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The Prevalence and Associated Factors of Atopic Dermatitis in Children between Six Months and Twelve Years Attending the Pediatrics Dermatology Clinic at Kenyatta National Hospital, Kenya

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Keywords:

Atopic Dermatitis,
Eczema,
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Background: Atopic dermatitis (AD) is a chronic inflammatory skin condition, typically beginning in early childhood and characterized by pruritus and dry, scaly lesions. It affects up to 20% of children globally, with varying prevalence across regions. In Africa, its prevalence ranges from 4.7% to 23%, but limited data exists for Kenya, particularly in pediatric populations. **Purpose of study:** This study aimed to determine the prevalence of AD and explore factors influencing its occurrence in pediatric patients aged 6 months to 12 years at Kenyatta National Hospital, Kenya. **Methodology:** A cross-sectional study was conducted, with 148 participants recruited consecutively. Data was collected using a structured questionnaire, covering demographics, family and personal histories of atopic conditions, and AD severity. The prevalence of AD was calculated, and binary logistic regression was used to investigate associated factors. Stata version 17 was used for analysis. Significance was assessed at 95%. **Results:** The study found a 25.7% prevalence of AD. Younger children (aged ≤ 5 years) had significantly higher odds of developing AD (OR = 16.99, 95% CI: 5.12, 56.37, $p < 0.001$), as did children aged 6-10 years (OR = 4.70, 95% CI: 1.42, 15.53, $p = 0.011$). Males were more likely to develop AD compared to females (OR = 2.83, 95% CI: 1.32, 6.03, $p = 0.007$). Family history of atopic conditions, including asthma, rhinitis, conjunctivitis, and AD, was strongly associated with higher odds of AD. Children with unemployed mothers also had a higher risk (OR = 2.39). AD severity varied, with 44.7% having minimal eczema, 34.2% mild, 13.1% moderate, and 7.4% severe. **Conclusion and recommendations:** One in four children attending a dermatology clinic was found to have atopic dermatitis. The study recommends early AD screening for children, particularly those with a family history of atopy, to improve early detection and management.

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INTRODUCTION

Atopic dermatitis (AD), also called atopic eczema, is a common chronic inflammatory skin disease characterized by acute flare-ups of intense pruritus and dry scaly lesions (Hadi et al., 2021). Symptoms of AD include patches of skin that are red or brownish, dry, cracked or scaly and itchy skin, especially at night. In infants, eczema usually appears as vesicles on the cheeks, while older children and adults often experience vesicles on the knees or elbows (often in the folds of the joints), on the backs of the hands or on the scalp. AD affects up to 20% of children and 3% of adults; the latest global data shows increases in its prevalence (Mandlik et al., 2021). A study by Sendrasoa et al., (2020) reported a prevalence of 5.6% for atopic dermatitis among pediatrics aged 6 months to 14 years. In Africa, the prevalence of AD among paediatrics ranges from 4.7% to 23% (Margolis et al., 2014).

The onset of AD is usually between 2 and 6 months of age, although it can begin at any age. It was previously thought that it was resolved by adulthood in most cases, but evidence suggests that it is a chronic condition that may persist into adulthood. It is subdivided into infantile, childhood and adult subtypes (Hadi et al., 2021).

The etiology of atopic dermatitis (AD) is multifactorial with interaction between genetics,

immune and environmental factors. The strongest known genetic risk factor for developing AD is the presence of a loss-of-function mutation in filaggrin and therefore a primary defect in the epithelial barrier leading to secondary immunologic dysregulation and resulting in inflammation (Nutten et al. 2015). The increased global prevalence of AD cannot be attributed to genetics alone suggesting that evolving environmental exposures may trigger and/or flare disease in predisposed individuals. There is a complex interplay between different environmental factors, including prenatal exposures individual use of personal care products, irritants and pruritogens, pathogens, climate factors, including temperature, humidity, ultraviolet radiation, outdoor and indoor air pollutants, tobacco smoke exposure, water hardness, diet, breastfeeding, probiotics and prebiotics on AD (Nutten et al. 2015).

AD usually starts in early childhood and may represent the initial step of the so-called 'atopic march', which represents the natural history of atopic manifestations (Abdo et al., 2020). It is characterized by a typical sequence of atopic diseases (asthma and allergic rhinoconjunctivitis) in childhood preceding the development of other allergic disorders later in life (Hadi et al., 2021). Roughly 50% of all those with AD develop other allergic symptoms within their first year of life and probably as many as 85% of the patients experience

an onset below 5 years of age. Patients usually outgrow the disease in late childhood as around 70% of the patients with a disease onset during childhood have a spontaneous remission before adolescence (Hadi et al., 2021).

