

**Child-related factors contributing to the occurrence of atopic dermatitis among children aged 6 months to 10 years attending Kasangati Health Centre IV in Wakiso district.
A cross-sectional study.**

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Page | 1

ABSTRACT

Background:

In Uganda, the lifetime prevalence of reported atopic dermatitis among schoolchildren is estimated at 13.5%, with a 12-month prevalence of 2.3%. The study aims to determine child-related factors contributing to the occurrence of atopic dermatitis among children aged 6 months to 10 years attending Kasangati Health Centre IV in Wakiso district.

Methodology:

A cross-sectional study design was used during the study to collect quantitative data among children from 6 months to 10 years diagnosed with atopic dermatitis visiting the OPD attending Kasangati health centre IV. A simple random sampling technique was used.

Results:

Most of the categories, 20 (40%), were aged between 5-10 years, followed by 12 (24%), a little more with 10(20%) aged 1-5yrs while the least, 8 (16%), were aged below 1-6 months. Most of the categories were male: 35 (70%); 15 (30%) were female; 28 (56%) were from urban, and 22 (44%) were from rural. 25(50%) of the categories begin school at 3-5yrs followed by 20(40%) who begin at 1-3yrs with least being 5(10%) who begin at 5 -8yrs and none was found to begin kindergarten at 8-10yrs. The majority, 38 (76%), had other allergic-related diseases. Most of the categories, 20(53%) had pneumonia, 10 (26%) had asthma, and 8 (21%) had allergic rhinitis. 28(56%) had food allergy.

Conclusions:

Age at which children commence school increases environmental exposures to a high burden of comorbid allergic conditions, especially pneumonia and asthma.

Recommendations:

The Ministry of Health and Wakiso District Health Office should develop and disseminate simplified educational materials on AD prevention and management, like the importance of moisturising and avoiding harsh soaps through the maternal and child health clinics.

Keywords: Child-related factors, Atopic dermatitis, Environmental exposures, Kasangati Health Centre IV.

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Background

Studies across Africa show a wide range of the prevalence of AD from 4.7% to 23%. This condition typically begins in infancy between 2 and 6 months of age. It was previously thought that it resolved by adulthood in most cases, but it is now recognised as a potentially chronic condition. Several environmental exposures (use of personal care products, climate exposure, pollution, food) are significant contributors to increased global prevalence of atopic dermatitis in predisposed individuals. (Sendrasoa et al.,2020). In a study conducted in Madinah among school children aged 6 to 9 years,10.4 % reported ever having atopic dermatitis, and 8.8% reported having current atopic dermatitis symptoms. Such children have a higher risk of atopic dermatitis than other children. (Noura A et al., 2019).

Other studies conducted in the US found correlations between higher BMI and increased AD risk, so among obese children, the AD prevalence was 35% compared to non-obese peers (Silverberg et al,2015). In China, among infants showed that the consumption of allergenic foods like seafood by mothers during pregnancy is a key factor for the increasing prevalence of atopic dermatitis in infants. (Hanon Shi et al., 2021). In a study conducted in Australia about comorbid atopic conditions (atopic march), like asthma, allergic rhinitis showed that the prevalence of children with AD who develop other atopic diseases was 50-70% (Dharmage et al,2022).

In Uganda, the lifetime prevalence of reported atopic dermatitis among schoolchildren is estimated at 13.5%, with a 12-month prevalence of 2.3%. This study highlighted significant overlap with other allergy-related diseases like

rhinitis, allergic conjunctivitis, suggesting shared environmental and genetic risk factors such as residence, parental allergy, etc. (Harriet Mpairwe et al, 2021). AD is a chronic non-contagious inflammatory skin disease that affects mood and sleep, reduces quality of life, causes skin damage, mental retardation, and comorbidities among children. (Ma et al.,2024). Urbanisation is one of the most important risk factors for allergic disorders, which can be explained in part by the adoption of poor nutrition, reduced physical activity, and environmental factors such as traffic and industry-related air pollution. Asthma and allergic disorders contribute significantly to morbidity, mortality, and economic burden, including both direct and indirect costs. (Robert Kalyesubula et al., 2018). The study aims to determine child-related factors contributing to atopic dermatitis among children aged 6 months to 10 years attending Kasangati Health Centre IV in Wakiso district.

