



ORIGINAL ARTICLE

# Quality of life in children with skin disease: A Spanish sample



Lucía Campos-Muñoz\*, Cristina Belmar Madrid, Alberto Conde-Taboada, Alvaro Iglesias Puzas, Elena Gonzalez Guerra, Eduardo López-Bran

Servicio de Dermatología, Hospital Clínico San Carlos, Madrid, Spain

Received 20 April 2023; accepted 18 June 2023

## KEYWORDS

Quality of life;  
Atopic dermatitis;  
Acne;  
Molluscum  
contagiosum;  
Warts;  
Nevus;  
Children;  
Adolescent

## Abstract

**Introduction:** The impact of skin diseases on quality of life varies widely, and some can have an impact similar to that of asthma or cystic fibrosis.

**Material and methods:** We conducted a cross-sectional, observational and descriptive study with the aim of describing the degree to which quality of life was affected in paediatric patients managed in a dermatology clinic by means of the Children's Dermatology Life Quality Index (CDLQI).

**Results:** In our study, the skin disease with the greatest impact on quality of life was atopic dermatitis, chiefly on account of symptoms like pruritus and insomnia. It was followed by acne, mainly due to the associated negative feelings (shame, sadness, etc.). Quality of life in patients with viral warts and molluscum contagiosum was mostly affected by the treatment, chiefly based on cryotherapy. Most patients with nevi or café-au-lait spots did not have a decreased quality of life, although up to one third of them had negative feelings in relation to their skin disease.

**Discussion:** Atopic dermatitis was the common skin disease that caused the greatest impairment in quality of life in our sample, although other diseases also had an impact on different dimensions of quality of life. We ought to underscore the recommendation to use less painful treatments than cryotherapy for viral warts and molluscum contagiosum, as the impairment in quality of life in paediatric patients with these conditions was mainly due to the treatment.

© 2023 Published by Elsevier España, S.L.U. on behalf of Asociación Española de Pediatría. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

\* Corresponding author.

E-mail address: [luciacampos78@hotmail.com](mailto:luciacampos78@hotmail.com) (L. Campos-Muñoz).

**PALABRAS CLAVE**

Calidad de vida;  
Dermatitis atópica;  
Acné;  
Moluscos contagiosos;  
Verrugas víricas;  
Nevus;  
Niños;  
Adolescentes

**Estudio de la calidad de vida en Dermatología Pediátrica: un ejemplo de la población española****Resumen**

**Introducción:** Las enfermedades cutáneas pueden afectar a la calidad de vida de forma muy variable; el impacto de algunas dermatosis puede ser similar al del asma o la fibrosis quística. **Material y métodos:** Realizamos un estudio observacional, descriptivo y transversal con el objetivo de describir el grado de afectación de la calidad de vida de los niños que acudieron a la consulta monográfica de Dermatología Pediátrica, mediante el Children's Dermatology Life Quality Index (CDLQI).

**Resultados:** En este estudio la dermatosis con mayor impacto en la calidad de vida fue la dermatitis atópica, debido principalmente a síntomas como el prurito y el insomnio. El segundo grupo diagnóstico con mayor afectación fue el acné, debido principalmente a los sentimientos negativos (vergüenza, tristeza, etc.) asociados al mismo. Los pacientes con verrugas víricas y moluscos contagiosos tuvieron impacto en la calidad de vida debido principalmente al tratamiento de los mismos, que se realizó principalmente con crioterapia. La mayor parte de los pacientes con nevus o manchas café con leche no tuvieron afectación en la calidad de vida, si bien hasta un tercio de ellos tuvieron sentimientos negativos secundarios a su dermatosis.

**Discusión:** La dermatitis atópica fue la enfermedad dermatológica común que más impactó en la calidad de vida en nuestra muestra de pacientes, aunque otros procesos también afectaron a la calidad de vida en distintos aspectos de la misma. Cabe destacar la recomendación de emplear en verrugas víricas y moluscos contagiosos tratamientos más indolores que la crioterapia, ya que es el tratamiento lo que más impacta en la calidad de vida de los pacientes pediátricos.

