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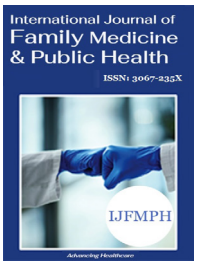

Epidemiological Investigation of Scabies Infestation in Dhaka Megacity, Bangladesh, 2024: Understanding the Severity along with It's Associated Factors

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A B S T R A C T

Being a neglected tropical disease and a major public health concern, scabies is undoubtedly common and contagious specially for low socio-economic and densely populated areas like us. In spite of high burden, the epidemiology has not been well assessed specially for Dhaka, Bangladesh. Therefore, this study aimed to investigate the epidemiological characteristics, severity along with it's associated factors among the scabies infected individuals residing in Dhaka megacity, Bangladesh.

This cross-sectional observational study was conducted among 406 confirmed scabies infected individual residing in Dhaka city who attended the Dermatology and Venerology out-patient department of the selected hospital from May to November,2024 using the International Alliances for Clinical Scabies 2020 (IACS 2020) diagnostic tool.

Among the studied population, the highest percentage of scabies was observed as severe scabies (51%), then moderate (45.1%) and mild scabies (3.9%) respectively. The median age of the participants was 23 years having IQR 26 years, the median family income was 30,000 BDT with an IQR 10,000 BDT. Among moderate to severe scabies infected individuals 53.6% were male and majority (54%) were young adults. The highest reported occupation was garments work (28%). More than 90% participants belonged from moderate to high social status but 90 % of them practiced sharing of bedroom, bathroom and articles. Itching and positive contact history was present in 90% cases. Several factors such as: Low social status (OR:10.03 with 95% CI 3.35-30.14) was associated with higher severity of scabies and regular bathing (OR:0.31 with 95% CI 0.10-0.92), Presence of burrows (OR:0.02 with 95% CI 0.006-0.08), itching (OR:0.09 with 95% CI 0.03-0.34), positive contact history (OR :0.07 with 95% CI 0.03-0.23) were associated with reduced odds of having higher severity of scabies.

The higher severity of scabies in the study area accents the necessity to strengthen the preventive as well as control strategy of Bangladesh. Improvement of the socio-economic condition, better hygiene practice may help to mitigate the higher severity of scabies.

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Introduction

Scabies is an infectious disease caused by *Sarcoptes scabiei var. hominis*., an obligate parasitic mite that burrows into the lower stratum corneum of the skin, leading to infestation[1]. Every year, about 300 million scabies cases are reported globally[2]. Scabies is more prevalent in hot and humid climates and was listed as a neglected tropical disease (NTD) by the WHO in 2013[3]. Recognizing the neglect of scabies in public and private sectors, its lack of attention at local, national, and international levels, and the higher incidence of scabies in low- and middle-income countries, the WHO designated it as an NTD to signify the need for prioritization[4]. The most common clinical manifestation of scabies is a generalized pruritic rash that worsens at night[5]. Scabies is primarily transmitted through direct contact with infected skin, including sexual contact[6,7]. Contact with infested fomites, such as clothing, bedding, and towels, plays a lesser role in transmission[6,8]. Although scabies is associated with low mortality, it can cause intense itching, dermatitis, and secondary bacterial infections[6]. Among infected individuals, it can also lead to psychological distress, frustration, and anxiety[7]. Additionally, the infection may negatively impact quality of life, resulting in stigmatization and ostracism[4].

Common sites of scabies infestation include the interdigital spaces, wrists, fingers, axillae, groin, buttocks, feet, and, in women, the breasts and in young children and infants, the soles, palms, neck, and face are more commonly affected[9]. Scabietic lesions and excoriations from scratching can lead to superinfections with bacteria such as *Streptococcus pyogenes* and *Staphylococcus aureus*, which may result in immune-mediated pathologies, including post-streptococcal glomerulonephritis and acute rheumatic fever and these conditions can further lead to chronic kidney disease and rheumatic heart disease[10,11]. Although scabies can infect all groups equally, certain populations are particularly vulnerable, such as children, the elderly, immunocompromised individuals, and residents of care facilities or overcrowded areas with low socio-economic status[12]. Epidemiological studies have shown that the prevalence and severity of scabies are not significantly influenced by age, sex, or race[13]. Instead, poor hygiene, overcrowded living conditions, and low socio-economic status are the main contributing factors[13].

