

## Burden of Scabies in Children of Out Patient of Dhaka Shishu Hospital

Mahfuza Hussain<sup>1</sup>, Rowshan Jahan Akhter<sup>2</sup>, Shawkat Ara<sup>3</sup>

### ABSTRACT

**Background:** Scabies is a common skin problem in all age groups in developing countries. It is one of the leading causes of morbidity in Bangladesh. Children and young adults are the usual victims of the disease. Although the disease itself is not life threatening, it frequently becomes secondarily infected and leads to various systemic complications like acute glomerulonephritis. Social awareness and cleanliness can largely prevent the disease, while early diagnosis and treatment may prevent its complications.

**Objectives:** This study was done in the largest tertiary care pediatric hospital in the capital of Bangladesh to determine the prevalence of scabies in children with respect to their age and sex, to evaluate the seasonal variation of the disease and to see the frequency of superimposed bacterial infections and eczematization in scabies.

**Methods:** Subjects of this study were children, aged up to 18 years, diagnosed as scabies in the Dermatology Outpatient Department (OPD) of Dhaka Shishu (Pediatric) Hospital [DSH] over a period of two years from January 2010 to December 2011. Retrospective data were collected from the medical records of the hospital of scabies affected children.

**Results:** During the study period, 28797 patients were treated at the Skin OPD of DSH; Of them 7273 patients (25.2%) were found to have scabies. The cases were diagnosed clinically. The patients were predominantly male (male to female roughly 3:2). Toddlers were predominantly affected with the disease (35.1%) followed by infants (23.9%), preschool children (20.8%), older children (12%) and adolescents (8.1%). Neonates were rarely affected with the disease (<0.1%). About 60% cases were secondarily infected and 20% cases had eczematous change. The disease was not found to increase significantly in winter and its prevalence is low in Monsoon season.

**Conclusions:** The study concluded that toddlers and pre-school children are at highest risk of scabies, followed by older children and adolescents. Male children are affected more often than the female ones. Secondary bacterial infection is an early complication, while eczematous change occurs in long-standing cases. The prevalence of scabies decreases during rainy season.

**Key words:** Scabies, children, complications.

### INTRODUCTION

Scabies is a common highly contagious, extremely pruritic condition of skin which infests about 300 million subjects each year and is one of the most common causes of itching dermatosis worldwide.<sup>1</sup> Infants and children are the usual victim followed by adolescents and young adults. It is rampantly prevailing in Bangladesh (10<sup>th</sup> leading cause of morbidity)<sup>1</sup> particularly where the people of lower socioeconomic group live in a

crowded environment with poor general hygiene.<sup>2,3,4</sup> The disease is caused by infestation with the human scabies mites (*Sarcoptes scabiei*), and is characterized by pruritic papules, vesicles, burrows; the sites of predilection are chiefly the finger webs, wrists, antecubital fossae, axillae, areas around umbilicus, lower abdomen, genitals and buttocks.

Gravid female mite measuring 0.3 to 0.4 mm burrows through the outer epidermis, depositing

### Authors' Information:

1. **Dr Mahfuza Hussain**, Consultant Dermatologist, Dhaka Shishu Hospital, Sher-e- Banglanagar, Dhaka.
2. **Rowshan Jahan Akhter**, Medical Officer, Dhaka Shishu Hospital, Sher-e- Banglanagar, Dhaka.
3. **Shawkat Ara**, Medical Officer, Dhaka Shishu Hospital, Sher-e- Banglanagar, Dhaka.

**Correspondence:** Dr Mahfuza Hussain, Consultant Dermatologist, Dhaka Shishu Hospital, Sher-e- Banglanagar, Dhaka, Email:mafahaq@gmail.com, tel: +8801711535590.

two to three eggs a day. Nymphs that hatch from these eggs mature in about 2 weeks and adult mite comes to the surface of the skin and after mating produce eggs and the cycle continues. The gravid female mites invade the skin of the same or another host. Transfer of newly fertilized female mites, from person to person, occurs by intimate personal contact and is facilitated by crowding and poor personal hygiene. Outbreaks commonly occur in nursing homes, mental institutions and hospitals in wealthy countries;<sup>2</sup> however in poorer communities, it happens in dormitories like madrasas, orphanages<sup>3</sup> and slums.

The magnitude of scabies in adult is well-described in literatures but prevalence of scabies in children in Bangladesh is not well-reported. To fill in this gap in knowledge, a large-scale study was contemplated in Dhaka Shishu Hospital to find the different aspects of scabies, which will help better to deal with scabies and thereby to lessen its complications.