Methodology

Study Design

A cross-sectional study design was used during the study to collect quantitative data because it allows the collection of data in a short period of time in a changing population.

Study Area

The study was carried out at Kasangati health centre IV in Wakiso district, located in central Uganda, surrounding the capital city Kampala on its northwestern and southern sides. It lies approximately between 012°N and 0°35N latitude and 3219°E and 3241°E longitude. The district covers an area of about 2704 square kilometres (1044 square miles). It borders the following districts:North:Luwerodistrict, Northeast: KayungaDistrict, East: MukonoDistrict, South: Kalangala District (across Lake Victoria), and West: Mityana District and Mpigi district. This health centre offers free services such as maternal and child health services, immunisation, dental, inpatient, laboratory services, and management of non-communicable diseases such as diabetes and hypertension, HIV/AIDS, and outreach services within the county. There are 30 inpatient beds.

Study population

The study population was children from 6 months to 10 years diagnosed with atopic dermatitis visiting the OPD attending Kasangati Health Centre IV.

Sample size determination

The sample size was determined by Burton's formula (1965)

Sample size $n = QR/O$

Where;

n = sample size

Q = population size

R =number of respondents who were interviewed per day

O =maximum time spent on each respondent

Taking $Q=50$ respondents, $R=20$ and $O=20$ minutes

$n=50*20/20=50$ respondents; Therefore,50 respondents will be used in the study.

Sampling Technique

The study was carried out using a simple random sampling technique in the recruitment of participants since it gives equal chances to all members to be selected, reduces research bias, and is less costly.

Sampling Procedure

Numbers 1 to 20 were written on small papers, and the paper pieces were folded and put in a box. The box was thoroughly shaken, and one piece of paper after another was randomly picked. Those who picked papers with numbers 1 to 10 were included in the study until the sample size was attained.

Study Variables

These include dependent and independent variables.

Dependent Variables

The dependent variable is atopic dermatitis among children aged 6 months to 10 years attending Kasangati Health Centre IV in Wakiso district.

Independent Variables

The independent variables are the child-related factors contributing to the occurrence of atopic dermatitis among children aged 6 months to 10 years attending Kasangati Health Centre IV in Wakiso district.

Selection criteria

Inclusion Criteria

The clients were children attending Kasangati health centre IV within the age range of 6 months to 10 years with atopic dermatitis, whose parents had fully consented and were mentally stable, and participated in the research study.

Exclusion Criteria

The clients who attended Kasangati health centre IV in the age range 6 months to 10 years with atopic dermatitis and their parents had fully consented, but due to time constraints for other commitments and personal relationships, they did not participate during research days in the study.

Data collection methods

The data was collected using the questionnaire method since it is time-saving, feasible, and affordable in terms of resources, safeguards confidentiality, and provides sufficient time for answering questions.

Data Collection Tools

The study involved the use of a semi-structured questionnaire with both closed and open-ended questions, and the respondents (mothers with children diagnosed with

AD) were required to tick in the boxes provided and were interpreted in the local language to illiterate clients.

Data Collection Procedures

An introductory letter was obtained from the school, which I used to seek permission from the senior medical officer at Kasangati Health Centre IV. The researcher proceeded to the selected department and selected participants. The selected participants were given an explanation of the objectives and purpose of the study, consent forms were given, and those who consented were given questionnaires and an explanation on how the filling is done. The researcher guided the illiterate respondents, and the filled questionnaire was thoroughly checked for accuracy and completeness by the researcher.

Quality Control

To ensure the validity and reliability of data, the questionnaire was pre-tested outside the study area, and several adjustments were made. The data was checked for completeness, consistency, and corrected each day involved. A humble time was given to collect data. The data was

stored in both soft and hard copies by entering in the computer software.

