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Impact of Atopic Dermatitis on Adolescents and Families: A Mixed-Method Systematic Review

Noelia Vicho-de-la-Fuente[1,2] | Alba-Elena Martinez-Santos[3,4] | Raquel Rodríguez-González[1] | Ángeles Florez[5] | Greg Sheaf[6] | Imelda Coyne[7]

[1]Faculty of Nursing, University of Santiago de Compostela, Santiago de Compostela, Spain | [2]Primary Care Nursing Department, Galician Health Service, Lugo, Spain | [3]Faculty of Nursing and Podiatry, University of A Coruña, Ferrol, Spain | [4]DIPO Research Group, Galicia Sur Health Research Institute (IIS Galicia Sur), SERGAS-UVIGO, Vigo, Spain | [5]Department of Dermatology, Santiago de Compostela University Hospital Complex, Santiago de Compostela, Spain | [6]The Library of Trinity College Dublin, Trinity College Dublin, Dublin, Ireland | [7]School of Nursing and Midwifery, Trinity College Dublin, Dublin, Ireland

Correspondence: Raquel Rodríguez-González (raquel.rodriguez@usc.es)

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ABSTRACT

Aims: To summarise the evidence regarding the impact of atopic dermatitis on adolescents and their families as well as their healthcare needs and to propose a nursing care plan based on the findings.
Design: Mixed-method systematic review.
Methods: Twenty-four studies were included, of which 19 were quantitative and 5 were qualitative. The quality of the studies was assessed using the *Mixed Methods Assessment Tool*. The synthesis method used was data-driven convergent synthesis design.
Data Sources: A systematic search was carried out in CINAHL, Embase, MEDLINE, PsycInfo and Web of Science without language restrictions from 1 January 2013 to 30 April 2023.
Results: The quality of life of adolescents with atopic dermatitis and their families are impaired. The more the severity of the condition, the greater the impact for them and their families. Atopic dermatitis impacts adolescents' sleep (due to itching), behaviour, mental well-being, social and school life. Likewise, parents' sleep, free time, interpersonal relationships and work life are affected by caring for their adolescents.
Conclusion: Adolescents and their families encounter numerous challenges managing and living with atopic dermatitis on a daily basis. The condition has a widespread impact on adolescents and parents' quality of life across home, work and school settings. In the family, there was also an alteration in the functioning and relationships between its members.
Implications for the Profession and/or Patient Care: This review reveals the burden of atopic dermatitis for adolescents and families and the need for comprehensive support. Greater awareness among healthcare professionals of the impacts may help promote an evidence-based approach that supports the whole family. Based on these findings, we propose a nursing care plan based on the NANDA taxonomy to promote better healthcare provision for adolescents and families.
Reporting Method: This review adheres to PRISMA guidelines.
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Noelia Vicho-de-la-Fuente and Alba-Elena Martinez-Santos contributed equally to this work and are co-first authors.

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Summary

- What already is known
    - Atopic dermatitis is a common chronic inflammatory skin disorder that has a significant long-term impact on adolescents' health and daily lives.
- What this paper adds
    - Adolescents with atopic dermatitis and their families perceive a deterioration in their quality of life and family functioning.
- Implications for practice/policy
    - Numerous challenges affect the quality of life of adolescents with atopic dermatitis and their families for which a comprehensive evidence-based nursing care is proposed.

1 | Introduction

Atopic dermatitis (AD) is one of the most common inflammatory skin diseases in children which is characterised by recurrent eczematous lesions and intense itching. Its prevalence has increased in recent years, and during childhood, it can affect up to 20% (Langan, Irvine, and Weidinger 2020). However, the clinical presentation is heterogeneous. It is a chronic pathology that usually appears in early childhood, and in many cases persists into adolescence and adulthood. The characteristic lesions show different patterns depending on patients' age, whereas diffuse eczema on the eyelids, lips (cheilitis), areolas, flexures or hands and feet are characteristics of the adolescent population. AD is usually classified into three levels of severity: mild, moderate and severe (Langan, Irvine, and Weidinger 2020). Although innovations in treatment have occurred in recent decades, including topic and systemic drugs, AD still lacks a curative treatment. Thus, the purpose of current treatments is to alleviate symptoms and establish long-term control of the disease by reducing outbreaks (Wollenberg et al. 2022a, 2022b).

1.1 | Background

AD is a skin disease that produces one of the highest burdens (Laughter et al. 2021); thus, the quality of life (QoL)[1] in adult and children is negatively affected by the condition (Ražnatović Đurović et al. 2021). In this way, people with AD are at greater risk of having all areas of their health affected because it is often associated with other physical, mental and social comorbidities. AD is associated with other atopic diseases such as asthma, allergic rhinitis and food allergies. Moreover, this condition can lead to infection complications due to the break in the cutaneous barrier and alterations in the skin microbiome. Psychosocially, people with AD report more mental health problems, such as anxiety, depression and behavioural disturbances, and more problems regarding social adaptation (Langan, Irvine, and Weidinger 2020). It also represents a significant economic burden, both individually and globally. These include direct costs derived from tests, treatments and health care assistance and indirect costs caused by the psychosocial consequences, namely work absenteeism and loss of productivity (Chung and Simpson 2019).

The World Health Organization (WHO) defines adolescents as people between 10 and 19 years old who are in the transition between childhood and adulthood. This is a vital stage in which multiple changes occur, both physically, psychologically and socially. Adolescents with chronic disease like AD are highly vulnerable to alterations of a psychosocial nature (Sawyer et al. 2012; WHO 2021). In this context, interpersonal relationships become very important, significantly influencing development and other areas of health. Mental health in adolescents is an area of risk, since 14% of the world's adolescent population suffers from alterations in this regard and it poses a global public health issue (WHO 2021). The family, relationships with peers, as well as the school community and the environment are critical social determinants (Sawyer et al. 2012; Viner et al. 2012), that are also affected by mental health (Langan, Irvine, and Weidinger 2020).

The family is essential for the healthy development of adolescents. The presence of chronic diseases impacts the daily lives of adolescents and that of their families, as they are in constant interaction and influence (Sawyer et al. 2012). The evidence found regarding the impact of AD in the paediatric population suggests that the environment of adolescents is affected by the condition. Their families are impacted by the caregiving tasks they have to assume, as well as by the consequences that this entails at a social level (Yang et al. 2019).

Although many adolescents are affected by AD, there is a deficit of evidence on the impact of AD and how nurses can provide support for adolescents and their families. It is important to raise awareness of the impact of AD on adolescents with AD and their families to identify challenges so that appropriate support can be provided within healthcare (Courtenay and Carey 2006). Nurses have an important role in the holistic approach and care of adolescents with AD and their families. Nursing care for AD consists of assessing the disease and monitoring treatment, as well as providing health education, psychosocial support and ensuring continuity of care of people with AD and their families. In this way, self-care and self-management are promoted. Multiple benefits result from these interventions, as they have been shown to improve QoL for patients and families (van Os-Medendorp et al. 2020). Given the importance of the nursing care process for adolescents with AD and their families and to improve the quality of care, it is necessary to develop nursing care plans based on the evidence-based needs of this population. To this end, it would be useful to use standardised taxonomies, such as the North American Nursing Diagnosis Association (NANDA) International taxonomy and standardised nursing language, the Nursing Outcomes Classification (NOC) and the Nursing Interventions Classification (NIC), which support the homogenisation of care, evidence-based practice and continuity of care (Carpenito-Moyet 2006).

2 | The Review

2.1 | Aims

The aims were: (a) to evaluate the impact of AD on adolescents and their families in the physical, psychological and social dimensions; (b) to identify the healthcare-related perceptions of adolescents with AD and their families; and (c) to propose an evidence-based nursing care plan to guide nurses' support in clinical practice.

2.2 | Design

We were guided in the reporting of this systematic review by the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines (Page et al. 2021). We developed a mixed-methods systematic review following the PSALSAR method (Mengist, Soromessa, and Legese 2020), which added two basic steps to the SALSA framework proposed by Grant and Booth (2009). The PSALSAR framework includes six stages: Protocol, Search, Appraisal, Synthesis, Analysis and Reporting Results. The review protocol was registered in PROSPERO (code: CRD42023435352). To integrate and narratively synthesise the quantitative and qualitative evidence, we collected and analysed the data in parallel, using the *data-based convergent synthesis design* following the methodological framework of Hong et al. (2019) and Noyes et al. (2019).

2.3 | Search Methods

We conducted searches in CINAHL, Embase, MEDLINE, PsycInfo and Web of Science from 1 January 2013 to 30 April 2023. The search strategy was developed through the collaborative work of an expert librarian (GS), the first author (NV) and an expert in AD (AF), and subsequently tested in the Web of Science database (GS and NV). Controlled search terms were used to design the search string, which were adapted to the database used (e.g., MeSH terms in MEDLINE). The terms used included keywords such as 'atopic dermatitis', 'adolescent', 'family', 'impact' and synonyms and derived words truncated with the Boolean operators AND, OR and NEAR/2. We did not add language restrictions, but we limited the time to the last 10 years to ensure relevant recent papers. We included original research with quantitative, qualitative and mixed methods designs. We considered those articles where adolescents with AD and their families were studied, and we excluded those where only data from younger children or adults were reported, or it was not possible to differentiate the results of adolescents.

2.4 | Inclusion and Exclusion Criteria and Search Outcomes

The database search resulted in 4229 articles. After removing 1205 duplicates, we screened 3024 studies. Two authors (NV and AM) independently screened titles and abstracts, resulting in 130 articles that were reviewed separately. Figure 1 represents the PRISMA flowchart, which describes the selection process and the results included (Page et al. 2021). Inclusion and exclusion criteria were designed using the *Sample, Phenomenon of Interest, Design, Evaluation and Research type* (SPIDER) tool (Cooke, Smith, and Booth 2012). Thus, we included original peer-reviewed studies with a qualitative, quantitative or mixed design, whose sample were adolescents aged 10 and 19 years old and their parents and siblings, whose phenomenon of interest was the impact of AD on all of them and whose perceptions, experiences, quality of life and attitudes were evaluated. The screening process led to 24 articles which fulfilled the inclusion criteria. The conflicts that arose between the previous authors were resolved by discussing with a third author who is an expert in child health (IC). The screening process was conducted using the Covidence software tool (https://www.covidence.org/).