© 2023 Publicado por Elsevier España, S.L.U. en nombre de Asociación Española de Pediatría. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Introduction**

Skin diseases affect quality of life to a highly variable degree,<sup>1</sup> and some have an impact similar to that of asthma or cystic fibrosis.<sup>2</sup> The assessment of the impact of the different skin diseases on quality of life is essential, as it can guide decisions at the clinical level (initiation of biological therapy, modifications to treatment) and at the administrative level (allocating more resources to diseases with a greater impact on quality of life).<sup>3,4</sup>

The Children's Dermatology Life Quality Index (CDLQI) is the instrument used most widely to measure quality of life in children with skin diseases.<sup>5</sup> It is a 10-item questionnaire that is easy to complete and validated for use in children aged 4–16 years, and it has been used in several studies, demonstrating its usefulness in the specific impact of skin disease in paediatric patients (Table 1). It evaluates different aspects of skin disease over the previous week: symptoms, feelings like embarrassment, friendship, clothing, playing, sports, academic performance, sleep, interpersonal relationships and impact of treatment. Higher scores indicate greater impairment of quality of life, and the results are interpreted based on the total score (sum of all the item scores).

We conducted a study in the department of dermatology of a referral university hospital in Madrid. The primary objective was to describe the degree of the impact of skin disease on the quality of life of children managed at the paediatric dermatology speciality clinic, and the secondary objectives were to analyse potential differences between

different diagnostic groups in the degree of impairment of quality of life and in the impact on specific dimensions of quality of life.

**Material and methods**

We conducted a cross-sectional, observational and descriptive study. The study took place between March 2021 and December 2021. We included patients aged 4–16 years who visited the paediatric dermatology clinic and received any of the common diagnoses in this setting: atopic dermatitis (AD), acne, viral warts, molluscum contagiosum, melanocytic nevus or café au lait spots. We excluded patients with severe nondermatological disease that could affect quality of life and patients with dermatological diagnoses other than those noted above.

The instrument used to assess quality of life was the *Índice de Calidad de Vida in Dermatología para Niños*, which is the validated version of the CDLQI in Spanish<sup>6</sup> and has exhibited a high internal consistency (Cronbach  $\alpha=0.83$ ; 95% CI, 0.76–0.88) and a high test-retest reliability (gamma [s]=0.97;  $P<0.001$ ). After taking the history and performing the physical examination of the patient and making the diagnosis, the children completed the questionnaire, administered verbally by the researchers. For the purposes of the descriptive and inferential analyses, we classified patients into 4 diagnostic groups: (1) AD; (2) acne; (3) viral warts and molluscum contagiosum (VW/MC), and (4) skin pigmentation disorders (melanocytic nevus and café au lait spots).

**Table 1** Children's Dermatology Life Quality Index, Spanish version.

El objetivo de este cuestionario es medir cuánto te ha afectado tu problema de piel Durante La Última Semana. Por favor, señala un recuadro en cada pregunta

1. *Durante la semana pasada, ¿en qué medida has sentido picor, sensación de piel rasposa, escozor o dolor en tu piel?*

Muchísimo

Bastante

Solo un poco

Nada

2. *Durante la semana pasada, ¿en qué medida te has sentido avergonzado o acomplejado, disgustado o triste a causa de tu piel?*

Muchísimo

Bastante

Solo un poco

Nada

3. *Durante la semana pasada, ¿en qué medida han afectado tus problemas de piel a las relaciones con tus amigos?*

Muchísimo

Bastante

Solo un poco

Nada

4. *Durante la semana pasada, ¿cuántas veces te has cambiado de ropa o llevado ropa/zapatos diferentes o especiales a causa de tu piel?*