The prevalence of scabies varies globally. It is higher in low- and middle-income regions with overcrowding compared to the rest of the world. For instance, in Australia, approximately 6 in 10 Aboriginal and Torres Strait Islander people are affected at any given time, a significantly higher prevalence than in other developed nations[14]. A systematic review conducted in 2015 revealed a global prevalence of scabies ranging from 0.2% to 71.4%, depending on the population studied[15]. Overcrowded living conditions, sleeping in the same bed, sharing clothes, malnutrition, and travel to scabies outbreak areas are recognized risk factors for infestation and transmission[16]. The most common victims are children from lower socio-economic groups, particularly those living in unhygienic, crowded areas, such as urban slums and boarding schools, where close contact facilitates rapid spread[17,18]. Evidence suggests that scabies outbreaks occur during wars, refugee and immigration crises, in prisons, care homes, and overcrowded institutions like schools or boarding facilities[10,19–21]. A retrospective study documented 84 scabies outbreaks over 30 years (1984–2013), most commonly in aged care facilities and hospitals[22]. Recently, in 2023, an outbreak occurred at the Cox's Bazar refugee camps in Bangladesh, where prevalence rates were reported at 40%, reaching up to 70% in some camps, according to WHO[23]. Another report highlighted a 77% prevalence of scabies among children in Bangladesh[24]. A recent study also noted high prevalence and severity of scabies among Bangladeshi madrasa students (Islamic religious boarding schools)[16]. UNICEF has further highlighted the ongoing outbreaks in Bangladesh, emphasizing the need for intervention[25]. Few studies have been conducted in Dhaka to reveal the epidemiological patterns, vulnerable groups, and associated factors of scabies infestation. For example, Kamrul Islam et al. conducted a study on scabies patients in Dhaka, which primarily examined socio-demographic profiles[26]. Dhaka, the capital of Bangladesh, is one of the fastest-growing cities globally and the 11th largest[27]. Approximately 40% of its population lives in slums and squatter settlements[27]. Despite high urban congestion, socio-spatial divisions, and unhygienic living conditions, at least 500,000 rural migrants join Dhaka annually in search of better opportunities[28,29]. These factors make the city particularly vulnerable to scabies infestation and transmission.

Therefore, this study aimed to investigate the epidemiological characteristics, severity, and associated socio-demographic, behavioral, and hygienic factors among scabies-infected individuals in Dhaka megacity. Understanding the epidemiology and associated factors of scabies severity may guide the development of effective preventive strategies.

Methods

Study area

The study was conducted among individuals infected with scabies residing in Dhaka megacity, the capital of Bangladesh. Dhaka is located in central Bangladesh at 23°42′37″N and 90°24′27″E, on the eastern banks of the Buriganga River[30]. The city lies within the monsoon climate zone and experiences a hot, wet, and humid tropical climate, with an annual mean temperature of 25.3 °C (77.5 °F)[30]. Monthly temperatures range from an average of 18.5 °C (65.4 °F) in January to 28.4 °C (82.9 °F) in May[30] .

Dhaka megacity is home to an estimated population of 20,738,739 people[31]. Of this, the city corporation areas, comprising Dhaka North City Corporation and Dhaka South City Corporation account for 6,970,105 residents, resulting in an average population density of 1,119 people per square kilometer[31]. For the purpose of this study, Dhaka megacity was divided into two areas: city corporation areas and non-city corporation areas, based on its administrative thana or upazila. The classification of these areas was derived using data extracted from a trusted and reliable source[32] through Python programming (Figure 1).

Study design and settings

It was a cross-sectional observational study conducted at Mugda Medical college of Dhaka megacity, the capital of Bangladesh. The study was conducted in between May ,2024 to November, 2024 and during the study period, every day approximately, 300-400 patients attended the OPD of Dermatology and venerology of our study site and almost more than half of them were diagnosed as scabies daily.

