

## Original article

# Childhood eczema: a comparative analysis

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**Abstract** **Introduction** Dermatological disorders affect children of all ages. Eczema is a common problem, along with infections and infestations. This study was carried out to determine frequency of various types of childhood eczema in our community.

**Materials and methods** The study comprises an audit of freshly registered cases of childhood eczema presenting in the outpatient department of BISS from 1st October 2001, till 31st March 2003, over a period of 18 months. A total of 1038 patients, of either sex, up to 15 years of age were included. There were 541 (52%) males and 497 (48%) females. All the clinically diagnosed cases were subclassified into: atopic dermatitis, pityriasis alba, seborrheic dermatitis, contact dermatitis, napkin dermatitis, xerotic eczema, infective eczema, pompholyx, nummular eczema, and lichen simplex chronicus. The patients were divided into three groups according to age; infancy, 1-5 years and 5-15 years.

**Results** Atopic dermatitis (26%) was the most common type seen followed by pityriasis alba (25%), seborrheic dermatitis (21%), contact dermatitis (7%), napkin dermatitis (7%), xerotic eczema (6%), infective eczema (4%), nummular eczema (1.5%), pompholyx (1.5%) and lichen simplex chronicus (1%). There were 445 (42.9%) infants, 283 (27.3%) in the 1-5 years group and 309 (29.8%) in 5-15 years group. Atopic eczema (44%), seborrheic dermatitis (65%), napkin dermatitis (88%) and xerotic eczema (51%) were the most common in infancy. In the 1-5 year group, infective eczema (55%), atopic dermatitis (31%), pityriasis alba (28%) and contact dermatitis (23%) were seen commonly. In the 5-15 year group, pityriasis alba (51%), contact dermatitis (47%), xerotic eczema (29.5%) and atopic dermatitis (24%) had the highest frequencies.

**Conclusion** The clinical patterns of childhood eczema in our population are the same with some variations in frequency. Most of the patients present within the first 5 years of life.

**Key words**

Childhood, dermatitis, eczema.

### Introduction

Dermatological disorders affect children of all ages. Eczema is a common problem, although infections and infestations are a major cause of dermatological ailments in children.<sup>1</sup> In neonates, eczematous eruptions are transient and troublesome but may herald chronic and severe atopic

dermatitis or provide an important clue to severe intrinsic diseases like zinc deficiency and Leiner's disease.<sup>2</sup> Infantile eczema usually indicates underlying atopy. In the later age, eczema reflects an increasing exposure of children to weather changes, wind, sunlight, environmental pollution, allergens and different infectious agents.

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Eczema is defined as an inflammatory response of the skin to various endogenous and exogenous factors, clinically characterized by itching, redness, scaling,

crusting, papulovesicular lesions and lichenification, based on the clinical stage. Depending upon the etiological factors there can be endogenous or exogenous types of eczema. Contact dermatitis and infective eczema are examples of exogenous eczema. Atopic dermatitis, seborrheic dermatitis and pityriasis alba belong to the group of endogenous eczemas. Endogenous eczemas are more commonly seen in patients with an atopic background. Eczema is a disease of all age groups, but certain types of eczema may be more common at a particular age e.g. asteatotic eczema in the elderly and atopic dermatitis in children. Certain anatomical, physiological, pathophysiological and pharmacological differences are responsible for this disease pattern in juvenile and elderly subjects.<sup>3</sup> Children up to the age of 15 years constitute a major proportion of our population.<sup>4</sup> Considerable ethnic variation occurs in the prevalence of eczema in the general population.<sup>5</sup> Muzaffar *et al.*<sup>6</sup> reported 25% of children suffer from some form of eczema.

The current study was carried out to determine the frequency of various types of childhood eczema in our community and to compare the results with any previous study.<sup>4</sup> Such a study can be helpful in planning our health care system in future.

