Impact of atopic dermatitis on quality of life: a large web-based survey from Argentina

Impacto de la dermatitis atópica en la calidad de vida: una gran encuesta a través de Internet en Argentina

Impacto da dermatite atópica na qualidade de vida: uma grande pesquisa da Argentina baseada na web

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La dermatitis atópica es una enfermedad crónica de la piel que tiene repercusiones negativas sobre la vida de los pacientes y sus familias, incluyendo un impacto en la calidad de vida. En este trabajo, se realizó una encuesta a través de Internet a 1650 pacientes argentinos (pediátricos y adultos) con esta enfermedad. El 20 % de ellos declaró que sus síntomas aparecieron en la adolescencia y la edad adulta. El diagnóstico fue más rápido en las zonas más pobladas y ricas del país. La principal afectación de la calidad de vida ocurrió en aspectos como la frustración, la ira, el estado de ánimo, el sueño y el impacto económico de la enfermedad. El estudio permite conocer en mayor detalle la repercusión física, social y económica de la dermatitis atópica en nuestro país.

Conceptos clave:

What is already known?

Las encuestas nacionales de factores de riesgo evidencian un claro aumento de la prevalencia de los mismos desde 2005 a 2018, fundamentalmente con respecto al sobrepeso y obesidad.

La población universitaria es principalmente vulnerable a experimentar cambios en su estilo y calidad de vida, siendo la coexistencia de la vida académica y laboral un factor influyente en el desarrollo de hábitos no saludables, correspondientes a factores de riesgo.

What does this manuscript add?

- AD, symptoms started during late adolescence and adulthood in Argentinean patients.
- A shorter time-to-diagnosis in populated and rich districts was recognized.
- Main affected QOL domains in our population included frustration, anger, mood alterations, stress, sleep and routine alterations, pain and economic impact.

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Abstract:
Background: Atopic dermatitis (AD) is a chronic, recurrent, inflammatory skin condition that is associated with detrimental effects on the lives of patients and their families, including an impact on quality of life (QOL). Studies about QOL on Latin American AD patients are scarce and have generally included few patients. **Objective:** describing AD impact on the QOL in a large cohort in Argentina. **Methods:** a structured web-based survey including 1,650 AD pediatric and adult patients was performed. **Results:** according to retrieved data, AD symptoms onset started during childhood in most patients, but 20 % of participants reported that manifestations of AD were initially perceived during late adolescence and adulthood. Important differences were observed among country regions, with a shorter time-to-diagnosis in most populated and richer districts. Main affected domains included frustration, anger, mood alterations, stress, sleep alterations, routine alterations, pain and economic impact of AD. *Limitations*: biases inherent to survey design. **Conclusions:** we consider that our study contributes to a better understanding of AD in Argentina, as well as its physical, social and financial impact on affected patients.

Keywords: *dermatitis, atopic; quality of life; Argentina; health surveys*

Resumen:
Introducción: La dermatitis atópica (DA) es una enfermedad inflamatoria de la piel, crónica y recurrente, que se asocia con efectos perjudiciales en la vida de los pacientes y sus familias, incluyendo un impacto en la calidad de vida (CDV). Los estudios sobre CDV en pacientes latinoamericanos con DA son escasos y generalmente han incluido pocos pacientes. **Objetivo:** describir el impacto de la DA sobre la CDV en una cohorte numerosa en Argentina. **Métodos:** se realizó una encuesta estructurada a través de Internet que incluyó a 1650 pacientes pediátricos y adultos con DA. Resultados: según los datos obtenidos, los síntomas de la DA comenzaron durante la infancia en la mayoría de los pacientes, pero el 20% de los participantes informó que las manifestaciones se percibieron inicialmente durante la adolescencia tardía y la edad adulta. Se observaron importantes diferencias entre las regiones del país, con un tiempo de diagnóstico más corto en los distritos más poblados y ricos. Los principales dominios afectados fueron la frustración, la ira, las alteraciones del estado de ánimo, el estrés, las alteraciones del sueño, las alteraciones de la rutina, el dolor y el impacto económico de la DA. Limitaciones: sesgos inherentes al diseño de la encuesta. **Conclusiones:** consideramos que nuestro estudio contribuye a un mejor conocimiento de la DA en Argentina, así como de su impacto físico, social y económico en los pacientes afectados.

