

Atopic dermatitis in adults from sub-Saharan Africa: epidemiological and clinical patterns, severity, and quality of life

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ABSTRACT

Background: Atopic dermatitis (AD) is a chronic and recurrent inflammatory dermatitis often associated with other atopic manifestations, such as asthma and allergic rhinitis. This study aimed to determine the epidemiological and clinical aspects of AD and to assess the quality of life (QoL) of patients suffering from AD in our setting. **Materials and Methods:** This was a cross-sectional study conducted from February through April 2017 in seven hospitals in Cameroon. The study included patients above 18 who presented themselves to a dermatology consultation, were diagnosed with AD, and gave their consent. To assess the severity of AD and evaluate the QoL of the patients, standardized scales, such as SCORAD and QoLIAD, were employed. **Results:** The study enrolled 46 patients between 18 and 69 years of age with a mean age of 31 ± 12 years and the prevalence of AD at 1.5%. Most of the participants were females, with a sex ratio of 0.4:1, living in urban areas (93.5%). Food (34.8%) and cosmetic products (21.7%) were found as the main risk factors in the occurrence of AD. Upon physical examination, the upper and lower limbs were found to be the most affected in 84.8% and 54.3% of cases, respectively; in addition to cutaneous xerosis (45.7%), lichenification (43.5%), and excoriations (37%). Of the 46 patients, 9 (20%) had severe AD, 32 (70%) had moderate AD, and 5 (10%) had mild AD. QoL was impaired in 43 of the 46 patients (93.5%). **Conclusion:** Atopic dermatitis is a pathology that impacts the QoL of adults. A QoL assessment is, therefore, an important step in the management of AD.

Key words: Atopic dermatitis; Quality of life; Adults; Cameroon; Sub-saharan Africa

INTRODUCTION

Atopic dermatitis (AD) is a common chronic and pruritic skin condition characterized by progression through relapsing, whose long-term management can be difficult and daunting [1,2]. Its increasing prevalence and the overall cost of its treatment constitute a real public health problem in industrialized countries [1]. As its onset often falls onto infancy, AD is commonly seen in the practice of pediatric dermatology, beginning

within the first year of life in 60% of cases and before the fifth year in 85% of cases [2].

The rapid increase in the prevalence of AD in the past twenty years can be due to many factors, such as industrialization, pollution, and reduced exposure to infectious agents. This observation derives from the “hygiene theory,” which claims that insufficient exposure to infectious agents in early childhood increases susceptibility to allergies and autoimmune diseases [3].

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Most often reported in children, AD can also occur in adults, and its prevalence has, in recent decades, increased considerably in industrialized countries [4]. In general, AD affects 1–3% of adults worldwide, and can be either *de novo* in adults or continue from childhood into adulthood [5].

Furthermore, the chronic nature of AD and its evolution by relapsing over multiple years and its generation of itching can ultimately impact the quality of life (QoL) of both patients and their families [6–9].

Aside from a 2017 study by Kouotou et al. [9], which described a significant change in the QoL of children and their families brought about by AD, there have been none in Cameroon to evaluate the QoL of adults with AD. Because, to the best of our knowledge, data on AD in sub-Saharan Africa is lacking, we have conducted a study on Cameroonian adults suffering from AD in order to determine their epidemiological and clinical profiles and to assess the impact of AD on their QoL.

MATERIALS AND METHODS

Study Design and Setting

The following was a cross-sectional descriptive study conducted from February through April 2017 in the outpatient dermatology services of five health facilities in Yaoundé, Cameroon: Central Hospital of Yaoundé (CHY), Yaoundé Gynecology, Obstetrics and Pediatrics Hospital (HGOPY), University Teaching Hospital of Yaoundé (UTHY), Biyem-Assi District Hospital (BADH), Elig-Essono District Medical Center (EEDMC); and two health facilities in Douala, Cameroon: Laquintinie Hospital of Douala (LHD) and Douala General Hospital (DGH). These facilities were chosen based on the availability of experienced dermatologists providing dermatology consultations.

Study Participants

We included patients over 18 years of age who presented themselves to a dermatology consultation in one of the study facilities during the recruitment period with manifestations of AD and who gave their consent to participate in the study. Patients with other skin conditions that could impact the estimation of the severity of AD were excluded from the study. Participants were recruited consecutively and non-exhaustively during the period of the study.

