PCR202

ATODERMA: CLINICAL AND ECONOMIC BURDEN OF MODERATE TO SEVERE ATOPIC DERMATITIS IN THE CZECH REPUBLIC

Authors: **Chadimova K[1,2], Lamblova K[1], Blazkova T[1], Doleckova K[1], Berezna J[1], Tuzil J[3], Turkova B[1], Mlcoch T[1], Dolezal H[1] and Dolezal T[1,4]**

[1]VALUE OUTCOMES, Prague, Czech Republic
[2]Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague, Czech Republic
[3]Biomedical informatics, First Medical Faculty, Charles University in Prague, Czech Republic
[4]Department of Pharmacology, Faculty of Medicine, Masaryk University, Brno, Czech Republic

V/O Value Outcomes

Background and objectives

Atopic dermatitis (AD) is one of the most common inflammatory, chronically relapsing, and intensely pruritic skin diseases affecting 1-5% of adults in Europe (1). AD is often associated with chronic sleep disturbances and significant impact on daily activities and quality of life. The disease also affects patients' social interactions and psychosocial health (2).

International studies show that adult patients with moderate to severe AD tolerate the disease less well than we would expect (1). Compared to controls, patients diagnosed with AD, even with mild AD, have more frequent comorbidities, which are associated with high costs to the healthcare system. The need for optimal management of this disease also results from limitations in patient work productivity (3).

This study explores AD's clinical and economic burden in the Czech Republic, which has not yet been systematically studied. One study with a small patient cohort shows a dramatic decline in quality of life and an increase in suicidal ideation in these patients (4). However, data on work productivity and other important socioeconomic aspects are very limited.

Methods

A cross-sectional questionnaire-based study among Czech moderate to severe AD adult patients and their physicians-dermatologists collected socio-demographic, clinical and cost data, including responses from validated questionnaires: DLQI (Dermatology Life Quality Index), EQ-5D-5L (European Quality of Life 5 Dimensions 5 Level Version), JSEQ (Jenkins Sleep Evaluation Questionnaire), CUDOS (Clinically Useful Depression Outcome Scale), CUXOS (Clinically Useful Anxiety Outcome Scale), and WPAI:AD (Work Productivity and Activity Impairment: Atopic Dermatitis). The data was collected between December 2021 and January 2023. Descriptive analysis was performed to generate summaries about samples and measurements.

Results

In total, 59 adult patients completed the study and were analyzed.

Demographic data

The patients' mean age was 44.6 years (SD = 14.7 years), and 58% of sample was female. The mean time since diagnosis was 33.6 years (SD = 10.9 years) and the mean age at diagnosis was 11.0 years (SD = 15.3 years).

Clinical data

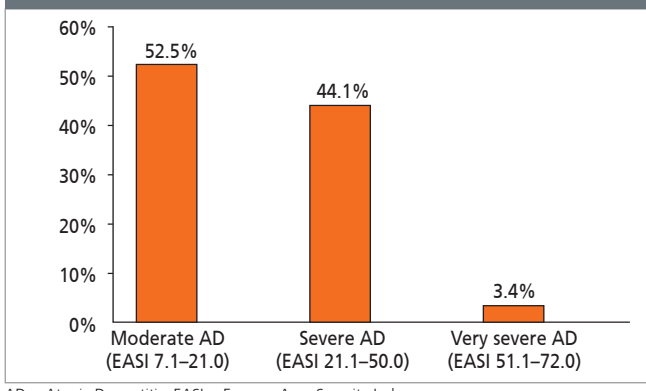
The mean BMI of the patients was 26.9 kg/m^2 (SD=5.8 kg/m^2). In total, 33.9% of patients were overweight and another 23.7% were obese. A total of 74.6% of patients had never smoked, while the remaining 25.4% had smoked at the time of completing the questionnaire or in the past. Patients' alcohol consumption in alcohol units was also collected. One unit corresponded to 2 dcl of wine or 0.5 l of beer or 50 ml of hard alcohol. On average, patients consumed 3.7 (SD=5.2) units of alcohol per week.

Current characteristics of the disease

The mean severity of AD assessed by physicians using VAS (Visual Analogue Scale) was 51.5 (SD=23.5) on the scale 0-100.