Muchísimo

Bastante

Solo un poco

Nada

5. *Durante la semana pasada, ¿en qué medida te ha afectado tu problema de piel para salir, jugar o realizar tus aficiones?*

Muchísimo

Bastante

Solo un poco

Nada

6. *Durante la semana pasada, ¿en qué medida has evitado nadar o practicar otros deportes a causa de tu problema de piel?*

Muchísimo

Bastante

Solo un poco

Nada

7. *La semana pasada, ¿fue periodo escolar o periodo de vacaciones?*

Sí, fue periodo escolar: *Durante la semana pasada, ¿cuánto afectó el problema de piel a tu trabajo escolar?*

Te impidieron ir al colegio

Muchísimo

Bastante

Solo un poco

Nada

Sí, fue periodo de vacaciones: *Durante la semana pasada, ¿en qué medida te ha interferido el problema de piel para disfrutar de las vacaciones?*

Muchísimo

Bastante

Solo un poco

Nada

8. *Durante la semana pasada, ¿en qué medida has tenido problemas con otras personas, a causa de tu piel, por meterse contigo, burlarse de ti, acosarte, hacerte preguntas o evitarte?*

Muchísimo

Bastante

Solo un poco

Nada

9. *Durante la semana pasada, ¿en qué medida te ha afectado tu problema de piel para el sueño?*

Muchísimo

Bastante

Solo un poco

Nada

Table 1 (Continued)

El objetivo de este cuestionario es medir cuánto te ha afectado tu problema de piel Durante La Última Semana. Por favor, señala un recuadro en cada pregunta

10. Durante la semana pasada, ¿en qué medida el tratamiento de tu piel te ha causado problemas?

- Muchísimo
- Bastante
- Solo un poco
- Nada

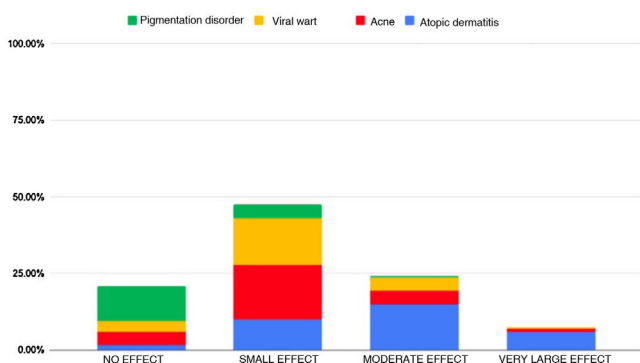


Figure 1 Distribution of the sample by the degree of the impact on quality of life.

The data were processed and analysed with the statistical software IBM SPSS Statistics, version 26. We have expressed qualitative data as frequency distributions. We summarised quantitative variables as mean and standard deviation (SD). In the case of quantitative variables with a skewed distribution, we used the median and interquartile range (IQR). (RIC). We compared quality of life scores in the different diagnostic groups with the nonparametric Kruskal–Wallis test, as this variable had an asymmetrical distribution, with the Bonferroni correction for the *P* value. The level of significance was set at 5% for all tests.

The study was approved by the Clinical Research Ethics Committee of our hospital, and we obtained informed consent to the participation of patients in the study.

## Results

We obtained a sample of 191 patients, 45.2% female and 54.8% male. The most frequent diagnosis was AD (31.9%), followed by acne (27.7%), VW/MC (23.5%) and skin pigmentation disorders (16.7%). The effect on quality of life was small in 47.64% of the sample, moderate in 24.08%, negligible in 20.94% and very large in 7.32%. None of the patients had scores reflecting an extremely large effect on quality of life. Fig. 1 presents the distribution of the sample by degree of impairment of quality of life and the proportion per category corresponding to each diagnostic group.

Analysing each diagnostic group separately, we obtained the following results (Table 2): the median score of patients with AD was 7 points, which corresponds to a moderate effect. The maximum score in the study occurred in this group (17 points, very large effect). The item with the highest score was item 1 (over the last week, how itchy, scratchy,

Table 2 Questionnaire scores by diagnostic group.