## MATERIALS AND METHODS

This retrospective study was done in the Outpatient Department (OPD) of Dhaka Shishu Hospital (DSH), over a period of two years, between January 2010 to December 2011, in children up to 18 years of age. Dhaka Shishu Hospital is the largest tertiary care pediatric hospital in Bangladesh, located in the heart of Dhaka city, the capital of Bangladesh. It is surrounded by areas where people of different socio economic status reside. On an average 50 patients of skin disease are treated daily in Skin OPD. A total number of 28,797 patients under 18 years of age, with skin diseases were treated during this period; of them 7273 were cases of scabies. Diagnosis was made clinically by the present investigator (a dermatologist). Data were collected from the medical records kept during patient consultation. Cases were tabulated based on age group,<sup>4</sup> sex, secondary infection, eczematization as well as seasonal variations and were diagnosed by characteristic pruritic papules at typical sites with nocturnal itching and involvement of other family members. Secondary infection was diagnosed by features of inflammation with or without pus formation.

Eczematization was characterized by thickening of skin with hyperpigmentation and exaggeration of skin markings. The results were analyzed using Statistical Package for Social Sciences (SPSS), version 16.

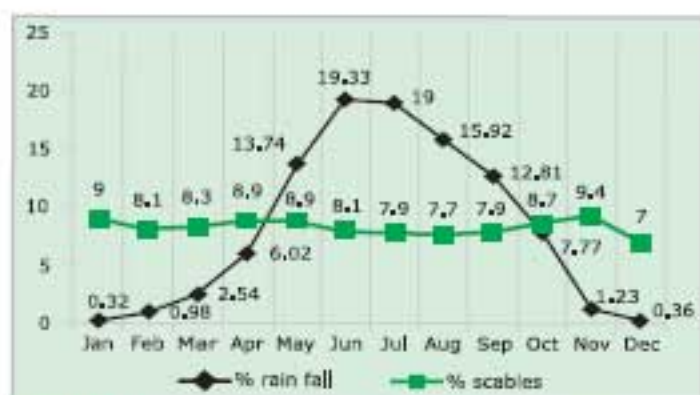
## RESULTS

Out of total 28797 patients seen in dermatology OPD in the year 2010 & 2011, there were 7273 cases of scabies giving a period prevalence of  $[(7273/28797) \times 100] = 25.2\%$ . Toddlers were predominantly affected with the condition (35.1%) followed by infants (23.9%), preschool children (20.8%), older children (12%) and adolescents (8.1%). Neonates were rarely affected (< 1%). The mean age of the patients was 3 yr and 8 months. A male preponderance was observed among the patients (58.7%) with male to female ratio being roughly 3:2 (Table I).

**TABLE I : Scabies in different age groups and male female ratio.**

Age Group	Male n(%)	Female n(%)	Male:Female	Total number(%)
Neonate (1-28 days)	7(100.0)	0(0.0)	7:0	7(0.1)
Infant (29 days to 1 year)	1024(58.8)	716(41.2)	1.4:1	1740(23.9)
Toddler (1-3years)	1480(58.0)	1072(42.0)	1.4:1	2552(35.1)
Preschool Child (3-6 years)	903(59.7)	609(40.3)	1.5:1	1512(20.8)
Late Childhood (6-9 years)	507(58.2)	364(41.8)	1.4:1	871(12.0)
Adolescent (9-18 years)	346(58.5)	245(41.5)	1.4:1	591(8.1)
<b>Total</b>	<b>4260(58.7)</b>	<b>3006(41.3)</b>	<b>1.4:1</b>	<b>7266(100.0)</b>

Seasonal variation of scabies with respect to age was also analyzed. Infants show an increase in prevalence during the months of December (9.2%) and January (11.2%). Toddlers show a rise in prevalence during the months of October (9.8%) and November (10.1%). Preschool children however, show increased prevalence during the month of April (10.1%) and May (10.3%). Similarly older children show highest prevalence in the month of May (11.9%). Adolescent group show a bimodal peak during March (11.2%) and November (11.8%). All groups showed a decrease in prevalence during the months of July to September (Monsoon season) when there is heavy rain fall in Bangladesh<sup>5</sup> (Fig.1).