2.5 | Quality Appraisal

To evaluate the quality of the quantitative, qualitative and mixed-methods studies, we used the *Mixed Methods Appraisal Tool* (MMAT) (Hong et al. 2019; Souto et al. 2015). All articles included in the review met the quality criteria. The quantitative descriptive study and the qualitative studies met all the analysed criteria. However, four of the quantitative analytic studies did not specify whether the target population was representative and in another two it was not. Furthermore, the last question regarding interventions did not apply to any of the studies, as it was an exclusion criterion for the present systematic review. Given that one of the exclusion criteria of the systematic review was the presence of interventions, one of the MMAT items for the evaluation of quantitative studies (non-randomised: cross-sectional analytic studies) was not applicable. The quality appraisal process was conducted by two of the researchers (NV and AM) and reviewed for accuracy by the other authors.

2.6 | Data Abstraction and Synthesis

After the selection process, one of the authors (NV) extracted the data from the 24 studies and the findings were checked by three authors (AM, RR and IC). We extracted details on the study design, data collection methods, study population, participant demographics characteristics, aims, main themes and results as shown in Table 1.

A meta-analysis of the data was not carried out due to its heterogeneity and given the nature of the review (mixed methods). All the studies were analysed by the same synthesis method. Following the *data-based convergent synthesis design*, quantitative and qualitative data were analysed during the same phase of the research process in a parallel manner, such that the extracted data were integrated into main themes, independently of the study approach (Hong et al. 2019; Noyes et al. 2019). Thus, the main findings of the studies included in the systematic review were presented together into themes and subthemes, involving data of different nature. Following the aims of this review, we summarised the selected research and we classified their data in themes based on the target population (adolescents and families) and in subthemes based on the area of health affected (general and physical health; mental health and behaviour; and school, family and social health) based on the results of the data analysis.

3 | Results

Twenty-four studies were selected, of which 19 were quantitative and five were qualitative. Two studies were international

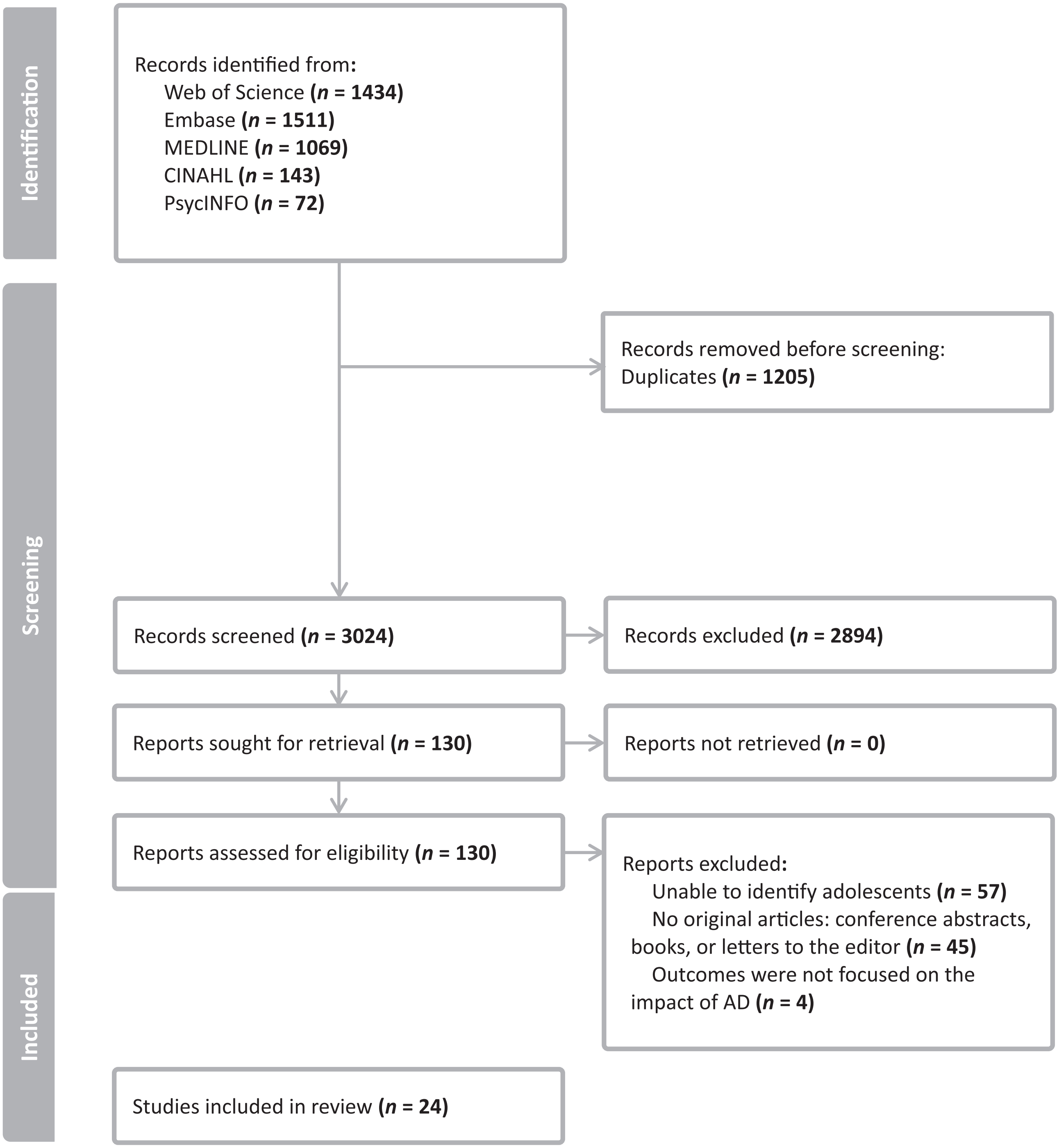

FIGURE 1 | PRISMA flowchart representing the identification, screening and including process (Page et al. 2021).

and involved different continents, while the other 17 studies were from United Kingdom ($n=4$), United States ($n=3$), Korea ($n=3$), Sweden ($n=2$), Brazil ($n=2$), China ($n=1$), Colombia ($n=1$), France ($n=1$), Germany ($n=1$), Japan ($n=1$), Kuwait ($n=1$), Nigeria ($n=1$) and Norway ($n=1$). Considering adolescents, the sample size of the quantitative studies ranged between 53 and 124,267 participants and that of parents or caregivers ranged between 399 and 3078. The wide variability of samples reflects the type of recruitment, in that five studies obtained their sample through national registries, and four through social networks campaigns or other advertisements. In the qualitative studies, the sample size ranged from 10 to 97 for adolescents and from 16 to 37 for parents. Regarding the main objective of this review, 16 studies reported the impact of AD on adolescents, three studies explored the impact on their families and five studies included impact on both adolescents and families. The quantitative studies ($n=19$) focused mainly on the impact of AD on quality of life (QoL), mental health and school life. The qualitative studies ($n=5$) reported on self-perceived health and psychosocial impact. The summary of the data extracted from each included study can be seen in Table 1. The synthesis resulted in the formulation of two main themes and six subthemes. These were: Theme 1. Impact on adolescents, that includes self-perceived QoL and

TABLE 1 | Summary of the quantitative and qualitative studies included in the review.

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Ballardini et al. (2014), Sweden	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 2756$) Recruitment in the first visit to child health care centres	**Age range:** 11–14 years old **AD characteristics:** 12.7% ($n = 350$) of the adolescents had AD: 274 mild AD and 76 moderate-to-severe disease 120 children had ongoing symptoms **Comparison group:** None	To analyse the AD burden in children measuring health related QoL	**Self-perceived health:** • Most children reported good self-perceived health (79% of them reported feeling 'excellent' or 'very good', 72% reported being completely healthy and 66% responded 'I am very happy') • Girls had more impaired self-perceived health than girls with no allergy-related disease, especially if they had ongoing AD, with the adjusted OR of 1.73 (95% CI 1.14–2.64), 1.90 (95% CI 1.27–2.86) and 1.63 (95% CI 1.11–2.40) for each question about self-perceived health • Boys did not report an impaired self-perceived health due to AD, with the adjusted OR of 0.78 (95% CI 0.40–1.52), 0.70 (95% CI 0.38–1.29) and 0.73 (95% CI 0.41–1.27) for each question about self-perceived health • Negative impact on QoL cannot be explained by physical comorbidities of AD **Disease-specific QoL:** • Lives of children were affected because of the disease, and the effects increased as AD severity did • Children with ongoing symptoms were bothered by itching and scratching, got embarrassed or upset due to skin symptoms, trouble with treatment and disturbed sleep • A significant negative correlation between the QoL and eczema severity ($p < 0.05$) and the QoL and health impact ($p < 0.05$) **Gender differences:** • Girls reported poorer self-perceived health and higher impairment of QoL than boys

