

**The humanistic burden of atopic dermatitis in Greece: a cross-sectional study**

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**SUPPLEMENTARY MATERIAL**

**Supplementary Table 1.** QoL, sleep problems, anxiety, and depression in AD patients based on DLQI.

	<b>Overall</b>	<b>Clear or almost clear/mild eczema</b>	<b>Moderate eczema</b>	<b>Severe/very severe eczema</b>	<b>p-value</b>
	<b>N=150</b>	<b>N=56</b>	<b>N=76</b>	<b>N=18</b>	
<b>Impact of AD in QoL (DLQI), last week</b>					
No effect	14 (9.3%)	13 (23.2%)	1 (1.3%)	0 (0.0%)	
Small effect	29 (19.3%)	22 (39.3%)	7 (9.2%)	0 (0.0%)	
Moderate effect	44 (29.3%)	15 (26.8%)	27 (35.5%)	2 (11.1%)	<b>&lt;0.001**</b>
Very large effect	52 (34.7%)	6 (10.7%)	37 (48.7%)	9 (50.0%)	
Extremely large effect	11 (7.3%)	0 (0.0%)	4 (5.3%)	7 (38.9%)	
<b>DLQI score [range: 0-30], Median (Q1-Q3)</b>	9.0 (4.0-15.0)	4.0 (2.0-7.0)	11.0 (7.0-15.0)	18.5 (15.0-26.0)	<b>&lt;0.001<sup>◇</sup></b>
<b>DLQI subscales</b>					
Symptoms and feelings [range: 0-6], Median (Q1-Q3)	3.0 (2.0-4.0)	2.0 (1.0-3.0)	4.0 (3.0-4.0)	6.0 (4.0-6.0)	<b>&lt;0.001<sup>◇</sup></b>
Daily activities [range: 0-6], Median (Q1-Q3)	2.0 (0.0-3.0)	0.0 (0.0-2.0)	2.0 (1.0-3.5)	5.0 (2.0-5.0)	<b>&lt;0.001<sup>◇</sup></b>
Leisure [range: 0-6], Median (Q1-Q3)	1.0 (0.0-2.0)	0.0 (0.0-1.0)	1.0 (0.0-2.0)	3.5 (1.0-6.0)	<b>&lt;0.001<sup>◇</sup></b>
Work and school [range: 0-3], Median (Q1-Q3)	1.0 (0.0-3.0)	0.0 (0.0-0.0)	1.0 (0.0-3.0)	3.0 (2.0-3.0)	<b>&lt;0.001<sup>◇</sup></b>
Personal relationships [range: 0-6], Median (Q1-Q3)	0.0 (0.0-3.0)	0.0 (0.0-0.0)	1.0 (0.0-3.0)	2.5 (1.0-4.0)	<b>&lt;0.001<sup>◇</sup></b>
Treatment [range: 0-3], Median (Q1-Q3)	0.0 (0.0-1.0)	0.0 (0.0-0.0)	1.0 (0.0-1.0)	2.0 (1.0-2.0)	<b>&lt;0.001<sup>◇</sup></b>
<b>AIS-8 score [range: 0-24], Median (Q1-Q3)</b>	6.5 (0.0-10.0)	0.0 (0.0-2.0)	8.0 (5.5-11.5)	10.0 (8.0-14.0)	<b>&lt;0.001<sup>◇</sup></b>
<b>Suffering with insomnia [AIS-8 score≥6], n (%)</b>					
Yes	83 (55.3%)	9 (16.1%)	57 (75.0%)	17 (94.4%)	<b>&lt;0.001**</b>
No	67 (44.7%)	47 (83.9%)	19 (25.0%)	1 (5.6%)	
<b>GAD-7 score [range: 0-21], Median (Q1-Q3)</b>	5.0 (3.0-9.0)	3.0 (1.0-5.5)	6.0 (3.5-9.0)	10.0 (6.0-13.0)	<b>&lt;0.001<sup>◇</sup></b>

