



Department Of Dermatovenoreology

Parental Knowledge and Practices on Skin Care of Children with Atopic Dermatitis and Associated Factors in Saint Paul's hospital Millennium medical College, Addis Ababa Ethiopia

Principal Investigator: Meaza Bogale (M.D. Year 2 DV Resident)

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Department Of Dermatovenoreology

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By: Meaza Bogale (MD)

Advisors: Selamawit Tamene Md (Assistant Professor of Dermatovenerology, SPHMMC)

Hana Feleke (Mph, Department of Public Health, SPHMMC)

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Addis Ababa, Ethiopia

Declaration

I, the undersigned, declare that this thesis is my original work; it does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing. It has not been accepted or presented for a degree, masters or PHD in this or any other institution and that all sources of materials used for the thesis have been fully acknowledged.

Name of Investigator: Meaza Bogale

Signature: _____

Name of the institution: St. Paul's Hospital Millennium Medical College

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List of abbreviations

AD	Atopic Dermatitis
TCS	Topical Corticosteroids
QoL	Quality of life
DFI	Dermatitis Family Impact
EMA	European Medical Agency
ADD/ADHD	Attention Deficit Hyperactivity Disorder
ISAAC:	International Study of Asthma and Allergies in Childhood
OPD:	Out Patient Department
SPHMMC:	St. Paul's Hospital Millennium Medical College

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Abstract

Background: Atopic dermatitis (AD) is a chronic skin condition common in children, with effective management heavily dependent on parental involvement. Parental knowledge and practices play a crucial role in the successful control of AD, yet there is a lack of studies exploring these factors, particularly in Ethiopia. Understanding these aspects is vital for developing strategies to improve AD management in children.

Objective: The study aim was to assess parents' knowledge and practices towards skin care of children with atopic dermatitis and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024.

Methodology: A hospital based cross-sectional study was conducted from January 2024 to September 2024 at dermatology OPD of the St. Paul's Hospital Millennium Medical College. 238 parents of children with AD who had follow up were included on the study with kth interval with systematic random sampling to complete the questionnaire. Bloom's cut off point was used to catecorize the level of knowledge and practice. Good knowledge and practice are consider if the score was more than 60%. Data were entered into Epi Data 3.1 and analyzed using SPSS version 25. Associations were conducted with binary logistics regression and reported using Adjusted Odds Ratios (AOR) with 95% confidence intervals.

Results: The proportion of good parental knowledge and practice on skin care for children with atopic dermatitis was found to be 57.14% (95% CI: 50.58-63.51%) and 35.29% (95% CI: 29.23-41.73%) respectively. The mean parental knowledge on skin care for children with atopic dermatitis was 58.3% (SD 3.5 ± 1.2) and the mean parental practice was 54% (2.7 ± 0.9). Those aged 31-50 years and over 50 have 0.269 and 0.365 times lower odds of having good knowledge (AOR = 0.269, 95% CI: 0.137–0.529) and (AOR = 0.365, 95% CI: 0.145–0.917) respectively. Higher education levels (elementary: AOR = 6.712, 95% CI: 1.60–28.06; secondary: AOR = 5.521, 95% CI: 1.562–19.513; college or above: AOR = 9.384, 95% CI: 2.715–32.429), a family history of AD (AOR = 2.641, 95% CI: 1.349–5.169), and four or more clinic visits (AOR = 2.525, 95% CI: 1.258–5.066). Good practices were linked to college education (AOR = 2.845, 95% CI: 1.005–8.05), while poorer practices were associated with unappealing moisturizer formulation (AOR = 0.457, 95% CI: 0.234–0.892), medication cost (AOR = 0.480, 95% CI: 0.265–0.868), and use of alternative natural methods and home remedies (AOR = 0.442, 95% CI: 0.245–0.796).

Conclusion and recommendations: The study indicates poor level of parental knowledge and practices regarding skin care for children with atopic dermatitis (AD). These findings underscore the need for

targeted interventions addressing educational and socio-economic factors to improve AD management among parents.

Keywords; *atopic dermatitis*; knowledge; practice; moisturizers; *emollients*; *skin care*.

1 Introduction

1.1 Background

Atopic Dermatitis (AD) is a chronic inflammatory skin disease that typically manifests in early childhood and may precede the development of other atopic disorders, including asthma, allergic rhinitis, and food allergies. The onset of AD most commonly occurs between 3 and 6 months of age, with approximately 60% of children with AD presenting symptoms in the first 12 months (1).

Since the 1970s, AD incidence has increased 2- to 3-fold in industrialized nations, affecting approximately 15% to 20% of children, 5% to 20% of adolescents, and 1% to 3% of adults. However, the International Study of Asthma and Allergies in Childhood (ISAAC) study, reported that the prevalence widely varies depending on geographical areas (2).

Although the exact mechanisms of the pathogenesis are still unclear, the epidermis plays a crucial role as a physical and functional barrier, and skin barrier defects are the most significant pathologic findings in AD skin (1, 3).

Xerosis is one of the cardinal clinical features of AD and results from a dysfunctional epidermal barrier (4). Several diagnostic criteria have been developed to support diagnosis. In 1980, Hannifin and Rajka proposed the first widely used diagnostic criteria for AD consisting of four major [i] pruritus; [ii] typical morphology and distribution; [iii] chronic or chronically relapsing dermatitis; [iv] personal or family history of atopy) and 23 minor criteria. The diagnosis of AD requires three major features and three minor features (5).

Children with AD and their caregivers had a significantly lower quality of sleep, which results in many restless nights and daytime drowsiness. Children with AD were more frequently victims of bullying at school or in other social environments and they are prone to absenteeism when compared to the control group (3). Previous studies have also reported correlations between AD and several comorbidities, including asthma, allergic rhinitis, food allergy, and mental health

disorders including attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD), autism, and depression (1).

Caregivers should be aware of the need and benefit of sufficient amounts of basic skin care, including regular use of emollients, emollient application after bathing (6, 7). Using a skin moisturizer is a first step and can be an effective treatment. It can keep the skin hydrated for 2-6 hours, depending on the type of moisturizer. The amount that should be used on newborns, infants, young children, and adults ranges from 100, 150-200, to 250 g/week, respectively. Moisturizers for patients with AD should not contain any fragrance or preservatives. It is recommended to use plain moisturizers such as cold cream, cream base, 3-10% urea, or petrolatum twice daily. Regularly using a moisturizer can decrease the use of TCS and thus prevent an exacerbation of the disease (8).

To avoid epidermal dehydration from bathing, it's best to use a hypoallergenic soap and a water temperature of 27- 30°C, while limiting one's exposure time to 5-10 minutes. After gently drying the skin, topical emollients should be applied immediately to slightly humid skin. Bathing with antiseptic soaps or solutions should be avoided, as they can cause skin irritation (8).

Treatment adherence is key for treatment outcome, especially in chronic dermatologic diseases like AD (9). Increased knowledge Of parents or caregivers on appropriate use of therapies, and the goals of management has been shown to increase treatment adherence (10). Health education programs for parents can make an important contribution to supporting the families and maximizing long-term treatment outcomes (11).