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Barbarot et al. (2022), International (North America, Latin America, Europe, Middel East/ Eurasia and East Asia)	Quantitative Observational cross-sectional study Questionnaires	Parents or guardians of children and adolescents ($n = 7465$; $n = 3078$ parents of adolescents) Recruitment by broad-reach portals, special interest sites and direct emailing campaigns	**Age range of children and adolescents:** 6 months to less than 18 years old (adolescents' cohort was considered between 12 and 18 years old) **AD characteristics:** All the adolescents had AD: 49.8% mild AD, 40.4% moderate AD and 9.5% severe AD **Comparison group:** None	To evaluate the impact of AD on the children's family	**Family impact of AD:** • Children and adolescents experienced substantial impact due to AD in all age groups across geographic regions • Parents and caregivers reported that the higher the impact of AD the higher the severity • Most affected areas for parents and caregivers of adolescents with AD were: housework (17.1%, 39.3%, 56.3%), food preparation and feeding (14.9%, 34.4%, 49.7%), sleep (14.0%, 38.8%, 55.9%), leisure activities (16.7%, 42.4%, 56.2%), shopping (11.2%, 31.7%, 52.8%), expenses (18.7%, 42.3%, 59.7%), tiredness (17.1%, 41.0%, 57.4%), emotional distress (16.3%, 42.5%, 61.0%), relationships (13.4%, 34.9%, 51.7%) and help with treatment (15.6%, 37.3%, 51.9%) • A relationship was not observed between the age of children with AD and the impact on their families • East Asian participants reported less impact than those from other regions and parents and caregivers of younger children perceived less impact than those of older children **Temporal component of care:** • Parents and caregivers spent more time caring for children with severe AD • Adolescents generally required fewer hours of care than younger children • Parents and caregivers spent 5.5 ± 10.2 h caring for those who had mild AD, 10.5 ± 14.8 h for those who had moderate AD and 14.8 ± 18.5 h for those who had severe AD **Parents' work absenteeism:** • Parents and caregivers reported a greater number of days lost from work due to their children's disease the more severe the AD was • In the last 4 weeks, parents and caregivers of adolescents with mild AD lost 1.8 ± 2.8 days of work, those with moderate AD lost 4.0 ± 4.1, and those with severe AD lost 6.0 ± 6.1 • No clear pattern of lost workdays by age group • No differences were observed between regions, except for East Asia, where absenteeism rates were lower

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Brew et al. (2019), Sweden	Quantitative Observational cross-sectional study Questionnaire	Adolescents ($n = 11{,}546$) Recruitment by telephone from Childhood and Adolescent Twin Study in Sweden register	**Age range:** 9–12 years old **AD characteristics:** 7.8% of the participants had AD AD severity was not evaluated **Comparison group:** Co-twins without AD	To study how asthma, AD, hay fever or food allergy affect academic performance	**Academic performance:** • Adolescents with current AD had a higher chance of being eligible for high school ($p < 0.05$) compared with their twin without AD • Adolescents with who at some point had AD had a higher chance of being eligible for high school ($p < 0.01$) and higher total marks ($p < 0.05$) • There were no differences regarding sexes or ages for any of the associations between the studied variables
Cheng, Fishbein, and Silverberg (2021), United States	Quantitative Observational cross-sectional study Questionnaires	Children and adolescents ($n = 98{,}873$) Recruitment by computer-assisted interviews from a national register	**Age range:** 5–17 years old (adolescents' cohort was considered between 12 and 17 years old) **AD characteristics:** AD severity was classified regarding the pharmacologic treatment **Comparison group:** Children and adolescents without AD or with psoriasis and without AD	To determine the social and behavioural symptoms of children with AD and how it affects their daily lives To examine the effects of AD on interpersonal relations, behaviour, and psychological wellbeing	**Behavioural changes:** • Having AD in childhood and adolescence was associated with mental health problems and the impairment of daily life functioning • Children with AD underwent more behavioural changes than children without AD ($p = 0.009$). Despite not being statistically significant, children with high-potency topical corticosteroids or oral systemic therapy prescribed for AD were the most affected • Childhood AD was associated with nervousness or being afraid ($p = 0.009$), behaviour at home ($p = 0.009$), staying out of trouble ($p = 0.007$) and relationships with other kids ($p = 0.01$) and with siblings ($p = 0.05$) • Rates of depression and anxiety were similar both in both groups • Male sex ($p < 0.001$), older age ($p < 0.001$), lower income ($p < 0.0001$ for low income and $p < 0.007$ for middle income), public or no insurance coverage ($p < 0.001$ and $p = 0.009$, respectively) and comorbid depression ($p < 0.001$), anxiety ($p < 0.001$) and asthma ($p < 0.001$) were identified as predictors increase the rates of behavioural changes

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Cheng, Fishbein, and Silverberg (2021), United States	Quantitative Observational cross-sectional study Questionnaires	Children, adolescents and young adults and their parents ($n = 124{,}267$) Recruitment by computer-assisted interviews from a nation register	**Age range:** 3–22 years old (adolescent cohort was considered between 12 and 17 years old) **AD characteristics:** AD severity was classified regarding the pharmacologic treatment **Comparison group:** Children, adolescents and young people without AD	To determine the prevalence of chronic school absenteeism and missed parental workdays due to caring for children with AD and psoriasis	**Chronic school absenteeism:** • 64.2% of adolescents with AD reported 1 or more missed school days owing to the illness • Adolescents with AD had higher rates of chronic school absenteeism due to their AD ($p = 0.04$) • Having low income ($p < 0.001$), public insurance coverage ($p < 0.001$) and comorbidities such as depression ($p = 0.004$), anxiety ($p = 0.02$), asthma ($p < 0.001$) or hay fever ($p = 0.03$) were factors that affect chronic school absenteeism • Chronic school absenteeism grew as disease severity increased from mild–moderate AD ($p = 0.07$) to severe AD ($p = 0.03$) **Parental work absenteeism:** • Parents had higher rates of work absenteeism due to caring for their children's health than parents of those without AD ($p = 0.002$ for fathers and $p < 0.001$ for mothers) • Parents missed more workdays than parents of those without AD ($p = 0.0006$ for fathers and $p < 0.0001$ for mothers)
Dias et al. (2016), Brazil	Qualitative Interviews	Mothers of children and adolescents ($n = 16$) Recruitment from an ongoing project about chronic skin diseases	**Age range of children and adolescents:** 6–12 years old (only people with 10–12 years old was considered adolescent) **AD characteristics:** There were 6 participants whose children had AD	To identify the events that mothers consider trigger the symptoms of their child's skin diseases and find any differences regarding the child's behavioural profile and disease type	**Mothers' views:** • Mothers reported associated factors like nervousness, sadness, anxiety, aggressiveness, concern and agitation • Some life events triggered exacerbation of AD in children, such as the death of a grandfather, disease severity and a child meeting the father • In family relationship, mothers described behavioural problems regarding the father's absence, fighting, getting slapped, tidying up and speaking very much • Mothers' views about emotional symptoms were validated by clinical staff

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Ezzedine et al. (2020), France	Quantitative Observational cross-sectional study Questionnaires	Parents and adolescents ($n = 399$ dyads) Recruitment by a polling institute	**Age range:** 12–17 years old **AD characteristics:** All the adolescents had AD: 57.6% with mild AD, 32.8% with moderate AD, 9.5% with severe AD **Comparison group:** None	To evaluate the impact of AD on the daily lives of adolescents and to assess the burden of the disease on their families	• Parents and adolescents had a moderate effect on QoL owing to the AD they suffer **QoL in adolescents:** • Adolescents' burden was positively associated with clinical severity ($p < 0.001$), masculine gender ($p = 0.03$), disease duration < 5 years ($p = 0.001$), AD present in parents ($p = 0.05$), father participated in the study ($p < 0.001$) and child or parent attended therapeutic patient education sessions ($p < 0.001$) • In adolescents between 12 and 14 years old, QoL decreased as age increased ($p < 0.001$), with decreasing disease duration ($p = 0.005$), and when parents had AD ($p = 0.031$) • In adolescents aged 15–17 years, lower QoL was associated with higher disease severity ($p < 0.001$), male sex ($p = 0.001$) and younger age of the parent who participated in the survey ($p < 0.001$) **QoL in families:** • Family burden was higher in parents of older children ($p = 0.01$), with higher disease severity ($p < 0.001$), shorter disease duration ($p = 0.013$), in male parents ($p = 0.004$) and in younger parents ($p = 0.006$)
Ghio et al. (2020), England	Qualitative Phenomenology study Interviews	Adolescents and young people ($n = 97$) Recruitment from dermatology departments, general practice clinics, social media, dermatology charities' mailing lists, universities and school	**Age range:** 13–25 years old (people with 13–19 years old was considered adolescent) **AD characteristics:** 23 participants had AD	To explore the perceptions of young people regarding their AD and how they are associated with self-care and living with the disease	**Self-care of AD:** • Adolescents and young people perceived AD as a long-term condition, with flare-up and asymptomatic periods • Information that health professionals give them about 'growing out of AD' was contradictory to their experiences because all the participants continued with AD into adolescence • A challenge of adolescents and young people with AD is to identify what triggers a flare-up and to assess treatments approaches **Adaptation to AD:** • Having AD implies a continuous learning and adaptation process. They experimented changes over time and learnt how to live and how to apply what they knew about AD • Many young people described uncertainty regarding the impact that AD would have on their lives in the long term. In contrast, some adolescents show little hope in their AD resolution. This perspective was related to a disengagement in help-seeking behaviours

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Ghio et al. (2021), United Kingdom	Qualitative Interviews	Adolescents and young people ($n = 28$) Recruitment from dermatology departments, general practice clinics, social media, dermatology charities' mailing lists, universities, school, GP database search and mail-out to people whose records included a diagnosis code for AD	**Age range:** 13–25 years old (people with 13–19 years old was considered adolescent) **AD characteristics:** All the participants had AD Severity of AD was not evaluated	To explore adolescents and young adults' experiences of AD related symptoms to identify psychosocial needs when dealing with them	**Impact related to AD symptoms:** • Substantial impact owing to signs and symptoms of AD • Not being able to sleep made the stress and the pain that adolescents with AD suffer worse **Psychosocial needs:** • Need to feel understood. People with AD, or familiar with the disease, from the participants' social network provided understanding and support. They identify providing a label as something positive to make AD aspects visible • Participants felt that most people think that AD is a mild condition, and they minimise and do not perceive it as a serious disease. This concept of AD reduces people's comprehension and support about the impact of it • Dealing with unsolicited advice from people that do not have or know about AD, who show the management of AD as easy, made adolescents feel misunderstood and frustrated • Despite wanting AD to be visible, many adolescents stated that they wanted it to go unnoticed so as not to lose their place in society and not be asked about their condition • Many participants reported having covered or changed their clothing and avoided participating in activities to prevent others commenting about their AD • Adolescents' self-esteem was affected by AD, both in males and females • People with AD who shared experiences and advice felt supported and understood and reduced the shame brought on by their condition • Participants found a lack of resources available for AD support, especially emotional support • Participants felt emotionally misunderstood by the health professionals who cared for them • Some participants reported feeling depressed and anxious about AD