AD poses a significant burden on healthcare resources and patients' quality of life (mainly because of sleep deprivation due to itchiness, employment loss, time to care and financial costs). The environmental factors may vary from one region to the other or from household to the other. This speaks of the need to understand the main probable environmental risk factors locally for effective preventive care. Thus, the purpose of the study was to determine the prevalence and factors associated with atopic dermatitis among paediatrics (children between 6 months and 12 years) attending dermatology clinic at Kenyatta National Hospital.

MATERIALS AND METHODS

Study Design

This was a facility-based descriptive cross-sectional study.

Study Site and Setting

The study was carried out in the dermatology paediatrics clinic at the Kenyatta National Hospital (KNH), Nairobi, Kenya. The facility, KNH, is the largest referral facility, not only in the country but also in Eastern and Central Africa with a bed capacity of around 2000.

Study Population

The study population comprises paediatrics, aged between 6 months and twelve (12) years, seeking dermatological care from KNH Pediatrics Dermatology Clinic. Those to be recruited in the study had to meet the following inclusion criteria which included children aged between 6 months and 12 years attending the pediatric dermatology clinic at KNH and parents/guardians willing to give consent for the study. Children less than 6 months and more than 12 years old and cases where the

parent or guardian refuses to give consent were excluded.

Sample Size Calculation

The actual size of the sample to be recruited was estimated using Cochran's (1977) formula for calculating an adequate sample in cross-sectional studies. The calculation was based on the findings reported by a study in Ethiopia which found that the prevalence of AD was 9.6% which was 134 and a 10 percent non-response was added hence the sample size was 148

Sampling Technique

The participants were enrolled into the study through a consecutive sampling technique where every eligible child's parent/guardian was approached, consented, and enrolled until the sample size was met. The sampling technique was appropriate for this study, given the rareness of atopic dermatitis, and hence every available case was critical for a descriptive profile.

Study Tool

The data were gathered through a structured questionnaire to be administered to the participants. The questionnaire was formulated with insights from the literature and previous studies to ensure it was valid and reliable. The questionnaire included details on all the targeted variables including the baseline characteristics, the associated factors and the severity of AD. The questionnaire underwent review from supervisors and a qualified biostatistician, and a pilot study was done to enhance its feasibility. The severity of the disease was determined using the Patient-Oriented Eczema Measure score.

Patient-Oriented Eczema Measure (POEM) Score

The Patient-Oriented Eczema Measure (POEM) is a validated assessment tool used to monitor the severity of atopic dermatitis (AD), focusing on the symptoms experienced by the patient. The

questionnaire consists of seven questions addressing itching, skin dryness, bleeding, weeping, crack formation, exfoliation, and sleep disturbance. Patients or their caregivers report their experiences over the past week, with responses scored from 0 to 4, where 0 indicates no experience and 4 indicates daily symptoms, reflecting very severe eczema. The total score ranges from 0 to 28, with higher scores indicating more severe AD. Severity levels are classified as follows: 0-2 (clear or almost clear skin), 3-7 (mild eczema), 8-16 (moderate eczema), 17-24 (severe eczema), and 25-28 (very severe eczema). This system helps healthcare providers assess the severity of AD and guide treatment decisions.

Data Collection Procedure

Parents or guardians were approached and informed about the study's purpose, objectives, and expectations. If the child was old enough, they were also briefed in the presence of their parents. Consent was obtained after ensuring both the parent and child fully understood the study, with an independent literate witness involved if they were illiterate. After consent, participants were directed to a private room to complete the questionnaire, which was read aloud to them by the principal investigator or research assistants and a diagnosis was made using the Kapur et al. (2018) criteria. The study followed an ethical approval process, including consent from the Dermatology Department-KNH, the KNH-UON Ethics Review Committee, and permission from the KNH research department. Research assistants, trained in the study protocol and medical language, collected the data. The study tool was pretested at Mbagathi Hospital to ensure its feasibility and reliability. Data quality and completeness were monitored daily by the principal investigator. Completed questionnaires were stored securely, with consent forms kept separately for confidentiality. Data was then cleaned and coded in Excel before being imported into Stata software for analysis.