Palabras claves: *dermatitis atópica; calidad de vida; Argentina; encuestas epidemiológicas*

Resumo:
Introdução: A dermatite atópica (DA) é uma doença cutânea inflamatória crônica e recorrente associada a efeitos prejudiciais na vida dos pacientes e suas famílias, incluindo um impacto na qualidade de vida (CDV). Os estudos sobre CDV em pacientes latino-americanos com DA são escassos e geralmente incluíram poucos pacientes. **Objetivo:** descrever o impacto do DA na CDV em uma grande coorte na Argentina. Métodos: uma pesquisa estruturada foi realizada através da Internet, incluindo 1650 pacientes pediátricos e adultos com DA. Resultados: de acordo com os dados obtidos, os sintomas da DA começaram durante a infância na maioria dos pacientes, mas 20% dos participantes relataram que as manifestações foram percebidas pela primeira vez no final da adolescência e na vida adulta. Foram observadas diferenças significativas entre as regiões do país, com menor tempo para diagnóstico em distritos mais populosos e mais ricos. Os principais domínios afetados foram frustração, raiva, distúrbios de humor, estresse, distúrbios do sono, distúrbios de rotina, dor e o impacto econômico. Limitações: Viés inerente ao projeto da pesquisa. **Conclusões:** consideramos que nosso estudo contribui para uma melhor compreensão da DA na Argentina, bem como seu impacto físico, social e econômico sobre os pacientes afetados.

Palavras chaves: *dermatite atópica; qualidade de vida; Argentina; inquéritos epidemiológicos*

INTRODUCTION

Atopic dermatitis (AD) is a chronic, recurrent, non-contagious, inflammatory skin condition that usually presents a typical morphology and distribution, according to different age groups.[1] AD onset is typically in early childhood, but the disease can begin at any age.[2] For several patients, AD persists during adulthood and is burdensome throughout all lifespan.[2]

AD is associated with detrimental effects on the lives of patients and their families, including an impact on quality of life.[3] These harmful effects include domains as emotional and mental health, physical activity, social functioning, sleep quality, work productivity, leisure activities and personal and family relationships.[4] AD has been associated with worse quality of life than several common chronic illnesses (heart disease, diabetes mellitus and hypertension).[5] However, studies about quality of life on Latin American AD patients are scarce and have generally included few patients.[6,7] Our goal was to describe the impact of AD on the quality of life in a large Argentinean cohort.

METHODS

A web-based survey was conducted, directed to pediatric and adult patients with a diagnosis of AD. A structured questionnaire was developed *ad hoc* and patients were contacted to participate by e-mail or by social networks of Asociación Civil para el Enfermo de Psoriasis (AEPSO) and Asociación Civil de Dermatitis Atópica Argentina (ADAR). Considered questionnaire domains included:

- Demographic information: responder condition (patient, caregiver, relative), age group (0-5, 6-11, 12-18, 19-25, 26-40, 41-60, older than 60), gender, province, educational level
- Diagnosis information: age of AD onset, time to first symptom to AD diagnosis, number of visited physicians before getting the diagnosis, physician specialties, comorbidities (asthma, rhinoconjuntivitis, nasal polyposis, eosinophilic esophagitis, allergies)
- Familiar history: AD, asthma, rhinitis, allergies
- Symptoms: Lickert scales (0-10) for itching severity and frequency; other AD-related skin symptoms (bleeding, cracking, suppuration, desquamation); need and number of hospitalizations
- Current and previous treatments: soaps, emollients, topical strategies (steroids, immunomodulatory drugs, antibiotics), phototherapy, systemic therapies, diet treatment, participation in clinical trials (part of these data were retrieved for future research and not included in current analysis)
- Satisfaction and adherence to current treatments
- Confinement due to COVID-19 pandemics: AD clinical evolution during social confinement, contact with treatment physician (these data were retrieved for future research and not included in current analysis)
- Direct treatment costs
- Quality of life: Likert scales (0-10) for DA-related routines modifications, activities cancellations, discrimination, sexual life impact, anger, frustration, feeling of guilt, concentration problems, self-esteem problems, reduced work/school performance and absenteeism, cohabiting problems, relationship problems, tiredness, stress, pain, social interaction difficulties, shame, bullying, anxiety, depression, suicidal ideation
- Other: need and type of psychological and/or psychiatric treatment, health insurance, alternative medicine treatment, need for disability certificate,
- Information sources about AD: physicians, family, friends, social networks, internet, patients association
- Patient-physician relationship (PPR)

All data were retrieved from to August 4th to August 15th 2020 and then anonymized and tabulated in spreadsheets. Numerical variables were described according to central tendency and dispersion while categorical variables were described according to their absolute and relative frequency. A formal sample size calculation was not needed, given the retrospective, descriptive design of our study.

