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ORIGINAL ARTICLE

Prevalence and Determinants of Atopic Dermatitis among School Aged Children

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ABSTRACT

Background: *Atopic dermatitis is a chronic, itchy skin disorder starting in childhood, commonly affecting elbows and knees, influenced by genetics and environment. Its burden in Bangladeshi school-aged children is significant, but research on prevalence and risk factors is limited.* ***Objective:*** *To determine the prevalence of atopic dermatitis and identify associated risk factors among school-aged children.* ***Methods & Materials:*** *A cross-sectional study of 130 children aged 6–12 years was conducted at Kapasia Upazilla Health Complex, Bangladesh, to assess atopic dermatitis prevalence and risk factors. Data were collected via questionnaire, AD diagnosed by UK Working Party's Criteria, and analyzed using chi-square tests and logistic regression.* ***Results:*** *Among 130 children, 58.5% were aged 9–12 years and 54.6% were male, with most parents having secondary education. The prevalence of atopic dermatitis was 17%, with family history of atopy and damp housing as significant predictors. Among 22 affected children, itching (100%) and dry skin (86.4%) were most common, mainly affecting elbows (63.6%) and knees (59.1%). Most cases were mild (63.6%), with fewer moderate (27.3%) and severe (9.1%) cases.* ***Conclusion****: Atopic dermatitis was observed in 17% of school-aged children, with family history and damp housing as major risk factors. The condition mainly presented with itching and dry skin, affecting flexural areas, and was mostly mild. Recognizing these risk factors and clinical features is important for early diagnosis and effective management.*

Keywords: *Atopic Dermatitis, School Aged Children, Prevalence, Determinants*

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INTRODUCTION

Atopic dermatitis (AD) is a chronic, relapsing inflammatory skin disorder characterized by pruritus, eczematous lesions, and a fluctuating disease course, commonly beginning in childhood [1,2]. It impacts approximately 12% of children and 7.2% of adults, usually beginning in early childhood, with 60% of cases manifesting before the age of one and 90% by age five, resulting in substantial healthcare utilization [1]. Common symptoms of atopic dermatitis include intense itching, dry and red inflamed skin with erythematous, scaly patches, often leading to scratching, excoriations, and lichenification, especially in skin folds like the knees and elbows. These features can be accompanied by oozing/crusting in acute flares and worsen quality of life due to discomfort and sleep disturbances [2].

Globally, the prevalence of AD varies widely, affecting up to 20% of children, with rising trends observed in both developed and developing countries [3,4]. Numerous factors contribute to the development and exacerbation of AD, including genetic predisposition, family history of atopic diseases, environmental exposures, and psychosocial stressors [5,6]. Urbanization, air pollution, and exposure to allergens such as pets or household irritants have also been identified as significant determinants influencing the onset and severity of symptoms [7].

In Bangladesh, studies have highlighted the substantial burden of AD among children, noting significant psychosocial impacts on affected families [8-10]. However, there is limited research focusing specifically on school-aged children in outpatient or community healthcare settings. Additionally, evidence on socio-demographic, environmental, and familial determinants that influence the occurrence and severity of AD in this population is scarce. These gaps underscore the need for research to assess both the prevalence and associated risk factors of AD among school-aged children in Bangladesh, to guide targeted prevention and management strategies.

METHODS & MATERIALS

A cross-sectional study was conducted at the Upazilla Health Complex, Kapasia, Gazipur, Dhaka, Bangladesh, from July 2023 to June 2024 to determine the prevalence and associated determinants of atopic dermatitis among school-aged children. Children aged 6–12 years whose parents or guardians provided written informed consent were included. Those with chronic skin conditions other than atopic dermatitis or those unable to participate due to acute illness were excluded.