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Halvorsen et al. (2014), Norway	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 3556$) Recruitment in schools	**Age range:** 18–19 years old **AD characteristics:** 346 of the adolescents had AD. The 71.5% never had AD, the 18.7% had previously AD and the 9.7% of them had current AD **Comparison group:** None	To examine the association of AD and itching with suicidal ideation, mental health problems and social functioning in adolescents	**Suicidal ideation:** • Adolescents reported more prevalence of suicidal ideation than those without AD (16% vs. 9%). When they itched the prevalence of suicidal ideation increased to 23.8% **Mental health problems:** • Prevalence of mental conditions in people with AD increased when they itched. 22.1% of the adolescents with AD and itching reported mental health problems and 42.4% had mental distress • Adolescents reported more mental health problems *with an adjusted OR of 1.72 (95% CI 1.21–2.45) and* mental health distress *adjusted OR of 1.63 (95% CI 1.23–2.16)* than those who had never suffered from AD. This association was statistically significant in separate analyses in girls but not in boys **Social functioning:** • An association between AD and low attachment to family was observed, *showing a crude OR of 1.36 (95% CI 1.03–1.80)*
Howells et al. (2017), United Kingdom	Qualitative Interviews	Adolescents, adults and parents of children ($n = 37$) Recruitment through the National Eczema Society Facebook page, Twitter posts and email invitations	**Age range:** 16 years old or over **AD characteristics:** All the participants or their children had AD	To engage adolescents, adults and parents of children with AD, to determine what long-term control means to them as well as explore the most important, feasible and acceptable aspects and methods of measuring long-term control	• Participants suffered observable signs or symptoms, unobservable symptoms, scratching, effects on daily life and psychosocial impact due to AD • Parents of adolescents analysed AD longitudinally, while doctors evaluated the condition at a specific time without fluctuations. They thought control measures should include self-reporting and attention should be more personalised • Adolescents reported spending less time on skin care when they were not suffering a flare-up, because they were exhausted from conditions brought on by flare-ups

(Continues)

TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Keller et al. (2021), Germany	Quantitative Observational cross-sectional study Questionnaires	Children ($n = 2701$, $n = 937$ adolescents) Recruitment through advertisements at clinics, schools and health institutions	**Age range:** 3–18 years old (adolescent group was considered between 11 and 18 years old) **AD characteristics:** 247 of the adolescent participants (26.4%) had AD AD severity was not evaluated **Comparison group:** Children between 3 and 10 years old	To study the association between atopic diseases and behavioural difficulties	• Adolescents with AD reported more behavioural difficulties than young children • No significant associations were found between AD and emotional problems, peer relationship problems, hyperactivity and/or inattention or problems in their conduct nether in parent-report nor self-report. AD was only associated with behavioural problems in the children's group
Kim et al. (2017), Korea	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 145{,}702$) Data collected from a web-based survey performed at school	**Age range:** 12–18 years old **AD characteristics:** 10,020 (6.8%) participants had AD AD severity was not evaluated **Comparison group:** adolescents without AD	To explore if smoking is associated with AD in adolescents	• Adolescents with AD smoked more and were more exposed to passive smoking than those without AD ($p = 0.003$ and $p < 0.001$, respectively) • Active smoking was associated with AD and there was a dose–response relationship ($p < 0.001$) • Electronic smoking was not associated with AD
Kim, Sim, and Choi (2017), Korea	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 299{,}659$) Data collected from a web-based survey performed at school	**Age range:** 12– 18 years old **AD characteristics:** 20,094 participants had AD AD severity was not evaluated	To determine the associations of allergic rhinitis, AD and asthma with school performance in adolescents	**Academic performance:** • AD had a negative relation with school performance ($p < 0.001$) • There were no differences of AD prevalence depending on each economic level **School absenteeism:** • 4.2% of AD subjects absented between 1 and 3 days from school and 1.0% of them did it 7 days or more in the last year due to the disease ($p < 0.001$)

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TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Lee and Shin (2017), Korea	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 72{,}435$) Data collected from the survey Ninth KYRBS 2013	**Age range:** 12–17 years old **AD characteristics:** 6.8% of the adolescents had AD **Comparison group:** Adolescents without AD	To assess the association between AD and depression or suicidal behaviours in adolescents	**Depression symptoms and suicidal behaviour:** • Adolescents with AD had a higher prevalence of drinking problems ($p = 0.002$), shorter sleeping duration ($p < 0.001$), unsatisfactory sleep ($p < 0.001$) and violence experiences ($p < 0.001$) • AD and depression symptoms and suicidal behaviour are positively related • Higher prevalence of felt sadness and hopelessness, considered suicide, planned suicide, attempted suicide, or depression symptoms in adolescents with AD compared with those without it • Being female, older age, lower family affluence score, having parents with lower educational attainment, smoking problems, drinking problems, short sleeping period, unsatisfactory sleep and violence experiences had higher prevalence of depression symptoms and suicidal behaviours ($p < 0.01$) • No differences between sexes regarding mental health variables in adolescents with AD
McKenzie and Silverberg (2018) United States	Quantitative Observational cross-sectional study Questionnaires	Children and adolescents ($n = 13{,}275$) Data collected from a national survey	**Age range:** 0–17 years old (adolescent group was considered between 11 and 17 years old) **AD characteristics:** 1603 of the participants had a history of AD **Comparison group:** children and adolescents without AD	To determine the prevalence of AD and related outcomes in children born in differently structured families	• Adolescents with AD reported more rates of 'only good', 'fair' or 'poor' than 'very good' or 'excellent' overall health • Prevalence of depression, anxiety and stress was higher in adolescents with AD than those without it (OR 3.073, 95% CI 1.433–6.593; OR 3.290, 95% CI 1.680–6.440; OR 2.300, 95% CI 1.229–4.302, respectively) • Families with a non-biologic mother or father had low data for overall health and more reported depression, anxiety and frequent stress (OR 3.162, 95% CI, 1.633–6.121 and OR 1.731, 95% CI, 1.005–2.981)

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TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Paller et al. (2023), International (North America, Latin America, Europe, Middel East/Eurasia and East Asia)	Quantitative Observational cross-sectional study Questionnaires	Children and adolescents and their caregivers and physicians ($n = 1447$, 746 of them adolescents; 1447 and 1092, respectively) Recruitment through online panels: broad-reach portals, special-interest sites and direct-email campaigns	**Age range:** 6–17 years old (adolescent group was considered between 12 and 17 years old) **AD characteristics:** All participants had moderate-to-severe AD	To assess the importance of QoL items and to identify the differences between them regarding the burden in children and adolescents with AD from patients', caregivers' and physicians' perspectives	**Adolescents reported QoL:** • Sleep disturbances were the most important QoL item for survey's participants, followed by feeling ashamed because of AD in all age groups • Adolescents felt sad and anxious and relief from treatment being limited over time and felt irritated because of AD **Caregivers reported QoL:** • For caregivers, sleep disturbances were also the most important item affected due to AD, followed by feeling ashamed, feeling sad/anxious, feeling irritated and relief of treatment is limited over time • Between 1%–3% of caregivers reported not being affected by AD **Physicians reported QoL:** • Physicians ranked feeling ashamed as the most important QoL item altered by AD. They reported that, for adolescents, the affected items were being singled out, feeling sad or anxious, disturbed sleep and not being able to meet/play with friends • Between 12%–14% of physicians reported that their patients were not impacted by AD • 70% of physicians affirmed that they asked about sleep quality impact during their patients' appointments and between 35% and 41% asked about school impact owing to AD **Differences between variables:** • In caregiver and children and adolescent groups there were no significant differences in the results regarding age. Physicians scored differently for 'disturbed sleep' and 'having to follow a specific diet' (more affected in children) and 'impact on clothing choice', 'feeling ashamed', 'being singled out', 'voluntary isolation from others' and 'feeling sad/anxious' (more affected in adolescents) ($p < 0.001$ for all items)
Puddicombe et al. (2018), Nigeria	Quantitative Observational cross-sectional study Questionnaires	Children ($n = 228$) Recruitment in a dermatology clinic	**Age range:** 0–16 years old (adolescent group was considered between 11 and 16 years old) **AD characteristics:** 47 of the participants had AD, 4 (8.5%) of them were adolescents	To examine the impact of AD on children's QoL and to identify relationships between it and disease severity and patient variables	• Adolescent with AD reported a higher impact on QoL • Most affected areas were itching/scratching, embarrassment and playing. They also reported an impact on friendship, school life, sleep pattern and treatment of the disease • No statistical significance between gender, age or socioeconomic status was found • A negative impact on QoL is directly correlated with disease severity