1.2 Statement of the problem

The reported prevalence of AD was usually higher during the 21st century than the 20th century, globally. In Asia, studies reporting repeated measures indicated higher proportions of AD in the 21st century. For example, there is an increase in life- time prevalence of doctor diagnosed AD from 18.0% to 23.9%. The highest incidence of AD occurred during infancy and the incidence was high in early childhood. In Stockholm, Sweden, study found that, between age 0–12 years, the proportion of “new” incident cases in the last 12 months was 53% of all prevalent cases (12). On a facility-based cross-sectional study conducted among 477 children aged from 3 months to 14 years in Ayder referral hospital Tigray, Ethiopia from July to September, 2014, the magnitude of

the atopic dermatitis was found to be 9.6 % (13), which is higher when compared to the result of similar study in 2005 in Jima, where the magnitude was 4.4% (13).

The impact of AD on children is comparable to other childhood chronic diseases such as cerebral palsy, epilepsy and cystic fibrosis. Children with AD are often affected on a daily basis including problems when feeding, changing clothes and playing, thus depriving them of a ‘normal childhood’. Whether the patient is a child, teenager or adult, AD effects on the extended family as well as on caregivers. This effect may be experienced by anyone with a close relationship with the patient (14). Caring for children affected by AD can be an extremely time-consuming task that can impair personal relationships and cause sleep loss among family members of affected patients. Additionally, AD may result in work absence or decreased work productivity for caregivers (12). The other impact of AD is cutaneous infection, atopic dermatitis patients with cutaneous infections incurred significantly greater health care utilization and expenditures than those without cutaneous infections (15).

Atopic dermatitis management aims to improve symptoms and establish long-term disease control. Management plans should be patient centered and education for self-managing atopic dermatitis improves disease severity and quality of life (16).

The high prevalence, coupled with high patient/caregiver burden and increased healthcare utilization, highlights the considerable public health burden associated with AD (1). In addition, poor treatment outcomes have significant consequences for patients and their families. In childhood AD, where a common cause of treatment failure is poor adherence rather than disease severity or the ineffectiveness of treatment (17). Parental poor knowledge and alternative health belief are among the identified factors for poor treatment adherence and treatment failure of atopic dermatitis in children (17, 18). However, in our country, no study investigated knowledge, attitude and practices of parents on skin care of children with atopic dermatitis. The aim of this research is to investigate parental knowledge, altitude and practices toward skin care of children with atopic dermatitis and to identify associated factors.

1.3 Significance of the study

The prevalence of atopic dermatitis (AD) in children is increasing globally, significantly affecting both the children and their families. Effective management of pediatric AD depends largely on

parents' knowledge and practices regarding skin care. To date, no study in Ethiopia has examined parental knowledge and practices concerning the skin care of children with AD or identified the factors that influence them. This research aims to fill this critical gap in knowledge, offering valuable insights into an essential aspect of AD management.

Given that most children with AD in Ethiopia are treated by non-dermatologists, the findings of this study will be instrumental in guiding the development of standardized, structured educational interventions led by dermatologists. These interventions will enable healthcare professionals, including nurses, pharmacists, and general practitioners, to offer consistent, evidence-based advice on managing pediatric AD. Additionally, the study will help dermatologists create efficient educational strategies that save time while improving treatment adherence and outcomes.

The study's outcomes will also provide a crucial resource for researchers and policymakers, offering baseline data to identify gaps in AD management. This evidence will stimulate further research and inform the development of national treatment guidelines aimed at improving pediatric AD outcomes in Ethiopia, ultimately enhancing the quality of care for affected children.

2 LITERATURE REVIEW

2.1 Magnitude of Pediatrics Atopic Dermatitis

AD is among the commonest inflammatory skin condition, onset is typically during infancy, manifested with intense pruritus and a chronic or chronically relapsing course (17). Clinical features, severity, and course AD is heterogeneity and often a child will have concomitant or subsequently develop other atopic disorders such as allergic rhino conjunctivitis, asthma and food allergies (19).

In general, the global prevalence of AD is increasing. Based on a global review of 18 countries including America, Europe, Asia and Middle East showed the higher proportion of pediatrics AD. Among 65,661 respondents, the 12-month diagnosed AD prevalence (ISAAC plus self-reported diagnosis) ranged from 2.7% to 20.1% across countries. Although prevalence and severity varied across age groups and countries, less than 15% had severe AD. When only the ISAAC criteria were considered, the prevalence of reported AD ranged from 13.5% (Israel) to 41.9% (Italy) in the overall population (20).

Recent studies from ISAAC phase 3 investigators showed the increasing prevalence of AD in Africa countries. The study surveyed more than 1 million schoolchildren between 1999 and 2004, estimated lifetime prevalence of AD in 6- to 7-year-old and in 13- to 14-year-old children to be 23.3% and 15.2% respectively. According to their result in some African countries including Morocco, South Africa, and Kenya, the lifetime prevalence of AD symptoms in 13- to 14-year-old children approximately doubled in over an approximate 7-year period (1995–2001/2002) (21). A cross-sectional study done between January 2016 and December 2017 in dermatology clinic of referral hospital in Wolaita Sodo, southern Ethiopia, Eczematous dermatitis accounted for the largest group (23.9%, $n = 447$) of skin conditions (22).

The global disease burden project ranks “dermatitis,” in general, as the highest-ranking skin disease in regards to total global disability burden. A survey conducted in Japan pediatric patients between 26 September 2018, and 2 December 2019 on disease impact on family QoL showed increased mean DFI scores as the severity of ‘diagnosed AD’ increased. Among patients with severe AD, mean (SD) DFI scores were 9.36 (5.93) in children aged <6 years, 14.47 (8.22) in those aged 6 to <12 years, and 11.55 (9.86) in adolescents aged 12 to <18 years. In addition to this among parents of children or adolescents with severe AD, at least 1 workday was missed by 100.0% of parents of children aged <6 years, 55.9% of those aged 6 to <12 years, and 62.7% of those aged 12 to <18 years (23). A cross-sectional study in USA that assessed 4,825,668 AD patients on health care utilization and expenditures, among which 16% experienced skin infections (mean age 4.4). Compared to AD patients without skin infections, those with skin infections had more frequent visits to ambulatory clinics ($P = 0.001$) and the emergency department ($P = 0.011$), and increased hospitalization.(15) However data on QoL and comorbidities in Africa is limited (21).

2.2 Parental Knowledge and Practice on skin care of AD

Bathing and use of emollient in AD are the corner stone and an important component of maintenance treatment (4). Patients and their family should be educated in order to understand the course of the disease and to know how to properly manage themselves to control their symptoms and prevent an exacerbation of the disease (8).

In a study done in china, from October 2014 to March 2015, among 350 patients, 72% were aware that the skin of children with eczema required moisturizers to restore the skin barrier, and 175 parents (50.0%) knew that moisturizers restored the skin barrier. Only 27 parents (15.4%) among the 175 parents knew that moisturizers could improve eczema, and only 26 parents (14.9%) among the 175 parents knew that moisturizers could reduce skin sensitivity. Moreover, 35 parents (10.0%) knew that topical moisturizers are an important part of eczema management, but only 30 parents (8.6%) knew that long-term moisturizer usage can prevent the recurrence of eczema. Only 10 parents (2.9%) believed that moisturizers should be used on the entire body for children with eczema, whereas 56 parents (16.0%) thought that moisturizers should never be used for children with eczema (24).