RESULTS

Age and location

A total of 1,650 AD participants completed the structured questionnaire (50 % adults, 50 % pediatric patients). For patients younger than 5 years, caregivers completed the questionnaire. In the subgroup aged 6 to 11 years (n = 310), caregivers also answered the structured survey, except for 10 children who responded by themselves. In the age range from 12 to 18 (n = 172), mostly adult caregivers answered the survey, except for 32 adolescents (18.6 %). Regional distribution of responders is described in **Figure 1**.

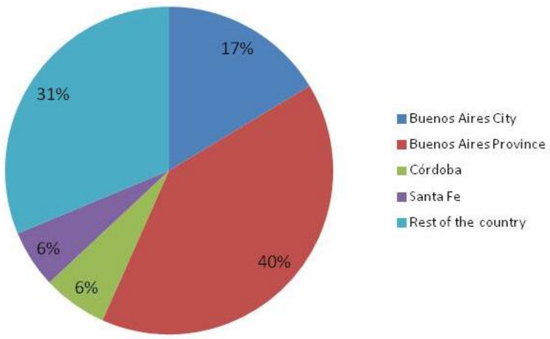

Figure 1. Regional distribution of responders (n = 1,650)

Diagnosis data

AD symptoms onset started during childhood (up to 11 years) in 70 % of the responders, but 20 % of participants reported that clinical manifestations of AD developed during late adolescence and adulthood.

Time from first symptom to AD diagnosis was shorter in pediatric patients (6 months for 45 % of patients younger than 5 years, 12 months for 55 % of patients up to 11 years). Important differences were identified between Buenos Aires City and Buenos Aires Province, when compared with the rest of the country (**Figure 2**). Two hundred and fifty responders (15.5 %) were diagnosed with AD at least 5 years after the first AD symptom; however, in six provinces, this diagnosis delay was reported by 25 % of participants. It is worth noting that 60 % of patients had their AD diagnosis after visiting at least 3 physicians, including dermatologists, pediatricians and allergists. PPR was considered as "very good" by 45.7 % of participants and "bad" or "very bad" by 32.3 %.

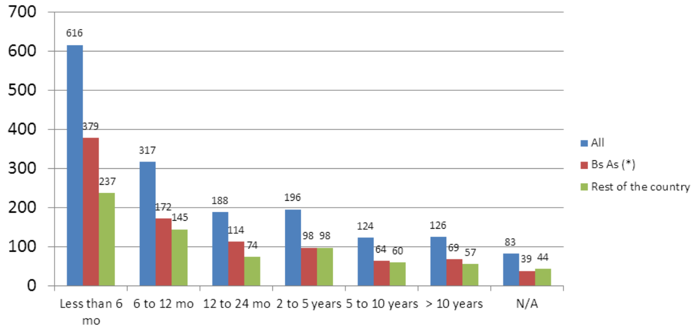

Figure 2. Time from first symptom to AD diagnosis according to regional distribution (n = 1,650)
(*) Buenos Aires City and Buenos Aires Province

Comorbidities

Familiar history of AD and allergic diseases was positive in 22.5 % and 33 % of surveyed patients, respectively. Personal history of at least one allergic disease was reported in more than half of the cohort, including food allergies (17.4 %), environmental allergies (36.5 %), asthma (25 %) and allergic rhinoconjuntivitis (10 %).

AD symptoms

Itching intensity and subjective frequency (“If you had to define itching frequency from 0 (null) to 10 (very frequent), which number would you choose?”) were evaluated by Likert scales. Mean itching intensity was 7.81 (range 0 to 10) and 65 % of participants defined it as “high” (≥ 8 points). Mean punctuation of frequency was 6.89 and 45.7 % of responders defined the frequency as “high” (≥ 8 points). When both attributes were considered together, 40% of patients considered intensity and frequency as “high”. Bleeding and suppuration was reported by 96 % of AD patients.

Considering the whole cohort, 95 participants (5.8 %) needed at least one hospitalization due to AD (mean: 2.2 hospital admissions). A bimodal distribution of age groups was reported, with higher frequencies for children up to 5 years-old and in the group aged 26 to 40 (**Figure 3**).