The mean EASI (Eczema Area Severity Index), which measures the severity and extent of the patient's skin involvement and ranges from 0 to 72 (i.e., the maximum possible severity and extent of skin involvement) was 21.7 (SD=12.0). According to the EASI, 52.5% of patients had moderate, 44.1% severe, and 3.4% very severe disease (**Figure 1**). These results show that patients with AD have a very high disease activity and thus probably high unmet medical need. Due to the inclusion of fewer patients than planned, it is not possible to stratify the results according to disease severity or to extrapolate the results to the entire AD patient population.

Figure 1. AD severity by EASI score



AD = Atopic Dermatitis; EASI = Eczema Area Severity Index

Exacerbation was defined as the development of difficulties requiring intensification of treatment or seeking additional medical care. In the last six months, 54.2% of patients experienced at least one exacerbation. The average number of exacerbations per patient was 0.9 (SD=1.1), and patients with current exacerbations had an average of 1.7 (SD=0.9) exacerbations. Four patients had to be hospitalized due to exacerbation.

In addition to atopic dermatitis, patients often suffer from allergic rhinitis (55.9%). A total of 33.9% of patients had food allergies and 13.6% had psychiatric comorbidities. Other comorbidities included lung cancer, migraine, hypertension, endometriosis, autoimmune thyroiditis, severe obesity, and other allergies (dust, pollen, mites, molds, and others).

Treatment data

Patients' previous systemic treatment was most commonly antihistamines (84.7%) and systemic corticosteroids (76.3%); almost half of the patients (47.5%) were treated with systemic antibiotics (**Table 1**). Four patients (6.8%) had a history of adverse effects from systemic therapy.

Currently, patients were mostly treated with antihistamines (55.9%), cyclosporine A (50.8%) and systemic corticosteroids (37.3%) (**Table 1**). Adverse effects of systemic therapy were reported in 28.8% of patients.

Table 1. Previous and current systemic treatment

Systemic treatment of AD	Previous (n=59)	Current (n=59)
Systemic corticosteroids	76%	37%
Systemic antibiotics	48%	2%
Antihistamines	85%	56%
Antifungals	17%	0%
Cyclosporine A	20%	51%
Azathioprine	2%	0%
Methotrexate	10%	10%
Antivirals	7%	0%

AD = Atopic Dermatitis

In addition to systemic therapy, patients with atopic dermatitis were also treated with targeted therapies (**Table 2**). However, it is clear that patients are not treated with modern AD therapies such as JAK inhibitors (upadacitinib, baricitinib), dupilumab, and in line with local and international guidelines (5-9). This confirms that patients have currently limited treatment options and thus high unmet medical need.

Patient's productivity status

In total, 50.8% of patients worked full-time, 11.9% of patients worked part-time. The patients included two students and four patients on maternity or parental leave. A total of 16.9% of patients stated that they were self-employed, three of them specified that they worked full-time. None of the patients were unemployed.

Table 2. Previous and current treatments for atopic dermatitis

AD treatment	Previous (n=59)	Current (n=59)
Topical corticosteroids	100%	93%
Topical calcineurin inhibitors	59%	34%
Emollients (plasticizers)	98%	93%
Tacrolimus	24%	12%
Phototherapy	71%	14%
Balneotherapy	39%	0%
Climatotherapy	22%	0%
Psychotherapy	10%	9%
Alternative treatment	2%	10%
Other (rilzabrutinib in clinical trial)	2%	0%
Other (topical antibiotics)	0%	2%

AD = Atopic Dermatitis

Patient questionnaires

Table 3 summarizes the results of patients' questionnaires. Patients' mean DLQI score was 11.1, the mean EQ-5D utility index was 0.667, the mean patient-reported VAS was 57.5, and the mean JESQ score was 9.4. The average level of depression of the patients was 20.1 (CUDOS) and average degree of anxiety was 18.2 (CUXOS), **Figure 2** shows their severity categories. The average activity impairment was estimated to 35.8% and the average loss of work productivity was estimated to 31.0%, according to WPAI: AD (5.1% absenteeism, 27.5% presenteeism).

Disease management

Over the past six months, patients attended, on average, 3.8 planned and 1.5 unplanned doctor visits due to AD. Thirteen patients (22.0%) visited the emergency room and five patients (8.5%) were hospitalized in the past six months.