A total of 130 children were recruited using convenience sampling from the outpatient dermatology department of the Kapasia Upazilla Health Complex. Data were collected through a structured and pre-tested questionnaire administered to

parents or guardians. The questionnaire captured socio-demographic information, family and personal history of atopic diseases, and environmental exposures, including housing conditions and contact with allergens or pets. Atopic dermatitis was diagnosed according to the UK Working Party's Diagnostic Criteria.

Collected data were analyzed using SPSS version 25. The prevalence of atopic dermatitis was reported as percentages with 95% confidence intervals. Associations between potential determinants and atopic dermatitis were assessed using chi-square tests, and multivariate logistic regression was performed to identify independent predictors.

RESULTS

Table I shows the socio-demographic characteristics of the study participants. More than half of the children (58.5%) were aged between 9–12 years, while 41.5% were aged 6–8 years. A slight male predominance was observed, with males comprising 54.6% of the study population. Regarding parental education, 51.6% of parents had completed primary education and 48.4% completed secondary education.

Table – I: Socio-Demographic Characteristics of Study Participants (*n* = 130)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
6–8	54	41.5
9–12	76	58.5
Gender		
Male	71	54.6
Female	59	45.4
Parental Education		
Primary	67	51.6
Secondary	63	48.4

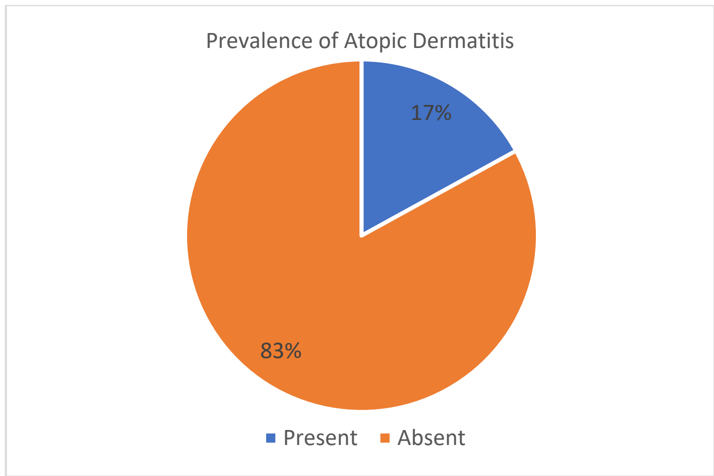

Figure – 1: Prevalence of Atopic Dermatitis among School Aged Children

The figure 1 shows that atopic dermatitis was present in 17% of the study participants, while 83% did not have the condition. Table II demonstrates that, after adjustment for potential confounders, children with a positive family history of atopy had significantly higher odds of atopic dermatitis compared to those without such history (adjusted OR = 4.5; $p < 0.001$). Living in damp or poorly ventilated housing was also an independent predictor of atopic dermatitis (adjusted OR = 3.1; $p = 0.01$). Gender, exposure to household pets, and age group were not significantly associated with atopic dermatitis in the multivariate analysis.

Table – II: Multivariate Logistic Regression for Determinants of Atopic Dermatitis (*n* = 130)

Determinant	Adjusted OR	95% CI	p-value
Family history of atopy	4.5	1.9–10.2	<0.001
Damp/poorly ventilated housing	3.1	1.3–7.4	0.01
Gender (Male)	1.2	0.5–2.9	0.66
Exposure to pets	2.3	0.9–5.6	0.08
Age (9–12 vs 6–8 years)	1.3	0.6–3.0	0.48

The table III shows the clinical characteristics of 22 children diagnosed with atopic dermatitis (AD). All children (100%) had itching, and most (86.4%) had dry skin, highlighting these as key features of atopic dermatitis. Sleep disturbances occurred in 45.5% of cases. The most commonly affected sites were elbows (63.6%) and knees (59.1%), followed by neck/facial area (36.4%), with involvement of palms (22.7%) and soles (13.6%) in a smaller number of cases. Most children had mild disease (63.6%), while moderate and severe cases were less common (27.3% and 9.1%, respectively).