Data Analysis and Presentation

The data obtained was tallied manually using pens, paper, and tally sheets, and the information obtained after tallying was presented in the form of tables, graphs, and pie charts. A narrative follows.

Ethical Consideration.

After getting permission from the school administration through the research committee, I went ahead and presented the letter to the hospital administrator. I gained consent from the respondents and requested them to participate in the interview in order to collect data from them at the same time, and ensured the confidentiality of the information provided by the respondents, which portrayed a good image.

Results

Socio-demographic Characteristics

Table 1: Socio-demographic Characteristics (n=50)

Variable	Categories	Frequency(f)	Percentage (%)
How old is your child?	1-6 months	8	16
	6-12months	12	24
	1-5 years	10	20
	5-10 years	20	40
	Total	50	100
What is the gender of the child?	Male	35	70
	Female	15	30
	Total	50	100
Where do you reside?	Urban	28	56
	Rural	22	44
	Total	50	100
Does any of your family members smoke?	Yes	30	40
	No	35	47
	Total	50	100
What is your level of education?	Primary	22	44
	O' level	6	12
	A-level	4	8
	Tertiary	18	36
	Total	50	100
What is your employment status?	Employed	28	56
	Unemployed	22	44
	Total	50	100
What is your tribe?	Muganda	18	36
	Munyankole	16	32
	Musoga	10	20
	Others	6	12
	Total	50	100

Table 1 shows that most of the categories, 20 (40%), were aged between 5-10yrs followed by 12 (24%), a little more

with 10(20%) aged 1-5yrs while the least, 8 (16%), were aged below 1-6 months. It was also revealed that most of the

categories were males, 35 (70%), while the significant other number 15 (30%) were female, and regarding residence, 28(56%) were from urban and 22(44%) were from rural. Regarding smoking, more than half of the respondents 26(52%) had family members who were smoking while 24(48%) were not and in relation to education level, most of

the respondents ere of primary level 22(44%) followed by those for tertiary 18(36%) while the least being A' level 4(8%). According to their employment status, most of the respondents, 28(56%), were employed, while the least, 22(44%), were unemployed.

Child-related factors contributing to atopic dermatitis.

Figure 1: Showing the distribution at which age the child begins kindergarten. (n=50)

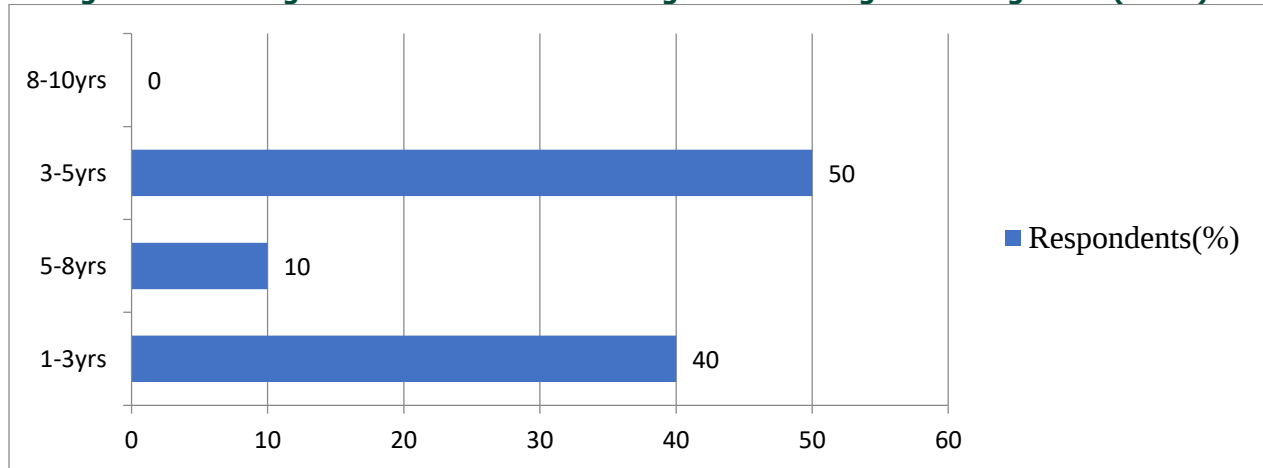


Figure 1 indicates that 25(50%) of the categories begin school at 3-5yrs followed by 20(40%) who begin at 1-3yrs with the least being 5(10%) who begin at 5 -8yrs and none were found to begin kindergarten at 8-10 years.

