.93	28.38±3.76	21.16±4.20	30.92±2.35				
Neither good nor bad/bad	60	23.5	7.15±2.80	5.38±2.12	7.58±1.75	20.95±5.44	26.88±4.11	21.03±3.76	30.18±3.09				
t;p			-3.139;0.002**	0.569;0.570	0.225;0.822	-1.339;0.182	2.637;0.009**	0.215;0.830	1.962;0.048*				
Expressing feelings easily													
Yes	113	44.1	5.35±3.08	4.28±2.31	7.12±1.96	17.43±5.95	28.34±3.95	21.57±4.38	30.58±2.62				
No	143	55.9	6.77±2.56	6.52±1.88	8.03±1.84	22.15±4.81	27.78±3.83	20.79±3.83	30.88±2.50				
t;p			-4.012;0.001**	-8.547;0.001**	-3.818;0.001**	-7.020;0.001**	1.132;0.259	1.511;0.132	-0.952;0.342				
Identifying parental attitude													
Neglectful	3	1.2	7.00±1.73	7.00±1.73	8.66±2.30	23.66±5.13	23.00±5.29	20.66±2.08	32.00±4.16				
Authoritarian	33	12.9	6.60±2.26	5.39±1.85	8.30±1.53	21.03±4.24	26.30±4.61	20.00±3.64	29.96±3.19				
Overprotective	207	80.9	6.03±2.97	5.55±2.42	7.57±1.96	19.93±6.00	28.46±3.48	21.24±4.06	30.94±2.31				
Democratic	13	5.1	6.46±3.04	5.30±2.65	6.61±2.10	19.00±6.53	26.53±5.50	22.38±5.50	30.00±3.53				
KW;p			2.725;0.436	1.554;0.670	7.290;0.063	2.516;0.472	11.376;0.010*	3.488;0.322	6.254;0.100				

\*: p<0.05; \*\*: p<0.01. AQC: Alexithymia questionnaire for children; PAS: Parental attitudes scale; DIF: Difficulty identifying feelings; DDF: Difficulty describing feelings; EOT: Externally-oriented thinking; AQC: Alexithymia questionnaire for children; F: One-Way analysis of variance (ANOVA); t: Student t-test; KW: Kruskal Wallis; SD: Standard deviation.

**Table 4. Linear regression analysis on the relationship between AQC scores and PAS scores and perceived ability to express feelings**

Independent variables	Coefficients	SE	t	p	%95 CI	
					Upper limit	Lower limit
Constant	31.744	3.066	10.354	0.001**	25.706	37.782
Acceptance/involvement	-0.245	0.085	-2.866	0.005**	-0.413	-0.077
Psychological autonomy	-0.134	0.081	-1.656	0.099	-0.294	0.025
Perceived ability to express feelings	0.201	0.667	-6.719	0.001**	-5.794	-3.167

\*\* : p<0.01. Dependent variable: AQC total score. AQC: Alexithymia questionnaire for children; PAS: Parental attitudes scale; SE: Standard error; CI: Confidence interval.

feelings had a significantly higher mean DDF score than those who thought they could express their feelings easily ( $p<0.01$ , Table 3).