On same study, 243 parents (69.4%) used moisturizers, but 183 parents (75.3%) only used moisturizers on the face of their children; 212 parents (87.2%) used moisturizers only on the dry areas of their children's face and other body parts, and only 16 parents (6.6%) used moisturizers on the entire body of their children. Among the 243 parents who used moisturizers on their children, 196 parents (80.7%) discontinued moisturizers immediately when skin dryness improved and only 13.2% used moisturizers long-term. The frequency of moisturizer usage in the surveyed children with eczema was as follows: 62.6%, 21.0%, 6.6%, 4.5%, and 5.4% used moisturizers 1 to 2, 3 to 4, 5 to 6, and 7 to 8 times/day, and once every few days, respectively. A total of 209 parents (86%) initiated the application of moisturizers on their child only when the skin was dry (24).

On the study done in different states of USA which includes 101 pediatrics patients, assessed the knowledge of caregiver on the need of emollient for maintenance therapy of eczema, showed that only 11% respond correctly (25).

On a cross-sectional analysis that was conducted at Boston Children's Primary Care at Longwood, 224 participants were Included, 22% of parents believed that emollients should be applied only to red, itchy areas rather than all over the skin. Almost a third of parents believed their child should take a bath for 20 minutes or longer, and 16% believed that they should wait at least 10 minutes after a bath to apply an emollient (26).

Based on a randomized trial done in China which includes 295 parents and patients, to assess their knowledge and practices on emollient before an educational intervention, 60.85% respondents think that emollient should be used daily and the rest think that emollient should be used every 3 days to more than a week interval. And 13.19%, 31.06%, 39.57% and 16.17% of study participant use emollient, very frequently, frequently, occasionally and Never respectively (19).

2.3 Factors associated with Parental Knowledge and Practice on atopic dermatitis

Complexity of treatment regimen, lack of knowledge, impaired quality of life, dissatisfaction with treatment strategies, infrequent follow up, corticosteroid phobia and the use of complementary and alternative medicine are among the identified factors that leads to poor treatment adherence (17).

In cross-sectional study conducted at the Clinic of Dermatovenerology, Clinical Center of Serbia, Belgrade, between February 2015 and March 2016 on parents' knowledge, attitude, and behavior towards AD, being older, married/partnered parent and those who have had AD themselves were more likely to be more knowledgeable on AD. Being older and employed were associated with stronger positive attitudes toward their children with AD. Older and less educated parents of children with AD had more supportive behavior than younger (24).

2.4 Conceptual framework

The study examined factors influencing parental knowledge and practices on skin care for children with atopic dermatitis. A theoretical framework was developed based on existing literature, focusing on three main categories: sociodemographic factors, physician- and treatment-related factors, and parent- and child-specific factors. This framework aligns directly with the study objectives, providing a clear structure for understanding these influences (13, 20, 21, 27-29).

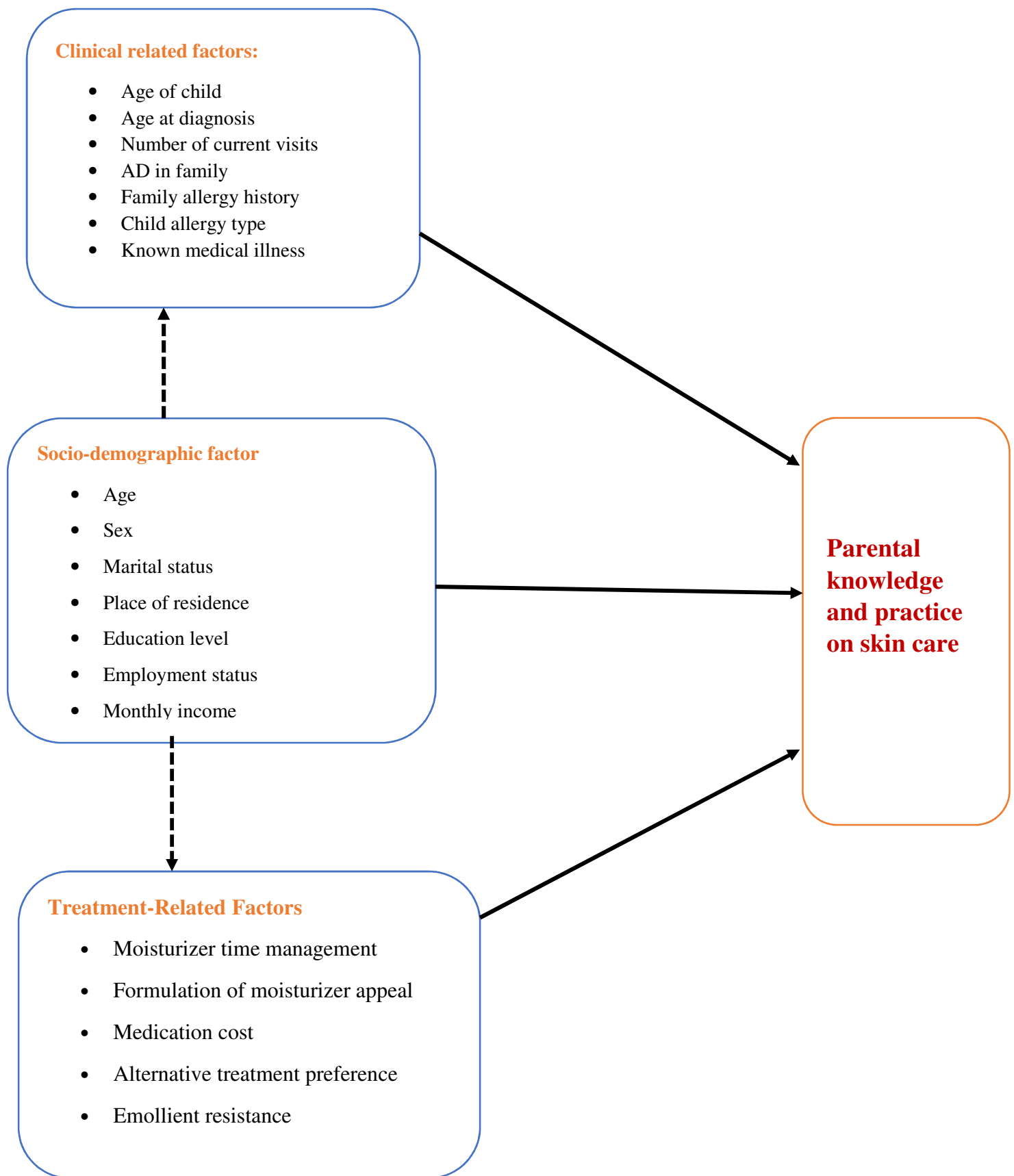


Figure 1: Conceptual framework

3 Objectives

3.1 General objective

- To assess the parental knowledge and practices on skin care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa Ethiopia, from January 2024 to September 2024.

3.2 Specific objectives

- To determine the parents' knowledge towards skin care of children with atopic dermatitis in St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa Ethiopia from January 2024 to September 2024.
- To determine the parents' Practices towards skin care of children with atopic dermatitis in St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa Ethiopia from January 2024 to September 2024.
- To identify factors that affect the parents' knowledge and practices on skin care of children with AD in in St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa Ethiopia from January 2024 to September 2024.