The diagnosis of AD was made by clinical recognition using the criteria of the United Kingdom Working Party.

Procedure and Data Collection

We used a standardized data collection form to obtain information on sociodemographic (age, sex, place of residence, profession, level of education, marital status, profession) and clinical (sites and types of lesions) characteristics and to assess the severity of each case of AD and each patient's QoL. Specific standardized scales were used to conduct these assessments. The evaluation of the severity of AD was performed during the consultation after the confirmation of the diagnosis. At the end of the process, the patient received a prescription, advice on the pathology, and an appointment date for a follow-up. Each patient's QoL was assessed after the consultation.

To assess the severity of AD, we used a clinical scoring system for AD, specifically SCORAD (Scoring Atopic Dermatitis), whose measurement range is 0 to 103. The formula of the SCORAD index is as follows: $(A/5 + 7B)/(2 + C)$. Its classification of AD is as follows: mild (0–24), moderate (25–50), and severe (51–103).

A represents the extension of AD, which measures the affected surface by noting the extent of the patient's inflammatory lesions and is calculated using the rule of nines (same as for burns). The total score ranges from 0% to 100%.

B represents six clinical features of varying disease intensities: erythema/darkening, edema/papules, oozing/crusting, excoriation, lichenification/prurigo, and dryness (evaluated on noninflamed skin), each on a scale of 0–3. The total score ranges from 0 to 18.

Finally, *C* represents the subjective symptoms as experienced by the patient, in particular daily pruritus and sleep loss, each on a scale of 0–10. The total score ranges from 0 to 20.

The QoL of each patient was assessed using the Quality of Life Index for Atopic Dermatitis (QoLIAD) [10], which is a scale that specifically assesses the impact that AD has on the QoL of a patient. QoLIAD comprises a questionnaire of 25 items intended for patients over 16 years old with answers either *true* (score = 1) or *not true* (score = 0) and scores from 0 to 25. The result is expressed as a percentage of the maximum possible score of 25. The higher the QoLIAD score, the greater and more significant the impact AD has on a patient's

QoL. Fig. 1 illustrates our process for recruiting our participants.

Statistical Analysis

Data was coded and entered using the software CSPPro and subsequently analyzed using SPSS Statistics, version 21.0, and R. Tables and figures were used to present the results, which were expressed as frequencies (percentages) of qualitative variables and means and standard deviations (SD) of quantitative variables. The comparison of the qualitative variables employed the Chi-square test or Fisher's exact test, and the independence t-test or the one-factor were employed in the comparison of the quantitative variables where appropriate. Statistical significance was set at a p of 5%.

Ethics Statement

We conducted the study in accordance with national and international ethical rules and in accordance with the revised Declaration of Helsinki and the Council for International Organizations of Medical Sciences (CIOMS).

The study was granted ethical clearance by the Ethical Review Board of the Faculty of Medicine and Biomedical Sciences of the University of Yaoundé I, Cameroon. In addition, we received administrative authorization from the directors of all hospitals comprehended by the study. The anonymity of the patients and the confidentiality of information gathered were respected.

The informed consent form was only obtained after signing the consent sheet by each of the patients. The study involved no major risk for the participants because no examination or invasive sampling was performed.

RESULTS

Prevalence of Atopic Dermatitis

From February through April 2017, 3132 patients visited the outpatient dermatology clinics of the selected hospitals. Of these 3132 patients, 46 suffered from AD and met the inclusion criteria, thus giving the prevalence of AD of 1.5% (95% confidence interval at 1.1–1.9).

Sociodemographic Characteristics of Patients

The age of the patients ranged from 18 to 69 years, with an average of 31 ± 12 years. There was a female

predominance, with a sex ratio of 0.4/1. In addition, these patients were mainly single (65.2%), with a university education (73.9%), and resided mainly in urban areas (93.5%), as illustrated in Table 1.

Patient Medical History

The AD cases were either isolated (21/46; 45.7%) or associated with at least one other atopic condition (25/46; 54.3%), including allergic rhinitis (45.6%), asthma (8.7%), and allergic conjunctivitis (23.9%). Furthermore, a family history of atopy found in our patients concerned the ascendants, the collaterals, and the descendants (Table 2).