### Comparison of PAS Scores by Demographic Characteristics

There was no difference in terms of sex, father's education level, mother's employment status, and socioeconomic status PAS subscale scores ( $p>0.05$ ). The "strictness/supervision" scores differed by age. The "psychological autonomy" scores differed by the number of siblings. The "acceptance/involvement" and "strictness/supervision" scores differed by mothers' education. The "strictness/supervision" scores differed by fathers' employment status. The "strictness/supervision" scores differed by family history of chronic diseases. The "acceptance/involvement" and "strictness/supervision" scores differed by perceived family relations ( $p<0.05$ ). Participants 11 years of age had a significantly higher "strictness/supervision" score than those 13 years of age. Participants with one sibling had a significantly higher "psychological autonomy" score than those with two or more siblings. Participants whose mothers had a high school degree had a significantly higher "acceptance/involvement" score than participants with illiterate mothers and those whose mothers had a primary school degree ( $p<0.05$ ). Participants with illiterate mothers had a significantly lower "strictness/supervision" score than those whose mothers had a high school and bachelor's degree ( $p<0.05$ ). Participants whose fathers were employed had a significantly higher "strictness/supervision" score than those whose fathers were unemployed or retired. Participants with no family history of chronic diseases had a significantly higher "strictness/supervision" score than those with a family history of chronic diseases ( $p<0.01$ ). Participants who perceived family relations as "good" had significantly higher "acceptance/involvement" and "strictness/supervision" scores than those who perceived family relations as "neither good nor bad" or "bad." Participants who defined their parents' attitudes as "overprotective" had a significantly higher "acceptance/involvement" score than those who defined their parents' attitudes as "neglectful" and "authoritarian" ( $p<0.05$ ) (Table 3).

A univariate linear regression analysis was used to determine the effect of parental attitudes on alexithymia in children. The analysis involved the variables of PAS subscale scores that were, or almost were, statistically significant and "perceived ability to express feelings." PAS "strictness/supervision" subscale scores were excluded from the analysis because it would have caused multicollinearity problems.

The regression analysis on the effect of the variables on the AQC total score showed that the model was highly significant ( $R^2=0.201$ ) ( $p<0.01$ ). The total mean AQC score was 31.74 with a standard error of 3.066 ( $p<0.01$ ) when all variables were kept constant. One unit of decrease in the "acceptance/involvement" score led to a 0.2 (0.245) unit of increase in the AQC total score when other variables were kept constant ( $p<0.01$ ). Participants who had difficulty expressing their feelings had about two points higher AQC total scores than those who could express their feelings when other variables were kept constant ( $p<0.01$ ). Although the "psychological autonomy" subscale score did not affect the AQC total score, we decided to keep it in the model due to the explanatory power of the model ( $p>0.05$ , Table 4).

### Discussion

Alexithymia is characterized by limited imagination and difficulties in recognizing and distinguishing emotions from physical responses and thoughts. Children with chronic diseases have a higher risk of developing alexithymia.<sup>[14]</sup> This study examined the effect of parental attitudes on alexithymia in children with chronic diseases. Participants had moderate levels of alexithymia. They had the highest and lowest AQC scores on the EOT and DDF subscales, respectively. Silvestri et al.<sup>[20]</sup> (2019) also reported that children with tic disorders had the highest and lowest AQC scores on the EOT and DDF subscales, respectively. Research, in general, shows a high prevalence of alexithymia in children with chronic diseases.<sup>[6,14,20]</sup> Therefore, our results are consistent with the literature.

PAS "acceptance/involvement" and "strictness/supervision" subscale scores above average indicate democratic parenting, which promotes psychosocial development.<sup>[18,19]</sup> Our

participants had “acceptance/involvement” and “strictness/supervision” scores significantly higher than average, indicating that they perceived their parents’ attitudes as democratic. Sicouri et al.<sup>[21]</sup> (2017) found that parents of children with asthma were more overprotective than those of children without asthma. Vrijmoet–Wiersma et al.<sup>[22]</sup> (2009) reported that stress, anxiety, overprotective, and indulgent parenting were more common in parents of children with congenital cardiac disease than in their control counterparts. Nixon (2012) conducted a cohort study to investigate the effect of parenting style on children’s social and emotional outcomes. The researchers determined that parents of children with chronic diseases were more authoritarian than those of children without chronic diseases.<sup>[23]</sup> The difference between this study and the literature may be due to the limited evaluation of children’s parental attitudes because the measurement tool selected as the most appropriate for the sample group in this study did not measure protective parental attitudes.