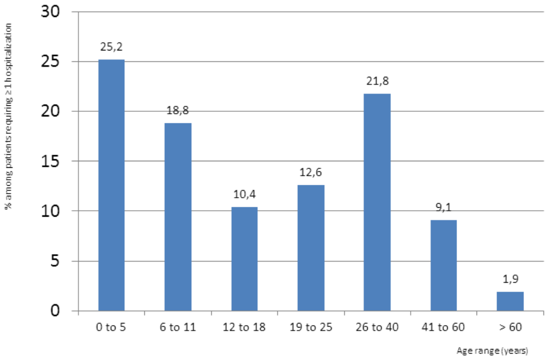

Figure 3. Age distribution of patients requiring at least one hospitalization due to AD (n = 95)
(*) Buenos Aires City and Buenos Aires Province

Quality of life and treatment

According to our survey, 1,428 participants reported that AD impact on quality of life (86.5 %). Thirty-one specific domains were characterized by Likert scales ranging 0 to 10 points. Detailed information is available in **Table 1**. Frustration, anger, mood alterations, stress and sleep alterations ranked a mean punctuation exceeding 5 points. Monetary costs impact was rated as high as pain and anxiety.

Topical treatments were highly used, including emollients (84 %), topical corticosteroids (60 %) and special soaps (60 %). Treatment satisfaction was defined as “moderate” by 21.7 % of patients and 40.5 % of participants were not satisfied with their treatment regimen.

Table 1. AD impact on quality of life (n = 1,428)

Domain	**Mean**	**SD**	**N**	**% responders (*)**
Frustration	5.6	3.2	1276	89.36
Anger	5.5	3.1	1289	90.27
Mood alterations	5.4	3.1	1298	90.90
Stress	5.2	3.3	1258	88.10
Sleep pattern alterations	5.1	3.3	1286	90.06
Routines alterations	4.8	3.0	1282	89.78
Pain	4.7	3.2	1277	89.43
Economic impact	4.7	3.3	1203	84.24
Dressing difficulties due to AD flares	4.6	3.4	1261	88.31
Anxiety	4.5	3.4	1212	84.87
Tiredness	4.1	3.4	1209	84.66
Self-esteem alterations	4.0	3.6	1220	85.43
Concentration problems	4.0	3.2	1210	84.73
Needing to cancel activities	3.5	3.2	1262	88.38
Shame	3.5	3.4	1207	84.52
Guilt	2.8	3.4	1171	82.00
Mobility difficulties due to AD flares	2.7	3.3	1160	81.23
Depression	2.5	3.3	1150	80.53
Discrimination	2.4	3.0	1227	85.92
Isolation	2.2	3.1	1151	80.60
Low attention to other family members	2.2	2.9	1172	82.07
Low academic/school performance	2.1	3.0	1149	80.46
Coexistence problems	2.0	2.8	1163	81.44
Difficulties in social interaction	1.9	2.9	1131	79.20
School absenteeism	1.6	2.7	1132	79.27
Bullying	1.6	2.8	1131	79.20
Sexual life difficulties	1.6	2.7	1104	77.31
Low working performance	1.5	2.6	1101	77.10
Relationship problems	1.2	2.3	1089	76.26
Work absenteeism	0.9	2.2	1073	75.14
Suicidal ideation	0.7	2.0	1093	76.54
(*) % of patients that answered about this domain (n = 1,428)				

DISCUSSION

AD prevalence is increasing globally[1] and places a notable burden on patients and their families.[4] This heterogeneous disease is characterized by its variable intensity, extent of lesions and frequency and intensity of clinical symptoms.[5] In our study, we performed a structured web-based survey including 1,650 AD pediatric and adult patients from Argentina. According to retrieved data, AD symptoms onset started during childhood in most patients, but 20 % of participants reported that manifestations of AD were initially perceived during late adolescence and adulthood. This proportion seems similar to recent data from other countries;[8] diagnosis of adult onset AD may be challenging even for expert physicians, due to the different lesional morphology and distribution compared with patients with childhood-onset AD[9] and the broader differential diagnosis of eczematous disorders in adult subjects.[8] On this matter, time from first symptom to diagnosis was longer in adult patients. Importantly, striking differences were observed among country regions, with a shorter time to diagnosis in most populated and richer districts. Even though further research is needed, potential explanations for these differences include accessibility to healthcare facilities, physicians training and education on AD and lower patients' awareness for this disease. Identifying barriers that lead to a delayed diagnosis may result in better strategies to approach AD patients and to reduce number of necessary clinical visits to confirm such diagnosis.