Table 3. Results of patient questionnaires

Parameter	mean	SD	median	min	max
DLQI score (0-30)	11.1	6.3	10.0	1.0	30.0
EQ-5D-5L					
Utility index (0-1)	0.667	0.185	0.706	0.143	1.000
VAS (0-100)	57.5	23.9	60.0	10.0	95.0
JSEQ score (0-20)	9.4	4.1	9.0	1.0	18.0
CUDOS score (0-72)	20.1	11.9	18.0	5.0	56.0
CUXOS score (0-80)	18.2	11.9	19.0	0.0	39.0
WPAI: AD (%)					
Absenteeism	5.1	9.3	0.0	0.0	40.0
Presenteeism	27.5	23.9	20.0	0.0	80.0
Work productivity loss (WI)	31.0	24.7	20.0	0.0	82.0
Activity Impairment (AI)	35.8	27.7	30.0	0.0	100.0

DLQI = Dermatology Life Quality Index; EQ-5D-5L= European Quality of Life 5 Dimensions 5 Level; VAS = Visual Analogue Scale; JSEQ = Jenkins Sleep Evaluation Questionnaire; CUDOS = Clinically Useful Depression Outcome Scale; CUXOS = Clinically Useful Anxiety Outcome Scale; WPAI:AD (Work Productivity and Activity Impairment: Atopic Dermatitis; SD = Standard Deviation

Almost all patients (93.2%) visited a dermatologist, 72.9% of patients also visited their general practitioner, 67.8% of patients visited an allergist and 30.5% of patients visited an immunologist. A total of 23.7% of patients reported another specialty of health care provider beyond the options offered in the questionnaire. These other specialties included neurology, orthopedics, rheumatology, endocrinology, cardiology, oncology, pulmonary, ophthalmology, or rehabilitation visits.

Per week, patients spent an average of 4.5h preparing and taking medications, 3.5h on special hygiene care, 2.6h on special cleaning, and 1.8h on meal preparation (**Table 4**).

Table 4. . Disease management

Parameter	mean	SD	median	min	max
Healthcare in the last six months					
Number of planned examinations	3.8	2.6	3.0	0.0	13.0
Number of unplanned examinations	1.5	1.7	1.0	0.0	6.0
Emergency	0.4	0.8	0.0	0.0	3.0
Hospitalization	0.1	0.4	0.0	0.0	2.0
Other activities related to AD management					
Journey to the examination for AD	2.1	3.3	1.0	0.2	24.0
Journey to be examined for comorbidities	1.2	1.2	1.0	0.0	6.0
Preparation and use of medicines (weekly)	4.5	3.8	3.5	0.1	14.0
Special hygienic care beyond the normal regime (weekly)	3.5	3.6	2.0	0.0	14.0
Special cleaning (weekly)	2.6	3.1	1.5	0.0	14.0
Planning, preparation, and purchase of special foods (weekly)	1.8	3.3	0.3	0.0	20.0
Purchase for AD (monthly)	5.7	9.4	3.0	0.0	60.0

AD = Atopic Dermatitis; SD = Standard Deviation

Direct and indirect costs

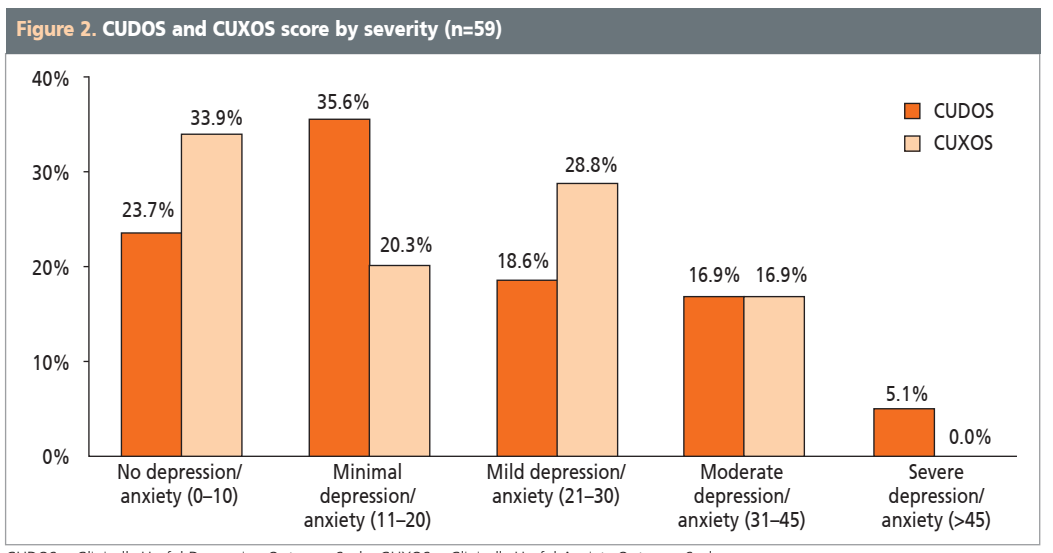
Detailed cost information can be found in **Table 5**. The total direct monthly costs for patients averaged €244 per month and ranged from €26 to €1,964.