Participants

All scabies-infected and suspected patients residing in Dhaka megacity were included in the study after providing informed written consent. For children under 18 years of age, informed written consent was obtained from their legal guardians. The sample size was calculated using the single-proportion population formula: $n= z^2p(1-p)/d^2$, where z=1.96 for 95% confidence interval, p=estimated prevalence of scabies, d= standard margin of error. For this study, the prevalence of scabies was set at 61%, as reported in a previous study from Bangladesh[33], with a margin of error of 5%. Using these values, the calculated sample size was 406 participants. Initially, 430 participants were enrolled; however, after considering the confirmed scabies diagnosis with complete responses and willingness to participate, 406 participants were included in the final analysis. A convenience sampling technique was used to recruit participants. Inclusion criteria for the study were as follows: both male and female participants, residing in Dhaka megacity, aged between more than 0 years and 70 years, diagnosed with confirmed scabies according to the IACS 2020 criteria, willing to participate in the study. Official written permission was obtained from the Head of the Dermatology and Venereology Department at the selected study site. The study's aims, procedures, and purpose were explained in detail to each participant. Informed written consent was then obtained before proceeding with examinations or interviews.

Data collection

Participants were examined by a registered attending physician and interviewed by trained research assistants. Shoes were removed prior to the examination, and adults were asked to expose designated body regions for assessment. Male participants were examined by male physicians, while female participants were examined by female physicians in a separate room to ensure privacy and uphold their dignity. A standard skin examination protocol was followed, as described in a previous study conducted in the Solomon Islands[10]. The examination included the following exposed areas: feet, legs (up to the thighs), hands (up to the upper arms), neck, face, and scalp. Sensitive body regions, such as the groin, genitals, and buttocks, were not routinely examined. Male participants were instead asked whether they had similar lesions in these areas. Only if a participant expressed doubts about lesions in these regions or explicitly requested an examination, only then these sensitive

areas examined in a private room. Socio-demographic, behavioral, hygiene-related, and clinical information was collected by trained research assistants using a pre-structured questionnaire. This questionnaire was developed based on two prior studies[16,18]. To ensure its validity and reliability, the questionnaire underwent rigorous testing. Content validity was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI) methods[34,35] with satisfactory results for all items. The questionnaire was administered by trained interviewers under the supervision of the principal investigator.

Measurements of variables

Socio-demographic variables

The study collected information about the age, gender, occupation, education, number of family member and family income. The variable age was grouped into "Infant (0-1 Year), pre-school child (1-6 years), school child (6-14 years), young adult (15-44 years), Middle aged adult (45-65 years), older adults (more than 65 years) considering a previous study[36], similarly information regarding occupation was collected by open ended response and then grouped into two categories "student and others (Job, business, garments worker, rickshaw puller, farmer), education status was grouped into "Illiterate or primary, secondary and above), number of family members were grouped into " less than 4 and more than 4", family income was grouped into three categories " lower class, middle class and higher class "considering a previous study[37].

Behavior related variables

The study collected information regarding the status of "sharing of articles, bathroom sharing, bedroom sharing" based on "Yes or No" response.

Hygiene related variables

The study collected information regarding the hygienic practice of individual. Daily bathing status, Use of Soap during bathing, nail cutting practice at a regular interval was assessed by "Yes or No" response.

Statistical analysis

To analyze the data, SPSS version-25 software was used. Descriptive statistics such as- frequency and percentage were performed. Chi-square test or Fisher's Exact Test were performed considering the appropriateness. To explore the association between variables, odds ratio was obtained with 95% confidence interval and the association was considered significant at 5% level where p-value < 0.05.

Operational definitions

Diagnosis of scabies

Scabies is diagnosed in the present study based on criteria for scabies diagnosis developed by the International Alliance for the control of scabies (IACS,2020) consensus criteria.[38]

Clinical category		Used in survey
Confirmed scabies A1 A2 A3	Mites, eggs or feces on light microscopy of skin samples Mites, eggs or feces visualized on individual using light powered imaging device Mites visualized on individual using dermascopy	No
Clinical Scabies B1 B2 B3	Presence of burrows Typical lesions affecting male genitalia Typical lesions in a typical distribution and two history features (itch and contact history)	**Yes**
Suspected scabies C1 C2	Typical lesions in a typical distribution and one history feature (itch or contact history) Atypical lesions or atypical distribution and two history features (itch and close contact with an individual who has itch or typical scabies lesion in a typical distribution)	No

In the present study, the authors used the sub-category of B (clinical scabies) for diagnosing the scabies.