The risk factors in the occurrence of AD in the participants were dominated by food (34.8%) and the usage of cosmetic products (21.7%) (Table 3). Among foods, sugar (17.4%) and fish (13.0%) were the most incriminated; and perfumes (10.9%) were the first cosmetic products to be mentioned by the participants (Table 3).

The patients experienced an average of 1.7 ± 0.94 relapses of AD per year, with extremes varying from one to four relapses.

Pruritus was present in 43 of the 46 patients (93.5%), while 16 of the 46 patients (34.8%) reported a loss of sleep.

Clinical Data

Upon physical examination, the upper and lower limbs were found to be the most affected in 84.8% and 54.3%

Table 1: Sociodemographic characteristics of patients with AD (N = 46)

Variable		Number	Percentage
Age (years)	18–20	8	17.4
	21–30	17	37
	31–40	11	23.9
	>41	10	21.7
Sex	Female	33	71.7
	Male	13	28.3
Level of education	University	34	73.9
	Secondary	10	21.7
	Primary	2	4.3
Marital status	Single	30	65.2
	Married	16	34.8
	Student	23	50.0
Profession	Employed	20	43.5
	Unemployed	3	6.5
Residence	Urban	43	93.5
	Rural	3	6.5

Table 2: Past medical history of the patients

Atopic diseases in the participants					
Atopic disease	Presence of atopic disease		Yes (%)	No (%)	Total (%)
	Allergic rhinitis		21 (45.7)	25 (54.3)	46 (100)
	Asthma		4 (8.7)	42 (91.3)	46 (100)
	Allergic conjunctivitis		11 (23.9)	35 (76.0)	46 (100)
Associations of atopic diseases					
Atopic disease associations	Associations		Number	Percentage (%)	Total (%)
	AD alone		21	45.7	46 (100)
	AD + allergic rhinitis		14	30.4	
	AD + allergic rhinitis + allergic conjunctivitis		4	8.7	
	AD + allergic conjunctivitis		3	6.5	
	AD + allergic rhinitis + asthma + allergic conjunctivitis		3	6.5	
AD + asthma + allergic conjunctivitis		1	2.2		
Family history of atopic diseases					
Family history	Atopic disease	Parents		Siblings	Children
		Number (%)		Number (%)	Number (%)
	Allergic rhinitis		10 (21.7)	14 (30.4)	3 (6.5)
	Asthma		5 (10.9)	5 (10.9)	4 (8.7)
	Allergic conjunctivitis		5 (10.9)	2 (4.3)	1 (2.2)
AD		4 (8.7)	7 (15.2)	1 (2.2)	

Table 3: Factors associated with AD

Variables	Number (%)		Total (%)
	Yes (%)	No (%)	
Alimentation	16 (34.8)	30 (65.2)	46 (100)
Cosmetic or washing products	10 (21.7)	36 (78.3)	46 (100)
Stress	3 (6.5)	43 (93.5)	46 (100)
Infection	1 (2.2)	45 (97.8)	46 (100)
Different components of triggering factors			
Triggering factors	Component	Number	Percentage (%)
Food allergy	Sugar	8	17.4
	Fish	6	13.0
	Dairy	1	2.2
	Spices	1	2.2
	Groundnut	1	2.2
Cosmetics and washing products	Fragrance	5	10.9
	Body wash	2	4.3
	Body lotion	1	2.2
	Detergent	2	4.3

of cases, respectively. The elbows and popliteal fossa were the most affected areas in 35 (89.7%) and 16 (64.0%) patients, respectively. The physical signs were moderate skin dryness (45.7%), moderate lichenification (43.5%), and moderate excoriation (37%) (Table 4).

The severity of AD was classified according to the SCORAD score: mild (5/46; 10.9%), moderate (32/46; 69.6%), and severe (9/46; 19.6%) (Fig. 2).

Quality of Life

QoL was impacted in 43 patients (93.5%). QoL scores ranged from 1% to 20%. We, thus, found 9 (19.6%) and

34 (73.9%) patients whose QoL scores varied between 11% and 20% and between 1% and 10%, respectively. Furthermore, the score was 0% in 3 patients (6.5%) (Fig. 3).

The most incriminated factors in the changes in QoL concerned appearance: in particular, questionnaire items “I struggle with my appearance” (80.4%) and “I feel embarrassed about my skin appearance” (65.2%) (Table 5).