<b>Anxiety severity, n (%)</b>					
Minimal anxiety (score: 0-4)	69 (46.0%)	38 (67.9%)	28 (36.8%)	3 (16.7%)	
Mild anxiety (score: 5-9)	47 (31.3%)	11 (19.6%)	31 (40.8%)	5 (27.8%)	<0.001**
Moderate anxiety (score: 10-14)	18 (12.0%)	5 (8.9%)	6 (7.9%)	7 (38.9%)	
Severe anxiety (score ≥15)	16 (10.7%)	2 (3.6%)	11 (14.5%)	3 (16.7%)	
<b>PHQ-9 score [range: 0-27], Median (Q1-Q3)</b>	4.0 (2.0-8.0)	1.5 (0.0-4.0)	5.5 (3.0-9.0)	8.0 (5.0-11.0)	<0.001 <sup>◇</sup>
<b>Depression severity, n (%)</b>					
None-minimal (score: 0-4)	81 (54.0%)	45 (80.4%)	32 (42.1%)	4 (22.2%)	<0.001**
Mild depression (score: 5-9)	42 (28.0%)	8 (14.3%)	26 (34.2%)	8 (44.4%)	
Moderate to severe depression (score: 10-27)	27 (18.0%)	3 (5.4%)	18 (23.7%)	6 (33.3%)	
<b>“How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?”, n (%)</b>	<b>N=149</b>	<b>N=55</b>			
Not difficult at all	48 (32.2%)	34 (61.8%)	12 (15.8%)	2 (11.1%)	
Somewhat difficult	81 (54.4%)	19 (34.5%)	52 (68.4%)	10 (55.6%)	<0.001**
Very difficult	18 (12.1%)	2 (3.6%)	11 (14.5%)	5 (27.8%)	
Extremely difficult	2 (1.3%)	0 (0.0%)	1 (1.3%)	1 (5.6%)	

<sup>◇</sup>Kruskal Wallis test except otherwise specified; \*\*Fisher’s exact test; n, number; SD, standard deviation; Q, quartiles; PHQ-9, Patient Health Questionnaire; Q, quartiles; QoL, quality of life; DLQI, Dermatology Life Quality Index; AIS, Athens Insomnia Scale; GAD-7, Generalized Anxiety Disorder 7-Item Scale.

**Supplementary Table 2.** Factors associated with QoL and insomnia (univariate and multivariate models) (N=150).

	Impact of AD in QoL				Insomnia			
	Univariate models <sup>1</sup>		Multivariate model <sup>2</sup> N=148		Univariate models <sup>1</sup>		Multivariate model <sup>2</sup> N=148	
Independent variables	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
<b>Sex</b>								
Female vs. Male	1.78 (0.92, 3.45)	<b>0.088</b>	1.05 (0.39, 2.76)	0.942	1.40 (0.73, 2.68)	0.311		
<b>Age, years</b>								
	0.98 (0.95, 1.01)	<b>0.136</b>	0.99 (0.95, 1.04)	0.719	1.00 (0.97, 1.03)	0.969		
<b>BMI</b>								
Overweight vs. healthy weight	0.69 (0.34, 1.40)	0.280			0.79 (0.40, 1.57)	<b>0.049</b>	1.47 (0.52, 4.11)	0.203
Obese vs. healthy weight	1.57 (0.55, 4.46)				4.21 (1.12, 15.85)		5.44 (0.84, 35.19)	
<b>Marital status</b>					<b>N=147</b>			
Married/cohabitation vs. unmarried	0.63 (0.31, 1.26)	0.397			0.75 (0.37, 1.48)	0.664		
Divorced vs. unmarried	0.42 (0.12, 1.47)				0.72 (0.23, 2.27)			
Widow/er vs. unmarried	0.53 (0.05, 6.08)							
<b>Occupational status</b>	<b>N=149</b>				<b>N=149</b>			
Employee vs. freelancer/self-employed	1.07 (0.49, 2.34)	0.847			0.80 (0.37, 1.73)	0.701		
Unemployed vs. freelancer/self-employed	1.56 (0.34, 7.02)				0.77 (0.17, 3.46)			
Retired vs. freelancer/self-employed	0.62 (0.11, 3.56)				4.62 (0.51, 41.48)			
Student vs. freelancer/self-employed	1.69 (0.63, 4.50)				1.15 (0.43, 3.11)			