4 Methods and materials

4.1 Study setting and period

This study was conducted at St. Paul's Hospital Millennium Medical College in Addis Ababa, Gulele Sub-City. Data were collected from parents of children with atopic dermatitis (AD) attending follow-up at the Dermatovenerology Outpatient Department (OPD) between January 2024 and September 2024.

St. Paul's Hospital Millennium Medical College, originally established in 1968 by Emperor Haile Selassie, was reopened as a medical school in 2007 and formally reestablished through a decree by the Council of Ministers in 2010. Governed by a board under the Federal Ministry of Health, the hospital has an inpatient capacity of over 700 beds. It serves an average of 1,200 emergency and outpatient clients daily, with 50–70 patients attending the Dermatovenerology OPD each day.

4.2 Study design

A hospital-based cross-sectional study was conducted among parents of children with atopic dermatitis (AD) attending follow-up at the Dermatovenerology Clinic of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia.

4.3 Source population

All parents of children with AD who came to Dermatovenerology OPD in SPHMMC, Addis Ababa Ethiopia from January 2024 to September 2024.

4.4 Study population

Parents of children with atopic dermatitis (AD) who attended follow-up at the Dermatovenerology Outpatient Department (OPD) of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia, from January 2024 to September 2024, and met the inclusion criteria, were selected for the study.

4.5 Eligible criteria

4.5.1 Inclusion criteria

All parents of children with atopic dermatitis (AD) who attended follow-up at the Dermatovenereology Outpatient Department (OPD) of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia, from January 2024 to September 2024, were considered candidates for selection.

4.5.2 Exclusion criteria

Parents below the age of 18, those who did not take care of the child most days of the week, and parents of children with additional dermatologic conditions were excluded from the study.

4.6 Sampling size determination, sampling technique and procedure

The sample size for the prevalence was calculated by using single population proportion formula calculated as follows:

$$n = \frac{Z_{\alpha/2}^2 p(1-p)}{d^2}$$

Where

n = estimated sample size

Z = the standard normal deviate (for a confidence level of 95%, α is 0.05 and the critical value is 1.96)

P = the expected prevalence (set at 10% for this example)

d = the acceptable marginal error (set at 5% for this example)

Since the source population consisted of 490 individuals, a finite population correction formula was applied to adjust the initially calculated sample size. The correction formula used is:

$$n_{adj} = \frac{n}{1 + \frac{n}{N}}$$

Where:

- n_{adj} is the adjusted sample size,
- n is the initial sample size calculated using the single population proportion formula
- N= the total source population size.

After applying the formula, the adjusted sample size was determined to be 216. To account for a 10% non-response rate, the final sample size was increased to 238.

Participants were selected using systematic random sampling with a sampling interval (k) of 2 which we get from dividing the whole expected population with sample size ($490/236=2.05$). The first participant was chosen randomly through a lottery method. Selected parents were then invited to complete the questionnaire.

4.7 Study variable

4.7.1 Dependent variables

Parental knowledge and practices on skin care of children with AD.

4.7.2 Independent variables

Socio demographic variables:

- Age
- Sex
- Marital status
- Place of residence
- Education level
- Employment status
- Monthly income

Clinical related variables:

- Age of child
- Age at diagnosis
- Number of current visits
- AD in family
- Family allergy history
- Child allergy type
- Known medical illness

Treatment-Related variables

- Moisturizer management
- Formulation appeal
- Medication cost
- Alternative preference

- Emollient resistance

4.8 Operational definitions

Parents/Caregivers of Children with AD on Follow-up: Parents or caregivers who have attended at least two follow-up visits at the Dermatovenereology OPD.

Good Knowledge: Parents or caregivers are classified as having "Good Knowledge" if they score 60% or higher on the knowledge assessment.

Good Practice: Parents or caregivers are classified as demonstrating "Good Practice" if they score 60% or higher on the practice assessment.

4.9 Data collection methods and tools

Data were collected using an interviewer administered structured questionnaire, developed after a thorough review of relevant literature. The questionnaire was designed to capture sociodemographic variables, as well as factors related to parents, children, physicians, and treatment. Physicians who examine children with atopic dermatitis (AD) participated in the data collection process, having undergone a one-day training session conducted by the principal investigator on the study's objectives and data collection procedures.

4.10 Data quality control

A structured questionnaire, tailored to the study context, was developed. Data collectors received training to ensure consistency and accuracy in data collection. To ensure the validity and reliability of the tool, a pre-test was conducted on 5% of the total sample size one week before the actual data collection. The questionnaire was reviewed for clarity, understandability, and simplicity, and necessary modifications were made. To maintain data quality, the investigator checked all completed questionnaires for completeness. The investigator was responsible for providing on-site supportive supervision and reviewing all filled questionnaires daily to ensure accuracy and consistency.

4.11 Data processing and analysis

After data collection, it was entered into Epi Info version 7.1 and analyzed using SPSS version 26, employing binary and multiple logistic regression models. Descriptive statistics, including frequencies and percentages, were used to summarize the data and characterize the study population. The association between independent variables and the outcome variable was assessed using binary logistic regression. Variables with a p-value of ≤ 0.05 in the binary logistic regression analysis were considered for inclusion in the multivariable logistic regression model. Adjusted odds ratios (AOR) with 95% confidence intervals were calculated, and associations with a p-value < 0.05 were considered statistically significant. Multicollinearity was assessed using the variance inflation factor (VIF), and the model's goodness of fit was evaluated using the Hosmer-Lemeshow test.

4.12 Ethical consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of SPHMMC. Participation in the study was voluntary, and only parents and caregivers who provided informed consent were included. Participants were thoroughly briefed on the study's objectives and procedures. Written consent was obtained from each parent and caregiver after explaining the purpose and details of the study. To protect confidentiality, participants were identified by code numbers rather than names, and both confidentiality and privacy were upheld throughout the research process.

5 Results

5.1 Socio-demographic characteristics

A total of 238 parents participated in this study on the care of children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. The majority of participants, 129 (54.2%), were aged between 18 and 30 years, and 208 (87.39%) were female. In terms of marital status, 140 (58.82%) were married, while 77 (32.35%) were single. Most of the respondents, 193 (81.09%), resided in urban areas. Regarding education level, the largest group of participants, 114 (47.9%), had completed college or higher education, followed by 68 (28.57%) with secondary school education. In terms of employment status, the majority, 192 (80.67%), were employed. When considering monthly income, 142 (59.66%) earned more than 5000 ETB and about 105 (44.12%) participants reported having 1-3 other children

Table 1 : Socio-demographic characteristic of the parents for the study on Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variables	Category	Frequency	Percentage (%)
Age	18-30	129	54.2
	31-50	76	31.93
	>50	73	13.87
Sex	Male	30	12.61
	Female	208	87.39
Marital status	Single	77	32.35
	Married	140	58.82
	Divorced	21	8.82
Residence	Rural	45	18.91
	Urban	193	81.09
Education level	No formal education	25	10.5
	Primary	31	13.03
	Secondary	68	28.57

	College and above	114	47.9
Employment status	Unemployed	46	19.33
	Employed	192	80.67
Monthly income	<2000 ETB	25	10.5
	2000-5000 ETB	71	29.83
	>5000 ETB	142	59.66
Number of other children	0	50	21.01
	1-3	105	44.12
	4 and above	83	34.87
Total		238	100

5.2 Clinical related characteristics

The study examined various clinical-related factors among 238 parents of children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. Out of all the children, the largest group was made up of 94 children (39.5%) who were between 2 and 12 years old.. In terms of age at diagnosis, 92 children (38.66%) were diagnosed before the age of 24 months.