	Median	Interquartile range
Atopic dermatitis	7	(5–10.5)
Acne	4	(2–6)
Viral warts	4	(2–6)
Skin pigmentation disorders	0	(0–2)

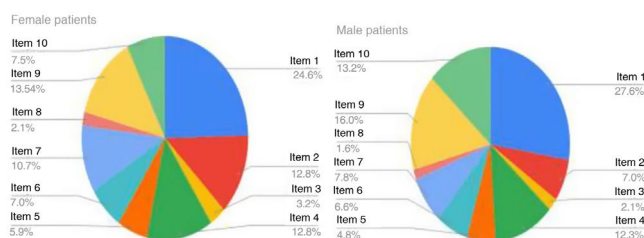


Figure 2 Item distribution of the total score in patients with atopic dermatitis.

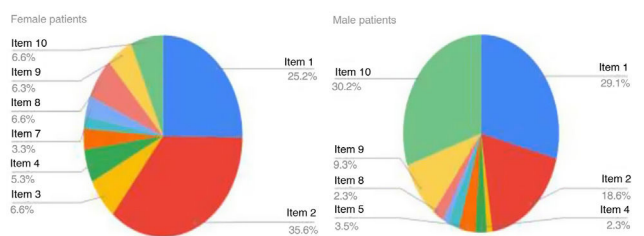


Figure 3 Item distribution of the total score in patients with acne.

sore or painful has your skin been?), with 78.5% of children with AD reporting that the symptoms affected them quite a lot or very much. Sixty-five percent of children with AD reported difficulty sleeping, although the effect was small in half of them. Fig. 2 shows the relative weight of each item in the total score in the AD group, that is, the impact of each item on the quality of life in these patients.

In patients with acne, the median score was of 4 points, corresponding to a small effect on quality of life. The item with the highest score was the one concerning feelings (item 2: over the last week, how embarrassed or self-conscious, upset or sad have you been because of your skin?), with 45.3% of children answering “quite a lot” (2 points) or “very much” (3 points) (Fig. 3).

Patients with VW/MC had a median score of 4 points, corresponding to small effect on quality of life. The highest item score was for item 10 (how much of a problem

has the treatment for your skin been?). In this group, 88.9% of children considered that their treatment caused them discomfort, with 31.1% choosing the “very much answer”, which is the highest possible score.

Thirty-two patients in the sample had skin pigmentation disorders: 27 had melanocytic nevi and 5 had café au lait spots. The median score in the questionnaire was 0, indicating no effect on quality of life in the group overall. This group had the lowest scores in every item. While 34.4% reported that their feelings were affected by their skin condition, 65.6% of these patients scored 0 points in this item.

We found statistically significant differences in comparing the diagnostic groups two by two: patients with AD had a poorer quality of life compared to each of the three other diagnostic groups (acne, VW/MC and skin pigmentation disorders). Patients with skin pigmentation disorders had a better quality of life compared to all other diagnostic groups (AD, acne and VW/MC).

## Discussion

To our knowledge, no other study to date has assessed the impact of different skin diseases on the quality of life of paediatric patients in Spain.

It is fair to say that although the quality of life of most patients managed in paediatric dermatology clinics is good, there are certain diagnoses, like AD, associated with greater impairment of quality of life (chiefly due to itching and insomnia), and therefore require more intensive treatment and a greater involvement on our part, as health care professionals, in pursuit of their wellbeing.<sup>7-9</sup> Our findings warrant considering the need to increase the duration of visits sufficiently to offer adequate care for children with AD and their families,<sup>10</sup> in order to provide specific information on the factors that can worsen the disease.<sup>11,12</sup> At the same time, they justify the considerable expenditure that may be required to provide novel treatments for AD (biologic agents, JAK inhibitors),<sup>13</sup> as this is one of the skin diseases associated with severe impairment of quality of life in the paediatric age group.<sup>14,15</sup> This finding was consistent with previous evidence from studies conducted in different countries: a study in the United Kingdom that assessed the impact on quality of life of different skin diseases in paediatric patients found greater impairment in association with AD, followed by psoriasis and urticaria<sup>2</sup>; and another study only found greater impairment in patients with scabies or psoriasis compared to AD.<sup>16</sup> A meta-analysis published in 2016 also found greater impairment in patients with AD, followed by patients with acne, alopecia and molluscum contagiosum.<sup>17</sup>