Figure 2: Showing the distribution of the respondents' responses on whether their child has any other allergic-related diseases. (n=50)

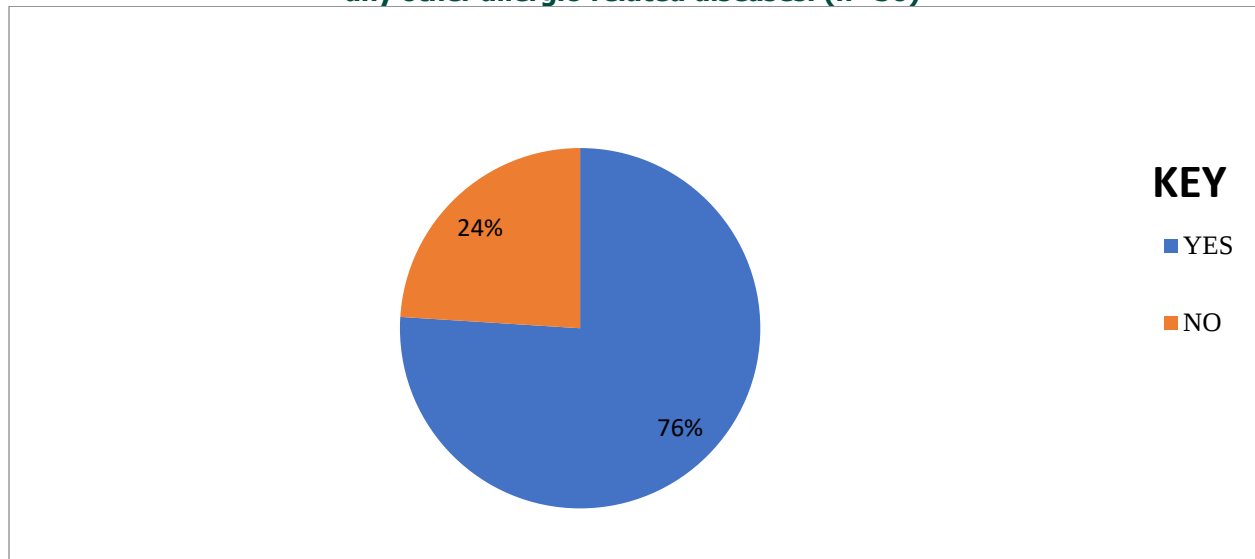


Figure 2 indicates that the majority, 38 (76%), had other allergic-related diseases, while the minority, 12 (24%), had no other allergic-related disease.

Table 2: Showing the distribution of respondents with other allergic-related diseases. (n=38)

If yes, what is?	Frequency(f)	Percentage (%)
Pneumonia	20	53
Asthma	10	26
Allergic rhinitis	8	21
Others	0	0
Total	38	100

Table 2: Out of the 38 respondents who had other allergic-related diseases, most of the categories, 20(53%), had pneumonia, followed by those with asthma, 10 (26%), while the least, 8 (21%), had allergic rhinitis.