Table – III: Clinical Features of Children with Atopic Dermatitis (*n* = 22)

Clinical Feature	Frequency (n)	Percentage (%)
Itching	22	100.0
Dry skin	19	86.4
Sleep disturbances	10	45.5
Affected sites		
Elbows	14	63.6
Knees	13	59.1
Neck/facial area	8	36.4
Palms	5	22.7
Soles	3	13.6
Disease severity		
Mild	14	63.6
Moderate	6	27.3
Severe	2	9.1

DISCUSSION

In this study, the majority of children with atopic dermatitis (AD) were aged 9–12 years (58.5%), reflecting the persistence of AD into middle childhood. This aligns with Tay et al., who reported prevalence of 22.7%, 17.9%, and 21.5% in children aged 7, 12, and 16 years, respectively, demonstrating that the condition remains prevalent across different school-age groups [11]. A slight male predominance (54.6%) was observed, consistent with age-related sex differences reported by Tay et al., suggesting genetic, hormonal, and immunological influences on AD expression [11].

Most parents had completed primary education (51.6%), followed by secondary education (48.4%). Consistent with Weber and Haidinger, higher parental education may enhance disease recognition, reporting, and healthcare-seeking behavior, contributing to observed prevalence patterns [12]. Overall, 17% of school-aged children had AD, consistent with epidemiological reports indicating childhood AD prevalence between 10–20% [13].

Genetic predisposition was a significant determinant, as children with a positive family history of atopy had higher odds of AD (adjusted OR = 4.5; $p < 0.001$), consistent with Böhme et al., who reported AD in 37.9% and 50% of children with one or two atopic parents, respectively [14]. Environmental factors also played a role; living in damp or poorly ventilated housing increased AD risk (adjusted OR = 3.1; $p = 0.01$), aligning with findings by Takaoka et al. linking household dampness to increased dermatitis in children [15]. Pet exposure showed a non-significant trend toward higher AD odds (adjusted OR = 2.3; $p = 0.08$), while meta-analysis data suggest a generally lower risk with overall pet exposure, particularly dogs (RR = 0.72), with cat exposure not clearly associated with AD [16].

Clinically, all affected children experienced itching (100%) and most had dry skin (86.4%), reaffirming these as hallmark features of pediatric AD. Sleep disturbances were reported in 45.5%, reflecting pruritus-related nocturnal discomfort, consistent with Korean data showing moderate itch intensity (mean NRS 5.8) and sleep disruption (mean NRS 4.3) [17]. Lesions predominantly affected elbows (63.6%) and knees (59.1%), with neck/facial involvement in 36.4%, mirroring adult patterns reported by Silverberg et al., where flexural and exposed regions were commonly involved [18]. We found a smaller proportion of children exhibiting involvement of the palms and soles. This aligns with previous observations by Lee et al., who reported that while typical atopic dermatitis frequently affects flexural areas, the hands and feet may also be involved, particularly in cases of atopic hand-foot dermatitis [19].

Disease severity was mainly mild (63.6%), with moderate (27.3%) and severe (9.1%) cases being less frequent, comparable to adult distributions (mild 60.1%, moderate 28.9%, severe 11.0%), highlighting that mild disease predominates across age groups [20]. Severity correlates with lesion extent, pruritus intensity, and quality-of-life burden, emphasizing the importance of comprehensive clinical assessment.

CONCLUSION

Atopic dermatitis affects a notable proportion of school-aged children, with a prevalence of 17% in this study. Genetic predisposition, particularly a positive family history of atopy, and environmental factors such as damp or poorly ventilated housing were identified as significant determinants of the condition. Clinically, itching and dry skin were the most common features, with lesions predominantly involving flexural areas like the elbows and knees. Most cases were mild, though moderate and severe forms were also observed, underscoring the variable disease burden. These findings highlight the importance of early identification, consideration of familial and environmental risk factors, and targeted management strategies to reduce symptoms and improve quality of life in affected children.

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