In our study, patients with acne were the group with the greatest impairment of quality of life following the AD group, chiefly on account of the impact on feelings, and with a greater effect on female versus male patients. Multiple studies have confirmed the psychological impact of acne<sup>18-20</sup> and supported a causal relationship between acne and the emotional state of the patient, with the presence of acne associated with a greater incidence of depression and anxiety.<sup>21,22</sup> This is an aspect that families and other health care professionals are not always aware of and it justifies the treatment of acne in every case, even in patients with

mild lesions, as the psychological impact can be significant nonetheless, and it is not always apparent during visits.

It is worth noting that in patients with MC/VW, the dimension with the highest scores in the questionnaire was the impact on quality of life caused by the treatment. Since many of these patients received cryotherapy, we may need to consider a change in the approach to their management, using less painful options, such as keratolytic therapy.<sup>23</sup>

Lastly, we may conclude that melanocytic nevi and café au lait spots do not tend to cause significant impairment of quality of life, although up to one third of patients may experience emotional problems secondary to these conditions. Since surgical removal of nevi is generally a simple procedure, it may be beneficial to ask patients whether the nevus they are seeking care for causes them sadness, embarrassment, etc, to identify potential candidates for surgery.<sup>24</sup>

One of the limitations of our study is the exclusion of skin diseases that are less prevalent in the Spanish paediatric population, like psoriasis, urticaria or alopecia. The study may also be affected by selection bias, as the patients in the sample required specialised care, and the observed impact on quality of life may have resulted from more severe forms of disease.<sup>25</sup> Furthermore, the analysis was not stratified by diagnostic group.

In conclusion, AD was, among the common skin diseases, the one with the greatest impact on the quality of life in our sample of Spanish children, although other diseases can also have a considerable impact on quality of life.

## Funding

This research did not receive any external funding.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## References

1. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)—a simple practical measure for routine clinical use. *Clin Exp Dermatol.* 1994;19:210–6.
2. Beattie PE, Lewis-Jones MS. A comparative study of impairment of quality of life in children with skin disease and children with other chronic childhood diseases. *Br J Dermatol.* 2006;155:145–51.
3. Udith J, Ong H, Onnie B, Oo K, Ohn J. The psychosocial and occupational impact of chronic skin disease. *Dermatol Ther.* 2008;21:54–9.
4. Wallander JL, Koot HM. Quality of life in children: a critical examination of concepts, approaches, issues, and future directions. *Clin Psychol Rev.* 2016;45:131–43.
5. Lewis-Jones MS, Finlay AY. The Children’s Dermatology Life Quality Index (CDLQI): Initial validation and practical use. *Br J Dermatology.* 1995;132:942–9.
6. Ramírez-Anaya M, Macías MER, Velázquez-González E. Validation of a mexican spanish version of the children’s dermatology life quality index. *Pediatric Dermatol.* 2010;27:143–7.
7. Manzoni AP, Pereira RL, Townsend RZ, Weber MB, Nagatomi AR, Cestari TF. Assessment of the quality of life of pediatric patients with the major chronic childhood skin diseases. *An Bras Dermatol.* 2012;87:361–8.