This study also looked into the correlation between PAS and AQC total and subscale scores. PAS “acceptance/involvement” subscale scores were negatively correlated with AQC total score and DIF and DDF subscale scores. This result indicates that the higher the parental acceptance/involvement, the less likely the children are to develop alexithymia and have difficulty identifying and describing their feelings. The extent to which children can identify their feelings depends on what type and intensity of feelings they share with their parents and how much and often they share them.<sup>[24]</sup> Children of emotionally aloof and strict parents with overprotective, neglecting, or rejecting styles of parenting are more likely to develop alexithymia.<sup>[24,25]</sup> On the other hand, children of warm and democratic parents are better at developing emotional, social, and cognitive competencies and identifying and managing their emotions.<sup>[7,8,26]</sup> Yazar (2018) investigated the relationship between alexithymia and personality traits and life satisfaction and found that children of democratic parents had lower AQC scores than those of neglectful, overprotective, or authoritarian parents.<sup>[27]</sup> Our results also showed that children of democratic parents had lower levels of alexithymia.

This section compared participants’ AQC and PAS scores based on their demographic characteristics and presented the results under headings.

### Discussion of AQC Scores by Demographic Characteristics

Participants who perceived their economic status as “low” had a significantly higher mean DIF score than those who perceived their economic status as “middle.” Bakan and Gülpınar (2019) also found that adolescents who perceived their family income as “low” had higher levels of alexithymia than those who perceived their family income

as “high.”<sup>[28]</sup> Our participants who had been hospitalized before had a higher DDF score than those who had not been hospitalized before. The hospital is an unfamiliar environment with strangers and different furniture and equipment. Therefore, it is no surprise that hospitalized children experience anxiety, fear, agitation, and irritability.<sup>[29]</sup> The adverse impacts of hospitalization can explain why hospitalized children have more difficulty expressing their feelings than those who are not hospitalized.

Family is the first and most important environment for development. Research shows that strong family ties and relationships prevent alexithymia in children.<sup>[30,31]</sup> Our participants who defined their family relationships as “neither good nor bad” or “bad” also had higher DIF scores than those who defined their family relationships as “good.” Janiec et al.<sup>[32]</sup> (2019) looked into the effect of family and demographic characteristics on alexithymia in children and noted a positive correlation between alexithymia and family problems. We also investigated the relationship between “perceived ability to express feelings” and AQC scores. The results showed that participants who thought they had difficulty expressing their feelings had higher AQC total and subscale scores than those who did not think they had difficulty expressing their feelings. Young children and adolescents have difficulty expressing their feelings due to inadequate emotional development and immature brain areas. Therefore, it is no surprise that children who cannot express their feelings are more likely to develop symptoms of alexithymia.<sup>[33,34]</sup>

### Discussion of PAS Scores by Demographic Characteristics

Participants 11 years of age had a significantly higher “strictness/supervision” score than those 13 years of age. Ergin (2015) reported a negative correlation between age and strictness/supervision scores in adolescents.<sup>[35]</sup> Wang et al.<sup>[36]</sup> (2005) also found that parents of younger children were stricter and more controlling than those of older children. Participants with one sibling had a significantly higher “psychological autonomy” score than those with two or more siblings. This may be because most of our participants had two or more siblings, which means that parents spend less time with each child, resulting in reduced parental investment and low levels of affection and attention. However, earlier studies have reported no relationship between the number of siblings and “psychological autonomy” scores.<sup>[35,37]</sup>

Participants whose mothers had a high school degree had a significantly higher “acceptance/involvement” score than those with illiterate mothers and those whose mothers had a primary school degree. Participants with illiterate mothers had a significantly lower “strictness/supervision” score than those whose mothers had a high school and bachelor’s degree. Bu-



lut (2019) also found that children whose mothers had a high school degree or higher had a higher “acceptance/involvement” score than those whose mothers were illiterate or had a primary school degree and that children whose mothers had a primary school degree or higher had a higher “strictness/supervision” score than those of illiterate mothers.<sup>[38]</sup>

Participants whose fathers were employed had a significantly higher “strictness/supervision” score than those whose fathers were unemployed. Gaertner et al.<sup>[39]</sup> (2007) looked into father involvement and parental attitudes and determined that fathers were more authoritarian than mothers. The researchers attributed this result to the fact that most fathers worked more than 30-h a week, and therefore, had less time to fulfill their parenting responsibilities and higher levels of stress than mothers. Our result may be because most parents perceived their economic status as “middle” or “low,” and most mothers were unemployed, which means that fathers felt more financial pressure to provide for their families, resulting in higher levels of stress.