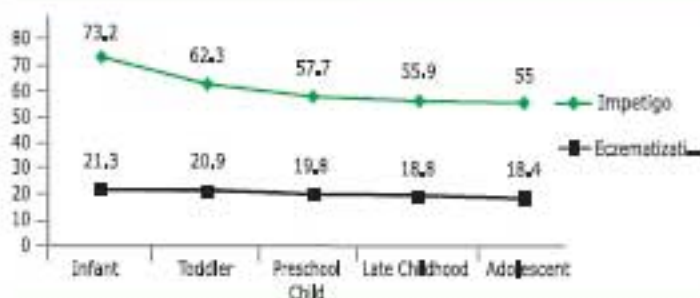


**FIGURE 1 :** Average Percent of rainfall in Dhaka city versus average percent of scabies in year 2010 & 2011 in children under 18 years of age in Skin OPD of DSH.

Secondary bacterial infection in scabies was very common in all age groups of children; the highest was seen in infants (73.2%) followed by toddlers (62.3%), preschool children (57.7%), older children (55.9%) and adolescents (55%). Eczematization was less common and was found in 21.3% of infants, 20.9% of toddlers, 19.8% of preschool children, 18.8% of older children and 11.7% of adolescents. In all age groups, secondary bacterial infection was about three times more than the eczematization of scabies lesions (62.6% vs.20.3%). Patients with scabies having both superadded bacterial infection and eczematization were found in 19.2% of infants, 16.6% of toddlers, 15.1% of preschool children, 14.1% of older children and 11.7% of adolescents (Table II).

**TABLE II :** Number (n) and percentage (%) of patients with secondary bacterial infection and eczematization in patients with scabies.

	Infant n(%)	Toddler n(%)	Preschool child n(%)	Older child n(%)	Adolescent n(%)	All age groups n(%)
<b>Bacterial infection</b>	1273 (73.2)	599(62.3)	872 (57.7)	487 (55.9)	325 (55)	4550 (62.6)
<b>Eczematization</b>	370 (21.3)	533(20.9)	299 (19.8)	164 (18.8)	109 (18.4)	1477 (20.3)
<b>Both</b>	334 (19.2)	423 (16.6%)	228 (15.1%)	123 (14.1)	69 (11.7)	1178 (16.2)



**FIGURE II :** Percentage distribution of patients who developed impetigo and eczematization in scabies (neonates excluded)

## DISCUSSION

The study demonstrated a prevalence of about 25.2% which is quite high compared to that found in another study (15%) done at Dermatology OPD of Faridpur Medical College Hospital. According to Bangladesh Bureau of Statistics (BBS),<sup>1</sup> prevalence of scabies in the year 2009 was 3.6 per 1000 population (male 3.8/1000, female 3.3/1000) which is much lower than the findings of the present study. This low prevalence could be attributed to population-based survey which differs from the present study in that the later was a hospital-based study and conducted on a subgroup of population (children and adolescents) who are at most risk of developing scabies.

Prevalence of childhood dermatologic conditions presents a pattern that often differs from that in adults and is important from clinical and epidemiologic points of view.<sup>6</sup> Scabies is more prevalent in children. In a study done in a dermatology clinic in Iraq, frequency of scabies in children was reported to be 15.6% compared to 9.8% in younger adults (p= 0.007).<sup>7</sup>

Prevalence of scabies can exceed 50%<sup>8</sup> in resource-poor countries, whereas in industrialized countries, it is most common in institutionalized communities like hospitals, old homes and dormitories. Scabies is particularly common where there is social disruption, as in war, overcrowding with close body contact, and limited access to water.<sup>9</sup> Carapetis et al. reported a prevalence of scabies in 25% of adults in Australian Indigenous Communities;<sup>10</sup> even higher rates (30 to 65%)<sup>11</sup> were recorded in school children of that community. Nair et al.<sup>12</sup> reported a similar level of endemic scabies in an Indian village. The prevalence of scabies was 18.5% in primary school children and 14.0% in infants in Fiji.<sup>13</sup>

As age of the children is considered, toddlers and infants were at greatest risk of developing the disease with mean age of the patients being 3 yrs and 8 months. Whereas in another study done in Dhaka Medical College,<sup>14</sup> Bangladesh, the mean age of the patients with scabies was much higher (13.1 years), because the Dermatology OPD of Dhaka Medical College is open for all age groups. Only one-third (36.15%)

of the patients attended there was in the age group of 1-5 years with a male to female ratio being 1.15:1. Unlike previous studies our study was done on pediatric age group and nearly 60% of our patients were 3 years old or less (toddlers comprised 35.1% and infants 23.9%). The present study also observed that neonates were observed to be least vulnerable which might be due to their less exposure to source of infection.