With respect to allergy-related conditions, 58 children (19.33%) were reported to have asthma, indicating a common comorbidity with AD. Additionally, 85 parents (35.71%) reported a family history of AD, pointing to a potential genetic link to the condition.

Regarding the frequency of medical visits, 95 parents (39.92%) had attended four or more visits, reflecting the ongoing nature of AD management. Lastly, 78 parents (32.77%) reported that their children had a known medical illness, highlighting the presence of additional health issues in some children with AD.

Table 2 : Clinical related factors for the study on Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variables	Category	Frequency	Percentage (%)
Age of child	<24 month	79	33.19
	24 month -12 years	94	39.50
	>12 years	65	27.32
Age at diagnosis	<24 month	92	38.66
	24 month -12 years	93	39.08
	>12 years	53	22.27
Any allergy related disease in child	No	150	63.03
	Asthma	58	19.33
	Conjunctivitis	25	10.5
	Others	17	7.14
AD in the family	No	153	64.29
	Yes	85	35.71
Other allergy related disease in the family (n = 85)	No	35	41.18
	Asthma	20	23.53
	Conjunctivitis	13	15.29
	Sinusitis	17	20.00
Number of current visits	Second	88	36.97
	Third	55	23.11
	Fourth and above	95	39.92
Known medical illness	No	160	67.23
	Yes	78	32.77
Total		238	100

5.3 Treatment related factors

The study assessed treatment-related factors among 238 parents of children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. A significant portion of participants, 153 (64.29%), did not find the application of moisturizers overly time-consuming. Regarding the formulation of treatments, 163 (68.49%) parents did not find the treatment's formulation unappealing. In terms of medication costs, 134 (56.3%) parents reported

that the cost of medications made it difficult to treat their child's condition. Additionally, 141 (59.24%) parents preferred using alternative or natural methods instead of prescribed medications. Lastly, 181 (76.05%) parents indicated that their child did not resist the application of emollients. These factors highlight the challenges and preferences in managing AD among children.

Table 3 : Treatment related factors for the study on Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variables	Response	Frequency	Percentage (%)
The application of moisturizers took too much time to manage my child's skin disease	No	153	64.29
	Yes	85	35.71
The unappealing formulation made it difficult to treat the skin disease.	No	163	68.49
	Yes	75	31.51
The cost of my child's medications made it difficult to treat the skin disease.	No	104	43.7
	Yes	134	56.3
I prefer using alternative/natural methods and home remedies instead of prescribed medications to treat my child's skin disease.	No	97	40.76
	Yes	141	59.24
My child resists the application of emollients.	No	181	76.05
	Yes	57	23.95
Total		238	100

5.4 Magnitude of Parental Knowledge on Skin Care of children with AD

The average parental knowledge score on skin care practices for children with atopic dermatitis was 3.5 ± 1.2 out of a maximum score of 6. Parents reported on the use of moisturizers for eczema management, with the majority highlighting their importance. Most participants indicated that they use moisturizers for their child (216, 90.76%), believe moisturizers can improve eczema (189, 79.41%), and view moisturizers as essential in managing the condition (196, 82.35%). Additionally, 196 participants (82.35%) agreed that long-term use of moisturizers can help prevent

eczema recurrence, 160 (67.23%) supported applying moisturizers to the whole body, and 200 (84.03%) emphasized the importance of using moisturizers even when the skin appears healthy.

Table 4 : Parental Knowledge on Skin Care of children with AD for the study on Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variables	Category	Frequency	Percentage (%)
1.moisturizers be used for your child	No	22	9.24
	Yes	216	90.76
2. Moisturizers can improve eczema?	No	49	20.59
	Yes	189	79.41
3. Moisturizers are important in eczema management	No	42	17.62
	Yes	196	82.35
4.long-term use of moisturizers can prevent eczema recurrence	No	42	17.62
	Yes	196	82.35
5. Moisturizers be applied to the whole body	No	78	32.77
	Yes	160	67.23
6. Moisturizers be used when the skin is doing well	No	38	15.97
	Yes	200	84.03
Total		238	100

The proportion of good parental knowledge on skin care for children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia, was found to be 57.14% (50.58- 63.51 %) (Figure 2).

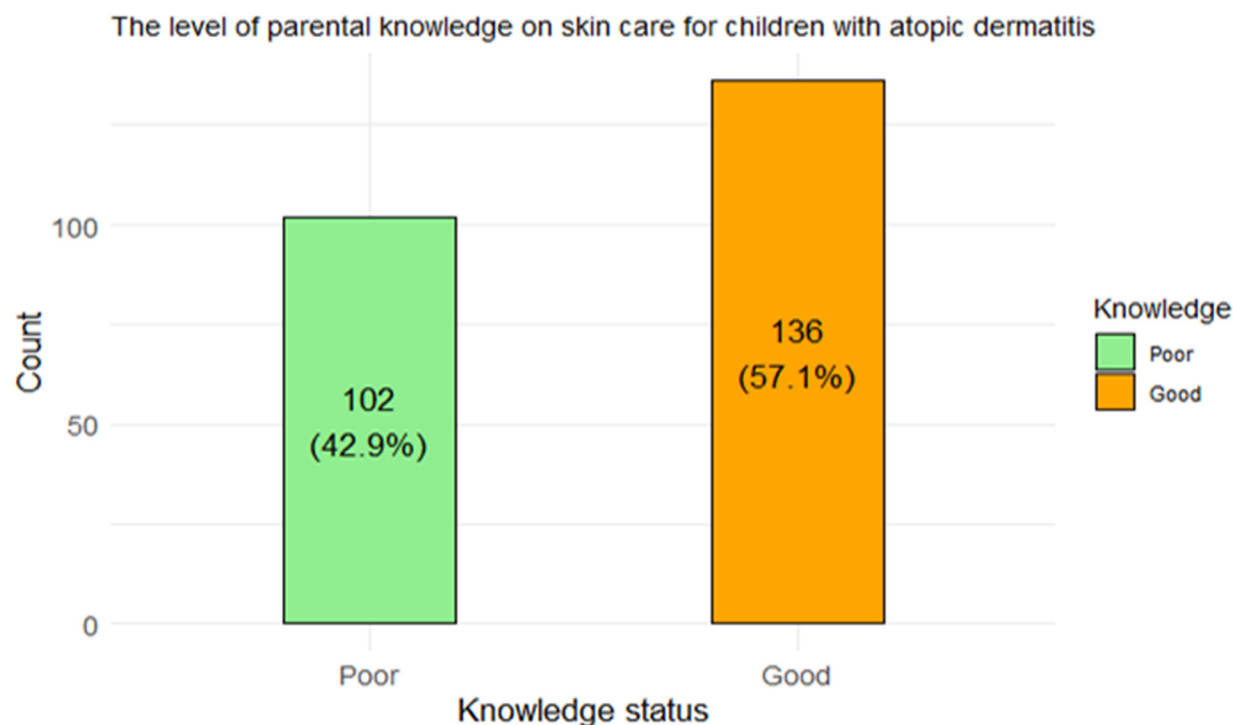


Figure 2 : The level of parental knowledge on skin care for children with atopic dermatitis (AD) at St. Paul’s Hospital Millennium Medical College in Addis Ababa, Ethiopia, 2024

5.5 Magnitude of Parental practice towards on Skin Care of children with AD

The average parental practice score on skin care practices for children with atopic dermatitis was 2.7 ± 0.9 out of a maximum score of 5. Most participants reported applying moisturizers on wet skin immediately after gentle drying (185, 86.85%) and using moisturizers long-term rather than discontinuing when the skin improves (158, 74.18%). Regarding application frequency, 37 (17.37%) used moisturizers more than once daily, while 65 (30.52%) applied them every day. For usage areas, 87 (30.85%) correctly reported applying moisturizers to the entire body.