Most patients did not receive any social benefits, which included disability benefits, sickness benefits or other social benefits (e.g., unemployment benefits, long-term incapacity for work). Four patients stated that they received sickness benefits, two specified that they had received them for a total of 21 and 40 days in the last year, while the remaining patients did not specify the number of days.

Conclusions

The study revealed a significant clinical and economic burden of AD that may be relevant when evaluating innovative treatments. To conclude, AD is a disease that requires a complex, differentiated (according to disease stage, age, localization) and especially individualized treatment that helps to achieve and maintain long-term and safe control of AD. Modern atopic dermatitis therapies help to reduce the frequency of exacerbations, allowing patients to avoid sleep disorders, itching and perform normal daily activities. The results of this study show that there is a high unmet medical need among AD patients as the innovative therapies are reimbursed for them from health insurance funds but not extensively used in clinical practice.

Figure 2. CUDOS and CUXOS score by severity (n=59)



CUDOS = Clinically Useful Depression Outcome Scale; CUXOS = Clinically Useful Anxiety Outcome Scale

Table 5. Direct costs

Parameter	mean	SD	median	min	max
Cost of car transport (monthly, €)					
AD examinations	38	38	32	0	191
Other AD-related activities	31	35	21	0	170
Parking	13	15	9	0	64
Other transport than car (monthly, €)	18	23	9	0	85
Non-transport cost (monthly, €)					
Medicinal products, aids, materials	49	52	43	0	340
Medical examinations and services over the reimbursement of the health insurance company	11	26	0	0	128
Hygienic means	30	28	21	0	128
Cosmetic products	21	35	9	0	179
Cleaning and janitorial products	18	22	13	0	128
Clothing and other clothing textiles	28	52	15	0	340
Bed linen, blankets, bathroom textiles	14	35	4	0	213
Other	25	101	0	0	531

AD = Atopic Dermatitis

References

1. Ring J, Zink A, Arents BWM, Seitz IA, Mensing U, Schielein MC, et al. Atopic eczema: burden of disease and individual suffering - results from a large EU study in adults. 2019;10. • 2. de Bruin-Weller M, Pink AE, Patrizi A, Agner T, Roquet-Gravy P-P, Ferrucci SM, et al. Disease burden and treatment history among adults with atopic dermatitis receiving systemic therapy:12. • 3. Toron F. Clinical and Economic Burden of Mild-to-Moderate Atopic Dermatitis in the UK: A Propensity-Score-Matched Case-Control Study. Dermatol Ther:22. • 4. Březinová E, Nečas M, Vašků V. Quality of life and psychological disturbances in adults with atopic dermatitis in the Czech Republic. J Biol Regul Homeost Agents. 2017 Jun;31(2 Suppl. 2):227-33. • 5. Ring J, Alomar A, Bieber T, Deleuran M, Fink-Wagner A, Gelmetti C, et al. Guidelines for treatment of atopic eczema (atopic dermatitis) Part I: Guidelines for treatment of atopic eczema. Journal of the European Academy of Dermatology and Venereology. srpen 2012;26(8):1045–60. • 6. Ring J, Alomar A, Bieber T, Deleuran M, Fink-Wagner A, Gelmetti C, et al. Guidelines for treatment of atopic eczema (atopic dermatitis) Part II: Guidelines for treatment of atopic eczema. Journal of the European Academy of Dermatology and Venereology. září 2012;26(9):1176–93. • 7. Wollenberg A, Barbarot S, Bieber T, Christen-Zaech S, Deleuran M, Fink-Wagner A, et al. Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: part II. J Eur Acad Dermatol Venereol. červen 2018;32(6):850–78. • 8. Sidbury R, Davis DM, Cohen DE, Cordoro KM, Berger TG, Bergman JN, et al. Guidelines of care for the management of atopic dermatitis. Journal of the American Academy of Dermatology. srpen 2014;71(2):327–49. • 9. Wollenberg A, Barbarot S, Bieber T, Christen-Zaech S, Deleuran M, Fink-Wagner A, et al. Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: part I. J Eur Acad Dermatol Venereol. květen 2018;32(5):657–82.

ISPOR EUROPE 2023, November, Copenhagen, Denmark

Corresponding author: *katerina.chadimova@valueoutcomes.cz*