DISCUSSION

The study took place from February through April 2017 in seven health facilities in the cities of Yaoundé and Douala with the aim to determine the epidemiological and clinical profiles of patients with AD, and to assess the impact of AD on their QoL. During the study's time frame, 46 adult patients were diagnosed with AD.

Prevalence of Atopic Dermatitis

In our study, AD in adults represented 1.5% of the dermatology consultations, which is less than the 3.4% reported by Pesce et al. in Italy [11]. This might be explained by the fact that our sample was much smaller. Our prevalence might also be explained by the fact that AD is classically described as an uncommon condition in adults. Indeed, the prevalence of AD decreases as an individual matures from a child to an adult, according to the literature [12,13].

Table 4: Sites and types of lesions

		Sites of lesions			
Sites	Site distribution	Number	Percentage (%)		
Upper limbs (N=39)	Elbows	35	89.7		
	Hands	15	38.5		
	Forearms	6	15.4		
	Popliteal fossa	16	64.0		
Lower limbs (N=25)	Feet	11	44.0		
	Thighs	10	40.0		
	Legs	4	16.0		
Torso (N = 12)	Thorax	9	75.0		
	Back	8	66.7		
	Face	6	100.0		
Head and neck (N = 6)	Scalp	3	50.0		
	Neck	1	16.7		
Genital organs (N = 1)	Scrotum	1	100		
		Clinical features (N = 46)			
	Feature	Absent	Mild	Moderate	Severe
Erythema	Number	11	6	27	2
	Percentage (%)	23.9	13.0	58.7	4.3
Edema/papulation	Number	8	10	26	2
	Percentage (%)	17.4	21.7	56.5	4.3
Oozing/crusting	Number	30	10	4	2
	Percentage (%)	65.2	21.7	8.7	4.3
Excoriations	Number	14	14	17	1
	Percentage (%)	30.4	30.4	37.0	2.2
Lichenification/prurigo	Number	18	6	20	2
	Percentage (%)	39.1	13.0	43.5	4.3
Dryness	Number	7	17	21	1
	Percentage (%)	15.2	37.0	45.7	2.2

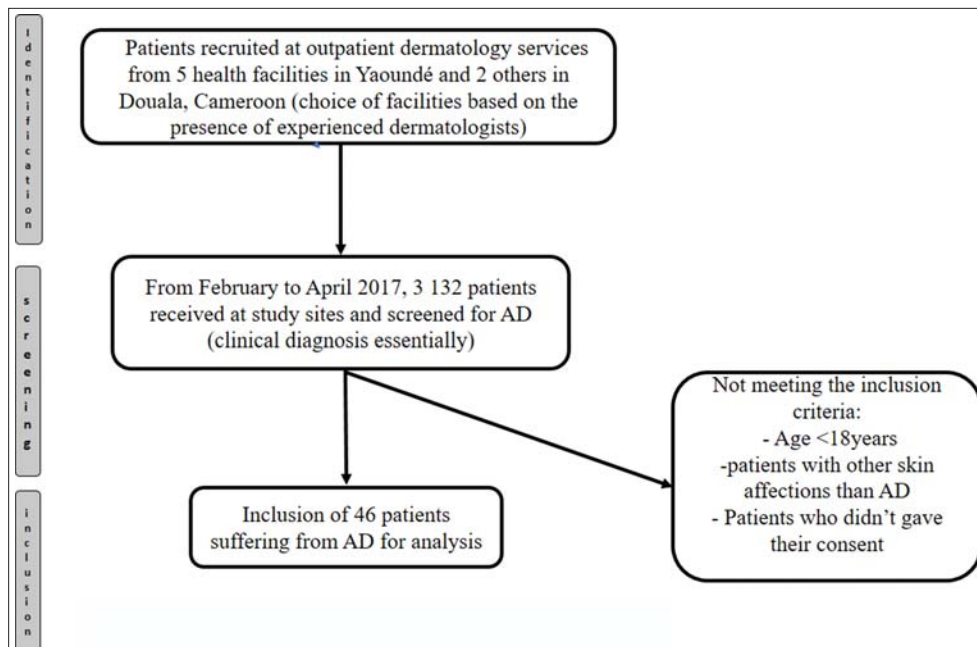


Figure 1: Flow diagram of the section “Materials and Methods.”

