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ORIGINAL ARTICLE

Nutritional Status & It's Association with Infectious Dermatosis in Paediatric Age Group in A Tertiary Level Hospital

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ABSTRACT

Background: *Pediatric dermatoses are common and may cause significant morbidity, with infectious skin diseases influenced by hygiene, overcrowding, socioeconomic conditions, and nutritional status. Malnutrition may impair skin integrity and immune function, increasing susceptibility to infection and affecting overall skin health and recovery. Evidence from Bangladesh remains limited; therefore, this study assessed nutritional status and its association with infectious dermatoses among children attending a tertiary-level hospital.* ***Methods & Materials:*** *A cross-sectional study was conducted among 238 children aged 1–14 years at Dhaka Medical College Hospital from January to December 2025. Sociodemographic, clinical, hygiene, and nutritional data were collected. Nutritional status was assessed anthropometrically, and infectious dermatoses were diagnosed clinically. Data were analyzed using SPSS and the Chi-square test, with p<0.05 considered significant.* ***Results:*** *Among 238 children, 43.3% were aged 5–9 years, 53.8% were male, and 56.7% were from rural areas. Normal nutritional status was observed in 55.0%, while 23.9% were underweight/thin. Infectious dermatoses were present in 57.6%, with bacterial infections being most common (25.2%). Rural residence was significantly associated with infectious dermatosis (p=0.049). Infectious dermatosis was also significantly associated with nutritional status (p=0.047), household contact with similar skin disease (p=0.018), sharing towels/clothing (p=0.034), and poor personal hygiene (p=0.008).* ***Conclusion:*** *Infectious dermatoses were common among children and were significantly associated with undernutrition, rural residence, household contact, sharing personal items, and poor personal hygiene. Early identification of nutritional problems and promotion of appropriate hygiene practices may help reduce the burden of infectious dermatoses in children.*

Keywords: *Pediatric dermatoses, Infectious dermatoses, Nutritional status, Malnutrition, Personal hygiene, Skin infections, Children.*

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INTRODUCTION

Pediatric dermatoses are skin diseases from birth to 13 years of age that deserve public health attention as they are highly prevalent and significantly morbid. Children are especially susceptible to infections because their skin is thin, permeable, and their immune systems are not fully developed [1,2]. The prevalence and pattern of pediatric dermatoses vary with geography, climate, season, socioeconomic status, hygiene, dietary habits, culture, and living conditions [3-5].

Infectious dermatoses form one of the largest groups of childhood dermatoses and comprise bacterial, fungal, viral, and parasitic infections of the skin [6-9]. Poor hygiene practices, overcrowding, large family size, low socioeconomic status, and malnutrition can contribute to susceptibility [4,5]. Moreover, pediatric dermatoses are among the most frequent reasons for outpatient pediatric and dermatology visits, with prevalence varying widely across populations [10,11].

Nutritional status is critical to normal skin integrity, barrier function, and immune responses. Malnutrition can damage host defense and increase the incidence of infections, whereas nutritional deficiencies can cause characteristic manifestations such as angular cheilitis, pallor, hyperpigmentation, flaky-paint dermatosis, and hair abnormalities [12-15]. Studies have also reported differences in dermatological manifestations according to nutritional status, with skin infections occurring among important complications of severe malnutrition [12,13,15]. Premature infants are particularly vulnerable to nutritional deficiencies because of limited nutrient stores and increased nutritional requirements [15].

International research suggests that nutritional status may influence the occurrence, severity, and clinical presentation of pediatric skin diseases. Deficiencies of proteins, vitamins, and minerals can compromise skin integrity and host defence and contribute to various dermatoses [9,14]. These findings highlight the importance of considering nutritional status during the clinical assessment and management of children with skin infections.

However, Bangladesh-specific evidence directly evaluating the association between nutritional status and infectious dermatoses among children is limited. Understanding this

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relationship may help identify vulnerable children and support early nutritional and dermatological interventions. Therefore, the present study aimed to assess nutritional status and determine its association with infectious dermatoses among pediatric patients attending a tertiary-level hospital.

METHODS & MATERIALS

Study design and setting

A hospital-based cross-sectional study was conducted to assess the nutritional status and its association with infectious dermatosis among paediatric patients. The study was carried out from January to December 2025 at Dhaka Medical College Hospital, Dhaka, Bangladesh. The study participants were recruited from children attending the relevant paediatric and dermatology services of the hospital during the study period.

Study population

The study included children aged 1–14 years who attended Dhaka Medical College Hospital during the study period. Children who fulfilled the eligibility criteria and whose parents or legal guardians provided informed consent were enrolled in the study. Children with incomplete anthropometric or clinical information and those whose parents or guardians did not consent to participation were excluded.