Severity of scabies

The severity of scabies was defined based on the number of lesions counted as mild (1-10 lesions), moderate (11-49 lesions), severe (more than 50 lesions)[38]

Results

Socio-Demographic Characteristics

A total of 406 scabies-infected individuals were examined, comprising 64% males and 36% females. The median age of participants was 23 years having an IQR 26 years, ranging from infants (0–1 years) to older adults (over 65 years). The majority (53.2%) were young adults aged 15–44 years, while infants constituted the smallest proportion (0.2%) (Table 1). Nearly 90% of participants resided in Dhaka city corporation areas, while 10% lived in non-city corporation areas (Figure 1). The majority of participants (54%) were either illiterate or had completed only primary education. The most frequently reported occupations included garment work (29%) and madrasah students (17.7%). Approximately 62% of participants reported having more than four family members. The median family income was 30,000 with an IQR 10,000 BDT, with over half (57%) of the participants classified as belonging to higher social status, while only 7% fell into the lower social status category (Table 1). More than 90% of participants reported sharing personal items (e.g., clothing, towels, linens), bedrooms, and bathrooms with other residents (Table 2). Although 87% of infected individuals indicated a regular bathing habit, a significant proportion (85%) did not use soap during bathing. Moreover, only 12% of participants practiced regular nail trimming (Table 3).

Clinical Information and Severity of Scabies

As shown in Table 4, scabies rashes were most commonly found in the finger webs (25%), followed by the wrists and hands (19%), legs (16%), buttocks (8.4%), and genitals (11%). Less frequent locations included the forearm (3.2%) and other body sites (17%).

All participants in our study (100%) experienced rashes and Characteristic rashes were predominantly found on exposed body parts (Figure 2a). Among participants, 96% reporting itching, a hallmark symptom of scabies, 93% had a history of contact with someone infected, and 63.5% had used topical benzyl benzoate for treatment in the previous two months (Figure 2c). Burrow, a signature sign of scabies (B1), were present in 97% of the participants, lesions in the genital region (B2) were observed in 65%, and 94% of participants exhibited the classic scabies pattern: characteristic lesions in typical locations, itching, and a history of contact with an infected individual (Figure 2b). When categorizing severity, severe scabies was the most common, affecting 51% of participants. Moderate scabies was observed in 45.1%, while mild cases were the least common at only 3.9% (Figure 3a). In terms of gender, both mild and moderate to severe scabies showed a male predominance and that is 81% & 37% (Figure 3b). Young adults were the most affected age group, accounting for 37.5% of mild cases and 54% of moderate to severe cases, surpassing the prevalence in school-aged children (Figure 3c).

Factors associated with scabies severity

Our study found that participants from low socioeconomic status were significantly more likely to develop moderate to severe scabies compared to those from moderate or high socioeconomic status. Specifically, they were 10 times more likely to have moderate to severe scabies than mild cases (OR=10.03, 95% CI 3.35–30.14, p=0.001; Table 5). Bathing habits also showed a notable association with scabies severity. Individuals who reported regular bathing were significantly less likely to have moderate to severe scabies compared to those who did not bathe. The odds were reduced by 70% (OR=0.30, 95% CI 0.10–0.92, p=0.04; Table 5). Participants who shared bedrooms, bathrooms, or personal articles were more likely to develop moderate to severe scabies compared to their non-sharing counterparts. However, these associations were not statistically significant (OR=1.78, 2.79, and 2.6, respectively; 95% CI 0.39–8.20, 0.60–13.16, and 0.7–9.8, respectively; p=0.35, 0.19, and 0.14; Table 5). Interestingly individuals with burrows present were much less likely to have moderate to severe scabies compared to mild cases. The likelihood was reduced to just 2% (OR=0.02, 95% CI 0.006–0.08, p<0.001; Table 5). Similarly, individuals who displayed typical scabies lesions in characteristic distribution along with two suggestive clinical features (e.g., itching and contact history) were 89% less likely to have moderate to severe scabies compared to those without these features (OR=0.11, 95% CI 0.04–0.35, p<0.001; Table 5).