Household vs. freelancer/self-employed	1.56 (0.20, 12.05)				0.77 (0.10, 5.94)			
<b>Occupation (dermatitis-related)</b>								
Dermatitis-related jobs vs. other jobs	1.30 (0.60, 2.81)	0.497			1.95 (0.87, 4.37)	0.104	1.47 (0.51, 4.28)	0.478
<b>Education</b>								
Bachelor's degree vs. primary school/lower secondary education/upper secondary education	0.80 (0.38, 1.66)	0.601			0.72 (0.35, 1.49)	0.206		
Master's/Doctoral degree vs. primary school	1.22 (0.50, 2.98)				1.61 (0.64, 4.07)			
<b>Age at AD diagnosis, years</b>	<b>N=149</b>				<b>N=149</b>			
	0.93 (0.90, 0.97)	<b>&lt;0.001</b>	0.96 (0.91, 1.002)	0.062	0.95 (0.93, 0.98)	<b>0.002</b>	0.97 (0.93, 1.01)	0.100
<b>Comorbidities<sup>3</sup></b>								
One vs. none	1.19 (0.47, 3.00)	<b>&lt;0.001</b>			1.97 (0.86, 4.50)	<b>&lt;0.001</b>		
Two vs. none	8.23 (2.89, 23.47)				21.43 (4.62, 99.47)			
Three or more vs. none	12.80 (4.10, 39.97)				5.90 (2.06, 16.93)			
<b>Comorbidities (each vs. no)</b>								
Asthma	1.58 (0.78, 3.22)	0.202			1.24 (0.61, 2.53)	0.551		
Food allergies	6.16 (2.70, 14.06)	<b>&lt;0.001</b>	1.94 (0.61, 6.11)	0.260	8.18 (2.98, 22.51)	<b>&lt;0.001</b>	3.81 (1.03, 14.13)	<b>0.045</b>
GI problems	26.88 (3.44, 209.77)	<b>0.002</b>	21.51 (2.39, 193.29)	<b>0.006</b>	6.59 (1.44, 30.15)	<b>0.015</b>	2.19 (0.34, 14.26)	0.412
Rhinitis	5.68 (2.59, 12.45)	<b>&lt;0.001</b>	4.07 (1.39, 11.90)	<b>0.010</b>	5.12 (2.17, 12.07)	<b>&lt;0.001</b>	2.57 (0.81, 8.10)	0.107
Diabetes	2.88 (0.51, 16.25)	0.230			4.23 (0.48, 37.12)	0.193		
Hypertension	1.04 (0.22, 4.81)	0.962			2.08 (0.39, 11.10)	0.390		

<b>Family history of AD, rhinitis, or asthma</b>	<b>N=149</b>				<b>N=149</b>			
Yes vs. No	2.05 (1.06, 3.98)	<b>0.034</b>	2.02 (0.78, 5.22)	0.148	1.26 (0.66, 2.40)	0.487		
<b>AD severity (POEM)<sup>4</sup></b>								
Moderate eczema vs. clear or almost clear/mild eczema	9.76 (3.74, 25.48)	<b>&lt;0.001</b>	4.64 (1.54, 14.00)	<b>&lt;0.001</b>	15.67 (6.48, 37.85)	<b>&lt;0.001</b>	11.10 (4.12, 29.89)	<b>&lt;0.001</b>
Severe/very severe eczema vs. clear or almost clear/mild eczema	66.67 (12.22, 363.63)		91.14 (12.06, 688.77)		88.78 (10.45, 753.92)		79.47 (7.91, 798.20)	
<b>POEM score</b>								
	1.35 (1.22, 1.50)	<b>&lt;0.001</b>			1.45 (1.29, 1.63)	<b>&lt;0.001</b>		