Sociodemographic Characteristics of Patients

The mean age was 31 ± 12 years, with extremes of 18 and 69 years. This result is close to the 30.4 years achieved by Zeppa et al. [14].

Women constituted 73% of the study population, with a sex ratio of 0.4. This might be explained by the fact that women, in general, exercise more apprehensiveness about their physical appearance and, thus, consult more readily, whether the pathology is visible or not.

Table 5: Quality of life perception in patients suffering from AD (QoLIAD)

Quality of life perception in patients	(N=46)					
	Sex				Total	
	Female		Male			
N	%	N	%	N	%	
I struggle with my appearance.	26	56.5	11	3.9	37	80.4
I lack self-confidence.	10	21.7	3	6.5	13	28.3
I try to avoid physical contact or touching other people.	12	26.1	6	13	18	39.1
I feel embarrassed about my skin appearance.	14	30.4	7	15.2	21	45.7
I worry about my life because of my eczema.	6	13	2	4.3	9	19.6
I am nervous.	9	19.6	5	10.9	14	30.4
I want to hide.	2	4.3	2	4.3	4	8.7
I can't wear the clothes that I want.	20	43.5	9	19.6	29	63.0
I feel as if other people don't want to touch me.	8	17.4	4	8.7	12	26.1
It's always on my mind.	6	13	3	6.5	9	19.6
I try to hide my eczema.	21	45.6	9	19.6	30	65.2
I have difficulty concentrating.	5	10.9	0	0	7	15.2
I want to cry sometimes.	6	13	3	6.5	7	15.2
I am afraid of being rejected.	3	6.5	3	6.5	6	13.0
I hate seeing myself in the mirror.	5	10.9	3	6.5	7	15.2
I am nervous.	5	10.9	2	4.3	6	13.0
I can't concentrate on anything else.	0	0	1	2.2	2	4.3
I am losing time because of my eczema.	5	10.9	2	4.3	8	17.4
I feel embarrassed about my skin appearance.	22	47.8	3	6.5	30	65.2
There is no liberation.	9	19.6	8	17.4	16	34.8
I am afraid of being rejected.	3	6.5	7	15.2	7	15.2
I can't do the things that I want.	5	10.9	4	8.7	7	15.2
I have to force myself to do something.	3	6.5	3	6.5	5	10.9
I feel overwhelmed by my eczema.	1	2.2	2	4.3	3	6.5
I can't tolerate it when someone touches me.	7	15.2	3	6.5	11	23.9

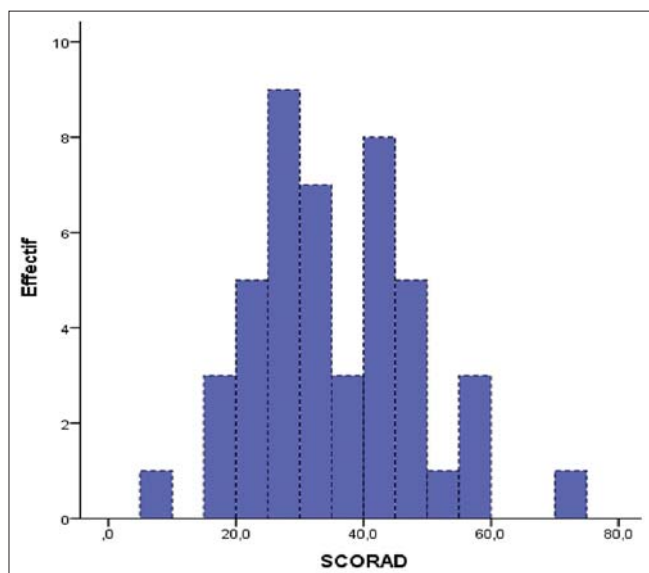


Figure 2: Distribution of patients according to SCORAD.

The same tendency has also been noted in Italy and India [5,11].