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TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Ramirez et al. (2019), UK	Quantitative Longitudinal cohort study Questionnaires	Children ($n = 13,988$) Recruitment of pregnant women to Avon Longitudinal Study of Parents and Children (ALSPAC)	**Age range:** Children followed between 1 and 16 years old **AD characteristics:** 4938 (35.3%) of the participants had AD	To determine if there is sleep impairment in children with active AD and if the severity of the disease influences it	• Hours of nightly sleep decreased as age increased, so that it ranged from 11.2 ± 1.0 h at 2 years old and 8.7 ± 0.9 h at 16 years old • Children with AD slept an average of 2 min less per day than those without the disease (95% CI, −4 to 0) and this was associated with AD severity • Children with active AD had lower quality of sleep than those who did not suffer from it. They were almost 50% more likely to report more disturbances in sleep quality during childhood (OR 1.48; 95% CI, 1.33–1.66), compared to those without AD • AD severity was negatively associated with sleep quality. Children with severe or very severe active AD were almost 1.7 times more likely to report more sleep quality disturbances (OR, 1.68; 95% CI, 1.42–1.98) compared to those without AD
Saeki et al. (2023), Japan	Quantitative Observational cross-sectional study Questionnaires	Children and adolescents ($n = 5702$, 2042 of them adolescents) Recruitment via direct emailing, special interest websites and broad-reach portals	**Age range:** 6 months to 18 years old (adolescent group was considered between 12 and 18 years old) **AD characteristics:** 182 (9.1%) of the adolescents had AD The 63.2% of the patients had mild AD, the 32.4% had moderate AD and the 4.4% had severe AD	To study the impact of AD in children and adolescents on family QoL and the relationship between the family and household environment on the prevalence and severity of the disease	**Impact on family QoL:** • Impact on QoL increased as the severity of AD increased • For adolescents, AD had an impact on spending, emotional distress, family sleep and tiredness **Impact on parents' time:** • Mean number of hours spent caring for a child or adolescent with AD in the past week increased as AD severity increased • Parents reported spending 1.80 ± 4.10 h when they had mild AD, 6 ± 8.90 when they had moderate AD and 22.96 ± 34.59 when they had severe AD • Number of workdays missed for AD-related issues in the past month also increased as AD severity increased • 62.7% of parents of adolescents with severe AD missed at least 1 workday and 25.2% were absent from work more than 4 days in the last month. In those parents of adolescents with moderate AD, the prevalence of missing at least 1 workday was 51.6% and in those with mild AD 27.3%

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Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Sanclemente et al. (2021), Colombia	Quantitative Observational descriptive cross-sectional study Questionnaires	Adolescents and adults ($n=212$, 53 of them adolescents) Recruitment from dermatological consultation of private practice offices, health provider institutions and hospitals	**Age range:** 12–76 years old (adolescent group was considered between 12 and 18 years old) **AD characteristics:** All patients had AD. The 24.5% had mild AD, the 36.8% had moderate AD and the 38.7% had severe AD	To describe sociodemographic data, clinical features and economic burden of adolescents and adults with AD and their families	• 76.60% of adolescents reported itching when sweating • 25.5% of adolescents suffered anxiety, 14.9% had depression, 8.5% had attention deficit and 44.7% suffered sleep disturbances • All adolescents were economically dependent. Money spent on the disease per month was similar in adolescents and adults. Most adolescents spent between 50 and 130 dollars per month on AD
Santos et al. (2021), Brazil	Quantitative Observational cross-sectional study Questionnaires	Children, adolescents and their caregivers ($n=34$, 19 of the adolescents) Recruitment from dermatological consultation	**Age range:** 4–16 years old (adolescent group was considered between 10 and 16 years old) **AD characteristics:** All patients had AD. The 32% of the participants had mild AD, the 44% had moderate AD and the 24% had severe AD	To evaluate impact of AD on QoL in children, adolescents and their caregivers as well as the relation between it and disease severity	**QoL:** • In children and adolescents with AD, impairment of QoL was mainly caused by itching and sleep disturbances • Impact on principal caregivers and economic issues due to the treatment • Disease severity and QoL were negatively correlated. Patients with severe AD and their caregivers experimented more negative impact on QoL than those with mild AD ($p=0.001$ and $p<0.001$, respectively) • No differences between QoL and gender, time of care or scholarship of parents were found

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TABLE 1 | (Continued)

Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Xie, Chan, and Chan (2020), China	Qualitative Phenomenological approach Interviews	Children and adolescents ($n = 17$, 10 of the adolescents) Recruitment from school children	**Age range:** 8–12 years old (adolescents were considered between 10 and 12 years old) **AD characteristics:** All participants had AD, 11 had severe AD and 6 had moderate AD	To comprehend the experiences of children with AD collecting their voices	**Impact on adolescents:** • Most participants complained about itching as their physical challenge. Itching and scratching were one of the main causes of their psychological stress, expressed as feeling irritability and having sleep disturbances • AD symptoms limited adolescents' daily life. The most affected areas were diet, play and sports. They felt frustrated, angry and unhappy because of the restrictions on their activities • Many participants perceived the AD as a long-term disease, and they complained and were desperate about the chronic and recurring process of living with it • Some participants described a relation between their skin condition and their psychological state, reporting changes in their mood and increase of stress due to AD **Impact in the family:** • Adolescents resent when their parents tell them not to scratch because they felt misunderstood. This caused conflicts and negative emotions for them • Many adolescents complained about the discomfort of applying topical treatments and reported that their parents always forced them to apply them. Finally, they admitted that the treatments were beneficial for their AD • Adolescents also felt more academic pressure when trying to meet parental expectations and related exam moments to outbreaks, which they felt worried about • AD was the cause of conflicts in the family, but there was no significant deterioration in the relations between its members. Conflicts with parents made most of the participants feel more anguished and anxious in addition to the psychological impact that AD had on them. On the contrary, families provided support for adolescents with AD **Impact in school:** • The reactions to the injuries produced by AD and the appearance of those who suffer from it were the main sources of bullying within the school environment • Adolescents reported that their peers ignored and avoided them. Most participants described problematic relationships with their classmates at school, with being bullied verbally, socially and even physically because of their AD • Teachers also often displayed a lack of knowledge and rejection towards AD, which led to negative feelings towards them on the part of the adolescents • For adolescents, school was a place that generated chronic stress, reporting anger and unhappiness **Neighbourhood impact:** • Participants with AD experienced discrimination and stigmatisation in their neighbourhood and society in general because of their skin condition **Self-impact:** • Adolescents reported feeling lonely, misunderstood and desperate due to their situation • The self-esteem and self-concept of adolescents was altered. This significantly affected their interpersonal relationships and aggravated their psychological disorders

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Author(s) & (year) & Country	Study design & data collection methods	Study population & settings	Participant characteristics	Aim	Main themes & results
Ziyab et al. (2023), Kuwait	Quantitative Observational cross-sectional study Questionnaires	Adolescents ($n = 3864$) Recruitment in public middle schools	**Age range:** 11–14 years old **AD characteristics:** All the participants had AD, the 10.2% of them had current AD	To investigate the prevalence of adolescent AD symptoms and severity as well as to determine sex differences, frequency of sleep disturbance and evaluated risk factors	**Sleep disturbances:** • Adolescents with AD and current itchy rash reported keeping awake at night due to itching 1 night per week (21.7%) or more than 1 nights per week (12.7%) • 31.5% of subjects with current itchy rash reported that their itchy rash never completely cleared at any time in the last year • Differences in the frequency of sleep disturbance at night and persistence of itchy rash regarding gender • Adolescents 14 years old or over reported more sleep disturbance than those aged under 12 • Household exposure to environmental tobacco was associated with sleep disturbance in adolescents with AD ($p = 0.001$) • The use of antihistamine at least once per month increased as the sleep disturbance increased ($p < 0.001$)

sleep disturbances, mental health well-being and behaviour disturbances and on school and social life; Theme 2. Impact of AD on the family, that includes parents QoL, family functioning and lack of support from healthcare professionals.

3.1 | Theme 1: Impact on Adolescents

3.1.1 | Self-Perceived QoL and Sleep Disturbances

Although some studies investigated the impact of AD on some of the QoL dimensions, a global analysis of the construct was more commonly found. General questionnaires, such as the EuroQoL-5D (EQ-5D) (Ezzedine et al. 2020), or specific dermatological questionnaires, like the Dermatology Life Quality Index (DLQI) (Ballardini et al. 2014; Barbarot et al. 2022), were used to assess QoL in the studies. Numerous studies reported that the QoL and daily functioning of adolescents with AD were negatively affected (Ballardini et al. 2014; Barbarot et al. 2022; Cheng, Fishbein, and Silverberg 2021; Ezzedine et al. 2020; Ghio et al. 2020, 2021; Howells et al. 2017; Paller et al. 2023; Puddicombe et al. 2018; Santos et al. 2021; Xie, Chan, and Chan 2020). Likewise, it was observed that the more the clinical severity of AD, the greater the deterioration in QoL (Ballardini et al. 2014; Ezzedine et al. 2020; Puddicombe et al. 2018; Santos et al. 2021). AD generally occurs in outbreaks and QoL was more affected in adolescents with ongoing symptoms. Itching and scratching significantly impacted on the daily life of adolescents with AD (Ballardini et al. 2014; Ghio et al. 2020).

Adolescents with AD experienced the disease as a long-term condition needing a process of adaptation which, in most cases, was difficult and time-consuming (Ghio et al. 2020). Therefore, those adolescents who have experienced the condition for a shorter time had a greater impact on their health and QoL found through quality of life questionnaires such as the Dermatology Life Quality Index (DLQI), which may be due to insufficient time to adapt (Ezzedine et al. 2020). They also complained and reported feeling distressed and frustrated about the chronic and recurring process of living with AD (Xie, Chan, and Chan 2020). Furthermore, adolescents QoL deteriorated as they got older (Ezzedine et al. 2020). In addition, most studies showed that other problems such as sleep disturbances or other psychosocial problems also caused a decrease in QoL (Paller et al. 2023; Santos et al. 2021; Xie, Chan, and Chan 2020). In contrast, Ballardini et al. (2014) did not find an association between the impairment on QoL of adolescents with AD with the physical comorbidities they have, such as asthma, that can coexist with AD (Ballardini et al. 2014). Only two studies explored the impact on adolescents' self-perceived health. One study reported that adolescents had low levels of health, which is consistent with other studies reporting QoL (McKenzie and Silverberg 2018), while adolescents in another study reported having good self-rated health (Ballardini et al. 2014).