Table 5 : Parental practice towards Skin Care of children with AD for the study on Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul’s Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variables	Response	Frequency	Percentage (%)
How frequently do you use moisturizer?	>1 time in a day *	37	17.37
	Every day	65	30.52

	Every 2–3 days	41	19.25
	1 time per week	33	15.49
	After bathing	37	17.37
Where do you use moisturizers on your child?	Only face	88	41.31
	Only dry areas	38	17.84
	Entire body *	87	30.85
When do you discontinue moisturizer?	When the skin improves	55	25.82
	I use long term *	158	74.18
When do you apply emollient after bathing?	On wet body immediately after gentle drying *	185	86.85
	After vigorously drying the body	28	13.15
* Correct answers mentioned by respondents		213	100

The proportion of good parental practice on skin care for children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia, was found to be 35.29% (95 % CI: 29.23- 41.73 %) (Figure 3).

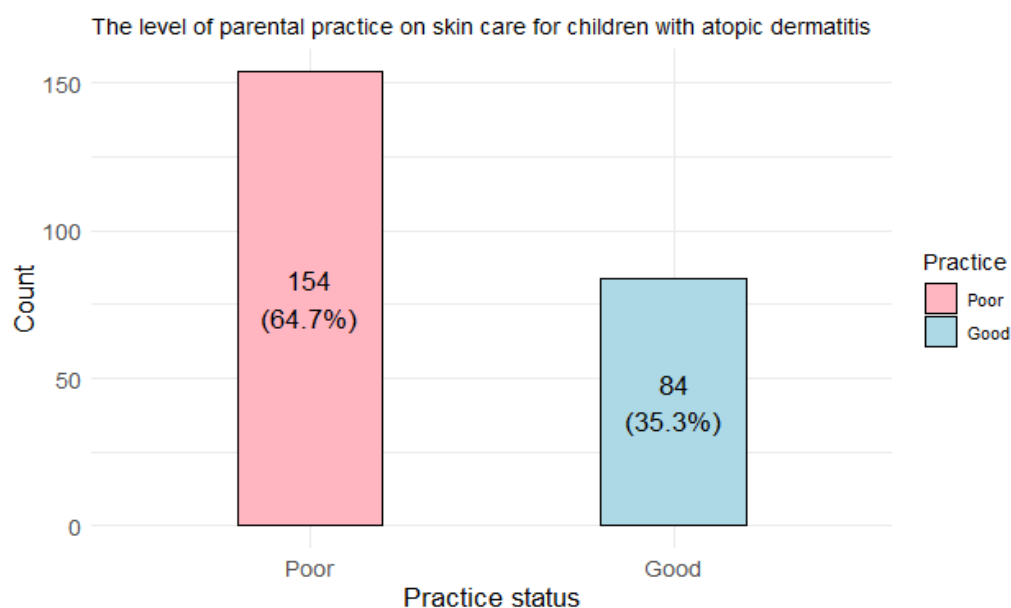


Figure 3 : The level of parental practice on skin care for children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia, 2024

5.6 Factors Associated with parents' knowledge on skin care of children with AD

This study identified several factors significantly associated with parental knowledge on skin care of children with atopic dermatitis (AD). The factors included age, educational level, history of AD in the family, and number of current visits.

Parents aged 31-50 years had 0.269 lower odds of having good knowledge compared to those aged 18-30 years (AOR = 0.269, 95% CI: 0.137 - 0.529). Similarly, parents over 50 years old had 0.365 lower odds of good knowledge compared to those aged 18-30 years (AOR = 0.365, 95% CI: 0.145 - 0.917).

Parental education level was a crucial determinant, with parents having elementary education showing 6.712 higher odds of good knowledge compared to those with no formal education (AOR = 6.712, 95% CI: 1.60 - 28.06). Parents with secondary school education also had 5.521 higher odds of good knowledge (AOR = 5.521, 95% CI: 1.562 - 19.513), as did those with a college education or above with 9.384 higher odds when compared to those with no formal education. (AOR = 9.384, 95% CI: 2.715 - 32.429).

Having a family history of AD significantly increased the odds of good parental knowledge, with parents of children with AD had 2.641 higher odds of having good knowledge compared to those without a family history (AOR = 2.641, 95% CI: 1.349 - 5.169).

The number of visits to the clinic was also significantly associated with good parental knowledge. Parents with more than two visits had 2.525 higher odds of good knowledge compared to those with only one visit (AOR = 2.525, 95% CI: 1.258 - 5.066).

Table 6 : Factors associated with Parental Knowledge on Skin Care of children with AD in St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa Ethiopia, 2024

Variable	categories	COR (95% CI)	AOR (95% CI)
Sex of the Parent	Female	1	1

	Male	0.578 (0.206 - 0.986)	0.4 (0.159- 1.002)
Age of the parent	18-30	1	1
	31-50	0.327 (0.181- 0.588)	0.269 (0.137- 0.529) ***
	>50	0.374 (0.172- 0.817)	0.365 (0.145- 0.917) *
Educational level of parent	No formal education	1	1
	Elementary	7.269 (2.01- 26.285)	6.712 (1.60- 28.06) **
	Secondary school	5.906 (1.832 -19.039)	5.521 (1.562 -19.513) **
	College and above	11.375 (3.63-35.561)	9.384 (2.715 - 32.429) ***
AD in the family	No	1	1
	Yes	2.239 (1.279- 3.92)	2.641 (1.349- 5.169) **
Age of child at diagnosis	<24 months	1	1
	24 months-12 years	0.421 (0.232- 0.761)	0.422 (0.214- 1.102)
	>12 years	1.037 (0.508- 2.113)	0.833 (0.367- 1.889)
Number of current visits	Second	1	1
	Third	1.314 (0.668- 2.583)	1.351 (0.614 -2.971)
	Fourth and above	2.261 (1.242- 4.116)	2.525 (1.258- 5.066) **
*Significant at p value		* <0.05	< **0.01
			< ***0.001

5.7 Factors Associated with parents' practices on skin care of children with AD

This study identified several factors significantly associated with parental practices regarding the skin care of children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. The factors include parental education level, the appeal of the moisturizer formulation, the cost of medications, and the preference for alternative or natural methods. Parental education level was a key determinant, with parents who had a college education or above showing 2.845 higher odds of good practices compared to those with no formal education (AOR = 2.845, 95% CI: 1.005 - 8.05).