Our patients resided mainly (43/46; 93.5%) in urban areas, which is similar to the results obtained by Yemaneberhan et al. in Ethiopia [15]. In addition,

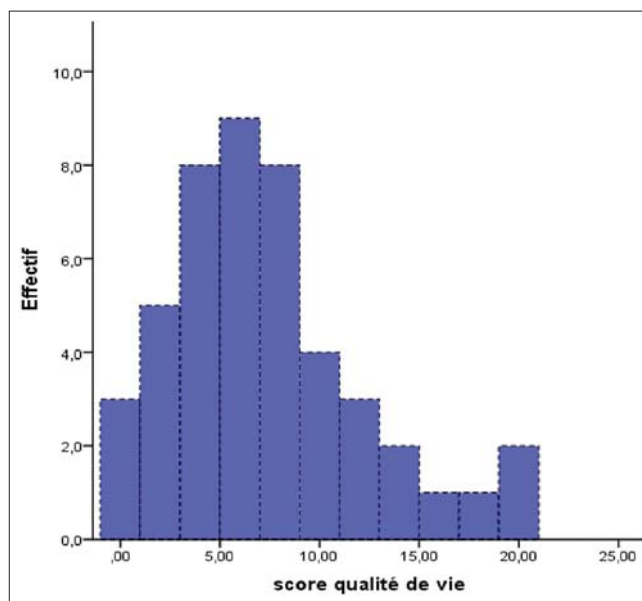


Figure 3: Evaluation of QoL according to QoLIAD.

a Chinese study highlighted a clear gradient in the prevalence of urban vs. rural AD: 10.2% vs. 4.6% [16]. The increased risk of atopy in urban areas might be explained by the industrialization of cities, air pollution, and various dietary habits [4,15,16].

Patient Medical History

In our study, we found that 54.3% of the patients had a personal history of allergic rhinitis, asthma, and allergic conjunctivitis. This result is close to that obtained by Ahogo et al. [2], who found that 54.2% of cases studied had a personal history of atopy.

Food allergy was the first risk factor in AD and accounted for 34.8% of cases. The relationship between AD and food allergy has been well-established in children, unlike adults, who are more sensitive to environmental allergens, such as molds, mites, and pollens [17,18].

Clinical Data

The upper limbs (84.8%) and lower limbs (54.3%) were the most affected, with a predominance in the elbows (96%) and popliteal fossa (64%). Zeppa et al. [14] found lesions to be located predominantly on the upper limbs (66.6%), followed by the face (45.9%) and the lower limbs (34.6%). In fact, these sites are described as the most affected in adults with AD [19] and these adults had lesions in at least three sites [20].

In our patients, the most common clinical signs were dry skin (45.7%), lichenification (43.5%), and excoriations (37.0%). The lichenoid aspect of the lesions might be due to the chronicity of the lesions and the intensity of the pruritus.

Moderate AD (69.6%) was the most common in our sample, which is higher than the 18.7% found by Zeppa et al. [14], who determined severe atopic dermatitis to be predominant (54.8 %).

Quality of Life

In our study, we employed QoLIAD, an AD scoring scale for adults [10], to find that QoL was impacted in 43 of all our 46 patients (93.5%). This result is close to the 88.6% noted by Cheok et al. [21]. Similar impact of AD on the QoL of patients, both children and adults, was discovered by other studies [7,9]. Health-related QoL is defined as a multidimensional construction comprised of impacts on different aspects of life, such as physical, emotional, mental, and social health, as well as daily functioning. In our case, changes in QoL can be explained not only by the chronic and relapsing nature of the pruritus but also by the sociocultural factors for which modern medicine can offer no definite solution.

In our study, we found a high percentage of positive responses to items in the QoLIAD questionnaire, mostly two: “I struggle with my appearance” (80.4%) and “I feel embarrassed about my skin appearance” (65.2%). This might be explained by the aesthetically displeasing nature of AD in a society in which appearance carries significant importance in interpersonal relationships and professional settings.

Nevertheless, our study, which concerned adults with AD, posed some limitations, in particular: 1) the fact that the sample was limited to hospital settings and, therefore, may not have been representative of the general population; 2) the choice of convenience made for the various hospitals where patient recruitment took place; and 3) the short period of data collection, which might have influenced the end results.

CONCLUSION

Atopic dermatitis (AD) is an infrequent finding in adults made by dermatology consultations in the Cameroonian cities of Douala and Yaoundé. It is predominantly found in females, and can either be isolated or associated with other forms of atopy. It is also found in patients with a family history of atopy. In most cases, its clinical presentation is quite moderate, but significantly affects the quality of life (QoL) of patients with AD. Therefore, in addition to medical treatment, educational and psychological support has to be provided. Such a combination of therapies could significantly improve the long-term condition of patients with AD. Assessing the QoL of adults with AD is an important step in their treatment and follow-up care.

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Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

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