As regards gender, four studies analysed the influence of gender on AD and QoL. Some studies did not find differences between gender and QoL (Ezzedine et al. 2020; Santos et al. 2021) as well as academic impact, particularly average grades and being eligible for high school (Brew et al. 2019). However, one study by Ballardini et al. (2014) associated gender with a deterioration in

QoL or a greater impact due to the condition. They found that females were the most affected, answering negatively to how healthy they consider themselves to be and how happy they are.

Many adolescents had altered sleep patterns due to AD, which was described as a reduction in sleep time and a decrease in sleep quality (Lee and Shin 2017; Paller et al. 2023; Puddicombe et al. 2018; Ramirez et al. 2019; Sanclemente et al. 2021; Xie, Chan, and Chan 2020; Ziyab et al. 2023). The deterioration of sleep quality was directly related to the severity of the disease and the presence of itching (Ramirez et al. 2019; Ziyab et al. 2023). In general, sleep hours decreased with age, but with the presence of AD sleep duration was more reduced, finding statistically significant differences, but clinically negligible since the difference was 2 min less per day in comparison with healthy peers (Ramirez et al. 2019). Howells et al. (2017) found that sleep disturbances can persist as age advances since adolescents verbalised challenges to carry out their daily duties. In this way, sleep disturbances were a key factor in causing psychological stress and decreased concentration and deteriorating QoL (Paller et al. 2023; Santos et al. 2021; Xie, Chan, and Chan 2020).

3.1.2 | Mental Health Well-Being and Behaviour Disturbances

Adolescents with AD appear to have a higher prevalence of mental health problems than those without AD. Anxiety and depression were among the most prevalent mental conditions (Ghio et al. 2021; Halvorsen et al. 2014; Lee and Shin 2017; McKenzie and Silverberg 2018; Paller et al. 2023). However, Cheng, Fishbein, and Silverberg (2021) found similar rates of anxiety and depression between adolescents with AD and those without. Only one study reported attention deficit as affecting adolescents with AD (Sanclemente et al. 2021). Furthermore, mental adolescents' health and well-being were adversely affected by symptoms such as itching and scratching (Halvorsen et al. 2014; Howells et al. 2017; Xie, Chan, and Chan 2020).

AD also affected adolescents' mood and feelings. Adolescents reported feeling poorly understood, nervous, irritable, sad and desperate due to their skin condition, especially when they could not control symptoms (Cheng, Fishbein, and Silverberg 2021; Ghio et al. 2021; Howells et al. 2017; Lee and Shin 2017; Paller et al. 2023; Xie, Chan, and Chan 2020). Self-esteem and self-concept were also impaired which was related to psychological distress and deterioration in their interpersonal relationships (Ghio et al. 2021; Xie, Chan, and Chan 2020).

Regarding behavioural problems, adolescents with AD present with more disturbances than their peers (Cheng and Silverberg 2021). Although Keller et al. (2021) found similar results, the differences were not statistically significant. Adolescents display more behavioural problems in the home (daily coexistence and relationship with siblings) or at school (relation with other children or adolescents) (Cheng and Silverberg 2021). Likewise, they also suffered more distressing experiences such as bulling or threatening by their peers (Lee and Shin 2017). In this sense, it is notable that sometimes parents rated their children's problems higher than the children themselves (Keller et al. 2021). Moreover, these disturbances were related to other symptoms such as itching or scratching, sleep disturbances as well as mental health comorbidities (Cheng, Fishbein, and Silverberg 2021; Howells et al. 2017). Compared to other chronic conditions like asthma, adolescents with AD had similar or greater behavioural problems (Cheng, Fishbein, and Silverberg 2021). Cheng, Fishbein, and Silverberg (2021) also identified male gender, greater severity of the disease and older age as predisposing factors to behavioural problems in adolescence.

Some researchers studied addictive behaviours in adolescents with AD, and reported greater problems with alcohol and tobacco consumption (Kim et al. 2017; Lee and Shin 2017; Sanclemente et al. 2021). Adolescents with AD smoked more actively and passively than those without AD. Higher suicide ideation and attempts were reported, which increased with the particular presence of pruritus and disease severity (Halvorsen et al. 2014; Lee and Shin 2017). Mental distress was directly related to suicidal ideation (Halvorsen et al. 2014). Additionally, Lee and Shin (2017) identified sociodemographic factors that lead to symptoms of depression and suicidal behaviours such as being female, older age, lower family affluence score, having parents with lower educational attainment, smoking problems, drinking problems, short sleeping period, unsatisfactory sleep and violent experiences.

3.1.3 | Impact on School and Social Life

School life during adolescence may be affected by AD as two studies found that academic performance was lower for adolescents with AD (Kim, Sim, and Choi 2017; Puddicombe et al. 2018). Some authors suggested a relationship between a decrease of academic performance and the sleep and attention disturbances produced by AD (Kim, Sim, and Choi 2017; Puddicombe et al. 2018). Interestingly, an investigation carried out on twins reported that siblings with AD showed greater possibilities of entering high school and obtaining better grades without gender or age differences (Brew et al. 2019), although these authors suggested further research to affirm that there is a greater academic performance.

School absenteeism appears to be higher in adolescents with AD compared with their peers. Cheng and Silverberg (2021) showed that 64.2% of adolescents reported one or more missed school days owing to AD and for some it turned into chronic absenteeism. In this context, it is a chronic phenomenon which is exacerbated in the presence of comorbidities, such as depression (Cheng and Silverberg 2021). Furthermore, the loss of school days appears to be directly related to the severity of AD (Cheng and Silverberg 2021; Kim, Sim, and Choi 2017). One study reported that having low income was also a predictor of higher rates of chronic school absenteeism (Cheng and Silverberg 2021). In adolescents with AD, the number of missed school days decreased over time, but the prevalence of chronic absenteeism did not significantly change with time (Cheng and Silverberg 2021).

The presence of AD also influenced adolescents' relationships with peers and teachers in their community. They reported being bullied, as well as being ignored and avoided by their peers (Ghio et al. 2021; Xie, Chan, and Chan 2020). Adolescents identified the reaction to their physical appearance caused by AD as the main source of bullying in school (Xie, Chan, and Chan 2020). The relationship with teachers was also affected since adolescents did not feel understood and sometimes even rejected due to AD, which was caused by the lack of knowledge about AD and its impact on daily life (Ghio et al. 2021; Xie, Chan, and Chan 2020). School and social environment are very important in personal development at this vital stage, and the AD condition produced chronic stress, anger and unhappiness and adolescents tended to associate it with school life (Xie, Chan, and Chan 2020).

Adolescents felt that people minimised their condition or had erroneous understanding of AD, like thinking it was a contagious disease. This situation reduced people's comprehension and support about the impact of AD. Therefore, adolescents felt misunderstood and frustrated and they expressed a great need to feel normal and be understood and supported by their community (Ghio et al. 2021; Xie, Chan, and Chan 2020). Adolescents expressed being discriminated and stigmatised in their neighbourhood and society in general because of their skin condition (Xie, Chan, and Chan 2020). Some adolescents reported avoiding leaving home because they felt ashamed of their condition or having problems with meeting friends and participating in activities such as sport, so their social integration was consequently impaired (Ghio et al. 2021; Howells et al. 2017; Paller et al. 2023; Xie, Chan, and Chan 2020).

3.2 | Theme 2: Impact of AD on the Family

3.2.1 | Parents Quality of Life

Parents and caregivers of adolescents with AD reported a high impact on their lives, with a consequent deterioration in QoL (Barbarot et al. 2022; Ezzedine et al. 2020; Paller et al. 2023; Saeki et al. 2023; Santos et al. 2021). The impact of caring for adolescents with AD was directly related to disease severity (Barbarot et al. 2022; Ezzedine et al. 2020; Santos et al. 2021) and indirectly related to disease duration (Ezzedine et al. 2020). Only one study reported differences between the parents' gender, in that males and younger parents appeared to bear the greatest burden (Ezzedine et al. 2020). When parents themselves had AD, the impact on their QoL and the family burden was greater than for families without prior experience of AD (Ezzedine et al. 2020).

Studies indicated that the biggest challenges in parents' daily lives were psychological distress, interpersonal relationships, sleep patterns, free time and housework (Barbarot et al. 2022; Dias et al. 2016; Paller et al. 2023; Saeki et al. 2023). Thus, some parents expressed feeling isolated due to their children's AD and considered it important to share experiences and be understood (Howells et al. 2017). In addition to disease symptoms and resources spent on medical consultations, treatment costs impacted financially (Sanclemente et al. 2021; Santos et al. 2021).

Regarding the balance between family life and work, the greater the disease severity, the more time parents spent caring for their adolescents (Barbarot et al. 2022; Saeki et al. 2023). Several studies reported that parents missed days of work due to their children's conditions, reporting higher rates of work absenteeism (Barbarot et al. 2022; Cheng, Fishbein, and Silverberg 2021; Saeki et al. 2023). Barbarot et al. (2022) reported an absence of parents between 1 and 3 days in mild cases and approximately 6 in severe AD in the last 4 weeks from their workplace. Saeki et al. (2023) reported 1-day absence for 27% of children with mild eczema, reaching 62% in severe cases. In addition to time spent caring, the parents' productivity at work was affected due to not getting enough sleep and experiencing tiredness (Barbarot et al. 2022).