In our cohort, familiar history of AD and allergic diseases was highly prevalent. Personal history of allergic comorbidities was reported in more than half of the participants. Even though some controversies still remain over the plausible mechanisms and epidemiology of comorbid atopic disease in AD,[10] the presence of comorbidities like asthma, hay fever and food allergy are part of the diagnosis criteria for AD.[11,12] In a previous small Argentinean study with severe AD, prevalence of rhinitis and asthma were reported as higher;[13] however, our study included a larger sample with pediatric and adult patients, probably representing closely the real-world along the whole severity spectrum of AD patients population in the country.

Itch intensity and subjective frequency were defined as "high" by 65 % and 45.7 % of surveyed patients, respectively. This symptom is a primary manifestation of AD, leading to scratching, eczema and risk of frequent complications like suppuration and local infection, which in turn induce itching persistence. This symptom has also been reported as the most bothersome manifestation of AD in other large cross-sectional studies[5] and it has been associated with lower levels of health-related quality of life in both pediatric and adult patients.[14]

Quality of life is usually perceived as the quality of an individual's daily life,[15] and consists in a broad concept including domains as standard of living and family and community life.[16] In addition, quality of life may be affected by personality, education, employment, financial and social situation, as well as medical issues.15 Even though AD has a well-known impact on quality of life,[1-2,5] data from Latin American region is scarce. In our study, quality of life was evaluated through Likert scales on 31 different domains. Frustration, anger, mood alterations, stress, sleep alterations, routine alterations, pain and economic impact were the more affected domains among our patients. Both frustration and anger have been linked to lower social functioning and reduced overall wellbeing among children with AD.[17] In addition, it is highlighted that AD induces stress, but can also be exacerbated by it.[18] Several AD-associated stressors have been described, including physical discomfort due to itching and altered appearance during AD flare-ups. These stressors have been shown to impact other quality of life domains, altering sleep patterns, decreasing self-esteem and interfering with interpersonal relationships.[18]

It is worth noting that AD financial impact has been reported by our patients as a highly relevant factor, comparable to routine alterations, pain and anxiety. Nearly one fourth of surveyed participants have no healthcare insurance, leading to a low accessibility to treatment due to their high costs. According to retrieved data, 34 % of our patients spend a non-reimbursable equivalent of one-fifth of a minimum wage in Argentina.

Differences were reported among participants from Buenos Aires and Great Buenos Aires and the rest of the country, including time to AD diagnosis. A better access to health services, lack of telemedicine resources and differences in knowledge among dermatologists may partially explain these differences. In other chronic dermatological conditions, like psoriasis, strategies of remote assistance and telementoring have shown to be useful in reducing asymmetries in medical knowledge and ensuring access to better practices.[19]

Our study has several limitations. First, it was a web-based survey and inclusion biases cannot be excluded. Secondly, as a cross-sectional study, it is susceptible to bias due to low response and misclassification. However, several strengths should be emphasized. To our best knowledge, our study represents the largest retrieved sample of AD patients in Argentina. Secondly, both pediatric and adult subjects were included, probably resembling the real distribution of whole AD population in our country. Third, real-world evidence of impact of quality of life demonstrated that, in addition to psychological and social functioning effects, economic impact is also a relevant feature to be considered in these patients approach.

As a conclusion, we consider that our study contributes to a better understanding of AD in Argentina, as well as its physical, social and financial impact on affected patients and we hope it will help us to develop better strategies in the future.

Limitaciones de responsabilidad:
La responsabilidad del trabajo es exclusivamente de quienes colaboraron en la elaboración del mismo.

Conflicto de interés:
Ninguno.

Fuentes de apoyo:
La presente investigación no contó con fuentes de financiación.

Originalidad:
Este artículo es original y no ha sido enviado para su publicación a otro medio de difusión científica en forma completa ni parcialmente.

Cesión de derechos:
Quienes participaron en la elaboración de este artículo, ceden los derechos de autor a la Universidad Nacional de Córdoba para publicar en la Revista de la Facultad de Ciencias Médicas.

Contribución de los autores:
Quienes participaron en la elaboración de este artículo, han trabajado en la concepción del diseño, recolección de la información y elaboración del manuscrito, haciéndose públicamente responsables de su contenido y aprobando su versión final.

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