### Materials and methods

The study comprised an audit of the freshly registered cases of childhood eczema presenting in the outpatient department of BISD, from 1st October 2001, till 31st March 2003, over a period of 18 months. 1037 patients belonging to

both the sexes, up to 15 years of age were included. There were 541 (52%) males and 496 (48%) females. After an appropriate history, a cutaneous and systemic examination was carried out. Any relevant investigations e.g. scrapings for fungus, swabs for culture and sensitivity, patch test, biopsy and histopathology etc. were performed as well. All the clinically diagnosed cases were subclassified into following types of eczema: atopic dermatitis, pityriasis alba, seborrheic dermatitis, contact dermatitis, napkin dermatitis, xerotic eczema, infective eczema, pompholyx, nummular eczema, and lichen simplex chronicus. The patients were also divided into 3 groups i.e. infants (0-1 year), 1-5 years, and 5-15 years.

### Results

Of the total 1038 patients, there were 541 (52%) males and 497 (48%) females, the male to female ratio being 1.1:1. More females suffered from contact dermatitis, nummular eczema and pompholyx. Males predominated in all other types of eczema. The relative frequencies of different types of eczema are shown in **Table 1**.

Atopic dermatitis (26%) was the most common type seen, followed by pityriasis alba (25%), seborrheic dermatitis (21%), contact dermatitis (7%), napkin dermatitis (7%), xerotic eczema (6%), infective eczema (4%), nummular eczema (1.5%), pompholyx (1.5%) and lichen simplex chronicus (1%). The frequencies of different eczema were also studied in accordance with age group. In the infantile group 445 (42.9%) patients suffered from eczema whereas 283 (27.3%) patients were affected in the 1-5 years group and 309 (29.8%) had the disease in the 5-15

**Table 1** Clinical patterns of childhood eczema (n =1038)

Sr. No.	Type of eczema	Male	Female	Total n (%)
1.	Atopic dermatitis	143	127	270 (26)
2.	Pityriasis alba	135	122	257 (25)
3.	Seborrheic dermatitis	117	104	221 (21)
4.	Contact dermatitis	37	40	77 (7)
5.	Napkin dermatitis	36	34	70 (7)
6.	Xerotic eczema	33	28	61 (6)
7.	Infective eczema	21	17	38 (4)
8.	Nummular eczema	5	11	16 (1.5)
9.	Pompholyx	7	8	15 (1.5)
10	Lichen simplex chronicus	7	6	13 (1)

**Table 2** Distribution of eczema in different age groups (n=1038)

Sr. No.	Type of eczema	0-1 year n (%)	1-5 year n (%)	5-15 year n (%)	Total n
1.	Atopic dermatitis	120 (44)	84 (31)	66 (24)	270
2.	Pityriasis alba	53 (21)	72 (28)	132 (51)	257
3.	Seborrheic dermatitis	144 (65)	55 (25)	22 (10)	221
4.	Contact dermatitis	23 (30)	18 (23)	36 (47)	77
5.	Napkin dermatitis	62 (88)	8 (12)	-	70
6.	Xerotic eczema	31 (51)	12 (19.5)	18 (29.5)	61
7.	Infective eczema	10 (25.5)	21 (55)	7 (18.5)	38
8.	Nummular eczema	2 (12.5)	8 (50)	6 (37.5)	16
9.	Pompholyx	-	2 (13)	13 (87)	15
10	Lichen simplex chronicus	-	4 (31)	9 (69)	13
	Total	445 (42.9)	284 (27.3)	309 (29.8)	1038

years group. The frequency of atopic dermatitis was 44% in infancy, followed by 31% and 25% in the 1-5 and 5-15 years groups, respectively ( $p < 0.01$ ). Pityriasis alba (51%) was the most common variety in the 5-15 years group followed by 28% and 21% in the 1-5 and 0-1 year groups, respectively ( $p < 0.001$ ). Descending frequency of seborrheic dermatitis in different age groups was infancy (65%), 1-5 years (25%) and 5-15 years group (10%) ( $p < 0.001$ ). Contact dermatitis was most commonly seen in the 5-15 year-old patients (47%), followed by infancy (30%) and 1-5 years (23%) ( $p < 0.01$ ). Napkin dermatitis had the highest presentation in infancy (88%) and a lower frequency in the 1-5 years group (12%) ( $p < 0.05$ ). Xerotic eczema was seen with the following frequencies: infancy (51%), 5-

15 years group (29%) and 1-5 years group (20%) ( $p < 0.01$ ). Infective eczema presented most commonly in the 1-5 years group (55%), followed by infancy (26%) and the 5-15 years group (19%) ( $p < 0.05$ ). Nummular eczema, pompholyx, and lichen simplex chronicus presented less frequently in all age groups.