Sample size and sampling technique

A total of 238 eligible children were included in the final analysis. Participants were selected using a consecutive sampling technique, whereby eligible children attending the hospital during the study period were recruited until the required sample size was achieved.

Data collection

Data were collected using a structured questionnaire through face-to-face interviews with the parents or accompanying guardians. Information regarding age, sex, residence, family size, household contact with similar skin disease, sharing of towels or clothing, and personal hygiene was obtained. A clinical examination was performed for each participant to identify the presence and type of infectious dermatosis.

Assessment of infectious dermatosis

Infectious dermatosis was diagnosed based on clinical examination by the attending physician and, where clinically indicated, relevant laboratory or microbiological investigations. The infectious dermatoses were categorized into bacterial, fungal, parasitic, and viral infections. Common clinical conditions identified during the study included impetigo, tinea corporis, tinea capitis, scabies, and other clinically diagnosed infectious skin conditions. For statistical analysis, participants were categorized as having either infectious dermatosis present or absent.

Assessment of nutritional status

Anthropometric measurements were obtained using standard procedures. Body weight was measured in kilograms using a calibrated weighing scale, while height was measured in centimetres using a standard height-measuring device. Measurements were taken with the child wearing light clothing and without shoes. Body mass index (BMI) was calculated as weight in kilograms divided by height in metres squared. Nutritional status was assessed using age- and sex-specific growth standards. Based on the assessment, participants were categorized as underweight/thin, normal, overweight, or obese.

Assessment of associated factors

Information regarding selected factors potentially associated with infectious dermatosis was collected from the parents or guardians. These included the presence of a household member with a similar skin disease, sharing of towels or clothing, and personal hygiene practices. Personal hygiene was assessed based on routine bathing, hand hygiene, clothing practices, and general skin-care practices and was categorized as good or poor according to predefined criteria. Residence was categorized as urban or rural, and family size was classified as ≤4, 5–6, or >6 members.

Statistical analysis

The collected data were checked for completeness, coded, and analyzed using IBM SPSS Statistics. Continuous variables such as age were summarized using mean and standard deviation, while categorical variables were presented as frequencies and percentages. The Chi-square test was used to assess the association between nutritional status and infectious dermatosis and to examine the relationships between selected sociodemographic and behavioural factors and infectious dermatosis. A p-value <0.05 was considered statistically significant.

Ethical considerations

Ethical approval was obtained from the appropriate institutional ethical review authority before commencement of the study. Written informed consent was obtained from the parents or legal guardians of all participants. Participation was voluntary, and confidentiality of the collected information was maintained throughout the study. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

RESULTS

Sociodemographic characteristics of the study participants

A total of 238 paediatric patients were included in the study. The mean age of the participants was 7.1 ± 3.5 years, with an age range of 1–14 years. The largest proportion of participants belonged to the 5–9-year age group (43.3%), followed by those aged 10–14 years (36.1%) and 1–4 years (20.6%). Of the total participants, 128 (53.8%) were male and 110 (46.2%) were female. Regarding residence, 135 (56.7%) participants were from rural areas and 103 (43.3%) were from urban areas. Most participants belonged to families with 5–6 members (47.5%), followed by families with ≤4 members (38.2%) and >6 members (14.3%) (*Table I*).

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Table I: Sociodemographic characteristics of the study participants (*n*=238)

Variable	Frequency (n)	Percentage (%)
Age group (years)		
1–4	49	20.6
5–9	103	43.3
10–14	86	36.1
Sex		
Male	128	53.8
Female	110	46.2
Residence		
Urban	103	43.3
Rural	135	56.7
Family size		
≤4 members	91	38.2
5–6 members	113	47.5
>6 members	34	14.3

Nutritional status of the participants

Figure I presents the distribution of participants according to nutritional status. Among the 238 participants, 131 (55.0%) had normal nutritional status, while 57 (23.9%) were underweight/thin. Overweight and obesity were observed in 32 (13.4%) and 18 (7.6%) participants, respectively.