Data Analysis

The data collected was analyzed using Stata version 17 with specific tests run based on the specific objective requirements. Descriptive analysis was done using mean and standard deviation for continuous data and frequencies and proportions for categorical data. The prevalence of atopic dermatitis was calculated as a proportion of the total sample size and expressed as a percentage. Factors associated with AD were determined using logistic regression analysis. The odds ratio was explained to investigate the strength of the association. The level of significance was assessed at <0.05 .

Data Quality Control and Assurance

The strength of evidence presented in any study is by a significant proportion dependent on the quality of the data. In this study, the data quality was enforced by a raft of measures. First, the data collection was done by qualified healthcare providers, who were trained. Secondly, the study tool was pre-tested before deployment to ensure the targeted data was obtainable, and that the data collected would be adequate to respond to the study objectives. Thirdly, the data collected was appraised for completeness, correctness, and clarity before being progressively analysed to ensure minimal data errors at the analysis level.

Ethical Considerations

- Ethical approval was obtained from KNH-UON ERC reference number: **Ref.No. KNH-ERC/A/272**

Those recruited as participants were required to have informed written consent, which was obtained without any form of coercion, intimidation or blackmail. There was no risk or harm to any of the study participants. There were no monetary or other types of compensation for participating in this study.

RESULTS

The present study aimed to determine the prevalence of atopic Dermatitis and its associated factors among children aged 6 months to 12 years

attending the pediatric dermatology clinic at Kenyatta National Hospital. A total of 148 children were enrolled on the study and included in the analysis.

Demographic Characteristics of Children between 6 Months and 12 Years Attending the Pediatrics Dermatology Clinic at the Kenyatta National Hospital

The demographic characteristics of the 148 pediatric patients attending the dermatology clinic revealed that 59 (39.9%) were aged more than 10 years while 51 (34.5%) were aged 6-10 years. A higher proportion were female 90 (60.8%). Most patients resided in urban areas 80 (54.1%) and had 1-5 siblings 62(41.9%). A larger percentage lived in extended family settings 81(54.7%) as shown in Table 1.

Table 1: Demographic Characteristics of Children between 6 Months and 12 Years Attending the Pediatrics Dermatology Clinic at the Kenyatta National Hospital (N =148)

	Frequency	Percent
Age		
≤5 years	38	25.7
6 - 10 years	51	34.5
More than 10 years	59	39.9
Gender		
Male	58	39.2
Female	90	60.8
Residence		
Urban	80	54.1
Rural	68	45.9
Number of siblings		
No siblings	39	26.4
1 - 5 siblings	62	41.9
More than 5 siblings	47	31.8
House setting		
Nuclear	67	45.3
Extended	81	54.7
Mother occupation		
Employed	36	24.3
Unemployed	112	75.7
Father occupation		
Employed	78	52.7
Unemployed	70	47.3

The Associated Atopic Conditions (in Self and Family)

The two most common atopic conditions both in family history and in personal diagnoses are allergic rhinitis and allergic asthma. In family history,

allergic rhinitis was reported by 25(65.8%) and allergic asthma was 14(9.5%). When investigating personally related factors, 17(11.5%) of the patients had allergic asthma while 16(10.8%) had allergic rhinitis as shown in Table 2.

Table 2: The Associated Atopic Conditions (in Self and Family)

	Frequency	Percent
Family history		
Allergic asthma	14	9.5
Allergic rhinitis	25	16.9
Allergic conjunctivitis	11	7.4
Atopic dermatitis	13	8.8
Personal related factors		
Allergic Asthma	17	11.5
Allergic rhinitis	16	10.8
Allergic conjunctivitis	14	9.5

The Prevalence of Atopic Dermatitis among Children between 6 Months and 12 Years Attending the Pediatrics Dermatology Clinic at the Kenyatta National Hospital

The prevalence of atopic dermatitis was 38(25.7%) with a confidence interval of between 18.9% to 33.5%

Factors Associated with Atopic Dermatitis among Children between 6 Months and 12 Years Attending the Pediatrics Dermatology Clinic at the Kenyatta National Hospital

Binary logistic regression was conducted to investigate factors associated with atopic dermatitis

as shown in Table 3. The findings showed that children aged 5 years or younger had significantly higher odds of having atopic dermatitis (OR = 16.99, 95% CI: 5.12, 56.37, $p < 0.001$). In addition, children aged 6-10 years also had significantly higher odds of having atopic dermatitis compared to those aged more than 10 years (OR = 4.70, 95% CI: 1.42, 15.53, $p = 0.011$). Males had significantly higher odds of having atopic dermatitis compared to females (OR = 2.83, 95% CI: 1.32, 6.03, $p = 0.007$). Children with unemployed mothers had significantly higher odds of having atopic dermatitis compared to those who were employed (OR = 2.39, 95% CI: 1.12, 5.10, $p < 0.001$).