The appeal of the moisturizer formulation also played a significant role. Parents who found the moisturizer's formulation unappealing had 0.457 lower odds of implementing good skin care practices compared to those who did not find it unappealing (AOR = 0.457, 95% CI: 0.234 - 0.892). The cost of medications emerged as another significant factor. Parents who reported that the cost of medications was prohibitive had 0.480 lower odds of adopting good skin care practices compared to those who did not perceive the cost as a barrier (AOR = 0.480, 95% CI: 0.265 - 0.868). Lastly, the preference for using alternative or natural methods was associated with poorer skin care practices. Parents who preferred alternative or natural methods over prescribed treatments had 0.442 lower odds of adopting good practices (AOR = 0.442, 95% CI: 0.245 - 0.796).

Table 7 : Factors associated with Parental Practice on Skin Care of children with AD in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2024

Variable	categories	COR (95% CI)	AOR (95% CI)
Parents Educational level	No formal education	1	1
	Elementary	0.923 (0.266-3.209)	0.773 (0.205- 2.9)
	Secondary school	0.821 (0.276- 2.44)	0.706 (0.223- 2.24)
	College and above	3.166 (1.178-8.509)	2.845 (1.005- 8.05) *
The moisturizer has an unappealing formulation	No	1	1
	Yes	0.464 (0.251- 0.859)	0.457 (0.234- 0.892) *
The cost of the medications is prohibitive	No	1	1
	Yes	0.499 (0.291- 0.856)	0.480 (0.265- 0.868) *
The child resists the application of the emollient	No	1	1
	Yes	0.723 (0.38-1.37)	0.793 (0.389-1.616)
There is a preference for using alternative or natural methods and home remedies instead of prescribed treatments	No	1	1
	Yes	0.409 (0.237- 0.7055)	0.442 (0.245-0.796) **
<i>*Significant at p value</i> * <0.05 < **0.01 < ***0.001			

6 Discussion

This hospital-based cross-sectional study investigated the Parental Knowledge and Practices on Skin Care of children with AD and associated factors in St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, and identified the factors associated with it. The research focused on various determinants, including socio-demographic status, clinical-related factors and treatment related factors, to understand the extent to which Parental Knowledge and Practices may be influenced by these factors.

The proportion of good parental knowledge on skin care for children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia, was found to be 57.14% (95% CI: 50.58-63.51%), while the proportion of good parental practice on skin care for children with AD was 35.29% (95% CI: 29.23-41.73%). The mean parental knowledge on skin care for children with atopic dermatitis was 58.3% (SD 3.5 ± 1.2) and the mean parental practice was 54% (2.7 ± 0.9). The level of knowledge in this study is in line with a study conducted in South Korea (30) but lower than a study conducted in Saudi Arabia (27). The variation could be due to differences in healthcare systems, public health education, access to resources, and cultural perceptions of atopic dermatitis in each country. Socioeconomic factors and the availability of specialized care may also contribute to the differences observed.

Our study identified several factors significantly associated with parental knowledge on skin care of children with atopic dermatitis (AD). The factors included age, educational level, history of AD in the family, and number of current visits. Parents aged 31-50 years had approximately 73% lower odds of having good knowledge compared to those aged 18-30 years. Similarly, parents over 50 years old had about 64% lower odds of having good knowledge compared to those aged 18-30 years. This is in line with previous studies (31). This could be due to factors such as reduced exposure to new information or healthcare-related resources, lower levels of formal education among older parents (24). The finding implies that younger parents may have better access to and engagement with educational resources, leading to improved health knowledge. Interventions aimed at improving parental knowledge should consider targeted strategies for older age groups.

Parental education level was a key determinant, with those having elementary, secondary, or higher education showing progressively good knowledge compared to those with no formal education.

This suggests that education plays a crucial role in enhancing health knowledge, likely due to better literacy, access to information, and improved critical thinking skills. This finding is aligned with previous studies on educational status and better health knowledge (32). The implication is that increasing educational opportunities, particularly for parents with lower levels of formal education, could help improve health literacy and overall well-being in communities.

Having a family history of AD significantly increased the odds of good parental knowledge, with parents of children with AD having much higher odds of good knowledge compared to those without a family history. This finding is consistent with previous studies conducted in Saudi Arabia (29). This could be attributed to increased awareness and heightened attention to the condition within families that have direct experience with AD (33).

The number of visits to the clinic was also significantly associated with good parental knowledge. Parents with more than two visits had significantly higher odds of good knowledge compared to those with only one visit. This could be due to increased exposure to healthcare professionals, information, and discussions that enhance understanding over time (34). The implication of this finding is that encouraging repeated visits to healthcare facilities may provide parents with continuous education and resources, ultimately improving their knowledge and awareness of important health issues.

Our study identified several factors significantly associated with parental practices regarding the skin care of children with atopic dermatitis (AD) at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. The factors include parental education level, the appeal of the moisturizer formulation, the cost of medications, and the preference for alternative or natural methods.

Parental education level was a key determinant, with parents who had a college education or higher having approximately three times the odds of adopting good skin care practices compared to those with no formal education. This finding is in line with previous studies (32). This could be attributed to higher education levels enabling parents to better understand medical advice and treatment options, thus improving their ability to care for children with AD (35). The implication is that

targeted educational interventions may be beneficial in improving practices among parents with lower education levels (36).

The appeal of the moisturizer formulation also played a significant role. Parents who found the moisturizer's formulation unappealing had about 54% lower odds of implementing good skin care practices compared to those who did not find it unappealing. This suggests that the sensory properties of the moisturizer, such as texture or scent, may influence its use (37). To improve adherence to skin care regimens, manufacturers and healthcare providers could focus on developing formulations that are more acceptable to parents and children.

The cost of medications was another significant factor. Parents who perceived the cost of medications as prohibitive had about 52% lower odds of adopting good skin care practices compared to those who did not see cost as a barrier. Financial constraints may limit access to necessary treatments, especially for lower-income families. This finding is in line with previous studies (38, 39). This highlights the importance of affordable treatment options and healthcare subsidies to ensure better adherence to skin care recommendations for children with AD.

Lastly, the preference for using alternative or natural methods was associated with poorer skin care practices. Parents who preferred alternative or natural methods over prescribed treatments had about 56% lower odds of adopting bold practices. This is in contrast with other studies (40, 41). This might be because traditional medicines from other countries are recognized, approved, or acknowledged, whereas in our case, cultural medicines are not officially approved. This could be due to a lack of trust in conventional treatments or cultural preferences for natural remedies (40, 41). The implication is that health professionals should engage in dialogue with parents to address concerns about conventional treatments while emphasizing the importance of scientifically backed skincare approaches for AD.

The findings of the study have several implications. For parents, the results suggest that improving knowledge about atopic dermatitis (AD) and its management could enhance their ability to provide effective skin care for their children. For healthcare professionals, the study underscores the role of repeated consultations and tailored education in equipping parents with the necessary skills and information. For policymakers, the results highlight the need to address systemic barriers such as

affordability and accessibility of treatments, as well as the importance of promoting health literacy programs to empower families and improve overall care outcomes for children with AD.

Strength and Limitation of the study

The study has several strengths and limitations. A major strength is its focus on a critical and under-researched area, offering valuable insights into parental knowledge and practices regarding the management of atopic dermatitis (AD) in children. Additionally, the study identified multiple factors associated with parental knowledge and practices, providing a comprehensive understanding of the determinants influencing them. However, the study also has limitations. As a hospital-based study, its findings may not be easily generalized to broader community settings. Moreover, the reliance on self-reported data introduces the potential for recall bias and social desirability bias.