8. Lewis-Jones S. Quality of life and childhood atopic dermatitis: the misery of living with childhood eczema. *Int J Clin Pract.* 2006;60:984–92.
9. Ražnatovic MR, Jankovic J, Čirkovic A, Timotijevic ZS, Rašić J, Vitkovic L, et al. Impact of atopic dermatitis on the quality of life of children and their families. *Ital J Dermatol Venereol.* 2021;156:29–35.
10. Lawson V, Lewis-Jones, Finlay AY, Reid P, Owens RG. The family impact of childhood atopic dermatitis: the Dermatitis Family Impact questionnaire. *Br J Dermatol.* 1998;138:107–13.
11. Absolon CM, Cottrell D, Eldridge SM, Glover MT. Psychological disturbance in atopic eczema: the extent of the problem in school-aged children. *Br J Dermatol.* 1997;137:241–5.
12. Gazibara T, Reljic V, Jankovic S, Peric J, Nikolic M, Maksimovic N. Quality of life in children with atopic dermatitis: a one-year prospective cohort study. *Indian J Dermatol Venereol Leprol.* 2022;88:65–9.
13. Cartron AM, Nguyen TH, Roh YS, Kwatra MM, Kwatra SG. Janus kinase inhibitors for atopic dermatitis: a promising treatment modality. *Clin Exp Dermatol.* 2021;46:820–4.
14. Mohr N, Augustin M, Zeervi L, Bieber T, Werfel T, Wollenberg A, et al. Determinants of costs and benefits in atopic dermatitis routine care in Germany. *J Eur Acad Dermatol Venereol.* 2022;36:1450–5.
15. Wu AC, Fuhlbrigge AL, Robayo MA, Shaker M. Cost-effectiveness of biologics for allergic diseases. *J Allergy Clin Immunol Pract.* 2021;9:1107–17, e2.
16. Goyal S, Sajid N, Nayak SUK, Husain S. CDLQI-based assessment of skin disorders among children: a study from Northern India. *Indian J Dermatol.* 2021;66:704.
17. Olsen JR, Gallacher J, Finlay AY, Piguet V, Francis NA. Quality of life impact of childhood skin conditions measured using the Children's Dermatology Life Quality Index (CDLQI): a meta-analysis. *Br J Dermatol.* 2016;174:853–61.
18. Tan J, Beissert S, Cook-Bolden F, Chavda R, Harper J, Hebert A, et al. Impact of facial and truncal acne on quality of life: a multi-country population-based survey. *JAAD Int.* 2021;3:102–10.
19. Walker N, Lewis-Jones MS. Quality of life and acne in Scottish adolescent schoolchildren: use of the Children's Dermatology Life Quality Index (CDLQI) and the Cardiff Acne Disability Index (CADi). *J Eur Acad Dermatol Venereol.* 2006;20:45–50.
20. Orion E, Wolf R. Psychologic factors in the development of facial dermatoses. *Clin Dermatol.* 2014;32:763–6.
21. Sood S, Jafferany M, Vinaya Kumar S. Depression, psychiatric comorbidities, and psychosocial implications associated with acne vulgaris. *J Cosmet Dermatol.* 2020;19:3177–82.
22. Samuels D, Rosenthal R, Lin R, Chaudhari S, Natsuaki MN. Acne vulgaris and risk of depression and anxiety: a meta-analytic review. *J Am Acad Dermatol.* 2020;83:532–41.
23. Adusumilli N, Shoen E, Friedman A. Psychosocial burden of verruca vulgaris: a cross-sectional survey. *J Drugs Dermatol.* 2022;21:614–7.
24. Elisabeth Wramp M, Langenbruch A, Augustin M, Zillikens D, Krengel S. Clinical course, treatment modalities, and quality of life in patients with congenital melanocytic nevi — data from the German CMN registry. *J Dtsch Dermatol Ges.* 2017;15:159–67.
25. Ferrucci SM, Tavecchio S, Angileri L, Surace T, Berti E, Buoli M. Factors associated with affective symptoms and Quality of Life in Patients with Atopic Dermatitis. *Acta Derm Venereol.* 2021;101:adv00590.