### Discussion

The results of our study give an insight into the frequency of different types of childhood eczema. The most common types of eczema were atopic dermatitis, pityriasis alba and seborrheic dermatitis. Other less frequently reported eczemas included contact dermatitis, napkin dermatitis, xerotic eczema and infective eczema. Nummular eczema, pompholyx, and lichen simplex chronicus were the less

common types seen. Males were affected more commonly among all the patients but females predominated in the following types: contact dermatitis, nummular eczema and pompholyx. The incidence of eczema has been reported to be higher in males previously. Childhood pyoderma is a major dermatological problem in the third world countries<sup>7</sup> but Giam<sup>8</sup> reported eczema to be the most predominant group of dermatoses in children, atopic dermatitis being the most frequent type. The frequency of eczema in our series remained the highest during infancy (43%) followed by 30% and 27% in the 5-15 and 1-5 years age groups, respectively. Previous reports<sup>8,9</sup> suggest eczema to be the most prevalent in 1-5 years age group. Muzaffar *et al.*<sup>4</sup> also reported the highest prevalence of eczema in 1-5 year-old subjects (42.5%), a higher frequency in 5-15 years age group (31%) and a lower figure in infancy (26.5%). Higher frequency of atopic, seborrheic and napkin dermatitis in our series during infancy may contribute to this difference.

Atopic dermatitis is reported to be more common in Asians and is especially seen in urban areas.<sup>10</sup> The prevalence of atopic dermatitis is the highest in juvenile subjects.<sup>11</sup> It affects 10% of all infants.<sup>12</sup> In UK<sup>13</sup> 15% and in Germany<sup>14</sup> 11.3% children suffer from the disease. Current prevalence of atopic dermatitis in school going children is 10-15.6%.<sup>15</sup> Lawrence *et al.*<sup>16</sup> have reported an increased prevalence of atopic dermatitis over the recent decades in school going children. Atopic dermatitis accounts for 10-15% of visits to a pediatric dermatologist.<sup>17</sup> It presented with the highest frequency (26%) in our series that is consistent with the previous reports.<sup>8,9</sup> The frequency is significantly higher than that from Lahore (13.3%).<sup>4</sup> This finding could be due to a hot humid

weather, environmental pollution and higher extent of industrialization. The male preponderance reported from Lahore<sup>4</sup> and in the current series is in accordance with the literature.<sup>10,18,19</sup> Its significance remains unclear. Most of the patients presented in infancy (44%) and a total of 75% had presented within the first 5 years. Report from Lahore<sup>4</sup> also gives a frequency of 75% for atopic dermatitis within the first five years, but the ratio was higher in 1-5 years old group (54%). Almost 80% of the atopic dermatitis subjects are reported to present by the age of five years.<sup>20-22</sup> Therefore, our findings are consistent with the literature.

Pityriasis alba is a disease of children 3-16 years old.<sup>23</sup> A disease well known to be associated with atopy, but many cases may lack an atopic background.<sup>4</sup> The frequency of pityriasis alba (25%) is higher than that reported previously<sup>4</sup> (17.5%). It is the most common type of childhood eczema. The disease involves both the sexes, but males predominated in our study and also in the past.<sup>4</sup> The frequency of pityriasis alba increases with age being the highest in the 5-15 years age group (51%), followed by 1-5 years group (28%) and infancy (21%). This tendency with increasing age is comparable with that reported previously<sup>4</sup> i.e. 5-15 years (46%), 1-5 years (41%) and infancy (13%). Therefore, 80% of these subjects present after infancy. The reason for this trend is an increased exposure of a growing child to wind, sunlight and detergents.