Logistic regression with dependent variables: the impact of AD in QoL last week (based on DLQI score) categorized as: 1=very large/extremely large effect (DLQI score  $\geq 11$ ), 0=no effect/small/moderate (DLQI score  $< 11$ ); insomnia (based on AIS-8 score) categorized as: 1=Yes (AIS-8 score  $\geq 6$ ), 0=No (AIS-8 score  $< 6$ ). <sup>1</sup>All variables with  $p < 0.15$  in the univariate model, were inserted to the multivariate model; <sup>2</sup>all variables with  $p < 0.05$  in the multivariate model were deemed to have a significant effect; <sup>3</sup>number of comorbidities variable was not inserted in the multivariate model, as it was statistically significantly associated with the variables for food allergies, GI problems and rhinitis; <sup>4</sup>the numeric POEM score was not inserted in the multivariate model, as it was statistically significantly associated with AD severity based on POEM score.

N, number; QoL, quality of life; DLQI, Dermatology Life Quality Index; POEM, Patient-Oriented Eczema Measure; OR, odds ratio; AD, atopic dermatitis; GI, gastrointestinal.

**Supplementary Table 3.** Factors associated with anxiety and depression (univariate and multivariate models) (N=150).

Independent variables	Anxiety				Depression			
	Univariate models <sup>1</sup>		Multivariate model <sup>2</sup> N=148		Univariate models <sup>1</sup>		Multivariate model <sup>2</sup> N=148	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
<b>Sex</b>								
Female vs. male	2.20 (1.14, 4.24)	<b>0.019</b>	1.71 (0.77, 3.76)	0.185	2.38 (1.22, 4.62)	<b>0.011</b>	2.08 (0.87, 5.00)	0.101
<b>Age, years</b>								
	1.00 (0.97, 1.02)	0.798			1.00 (0.98, 1.03)	0.889		
<b>Age group</b>								
30-39 vs. 18-29	1.16 (0.50, 2.67)	0.613			1.32 (0.57, 3.02)	0.228		
40-49 vs. 18-29	0.63 (0.25, 1.62)				0.52 (0.19, 1.40)			
50+ vs. 18-29	1.08 (0.42, 2.78)				1.38 (0.54, 3.54)			
<b>BMI</b>								
Overweight vs. healthy weight	0.55 (0.27, 1.10)	0.192			0.71 (0.35, 1.42)	<b>0.119</b>	0.97 (0.36, 2.59)	0.322
Obese vs. healthy weight	1.05 (0.36, 3.03)				2.24 (0.76, 6.65)		2.67 (0.68, 10.49)	
<b>Marital status</b>	<b>N=147</b>				<b>N=147</b>			
Married/cohabitation vs. unmarried	0.69 (0.35, 1.37)	0.538			0.71 (0.36, 1.43)	0.400		
Divorced vs. unmarried	1.02 (0.32, 3.22)				1.49 (0.47, 4.70)			
Widow/er vs. unmarried								
<b>Occupational status</b>	<b>N=149</b>				<b>N=142</b>			
Employee vs. freelancer/self-employed	0.74 (0.34, 1.61)	0.662			0.59 (0.27, 1.30)	0.719		

Unemployed vs. freelancer/self-employed	1.28 (0.27, 6.01)				0.60 (0.13, 2.81)			
Retired vs. freelancer/self-employed	4.62 (0.51, 41.48)							
Student vs. freelancer/self-employed	0.83 (0.31, 2.21)				0.92 (0.35, 2.45)			
Household vs. freelancer/self-employed	0.77 (0.10, 5.94)				1.00 (0.13, 7.72)			
<b>Occupation (dermatitis-related)</b>								
Dermatitis-related jobs vs. other jobs	1.51 (0.69, 3.29)	0.303			2.29 (1.04, 5.01)	<b>0.039</b>	2.20 (0.77, 6.27)	0.139
<b>Education</b>								
Bachelor's degree vs. primary school/lower secondary Education/upper secondary education	0.67 (0.32, 1.38)	0.487			0.48 (0.23, 1.00)	<b>0.050</b>	0.53 (0.20, 1.44)	0.312
Master's/Doctoral degree vs. primary school	0.98 (0.40, 2.41)				1.24 (0.51, 3.02)		1.16 (0.35, 3.91)	
<b>Age at AD diagnosis, years</b>								
	<b>N=149</b>				<b>N=149</b>			
	0.96 (0.93, 0.98)	<b>0.002</b>	0.97 (0.94, 1.01)	0.125	0.95 (0.92, 0.98)	<b>0.001</b>	0.97 (0.94, 1.01)	0.124
<b>Comorbidities<sup>3</sup></b>								
One vs. none	1.16 (0.51, 2.64)	<b>&lt;0.001</b>			2.00 (0.84, 4.77)	<b>&lt;0.001</b>		
Two vs. none	7.98 (2.45, 26.03)				15.42 (4.60, 51.74)			
Three or more vs. none	4.81 (1.69, 13.72)				6.24 (2.26, 17.21)			