Finally, participants with a history of itching and contact with scabies-infected individuals were also significantly less likely to develop moderate to severe scabies compared to those without such histories. The odds of

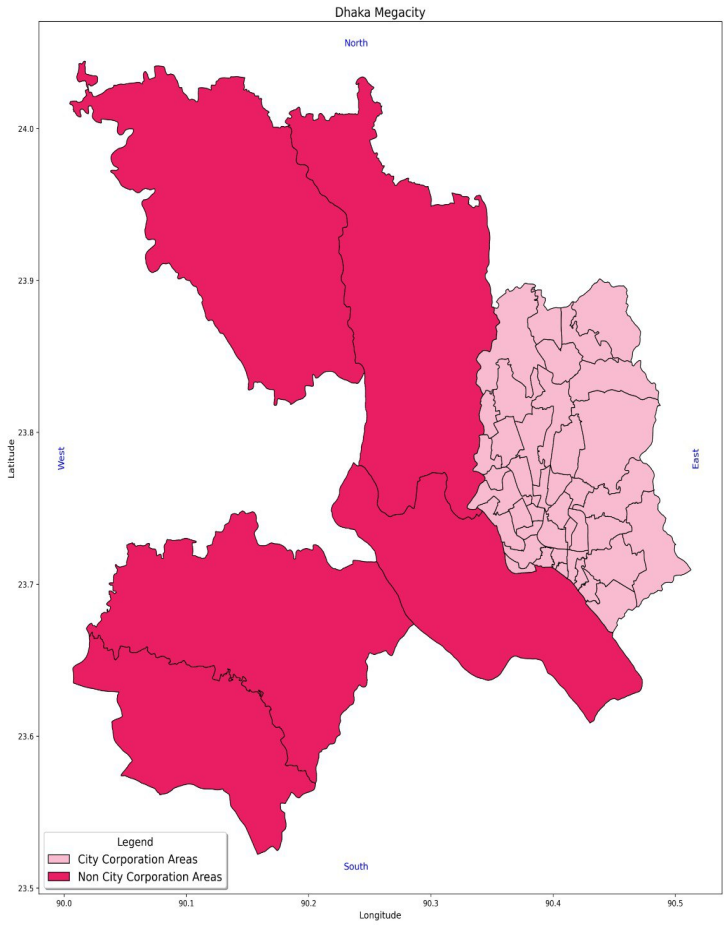

Figure 1(a): Dhaka megacity, Bangladesh.