Table 3: Factors Associated with Atopic Dermatitis among Children between 6 Months and 12 Years Attending the Pediatrics Dermatology Clinic at the Kenyatta National Hospital

	Atopic dermatitis present		OR (95% CI)	P value
	Absent n(%)	Present n(%)		
Age				
≤5 years	17(44.7)	21(55.3)	16.99(5.12, 56.37)	<0.001
6 - 10 years	38(74.5)	13(25.5)	4.70(1.42, 15.53)	0.011
More than 10 years	55(93.2)	4(6.8)	Ref	
Sex				
Male	36(62.1)	22(37.9)	2.83(1.32, 6.03)	0.007
Female	74(82.2)	16(17.8)	Ref	
Residence				
Urban	56(70.0)	24(30.0)	1.65 (0.77, 3.53)	0.194
Rural	54(79.4)	14(20.6)	Ref	
Number of siblings				
No siblings	28(71.8)	11(28.2)	Ref	
1 - 5 siblings	43(69.4)	19(30.6)	1.12 (0.47, 2.72)	0.794
More than 5 siblings	39(83.0)	8(17.0)	0.52 (0.19, 1.47)	0.261
Housing unit				
Nuclear	50(74.6)	17(25.4)	Ref	
Extended	60(74.1)	21(25.9)	1.03 (0.49, 2.16)	0.939

	Atopic dermatitis present		OR (95% CI)	P value
	Absent n(%)	Present n(%)		
Mother occupation				
Employed	30(82.1)	6(17.9)	Ref	
Unemployed	80(71.4)	32(28.1)	2.39 (1.12, 5.10)	<0.001
Father occupation				
Employed	62(79.5)	16(20.5)	Ref	
Unemployed	48(68.6)	22(31.4)	1.78(0.84, 5.10)	0.131

Personal and Family Disease-related Factors with AD Diagnosis

The odds of having Atopic Dermatitis are much higher in individuals with a family history of allergic asthma (OR = 9.46, 95% CI: 2.76–32.45, $p < 0.001$), allergic rhinitis (OR = 23.33, 95% CI: 7.67–70.11, $p < 0.001$), allergic conjunctivitis (OR = 5.98, 95% CI: 1.64–21.78, $p = 0.007$), and atopic dermatitis itself (OR = 8.22, 95% CI: 2.36–28.63, p

= 0.001). Additionally, personal factors also show strong associations with AD. Individuals with allergic asthma are 13.78 times more likely to have AD (OR = 13.78, 95% CI: 4.14–45.86, $p < 0.001$), allergic rhinitis have 12.23 times higher odds (OR = 12.23, 95% CI: 3.65–41.02, $p < 0.001$), and allergic conjunctivitis significantly increases the odds (OR = 14.53, 95% CI: 3.79–55.75, $p < 0.001$) as shown in Table 4.

Table 4: Personal and Family Disease-related Factors with AD Diagnosis

	Atopic dermatitis present		OR(95%CI)	P value
	Absent n(%)	Present n(%)		
Family history of allergic asthma				
No	106(79.1)	28(20.9)		
Yes	4(28.6)	10(71.4)	9.46(2.76, 32.45)	<0.001
Family history of allergic rhinitis				
No	105(85.4)	18(14.6)		
Yes	5(20.0)	20(80.0)	23.33(7.67, 70.11)	<0.001
Family history of allergic conjunctivitis				
No	106(77.4)	31(22.6)		
Yes	4(36.4)	7(63.6)	5.98(1.64, 21.78)	0.007
Family history of atopic dermatitis				
No	106(78.5)	29(21.5)		
Yes	4(30.8)	9(69.2)	8.22(2.36, 28.63)	0.001
Personal factors				
Allergic Asthma				
No	106(80.9)	25(19.1)		
Yes	4(23.5)	13(76.5)	13.78(4.14, 45.86)	<0.001
Allergic rhinitis				
No	106(80.3)	26(19.7)		
Yes	4(25.0)	12(75.0)	12.23(3.65, 41.02)	<0.001
Allergic conjunctivitis				
No	107(79.9)	27(20.1)		
Yes	3(21.4)	11(78.6)	14.53(3.79, 55.75)	<0.001

The Disease Severity Using the POEM Score

The most common symptom was "skin feeling dry or rough due to eczema," with 16(42.1%) of

children reporting this condition every day. The findings also showed that 18(47.4%) reported no flaking as shown in Table 5.