Participants with no family history of chronic diseases had a significantly higher “strictness/supervision” score than those with a family history of chronic diseases. Parents are devastated and succumb to grief when their child is diagnosed with a chronic disease. Some parents can get out of that grief and develop positive parental attitudes by adopting effective coping strategies. However, some parents fail to develop the necessary coping strategies and instead adopt strict, overprotective, or rejecting styles of parenting.<sup>[40]</sup> Our participants with no family history of chronic diseases had a higher “strictness/supervision” score, probably because it was the 1<sup>st</sup> time they had a family member diagnosed with a chronic illness, and therefore, they had not yet developed the necessary coping strategies, resulting in them becoming more oriented toward “strictness/supervision” style of parenting.

Participants who perceived family relations as “good” had significantly higher “acceptance/involvement” and “strictness/supervision” scores than those who perceived family relations as “neither good nor bad” or “bad”. This result indicates that parents have a highly democratic style of parenting, resulting in a healthy parent-child relationship. Most participants perceived their parents’ attitudes as “overprotective.” Participants who defined their parents’ attitudes as “overprotective” had a higher “acceptance/involvement” score than those who defined their parents’ attitudes as “neglectful” and “authoritarian”. Overprotective parents are more likely to be overcontrolling, overattentive, and overinvolved. Therefore, it is no surprise that children who perceive their parents’ attitudes as “overprotective” have higher “acceptance/involvement” scores.<sup>[41]</sup> However, participants had a higher PAS “democratic” score than “authoritarian” and “overprotective” scores. This difference may be because we

did not use a comprehensive instrument to measure the overprotective style of parenting, and therefore, participants failed to distinguish it from the democratic one.

We performed a regression analysis to determine the effect of parental attitudes on alexithymia. The results showed that one unit of decrease in the “acceptance/involvement” subscale score led to a 0.245 unit increase in the AQC total score. Research also shows that low “acceptance/involvement” scores indicate negative parental attitudes, resulting in a higher prevalence of alexithymia in children.<sup>[24,25]</sup> The regression analysis on “perceived ability to express feelings” and AQC total score showed that participants who had difficulty expressing their feelings had about two points higher AQC total score than those who could express their feelings. One should be able to generate feelings and recognize them to be able to express them.<sup>[42]</sup> People with alexithymia cannot express their feelings easily because they have difficulty recognizing and identifying them and differentiating them from bodily sensations and thoughts.<sup>[12,13]</sup> Therefore, our results indicate that children who have difficulty expressing their feelings are likely to have higher levels of alexithymia.

### Limitations

The study had four limitations: First, the research was conducted only in one center. Second, the data were based on self-report. Third, the results were sample-specific. Fourth, children completed the scales based on their experience and knowledge because we did not inform them of parental attitudes.

### Conclusion

Our participants had a moderate level of alexithymia. They had “acceptance/involvement” and “strictness/supervision” scores above average, indicating that their parents were mostly democratic. An increase in PAS “acceptance/involvement” scores led to a decrease in AQC total and DIF and DDF subscale scores. There was a negative correlation between “acceptance/involvement” and AQC total scores. Participants who had difficulty expressing their feelings had a higher AQC total score than those who did not have difficulty expressing their feelings. Health-care professionals should be provided with training on the effect of parental attitudes on alexithymia in children with chronic diseases. Nurses should use appropriate instruments to assess parental attitudes and brief parents on the impact of parenting on children’s well-being. Parents should be informed that democratic parenting promotes emotional development and reduces the level of alexithymia. We think that these measures can help reduce the risk of alexithymia development in children with chronic diseases. Moreover, parents and health-care professionals should collaborate to make sure that children with chronic diseases continue to receive appropriate care at home.

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