3.2.2 | Family Functioning

Some studies found differences between parent reports and adolescent self-reports. Keller et al. (2021) suggested that adolescents express fewer difficulties than their parents do. In contrast, Paller et al. (2023) found that caregivers assign a different importance in the impact of AD, like the increase of feeling anxious and sad and the decrease of having difficulties to meet friends, compared with their children. Family dynamics were affected by conflicts and negative emotions. Dias et al. (2016) explored mothers' views about AD and the impact on their lives, and they reported problems in family relationship related to adolescents' behavioural problems due to factors such as the father's absence, fighting, not being disciplined, not tidying up and speaking very much. Adolescents with AD showed a low attachment to family (Halvorsen et al. 2014). Some of the studies analysed the deterioration of parent–child relationships, but two studies did not find significant associations (McKenzie and Silverberg 2018; Xie, Chan, and Chan 2020). However, adolescents expressed discomfort with their parents when forced to apply topical treatments, or when told not to scratch. Regarding educational issues, they felt pressure by parents' expectations. As a consequence, they felt misunderstood and it caused conflicts and negative emotions (Xie, Chan, and Chan 2020). Despite these findings, families represented one of the main pillars of support for adolescents with AD (Xie, Chan, and Chan 2020).

McKenzie and Silverberg (2018) affirmed that the prevalence of AD depends on family structure, affecting predominantly single-parent families, families with no father present, non-biologic fathers or unmarried mothers. Regarding this family structure, adolescents with a non-biologic mother/father also expressed having less overall health and more depression, anxiety and frequent stress (McKenzie and Silverberg 2018).

3.3 | Lack of Support From Healthcare Professionals

Adolescents with AD perceived a lack of resources to help them cope with their disease, in particular regarding emotional support (Ghio et al. 2021; Halvorsen et al. 2014). The use of resources was of vital importance for adolescents with AD, since those who shared experiences and advice felt supported and understood which reduced the impact of the disease (Ghio et al. 2021). Furthermore, adolescents perceived that the information provided by health professionals were not entirely realistic when compared to their experience, especially when they gave them information about the duration of the disease and flare-ups, and they felt misunderstood by them (Ghio et al. 2020, 2021; Howells et al. 2017). Moreover, based on the findings of Paller et al. (2023), asking about sleep disturbances was common in 70% of physicians, but only between 35% and 41% asked about the impact on school and other psychosocial factors which AD affected.

Although we have not focused on healthcare professionals' perceptions, one study was included as it examined the difference between the adolescents' experiences and professionals' perceptions. In general, physicians reported less impact related to AD than the impact experienced by adolescents. Between 12% and 14% of physicians reported that their patients' QoL were not impacted by AD. Unlike adolescents, physicians gave a different degree of importance to issues such as family tensions, clothing choices or different feelings due to AD (Paller et al. 2023).

4 | Discussion

In this systematic review, AD appears to have a significant adverse biopsychosocial impact on adolescents and their families. The findings suggest that both adolescents and their families are affected by the condition in all areas of their health and particularly in their psychological and social well-being.

As shown, AD negatively affects the QoL of adolescents and has biopsychosocial consequences (Cheng, Fishbein, and Silverberg 2021; Ezzedine et al. 2020) because it entails numerous alterations in their daily lives. Beyond the severity of the disease, which impairs QoL, a clear pattern of adolescents who are especially vulnerable to the impact of AD on QoL was not evident. This finding could suggest that the differences in this indicator could be associated with the determinants of health and not with the condition (Viner et al. 2012). Despite this, no studies were found that assessed the relation of social determinants of health with the impact of AD itself. Regarding gender, there was no clear consensus that identifies which gender is at a higher risk of suffering a greater impact due to AD. Some studies suggest that the female gender is the most affected, but did not report statistically significant differences (Ballardini et al. 2014).

In recent decades, a significant deterioration in the mental health of adolescents has been reported and, particularly for those who have AD (Piao et al. 2022). Among the most prevalent are anxiety and depression conditions, as well as increased behavioural problems and suicidal ideation (Piao et al. 2022), which is consistent with the ranking of mental health conditions in the general population but worsened by AD (Halvorsen et al. 2014; Lee and Shin 2017). Considering the alterations in body image due to the disease (Ghio et al. 2021; Xie, Chan, and Chan 2020), it would be important to research if eating disorders are more prevalent for adolescents with AD.

At school level, adolescents appear to experience isolation from both classmates and lack of support from teachers (Xie, Chan, and Chan 2020). Greater knowledge of the teachers about the condition improves its management and QoL in the case of young children (Akcay et al. 2014). In this way, research about teachers' attitudes and competences regarding the management of adolescents with AD seems necessary. Since academic performance and school absenteeism are two of the most reported issues by adolescents (Cheng and Silverberg 2021; Kim, Sim, and Choi 2017), they could benefit from inclusive educational methodologies. This could reduce reported consequences, particularly when the condition is associated with attention deficit disorders and behavioural problems, which negatively influence school life (Cheng and Silverberg 2021; Kim, Sim, and Choi 2017). Previous studies show that coordination between school and health education, campaigns coordinated by healthcare professionals such as nurses, convey numerous benefits to adolescents health (Francis et al. 2021). Along these lines, it is also necessary to consider sleep disturbances since they are one of the main problems related to AD and some studies suggest that stress and concentration deficit (Paller et al. 2023; Xie, Chan, and Chan 2020) can significantly affect academic performance.

Only two studies analysed the experiences of adolescents with their peers (Ghio et al. 2021; Xie, Chan, and Chan 2020). Social health is a vital area for everyone, particularly adolescents because they are developing their personality and disturbances in this stage could persist into adulthood (WHO 2021). Therefore, addressing social problems experienced by adolescents is important. Increased awareness and knowledge of the general population about AD could reduce the social impact on adolescents as such strategies have been especially effective in infectious diseases in recent years (Saadatjoo et al. 2021).

The findings suggest that parents of adolescents with AD experience numerous impacts on their psychosocial health. Work absenteeism due to taking care of their children was a common factor in parents' daily lives with a high number of hours and days lost being reported (Barbarot et al. 2022; Saeki et al. 2023). The impact on parents' work is especially relevant considering the chronicity of AD. Moreover, a balance between work and family life is an important principle for workers and influences their QoL and it could be affected by increased work absenteeism, impairing job satisfaction and psychosocial health (Gragnano, Simbula, and Miglioretti 2020). Parents experience impaired QoL which is related to disrupted sleep patterns, balancing work life demands and psychological and social health (Barbarot et al. 2022; Ezzedine et al. 2020). The results are consistent with those found in research in other chronic conditions, that parents experience numerous challenges in balancing their work and family life (Kish, Haslam, and Newcombe 2020).

With respect to the principal caregiver figure, none of the included studies analysed the situation in terms of gender or compared profiles in this regard. Previous studies showed that mothers are usually the main caregivers and are the most affected by caring for adolescents with a chronic condition (Toledano-Toledano and Domínguez-Guedea 2019). In contrast, Ezzedine et al. (2020) suggest that those who suffer the greatest burden are young fathers, which indicates a need for more research in this area.

Other studies have evaluated the impact of chronic conditions on the family and describe the deterioration of health, increased demands for care and the unmet need for support among other affectations (Pinquart 2019; Toledano-Toledano and Domínguez-Guedea 2019; Wee, Tan, and Chen 2022). On the contrary, with AD, there is little research that evaluates the impact on the entire family, despite the biopsychosocial implications on the different members. One study suggests that family dynamics are altered when one member has AD (Xie, Chan, and Chan 2020) and none included members other than the parents (e.g., siblings or grandparents). Despite these findings and given the heterogeneity of families today, a detailed study of these dynamics would be interesting to explore the aspects most affected by AD and establish improvement plans. An in-depth analysis of adolescents, including the family, would allow for patient- and family-centred care, which is essential for quality care provision (Coyne, Holmström, and Söderbäck 2018; Park et al. 2018).

According to the literature, there is room for improvement in healthcare, since adolescents with AD are not satisfied with the help provided by the system due to the lack of resources and understanding on behalf of physicians (Ghio et al. 2020; Halvorsen et al. 2014; Howells et al. 2017). Previous studies show that, when patients, families and health professionals are included in decision-making, it leads to better patient and parent satisfaction than other models of healthcare. Involving adolescents and their carers helps to promote a therapeutic relationship and better health outcomes (Coyne, Holmström, and Söderbäck 2018).

Nurses, due to their role and competencies, could lead health education programmes and disease management, creating a link between health and education environments. Indeed, a recent integrative review about nurse-led interventions in AD concluded that this care improved the condition and ameliorated its impact on the daily lives of adolescents and their families (Brunner et al. 2023). Thus, we propose a care plan for families and adolescents with AD, which is based on the key findings of this review (Table 2). The nursing care plan is a fundamental tool for the nursing care process. We employed NANDA taxonomies for diagnosis identification, NOC for goal planning and assessment and NIC to develop interventions to guide the delivery of nursing care from an adolescent- and family-centred perspective (Moorhead, Swanson, and Johnson 2024; NNNConsult 2023; Wagner, Butcher, and Clark 2023). The use of this international taxonomies allows us to capture the contribution of nursing to health, enables cross-country comparisons of nursing practice and promotes the development of nursing care (Carpenito-Moyet 2006). We proposed a selection of diagnoses based on the findings of this research in such a way as to reflect the main health problems identified in adolescents with AD and their families, specifically their parents. Of these diagnoses, some are attributed to the family as a whole, such as ineffective self-management of family health, and others to adolescents and parents individually, such as altered sleep patterns, chronic low self-esteem, impaired social interaction and ineffective coping (see Table 2). This care plan identifies specific challenges for adolescents with AD and their families, so a series of standardised interventions based on health education and support for patients and families are proposed. The findings may help to raise awareness of an understudied problem, as well as to strengthen health care, improve QoL and reduce the impact of AD in our study population, ensuring equity and access to health (van Os-Medendorp et al. 2020).