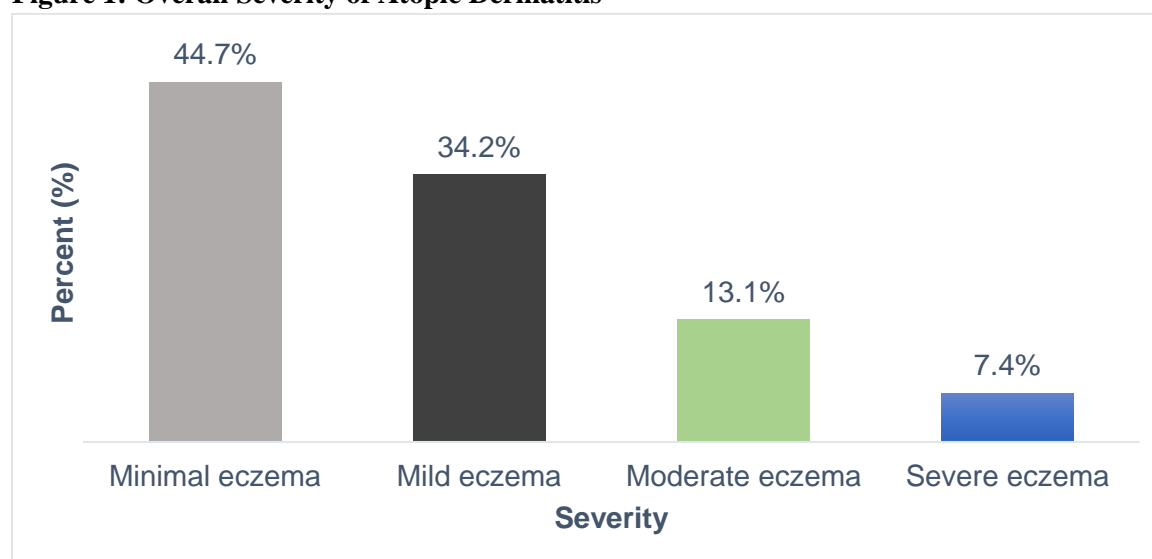
Table 5: The Disease Severity Using the POEM Score (N =38)

<i>Statements</i>	No days n(%)	1 - 2 days n(%)	3 - 4 days n(%)	5 - 6 days n(%)	Everyday n(%)
Over the last week, how many days has your child's skin been itchy because of their eczema	11(28.9)	10(26.3)	5(13.2)	2(5.3)	10(26.3)
Over the last week, how many nights has your child's sleep been disturbed because of their eczema?	15(39.5)	3(7.9)	2(5.3)	6(15.8)	12(31.6)
Over the last week, how many days has your child's skin been bleeding because of their eczema?	14(36.8)	5(13.2)	7(18.4)	9(23.7)	3(7.9)
Over the last week, how many days has your child's skin been weeping or oozing clear fluid because of their eczema?	17(44.7)	9(23.7)	5(13.2)	2(5.3)	5(13.2)
Over the last week, how many days has your child's skin been cracked because of their eczema?	13(34.2)	13(34.2)	3(7.9)	0	9(23.7)
Over the last week, how many days has your child's skin been flaking off because of their eczema?	18(47.4)	13(34.2)	0	4(10.5)	3(7.9)
Over the last week, how many days has your child's skin felt dry or rough because of their eczema?	3(7.9)	1(2.6)	8(21.1)	10(26.3)	16(42.1)

Overall Severity of Atopic Dermatitis

The overall severity of eczema among the patients was assessed and scored using the POEM score where the findings showed that 17(44.7%) of the

patients had minimal eczema, 13(34.2%) had mild eczema, 5(13.1%) had moderate eczema while 3(7.4%) of the AD patients had severe eczema as shown in Figure 2.