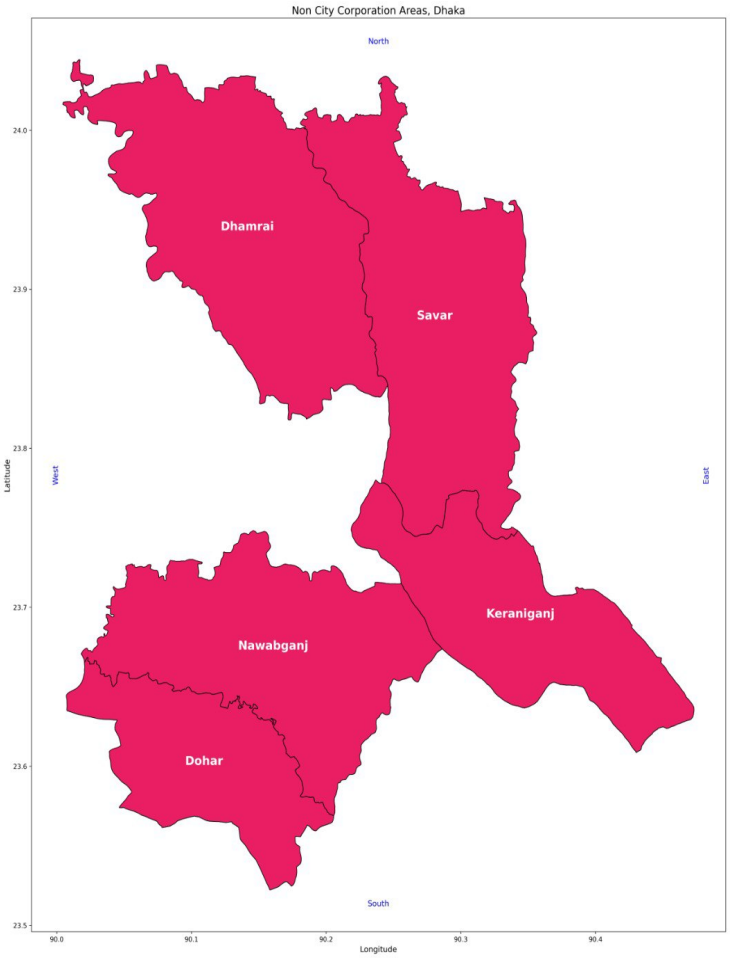

Figure 1(b): Non-City corporation areas of Dhaka city, Bangladesh.

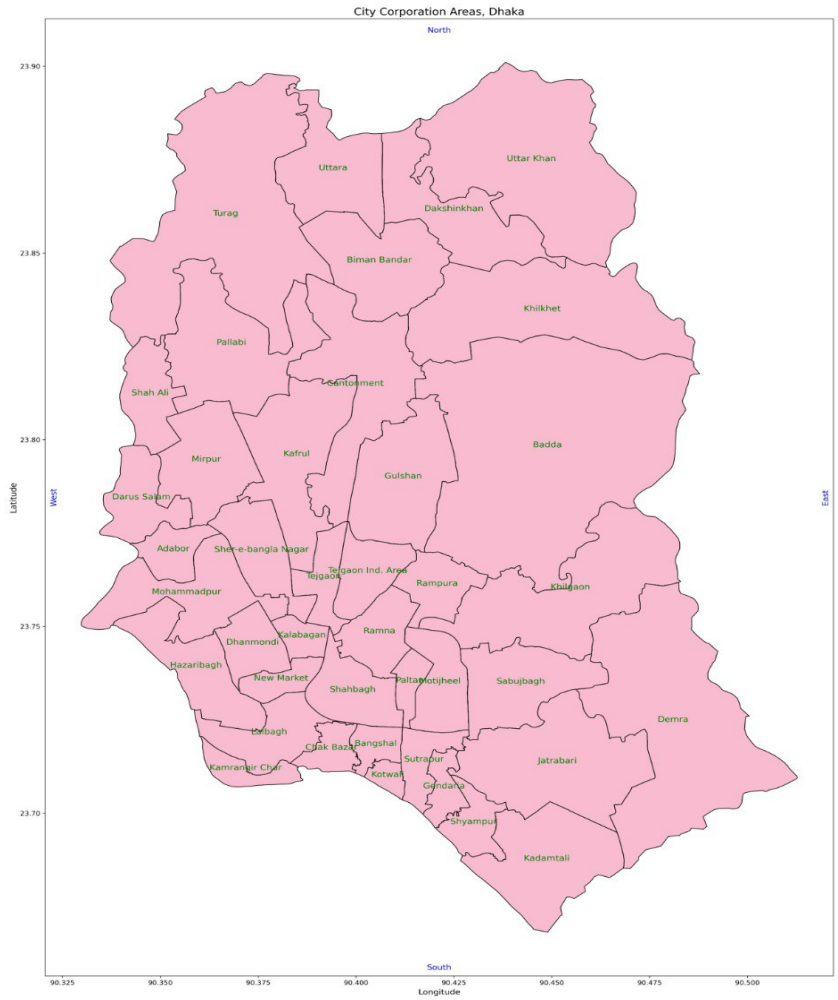

Figure 1(c): City Corporation areas of Dhaka city, Bangladesh.

Photo is taken and used anonymously with the written permission of the patient

Figure 2(a): Characteristics lesion of scabies in finger webs, wrists, hands and fingers.

moderate to severe scabies were reduced to 9% and 7%, respectively, for these individuals (OR=0.09 and 0.07; 95% CI 0.03–0.34 and 0.03–0.23, respectively; p<0.001 for both; Table 5).