5 | Strengths and Limitations

This mixed-methods systematic review summarised evidence from the last decade regarding the impact of AD on adolescents and their families. Most studies about AD mainly explored children and adults' views, with little research that focused on adolescents and even less on their families as affected members. This review provides a broad vision of the phenomenon from various approaches of one of the least studied groups in AD. This study was carried out by a multidisciplinary and international team in which specialists from different areas participated (children's nurse, family nurse, dermatologist) and the support of a health expert librarian. The search included studies published in English, Portuguese and Spanish to ensure a multicultural perspective. The studies provide an overview of the experiences of adolescents and families from in different contexts worldwide (Europe, America, Asia and Africa). This study is not without limitations. Despite not restricting the search just to the English language, the analysis was limited by the limited studies available that focused on adolescents and families. The selection of the adolescent population in the studies was complex, since the age ranges used in the research were heterogeneous, which resulted in the collection of detailed data stratified by age. Furthermore, only seven of the 19 quantitative studies compared the population with AD with a control group, of which six were healthy controls and one was a control with other diseases (psoriasis). It was not possible to perform a meta-analysis due to differences in terms of cultural background, setting, design and measurement (instruments).

6 | Conclusion

This systematic review illustrates how adolescents with AD and their families experience a notable impact both on their daily lives as well as their health due to this distressing skin condition. They undergo changes on an individual level and collectively. These findings give us a general overview of the challenges for adolescents with AD and their parents, with considerable impacts on their QoL and psychosocial health. This knowledge and the aforementioned care plan will aid nurses in their approach to comprehensively provide support to adolescents and their families. Thus, healthcare professionals could be able to establish evidence-based actions. These interventions should be adapted to individual needs and encompass those affected by AD directly and indirectly, namely, the family, school and any social group in which they are immersed.

Therefore, to provide better care and more careful monitoring of AD, a broader coordination between the primary, specialised and community care levels is needed. This could also lead to an improvement in satisfaction with the health system on behalf of patients. The studies in this review showed that patient satisfaction was a recurring aspect that needed improving. There are multiple challenges faced by adolescents with AD and their families, as well as many areas of investigation that need to be expanded. Future research could focus on how AD affects the

TABLE 2 | Care plan for families and adolescents with AD based on the needs found in the systematic review (through standardised language and nursing taxonomy).

	Nursing Outcomes Classification (NOC) (Moorhead, Swanson, and Johnson 2024)		**Nursing Interventions Classification (NIC) (Wagner, Butcher, and Clark 2023)**	
NANDA diagnosis (NNNConsult 2023)	**Outcomes**	**Indicators**	**Interventions**	**Activities**
[00294] Ineffective family health self-management manifested by one or more family members reporting dissatisfaction with quality of life related to chronic illness *Definition: Unsatisfactory management of symptoms, treatment, physical, psychological and spiritual consequences and lifestyle changes inherent to living with one or more family members being affected by the chronic condition*	[2606] Family health status	[260605] Physical health of members [260607] School attendance of members [260608] School achievement of members [260609] Parental employment	[5562] Parent educations: adolescents	• Identify defence mechanisms most commonly used by adolescents, such as denial and intellectualisation • Instruct parents about essential communication skills that increase their ability to empathise with their adolescents and assist their adolescents to solve problems • Facilitate expression of parental feelings
			[7130] Family process maintenance	• Identify effects of role changes on family processes • Teach family time management/organisation skills when performing home care, as needed • Provide opportunities for adult family members to maintain ongoing commitments to their jobs if possible
[00198] Disturbed sleep pattern manifested by expressing dissatisfaction with sleep *Definition: Waking up due to external factors for a limited time*	[2203] Caregiver lifestyle disruption	[220315] Disruption of routine activities [220326] Breakdown in family relationship [220336] Interference in social interactions [220332] Interference in work productivity	[7040] Caregiver support	• Determine caregiver's acceptance of role • Support the caregiver in setting limits and taking care of self • Instruct on stress management techniques and health care maintenance strategies
			[1850] Sleep enhancement	• Assist in eliminating stressful situations before bedtime • Adjust environment (e.g., light, noise, temperature, mattress, bed) to promote sleep • Regulate environmental stimuli to maintain normal day-night cycles, as indicated
	[2002] Personal well-being	[200202] Psychological health [200203] Social relationships [200205] Physical health	[5330] Mood Management	• Evaluate for changes in mood on regular basis as treatment progresses • Assist to assume increasing responsibility for self-care • Provide guidance with developing on decision-making skills, as needed
			[5510] Health education	• Identify internal or external individual factors that may enhance or reduce motivation for healthy behaviours • Use strategies to motivate people to change health or lifestyle behaviours • Design modules, number of sessions and schedule of health educational intervention considering needs of individuals, family or caregivers, community and health care professionals

(Continues)

TABLE 2 | (Continued)

	Nursing Outcomes Classification (NOC) (Moorhead, Swanson, and Johnson 2024)		Nursing Interventions Classification (NIC) (Wagner, Butcher, and Clark 2023)	
NANDA diagnosis (NNNConsult 2023)	**Outcomes**	**Indicators**	**Interventions**	**Activities**
[00119] Chronic low self-esteem manifested by depressive symptoms/expresses loneliness/insomnia/suicidal ideas related to inadequate social support/stressors/physical condition *Definition: Long-standing negative perception of worth, acceptance, respect, competence and attitude towards oneself*	[1205] Self-esteem	[120501] Verbalisations of self-acceptance [120506] Regard for others [120511] Confidence Level	[8272] Adolescent care	• Encourage adolescent to be actively involved in decisions regarding their own health care • Enhance communication and assertiveness skills • Encourage development and maintenance of social relationships
			[5400] Self-esteem enhancement	• Encourage the patient to identify strengths • Instruct parents on the importance of their interest and support in their children's development of a positive self-concept • Monitor levels of self-esteem over time, as appropriate
	[2000] Quality of life	[200001] Health status [200017] Interpersonal relationships [200020] Spiritual well-being	[7140] Family support	• Promote open, trusting relationship with family • Facilitate communication of concerns and feelings between patient and family or among family members • Assist family to identify family strengths and coping abilities
			[5270] Emotional support	• Make supportive or empathetic statements • Listen attentively to concerns, thoughts, feelings and beliefs • Encourage expression feelings of anxiety, anger or sadness
[00052] Impaired social interaction manifested by expressed difficulties in social functioning related to alteration of self-concept/inadequate social support *Definition: Insufficient or excessive quantity or ineffective quality of social exchange*	[1504] Social support	[150417] Time provided by others [150427] Supportive social contacts [150428] Stable social network	[5100] Socialisation enhancement	• Encourage patience in developing relationships • Promote relationships with persons who have common interests and goals • Encourage participation in group and/or individual reminiscence activities
			[5370] Role enhancement	• Assist patient to identify usual role in family • Assist patient to identify behaviours needed for role development • Facilitate reference group interactions as part of learning new roles
	[1502] Social interaction skills	[150203] Cooperate with others. [150205] Uses assertive behaviours as appropriate [150212] Engages others	[4362] Behaviour Modification: Social Skills	• Ask to tell their story related to interpersonal behavioural problems • Use behavioural evidence-based interpersonal skills training programmes • Encourage sharing of feelings (negative and positive) that occur related to these interpersonal problems
			[5000] Caring interaction development	• Create a warm and accepting climate • Monitor relations related to care • Support patient's efforts to interact with others in a positive way

(Continues)

TABLE 2 | (Continued)

	Nursing Outcomes Classification (NOC) (Moorhead, Swanson, and Johnson 2024)		Nursing Interventions Classification (NIC) (Wagner, Butcher, and Clark 2023)	
NANDA diagnosis (NNNConsult 2023)	**Outcomes**	**Indicators**	**Interventions**	**Activities**
[00069] Ineffective coping manifested by impaired attention/fatigue/expresses disruption of the sleep–wake cycle related to inadequate social support/inadequate preparation for stressors *Definition: Pattern of invalid appreciation of stressors, with cognitive and/or behavioural efforts, that fail in the management of demands related to well-being*	[1212] Stress level	[121214] Sleep disturbance [121222] Anxiety [121221] Depression [121231] Absenteeism	[5440] Support system enhancement	• Identify psychological response to situation and availability of support system • Identify degree of family support, financial support and other resources • Encourage the patient to participate in social and community activities
			[6040] Relaxation therapy	• Invite the patient to relax and let the sensations happen • Individualise the content of the relaxation intervention (e.g., by asking for suggestions of change) • Demonstrate and practice relaxation techniques with the patient
	[2208] Caregiver stressors	[220807] Perceived lack of social support [220816] Loss of personal time [220818] Perceived lack of professional support	[5230] Coping enhancement	• Encourage gradual mastery of the situation • Arrange situations that encourage patients' autonomy • Encourage family involvement, as appropriate
			[7110] Family involvement promotion	• Monitor family structure and roles • Identify other situational stressors for family members • Facilitate management of the medical aspects of illness by family members

Note: This care plan has been developed for adolescents and families. Regarding family caregivers, only parents have been included, since to the best of our knowledge there is no evidence available for other family members. Despite this proposal, it would be necessary to individualise the cases by considering the family structure and other members of the family.

family because they are the primary caregivers and support for adolescents in the home.

Author Contributions

All authors contributed to the conceptualisation and the methodology design process. The search process was done by G.S., N.V. and A.F. The screening was done by N.V., A.M. and I.C. and the quality appraisal by N.V. and A.M. All the authors participated in the analysis, interpretation and representation of data. N.V. and A.M. and I.C., R.R. and A.F. have revised and edited it for important intellectual content. All authors have agreed on the final version of the article.

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Ethics Statement

The authors have nothing to report.

Consent

The authors have nothing to report.

Conflicts of Interest

The authors declared no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

Peer Review

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Endnotes

[1] According to the World Health Organization (WHO), QoL is addressed from a biopsychosocial perspective considering patient perceptions of their position in life in relation to their culture and value systems (WHO 2012).

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