Figure 1: Overall Severity of Atopic Dermatitis

DISCUSSION

AD poses a significant public health concern majorly among children although, in the local context, it remains largely unexplored which presents the need to understand its prevalence, severity as well as associated factors. Our current study established that one in four pediatric patients presenting at the dermatology clinic have atopic dermatitis. These findings are consistent with those from Al-Naqeeb et al. who found that in children 0 – 5 years the prevalence was reported at 24% evidencing the high prevalence in this age group as opposed to older children, adolescents and adults (Al-Naqeeb et al., 2019). Another study in Switzerland also revealed that the average age was 6.8 years and infants and school children represented 60% of the study population. Half of the patients (51%) were external referrals, almost one-third (29%) presented spontaneously, and the remaining 20% were sent from other hospital departments. With a frequency of 25.9%, atopic dermatitis was the most frequent diagnosis, followed by pigmented nevi (9.1%) and warts (5.0%) (Wenk & Itin, 2003). Environmental factors such as air pollution, allergens, and climate change are significant contributors to the rise in allergic conditions like atopic dermatitis. Kenya, particularly in urban areas, has seen increased exposure to air pollutants, dust, and allergens. The urbanization of Kenya has led to overcrowded living conditions, increased exposure to dust mites, and other environmental triggers that are known to worsen the condition. Most of the patients in our study were residing in an urban setting which could affirm this explanation.

However, the findings from the present study highlight a higher burden of AD compared to other studies. A study in Ethiopia established that the burden of AD was 9.6% (Kelbore et al., 2015). Another study in Northeast Croatia among school-going children aged between 12 to 14 years revealed that the estimated lifetime (ever) prevalence rate of atopic dermatitis symptoms was 7.55% and the

estimated 12-month prevalence rate was 5.75% (Munivvana Skvorc et al., 2014).

Castro et al. (2010) conducted a study in Brazil involving 3,600 children aged 6-7 years and found a prevalence rate of 9.6% over a 1-year period. This rate indicates a moderate prevalence of atopic dermatitis in this age group in Brazil. The relatively high prevalence may reflect a combination of genetic and environmental factors, including urbanization, changes in lifestyle, and dietary habits, which have been linked to the rising incidence of allergic diseases such as AD in various parts of the world. Goh et al., (2018) studied 384 children aged 1-6 years in Malaysia and found a prevalence of 13.4%. This higher prevalence compared to the Brazilian study could be due to different environmental, cultural, and healthcare factors specific to Malaysia. The higher burden of atopic dermatitis found in the present study could be attributed to a combination of genetic predisposition, environmental factors, healthcare access, and lifestyle differences, as compared to the studies conducted in Ethiopia, Northeast Croatia, Brazil, and Malaysia. The findings highlight the complexity of AD and underscore the need for context-specific research to understand the factors contributing to its prevalence and develop effective prevention and management strategies.

Our findings showed that the burden of AD was significantly higher in those aged less than or equal to five years. These findings align with those from a multicentre study in the United States examining the epidemiology and burden of AD, a significant portion of cases were found in younger children. The study highlighted that early childhood is a critical period for the onset of AD, with a higher incidence and burden observed in children under 5 years old (Sanclemente et al., 2021). Another study in Turkey reported that AD was most prevalent in infants and preschool children. Among 672 pediatric dermatology patients, a significant number were diagnosed with AD during the first five years of life, underscoring the higher burden of the

disease in this age group (Tamer et al., 2008). This study supports the notion that early childhood is a pivotal time for both the manifestation and burden of AD. These findings emphasize the assertion that AD typically begins in the first year of life, and the severity of symptoms can peak during early childhood, making it a significant burden during this period. The immune system's developmental phase during this time may contribute to the higher prevalence and more severe manifestations of AD.

Despite the majority of female patients attending dermatology clinics, our study established that the risk of AD was significantly higher in male pediatric patients. These findings align with those from a study in South Africa which established that there was a significantly higher incidence in male patients compared to women (Katibi et al., 2016). Another study in Sweden found that AD is more common in boys during early childhood (Bylund et al., 2020) which aligns with our study's findings. The higher prevalence in males is often observed in the first few years of life, but by adolescence, the gender difference tends to level out or even reverse, with females becoming more affected. This study suggests that males are at a higher risk of developing AD at younger ages, particularly in the infantile and preschool years.

Our findings also showed that the odds of AD were higher among children whose mothers were unemployed. Unemployment is often associated with lower socioeconomic status, which can limit access to quality healthcare, preventive measures, and early interventions for conditions like AD. Children in lower-income households may have limited access to specialized dermatological care, leading to higher rates of undiagnosed or poorly managed AD.