7 Conclusion and recommendations

7.1 Conclusion

This study found poor level of parental knowledge and practice regarding skin care for children with atopic dermatitis (AD) in Addis Ababa, Ethiopia, with significant factors influencing these levels. Young parental age and a history of AD in the family were found to be associated with good levels of knowledge regarding AD skin care, while lower educational levels and fewer healthcare visits were linked to poor levels of knowledge. Additionally, being in college was associated with good skin care practices, while the cost of medications and preference for alternative or natural methods were identified as barriers to proper AD skin care. These findings emphasize the need for targeted interventions addressing educational and socio-economic factors to improve AD management practices among parents. Integrating these considerations into healthcare policies and practices is crucial for enhancing the effectiveness of skin care management for children with AD.

7.2 Recommendations

For Government and Policymakers:

Government should prioritize public health education on proper skin care for children with atopic dermatitis (AD) and integrate AD management into primary healthcare services.

Resources should be allocated for affordable treatment options, and awareness campaigns on the role of education and healthcare visits in improving AD care should be supported.

For Healthcare Professionals:

Healthcare providers should emphasize consistent skin care practices, offer counseling on moisturizers, and warn against alternative treatments. Special focus should be given to older parents or caregiver and those with no family history of AD to improve their knowledge and practices.

For Parents:

Parents should be encouraged to attend regular healthcare visits, follow guidance on skin care, and use prescribed moisturizers. They should avoid relying on alternative treatments and receive targeted support to improve their understanding of AD management, particularly if they have lower education levels.

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9 ANNEXES

9.1 Assurance of Principal Investigator

I the undersigned agree to accept all responsibilities for the scientific and ethical conduct of the research project. I will provide timely progress report to my advisor and seek the necessary advice and approval from my primary advisors in the course of the research. I will communicate timely to my advisors all stakeholders involved in the study including any source of funding for this research.

Name of the student: Meaza Bogale

Signature: _____

Date: _____

Approval of the Primary Advisor

Name of the primary advisor: Hana Feleke (MPH, public health department of SPHMMC)

Signature: _____

Approval of the Co-Advisor

Name of Co advisor

Signature: _____

Date: _____

9.2 Information sheet and consent form-English version

Information sheet and consent form is prepared for patients attending dermatology OPD in Saint Paul's Millennium Medical College (SPMMC) Addis Ababa, Ethiopia who are going to participate directly or indirectly in the research project. A cross-sectional study will be conducted on Parental knowledge and practices on skin care of children with atopic dermatitis and associated factors in Saint Paul's hospital millennium medical college, Addis Ababa Ethiopia

Name of Principal investigator: Meaza Bogale (M.D. year 2 DV resident)

Name of the organization: Saint Paul's Millennium Medical College (SPMMC) Addis Ababa, Ethiopia.

Introduction: This information sheet and consent form is prepared to explain the study subjects to cooperate and to join to this study. Please listen carefully and ask any questions about the study before you agree to join.

You may ask questions at any time after joining the study.

The investigator is Resident in dermatology specialty in Saint Paul's Millennium Medical College (SPMMC) Addis Ababa, Ethiopia.

Purpose of Research: To assess Parental knowledge and practices on skin care of children with atopic dermatitis and associated factors in Saint Paul's hospital millennium medical college, Addis Ababa Ethiopia.

Procedure: To determine knowledge and practices on skin care of children with atopic dermatitis and associated factors among parents and caregivers attending dermatology OPD in Saint Paul's Millennium Medical College (SPMMC) Addis Ababa, Ethiopia, you are invited to take part in this study, if you are willing to participate in this project. Then, you will be asked to give your response by the data collectors and to provide clinical sample. For all questionnaire and clinical samples, the study participants are randomly selected patients attending dermatology OPD in Saint Paul's Millennium Medical College (SPMMC) Addis Ababa. You do not need to tell your name or name of your address to the data collectors and all your responses and the results obtained will be kept

confidentially by using coding system whereby no one will have access to your response except the principal investigator.

Risk/ Discomfort: By participating in this research project, you may feel that it has some discomfort especially on wasting time ranged 20 to 30 minutes. I hope you will participate in the study for the sake of the benefit of the research result. Really, there is no risk in participating in this research project.

Benefits: If you will participate in this research project, there may not be immediate benefit to you. However, the lead investigator is likely to benefit from your participation in evaluating the current level knowledge and practices of parents or caregivers on skin care of their children with Atopic dermatitis. In the end, this will assist the investigator in locating the gap in the intervention that the relevant authorities and stakeholders plan to do. As a result, the study's long-term benefit is to improve your children's health.

Incentives: You will not be provided with any incentives or payment to take part in this project.

Confidentiality: The data gathered for this study will be treated in strict confidence. Your name will not be included in the file containing the information about you and the healthcare facilities that this study collects. Instead, it will have a code number. In general, no one other than the lead investigator will have access to the information that is collected, and it will be kept in a safe, secure location.

Right to refuse or withdraw: You have the absolute freedom to decline taking part in this study. If you do not want to provide your response or a clinical sample, you can decide not to answer some or all of the questions. Additionally, you are free to leave this study whenever you want without losing any of your rights.

Please sign if you would like to participate voluntarily.

Signature_____

Date_____

Persons to contact:

If you have any question to ask, please contact me without hesitate.

Meaza Bogale

Tel: 0903179507

9.3 Questionnaire

PART 1: Sociodemographic and clinical characteristics of the child and parents	
1.1.Age in years	
1.2.Sex	a) Female b) Male
1.3.Marital status	a) Single b) Divorced c) Married
1.4.Place of residence	a) Rural b) Urban
1.5.Education level	a) No formal education b) Elementary c) High school d) Collage and above
1.6.Employment status	a) Employed b) Unemployed
1.7.Number of other children	
1.8.Monthly income	-----
Clinical related factors	
1.10. Age of child	
1.11. Age at diagnosis	
1.12. Number of current visits	
1.13. Any allergy related disease in child	a. Asthma b. Conjunctivitis c. Others.... d . none
1.14AD in the family	a) Yes b) No
1.15Other allergy related disease in the family	a) No b) Asthma c)Conjunctivitis d. others....

A. Yes. B. No

3. Do you know that moisturizers are important in eczema management?

A. Yes. B. No

4. Do you know that long-term use of moisturizers can prevent the recurrence of eczema?

A. Yes. B. No

5. Do you think that moisturizers should applied to the whole body?

A. Yes. B. No

6. Do you think that moisturizers/ emollient should use when the skin is doing well?

A. Yes. B. No

2.2 Parental / caregiver skin care practice to children with eczema.

1. Did you use moisturizers on your child?

A. Yes B. No

2. How frequent do you use moisturize?

A. >1times in a day B. Everyday C. Every 2-3 d D. 1 time per week E. After
bathing

3. Where did you use moisturizers on your child?

A. Only face B. Only dry area C. Entire body

4. When do you discontinue moisturizer?

A. When the skin improved

B. I use long term

5. When do you apply emollient after washing or bathing your child?

A. On wet body immediately after gentle drying

B. After vigorously drying the body