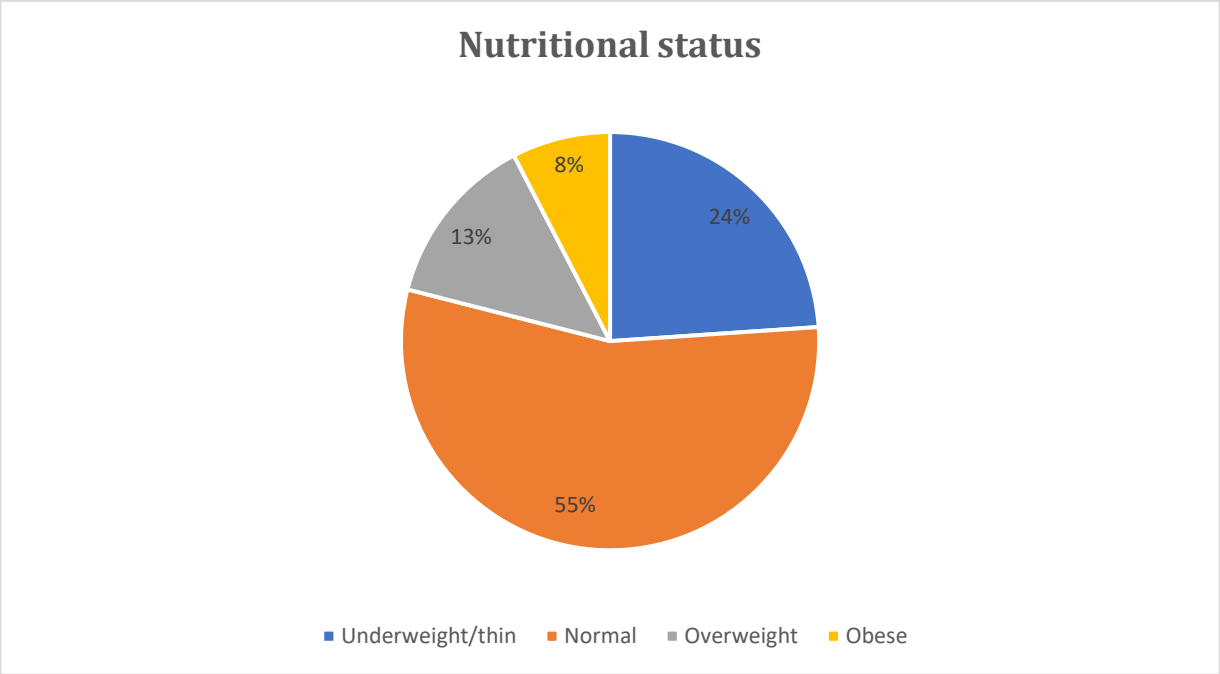


Figure 1: Distribution of participants according to nutritional status (*n*=238)

Distribution of infectious dermatosis

Among the 238 participants, 137 (57.6%) were diagnosed with infectious dermatosis, whereas 101 (42.4%) had no infectious dermatosis. Bacterial infections were the most common type, affecting 60 (25.2%) participants, followed by fungal infections in 42 (17.6%), parasitic infections in 29 (12.2%), and viral infections in 6 (2.5%) participants (*Table II*). Among the individual clinical conditions, impetigo, tinea corporis, scabies, and tinea capitis were the commonly observed infectious dermatoses.

Table II: Distribution of participants according to infectious dermatosis (*n*=238)

Infectious dermatosis	Frequency (n)	Percentage (%)
Bacterial	60	25.2
Fungal	42	17.6
Parasitic	29	12.2
Viral	6	2.5
No infectious dermatosis	101	42.4
Total	238	100.0

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Association between sociodemographic characteristics and infectious dermatosis

The prevalence of infectious dermatosis was 63.3% among children aged 1–4 years, 58.3% among those aged 5–9 years, and 54.7% among those aged 10–14 years. However, the difference in prevalence across age groups was not statistically significant (χ^2=0.93, p=0.628). Infectious dermatosis was observed in 60.2% of male and 55.5% of female participants, with no statistically significant association between sex and infectious dermatosis (χ^2=0.71, p=0.401). In contrast, infectious dermatosis was significantly more common among children from rural areas than among those from urban areas (63.0% vs. 50.5%; χ^2=3.87, p=0.049) (*Table III*).

Table III: Association between sociodemographic characteristics and infectious dermatosis (*n*=238)

Variable	Infectious dermatosis n (%)	No infectious dermatosis n (%)	χ^2	p-value
Age group (years)			0.93	0.628
1–4	31 (63.3)	18 (36.7)		
5–9	60 (58.3)	43 (41.7)		
10–14	47 (54.7)	39 (45.3)		
Sex			0.71	0.401
Male	77 (60.2)	51 (39.8)		
Female	61 (55.5)	49 (44.5)		
Residence			3.87	0.049
Urban	52 (50.5)	51 (49.5)		
Rural	85 (63.0)	50 (37.0)		

Association between nutritional status and infectious dermatosis

The prevalence of infectious dermatosis varied according to nutritional status. Among underweight/thin children, 40 (70.2%) had infectious dermatosis, compared with 72 (55.0%) among children with normal nutritional status. Infectious dermatosis was present in 16 (50.0%) overweight children and 9 (50.0%) obese children. Overall, a statistically significant association was observed between nutritional status and infectious dermatosis (χ^2=7.94, p=0.047), with the highest proportion of infectious dermatosis observed among underweight/thin children (*Table IV*).