The current study shows that individuals with a family history of allergic asthma, allergic rhinitis, allergic conjunctivitis, and atopic dermatitis have significantly higher odds of developing AD. The odds ratios (OR) for these conditions are substantial, with allergic asthma having an OR of 9.46, allergic

rhinitis at 23.33, allergic conjunctivitis at 5.98, and atopic dermatitis itself at 8.22. These findings are consistent with the understanding that AD, along with other allergic conditions, often runs in families due to shared genetic predispositions. The higher the family history of these conditions, the more likely individuals are to develop AD, which can be attributed to common genetic factors influencing the immune system, skin barrier function, and inflammatory pathways. These findings are consistent with those from the United States which revealed that children with a family history of allergic conditions like asthma, rhinitis, and eczema were significantly more likely to develop AD, supporting our finding that family history plays a critical role in the onset of AD (Sanclemente et al., 2021). These findings also align with those from a study in Croatia which revealed that the factors found to be associated with the symptoms of atopic dermatitis ever were positive family atopy and positive family atopy (Munivrana Skvorc et al., 2014). The findings from a study in Ethiopia also established that a family history of asthma and AD were associated with an increased likelihood of AD among children (Kelbore et al., 2015).

The personal history of allergic asthma, allergic rhinitis, and allergic conjunctivitis also strongly correlates with higher odds of having AD. These personal associations reflect the concept of the "atopic march," where individuals with one allergic condition (such as asthma) are more likely to develop other atopic diseases like AD, often starting in early childhood (Kelbore et al., 2015). This is due to similar immunologic mechanisms, particularly the involvement of the Th2 immune response, which is central to both AD and other allergic diseases. The immune system's heightened sensitivity to environmental allergens, such as pollen, dust mites, and pet dander, triggers inflammatory pathways that affect different parts of the body, leading to conditions like asthma, rhinitis, conjunctivitis, and AD. Yaneva & Darlenski (2021) highlighted that atopic dermatitis (AD) is closely linked to asthma. According to Acharya, Bajgain, &

Yoo (2019), allergic rhinitis typically causes symptoms like a runny nose, itchy nose, sneezing, and nasal congestion. In some cases, it can also cause itchiness in the eyes, throat, and ears.

The distribution of eczema severity in this study highlights a predominance of minimal and mild cases, with a smaller percentage of patients experiencing moderate or severe eczema. These findings are comparable to those from a prospective cohort study in China which examined early-onset AD in children and tracked the persistence of eczema up to the age of 12. The study found that the majority of cases were mild, but persistent AD cases had more moderate or severe forms of eczema, which aligns with the findings of higher severity in long-term AD cases (Zhang et al., 2021). This pattern suggests that a majority of AD patients in this cohort have relatively mild forms of the disease, which can typically be managed with basic skincare practices and topical treatments. However, the presence of moderate and severe cases, while less common, indicates the need for a more intensive, multifaceted approach for those with more severe symptoms.

Furthermore, the findings also suggest that there is a significant proportion of patients with manageable symptoms, which may help in designing educational programs aimed at promoting proper skin care, trigger avoidance, and early intervention. For those with more severe forms of AD, specialized care, including advanced therapies and psychological support, may be needed to address both the physical and emotional challenges of the disease.

CONCLUSION

The study found that atopic dermatitis (AD) is a significant issue in the pediatric population, with a substantial proportion of children affected, predominantly presenting with mild to moderate eczema. The severity, assessed using the POEM score, showed that many had minimal eczema, followed by those with mild, moderate, and severe

eczema. Interestingly, despite a higher number of female patients, male children were at greater risk, and AD was more common in children aged five years or younger. A family history of allergic conditions, such as asthma, rhinitis, conjunctivitis, and AD, significantly increased the likelihood of developing AD, highlighting the genetic and immunological factors involved. Additionally, a personal history of allergic asthma, rhinitis, or conjunctivitis was strongly associated with higher odds of AD. The study recommends implementing early screening in pediatric dermatology clinics, public health campaigns to raise awareness about recognizing AD early, and educational programs for families on managing risks, such as skin care routines and allergen avoidance. Furthermore, it suggests targeted management strategies for severe cases and further research on the effectiveness of early interventions, particularly for children with a family history of allergic conditions.

Conflict of Interest

There was none to declare

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