<b>Comorbidities (each vs. no)</b>								
Asthma	1.17 (0.58, 2.38)	0.656			1.85 (0.91, 3.77)	<b>0.089</b>	1.42 (0.55, 3.71)	0.468
Food allergies	3.72 (1.61, 8.57)	<b>0.002</b>	1.14 (0.40, 3.27)	0.805	5.80 (2.50, 13.46)	<b>&lt;0.001</b>	1.97 (0.68, 5.66)	0.210
GI problems	15.45 (1.98, 120.34)	<b>0.009</b>	11.04 (1.27, 96.21)	<b>0.030</b>	6.04 (1.64, 22.18)	<b>0.007</b>	2.92 (0.61, 14.02)	0.180
Rhinitis	3.85 (1.72, 8.61)	<b>0.001</b>	2.49 (0.92, 6.76)	0.074	4.42 (2.04, 9.61)	<b>&lt;0.001</b>	1.88 (0.67, 5.22)	0.228
Diabetes								
Hypertension	2.20 (0.41, 11.74)	0.354			2.20 (0.41, 11.74)	0.354		
<b>Family history of AD, rhinitis, or asthma</b>	<b>N=149</b>				<b>N=149</b>			
Yes vs. No	2.19 (1.13, 4.22)	<b>0.020</b>	2.21 (1.02, 4.76)	<b>0.043</b>	1.79 (0.93, 3.43)	0.080	1.77 (0.75, 4.19)	0.195
<b>AD severity (POEM)<sup>4</sup></b>								
Moderate eczema vs. clear or almost clear/mild eczema	3.62 (1.75, 7.50)	<b>&lt;0.001</b>	1.98 (0.87, 4.54)	<b>0.014</b>	5.62 (2.52, 12.53)	<b>&lt;0.001</b>	2.94 (1.15, 7.55)	<b>0.006</b>
Severe/very severe eczema vs. clear or almost clear/mild eczema	10.56 (2.71, 41.15)		8.28 (1.89, 36.20)		14.32 (3.93, 52.12)		10.01 (2.15, 46.61)	
<b>POEM score</b>								
	1.17 (1.09, 1.26)	<b>&lt;0.001</b>			1.23 (1.13, 1.33)	<b>&lt;0.001</b>		

Logistic regression with dependent variables: the anxiety severity (based on GAD-7 score) categorized as: 1=mild/moderate/severe anxiety (GAD-7 score  $\geq 5$ ), 0=minimal anxiety (GAD-7 score  $< 5$ ); The depression severity (based on PHQ-9 score) categorized as: 1=mild/moderate/moderately severe/severe depression (PHQ-9 score  $\geq 5$ ), 0=none/minimal depression (PHQ-9 score  $< 5$ ). <sup>1</sup>All variables with  $p < 0.15$  in the univariate model, were inserted into the multivariate model; <sup>2</sup>all variables with  $p < 0.05$  in the multivariate model were deemed to have a significant effect; <sup>3</sup>number of comorbidities variable was not inserted in the multivariate model, as it was statistically significantly associated with the variables for food allergies, GI

problems and rhinitis; <sup>4</sup>the numeric POEM score was not inserted in the multivariate model, as it was statistically significantly associated with AD severity based on POEM score.

N, number; QoL, quality of life; DLQI, Dermatology Life Quality Index; POEM, Patient-Oriented Eczema Measure; OR, odds ratio; AD, atopic dermatitis; GI, gastrointestinal.