Figure 3: Showing the distribution of respondents' responses on whether their child had any food allergies. (n=50)

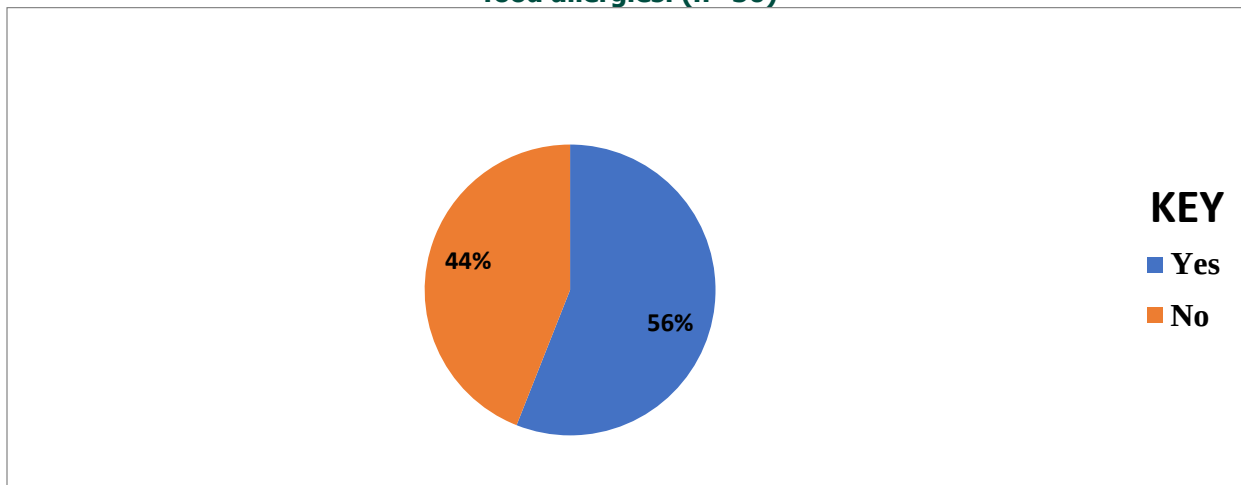


Figure 3, the majority of the respondents, 28(56%), had food allergy, while the minority 22(44%) never had.

Discussion.

Regarding the age of school commencement, it was revealed that children who begin kindergarten, the category 50% aged 3-5years had a high prevalence of atopic dermatitis. This indicates that starting kindergarten at an early age is a major cause, as it exposes children to new environments, infections, and, as they play with dust and other allergens, which can trigger or worsen AD. However, this is not in line with a study conducted by Noura A et al in 2019 in Madinah among school children aged 6 to 9 years that reported 10.4 % ever having atopic dermatitis and 8.8% reported having current atopic dermatitis symptoms. Such children have a higher risk of atopic dermatitis than other children. This implies that the start of school is a critical period for parents and health care workers to intensify preventative skin measures.

Furthermore, regarding comorbidities, the results were that the category 76% of children with atopic dermatitis have other allergic diseases, and pneumonia was the most reported comorbidity (53%), followed by asthma (26%) and allergic rhinitis (21%). This could be due to skin breakdown and immune suppression, which increases susceptibility to common infections. This lies in line with a study conducted by Dharmage et al in 2019 in Australia about atopic march-like asthma, allergic rhinitis showed that the prevalence of children with AD who develop other atopic diseases was 50-70%. This implies that children with AD should be routinely screened for allergic conditions and respiratory infections. Additionally, regarding food allergies, over half of children with AD were reported to have food allergies (56%). This could be due to an overreaction of their immune system, which is a significant trigger for AD flares, and this indicates a severe and complex form of disease.

Conclusions

Age between 3-5 years (50%) at which children commence school increases environmental exposures to a high burden of comorbid allergic conditions, especially pneumonia and asthma.

Recommendations

The Ministry of Health and Wakiso District Health Office should develop and disseminate simplified educational materials on AD prevention and management, like the importance of moisturising and avoiding harsh soaps, through the maternal and child health clinics.

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List of abbreviations

AD	:	Atopic dermatitis
BMI	:	Body Mass Index
OPD	:	Outpatient Department

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The study was not funded.

Conflict of interest

The author did not declare any conflict of interest.

Data availability

Data is available upon request.

Author contribution

Angella Nagawa collected data and drafted the manuscript of the study.

Echo Mugisha supervised the study.

George Masete supervised the study.

Author biography

Angella Nagawa is a student of a diploma in clinical medicine and community health at Kampala Institute of Health Professionals.

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Page | 7

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