Discussion

Scabies, despite lacking a vector in its life cycle, spreads efficiently through direct human contact or indirectly via contaminated objects, making it prone to outbreaks. As a global health issue, it affects people across all ages, races, genders, and socioeconomic groups, often leading to complications. Epidemiological studies, such as this one, provide valuable insights into the severity along with it's associated factors of scabies infestations, aiding in the formulation of appropriate preventive and control strategies, especially in densely populated areas like Dhaka, Bangladesh. In this study, scabies severity was categorized as mild, moderate, and severe. The prevalence of severe scabies (51%) was notably higher than that reported in previous Bangladeshi study[39]. Our findings highlighted a male predominance (63.3%) among moderate to severe scabies cases compared to females (36.7%), aligning with studies that suggest scabies disproportionately affects males[18,36,40]. However, some studies indicate female predominance[17,41–45]. These discrepancies may stem from cultural and social dynamics, such

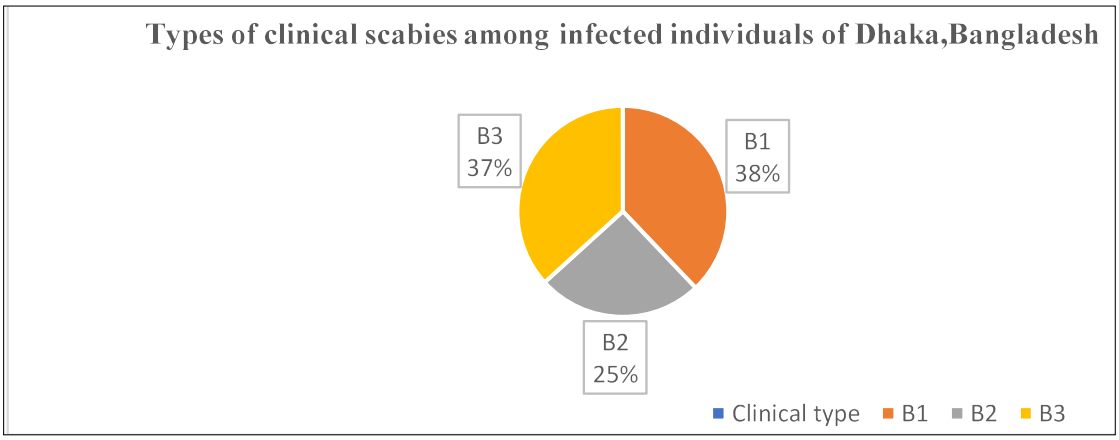

Figure 2(b): Types of clinical confirmed scabies.

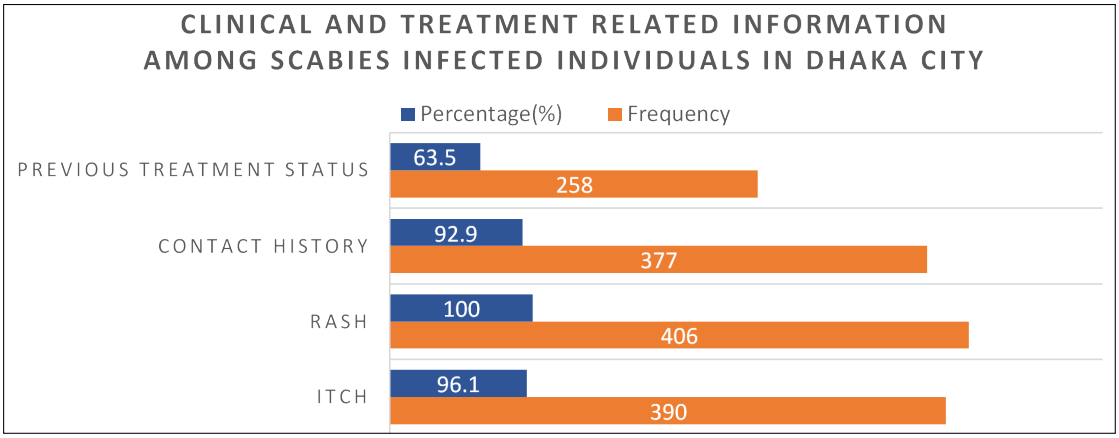

Figure 2(c): Clinical information among scabies infected individuals in Dhaka.