Seasonal variation of skin disease is well-known in literature. In a study done in Kolkata Medical College,<sup>15</sup> India, on seasonal variation of skin diseases, scabies and seborrheic dermatitis were more prevalent during winter, while impetigo, furunculosis and miliaria were more prevalent during summer and rainy seasons. There is a consensus among clinicians, that scabies is more common in winter season in our country. In our study we found that it is true in infants and also partly in case of toddlers. However, other groups did not show the seasonality in scabies frequency. It would be interesting to note that scabies is less prevalent in all age groups of children during the months of June to September, when rainfall is high. The phenomenon may be explained by the abundance of rain water which provides better opportunity for the poorer group of people in Dhaka city to maintain personal cleanliness better than in any other seasons of the year.

Secondary bacterial infection of lesions of scabies is common and is reported to be 25.6% in school children and 12.2% in infants of Fiji.<sup>13</sup> In our series secondary bacterial infections were very high which gradually declined with age - from 73.2% in infants to 55% in adolescent group. The reason for this high occurrence of secondary bacterial infection was not clear and needs further study.

Eczematization of skin lesions develops when scabies is long-standing which may be difficult to diagnose, because of atypical presentation. Long-standing scabies is usually due to inadequate treatment or reinfestation from untreated contacts. Eczema can either be pre-existing or can develop as a result of infestation with the scabies mite. Scabies can cause widespread eczema which may result from patients' immune reaction to burrowing mites and their fecal products.<sup>16</sup> Eczematization was noted in about 20% of cases and showed a very gradual fall in frequency from 19.2% in Infants to 16.2% in adolescents.

## CONCLUSION

Prevalence of scabies in children is quite high (one in eight pediatric dermatoses is due to scabies). It affects younger children more than the older ones. Prevalence does not show a peak in winter season in all age groups of children as is commonly thought. The frequency shows a fall during the monsoon season. Secondary infection in the form of impetigo is seen in about three-quarters of the infants and in more than half of the adolescents. Eczematization of skin lesions of scabies is related to chronicity and is seen in about one fifth of the children.

## REFERENCES

1. Statistical Pocket Book of Bangladesh 2009. Dhaka, Bangladesh: Bangladesh Bureau of Statistics 2010;387-8.
2. Zayyid M, Saadah R, Adil AR, Roheja M, Jamaiah I. Prevalence of scabies and head lice among children in a welfare home in Pulau Pinang, Malaysia. *Trop Biomed* 2010;27(3):442-6.
3. Pruksachatkunakorn C, Wongthanee A, Kasawat V. Scabies in Thai orphanages. *Pediatr Int* 2003;45(6):724-7.
4. Khan MR, Rahman ME. *Essence of Pediatrics*, 4th ed, India:Elsevier; 2011. p. 63.
5. Study on storm water drainage master plan by institute of Water Modelling Bangladesh (IWMA)
6. Patel JK, Vyas AP, Berman B, Vierra M. Incidence of childhood dermatosis in India. *Skinmed* 2010;8(3):136-42.
7. Alsamara AM. Frequency of scabies in Iraq: survey in a dermatology clinic. *J Infect Dev Ctries* 2009;3(10):789-93.
8. Stein DH. Scabies and pediculosis. *Curr Opin Pediatr* 1991; 3(4):660-6.
9. Green M. Epidemiology of scabies. *Epidemiol Rev* 1989; 11:126-50.
10. Carapetis JR, Connors C, Yarmirr D, Krause V, Currie B. Success of a scabies control program in an Australian aboriginal community. *Pediatr Infect Dis J* 1997;16(5):494-9.
11. Connors C. Scabies treatment. *North. Terr. Commun. Dis. Bull* 1994;2:5-6.
12. Nair BKH, Kandamuthan AJ, and Kandamuthan M. Epidemic scabies. *Indian J Med Res* 1977;65:513-8.
13. Steer AC, Jenney AWJ, Kado J, Batzloff MR, La Vincente S et al. High Burden of Impetigo and Scabies in a Tropical Country *Trop Dis* 2009;3(6):467.
14. Mahmood AR, Nur. Z. Predisposing Factors of Scabies among the Patients Attending Skin and Venereal Disease Outdoor of Dhaka Medical College Hospital. *J Med* 2008;9:82-6.
15. Banerjee S, Gangopadhyay DN, Jana S, and Chanda M. Seasonal variation in pediatric dermatoses. *Indian J Dermatol* 2010;55(1):44-6.
16. Johnston G, Sladden M. Scabies: diagnosis and treatment. *BMJ* 2005;331(7517):619-22.