Table IV: Association between nutritional status and infectious dermatosis (*n*=238)

Nutritional status	Infectious dermatosis n (%)	No infectious dermatosis n (%)	χ^2	p-value
Underweight/thin	40 (70.2)	17 (29.8)		
Normal	72 (55.0)	59 (45.0)		
Overweight	16 (50.0)	16 (50.0)		
Obese	9 (50.0)	9 (50.0)	7.94	0.047
Total	137 (57.6)	101 (42.4)		

Association of selected factors with infectious dermatosis

Several factors were assessed for their association with infectious dermatosis. Children who had a household contact with a person suffering from a similar skin disease had a significantly higher prevalence of infectious dermatosis than those without such contact (71.6% vs. 52.0%; χ^2=5.63, p=0.018). Similarly, infectious dermatosis was significantly more common among children who shared towels or clothing compared with those who did not (65.9% vs. 52.7%; χ^2=4.51, p=0.034). Poor personal hygiene was also significantly associated with infectious dermatosis, with a higher prevalence among children with poor hygiene than among those with good hygiene (68.1% vs. 53.0%; χ^2=7.08, p=0.008) (*Table V*).

Table V: Association of selected factors with infectious dermatosis (*n*=238)

Factor	Infectious dermatosis n (%)	No infectious dermatosis n (%)	χ^2	p-value
Household contact with similar skin disease			5.63	0.018
Yes	48 (71.6)	19 (28.4)		
No	89 (52.0)	82 (48.0)		
Sharing towels/clothing			4.51	0.034
Yes	58 (65.9)	30 (34.1)		
No	79 (52.7)	71 (47.3)		
Personal hygiene			7.08	0.008
Poor	49 (68.1)	23 (31.9)		
Good	88 (53.0)	78 (47.0)		

DISCUSSION

The present study's findings showed that the most common age group was 5-9 years old, accounting for 43.3%, followed by the 10-14 age group, representing 36.1%. Moreover, most respondents were male, 53.8%, and most of them came from the rural areas, 56.7%. Moreover, most of the respondents' families consisted of 5-6 members, representing 47.5%. These findings are comparable to the study conducted in Dhaka, Bangladesh, that also reported a prevalence of 5-9 age groups representing 40% and the prevalence of male sex was also high, 56% [16]. Such a high percentage of rural residence and big

family size might contribute to the high H. pylori transmission rate due to the crowded living conditions.

The current study found that 55.0% of children had normal nutritional status, while 23.9% were underweight/thin, 13.4% overweight, and 7.6% obese. In the tertiary-care study mentioned earlier, frequent cutaneous manifestations were found among malnourished children [17]. This could be an indication of the close relationship between nutritional status and skin health.

The present study found infectious dermatoses in 57.6% of participants, with bacterial, fungal, parasitic, and viral infections. This finding is similar to an Indian study, which reported a substantial burden of infectious and parasitic dermatoses, particularly scabies, pediculosis, impetigo, and dermatophyte infections. Impetigo, tinea corporis, scabies, and tinea capitis were also common in the present study [18].

The present study failed to demonstrate an association between infectious dermatoses and age or sex, whereas the analysis revealed that the rural population had a statistically significant association with higher prevalence of infectious dermatoses. The Indian study demonstrated that there was a significant association between socioeconomic status and pediatric dermatoses with infections and infestations being more prevalent among those with lower socioeconomic background [19]. It may be hypothesized that such dermatoses are more prevalent among rural children due to diverse factors, including differences in hygienic practices, living standards, access to healthcare, and socioeconomic disparities.

The present study established a significant link between nutritional status and a risk of developing infectious dermatosis. The risk appears highest among underweight/thin children, which is consistent with reports of higher prevalence of dermatological manifestations among nutritionally disadvantaged children. A similar trend may be explained by a compromised immunity and integumentary protection capacity [13,17].

The present work demonstrated that household contact with a similar skin disease, sharing towels or clothing, and poor personal hygiene were strongly associated with the development of infectious dermatosis. This result is aligned with research indicating that close contact, poor personal hygiene, and low socio-economic status are risk factors for developing infectious childhood dermatosis. Such conditions might contribute to the increased transmission of dermatosis via direct contact and sharing of personal belongings [4,19].

Overall, Infectious dermatoses were common among children and were significantly associated with undernutrition, rural residence, household contact, sharing personal items, and poor personal hygiene.

CONCLUSION

Dermatoses were common among children who attended the tertiary-level hospital, with bacterial infections accounting for the highest proportion of reported cases. Infectious dermatoses were significantly associated with undernourishment, rural residence, contact with a household member with a similar skin disease, sharing towels or clothing, and poor personal hygiene. This suggests that healthcare workers should assess the nutritional status and risk factors, such as personal hygiene, in pediatric patients presenting with dermatoses. Early diagnosis, treatment, nutritional intervention, and personal hygiene education may reduce the prevalence of infectious dermatoses among children.

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