Seborrheic dermatitis is a multifactorial disease predominantly affecting infants and adults but can also involve children. Seborrheic dermatitis is proposed to be a characteristic pattern of atopic dermatitis and not a distinct entity.<sup>24</sup> It is the 3rd most common type of childhood eczema in our

series, its frequency (21%) being less than that reported previously (26.2%).<sup>4</sup> The results differ from the reports of Giam *et al.*<sup>8</sup> (0.7%). Almost 90% of the patients suffering from seborrheic dermatitis had presented by the age of 5 years which is comparable with data from Lahore<sup>4</sup> (80%). Infants (65%) had a frequency higher than that from Lahore (38%).<sup>4</sup> Malnourishment and atopy may account for this high figure in infancy.

Contact dermatitis is a disease predominantly of adults but children are not immune. The immune system is not fully developed at birth. As the child grows it matures and exposure to environmental allergens increases, as well. Therefore, irritant contact dermatitis is more likely to be seen in infants but in the older children allergic contact dermatitis predominates.<sup>25</sup> Common sensitizers are not an infrequent culprit in children, as indicated by positive patch tests.<sup>25-30</sup> In our series the frequency of contact dermatitis (7%) was comparable to a past study from Lahore (8.2%).<sup>4</sup> However, more females were affected in the latter.<sup>4</sup> The age wise distribution was also comparable with 30% patients presenting in infancy and 70% afterwards i.e. 1-15 years-old. An inappropriate use of soaps and antiseptics etc. accounts for 30% infants suffering from contact dermatitis.

Napkin dermatitis, predominantly a disease of infants, is an irritant type of reaction involving the genital flexures. Occlusive environment of the napkin area combined with candidiasis, bacterial infection and irritant effects of urine and feces result in this condition. Napkin dermatitis has a peak incidence in infancy and affects 50% of the infants at some stage.<sup>31</sup> Napkin dermatitis (7%) had the following frequency in different age

groups: infancy (88%) and 1-5 years (12%). This frequency (7%) is higher than that in the past (4.4%).<sup>4</sup> However, the disease was most commonly seen in infancy as reported previously.<sup>4</sup> It is especially common in obese children.<sup>32</sup>

Xerotic eczema, seen less frequently in children is usually a manifestation of atopy but may be a presentation of ichthyosis or malnutrition. The frequency of xerotic eczema (6%) is even less than half that reported previously (14.6%).<sup>4</sup> Hot and humid weather of Karachi, in contrast to dry and cold weather in Lahore, may account for this significant difference. In our series half the children suffering from xerotic eczema were infants, while 19.5% were 1-5 year and 29.5% 5-15 year-old. About 70% of the children presented by the age of 5 years. This higher ratio in infancy may reflect an atopic background. Similar figures have been reported from Lahore,<sup>4</sup> 65% patients presenting within the first 5 years, although the ratio was higher in 1-5 years age group (44%).

Infective eczema is an inflammatory reaction of the skin to different microorganisms e.g. bacteria, viruses and fungi. The frequency (4%) is almost one-third of that reported in the past (13.3%).<sup>4</sup> In the current series, the highest frequency was seen in the 1-5 year-old subjects (55%), which is almost comparable to Lahore (46%).<sup>4</sup> The other age groups had the following frequencies: infancy (26%) and 5-15 yr. (18.5%). The comparative figures in the past study<sup>4</sup> were: 20% in infancy and 34% in 5-15 year group. Thus most of the patients in either series presented by the age of 5 years.

Nummular eczema (1.5%), pompholyx (1.5%), and lichen simplex chronicus (1%)

were least frequent and in accordance with previous study.<sup>4</sup>

### Conclusion

Similar clinical patterns of childhood eczema are seen in our population with some variation in frequency. Atopic dermatitis, seborrheic dermatitis and pityriasis alba remain the most common types. Most of the patients present within first 5 years of life. Atopic dermatitis predominates in Karachi.

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