as conservative attitudes among Bangladeshi females[39], or differences in population demographics and geographic contexts[41]. The study also showed that young adults (54%) were the most affected group for moderate to severe scabies, while children were less likely to develop severe cases. This contrasts with studies in Bangladesh and other countries those reported higher prevalence among children[3,16,39,46,47]. The most affected age group young adults might have some attributable factors in their lifestyle for scabies transmission and severity; such as: close-contact work environments, social and sexual behaviors, prolonged exposure to hot, humid conditions and all of these might promote scabies transmission by creating warm, moist conditions in skin favorable for mite infestation.

Occupational analysis revealed that individuals engaged in jobs or works other than studying (73.6%) were the most affected group for moderate to severe scabies, with garment workers being the most particular. This contrasts with other studies highlighting the students as a high-risk group[18,19,46,48,49]. Garment workers in Dhaka might fight with poor living standards, financial constraints, inadequate sanitation, and prolonged work hours, leading to reduced attention to their personal hygiene and increased exposure to scabies and subsequently scabies infestation as well as severity. Our findings showed no significant association between education status and higher severity of scabies. This aligns with a study emphasizing that scabies infestation and severity are not solely determined by education level. Instead, they might be more closely linked to awareness and hygienic practices[50]. Our analysis revealed that individuals from low social status were more likely to experience higher severity of scabies. This highlights low socioeconomic status as a significant risk factor for scabies infestation and higher degree of severity and it is consistent with findings from previous native and global studies[46,51]. Factors such as overcrowded living conditions, limited healthcare access, poor sanitation, inadequate hygiene practices, and low health awareness might have contribution in high severity of scabies.

In our study, the most common location for scabies rashes was the finger webs, a finding consistent with a similar study from Iran[52]. This might be explained by climate-driven behaviors of the infected individuals residing in the study area (Dhaka, Bangladesh). During the hot and humid weather, participants particularly young adult males, the predominant group in this study might expose larger parts of their bodies, increasing the likelihood of contact with mite contaminated materials and infected individuals.

A study from Iran reported that sharing personal items, bedrooms, and lack of bathrooms availability increased the risk of scabies infestation[18]. Our study supports this finding, as over 90% of scabies-infected individuals reported such sharing. However, this behavior did not appear to influence the severity of scabies in our participants. Karim et al. observed that families with lower incomes were less likely to wash clothes, bed linens, and other belongings frequently compared to families with better financial means[46]. In our study, the majority of participants belonged to middle to high-income groups, which might explain why frequent washing practices mitigated the impact of shared environments on scabies severity. In our study, the majority of scabies-infected individuals (over 92%) belonged to middle to high income groups. These individuals might be likely to practice frequent washing of clothes, bed linens, and other belongings and hygienic behavior which may explain why the high incidence of shared bedrooms, bathrooms, and personal articles did not influence scabies severity in our findings. Moreover, a study conducted in the same country reported that participants with poor personal hygiene were more likely to experience scabies infestation and severity[16]. This aligns with our study, which observed that individuals with good hygienic practices, such as regular bathing, had a lower likelihood of higher scabies severity. Similar associations have been reported in studies from Ethiopia, Nigeria, Saudi Arabia, Bangladesh, and Cameroon[18,46,53–55]. Regular bathing may improve hygiene by removing mites and eggs from the skin's surface, cleansing affected areas by removing dirt, debris, and softening the skin for topical treatments and all of these might contribute in reducing the scabies severity.

Over 91% of participants in our study reported intense itching and a positive contact history with scabies-infected individuals. This is consistent with previous studies where intense itching was a common symptom [7,45,56]. Furthermore, our results indicated that individuals with skin burrows, typical rashes in characteristic locations, along with itch and positive contact history, were less likely to develop moderate to severe scabies. This might be possible for attributable cultural and community practices, where visible symptoms like skin rashes and itching may prompt early diagnosis and treatment. Awareness of contact history with infected individuals might enhance the vigilance and that ensures the medical attention timely. Additionally, both the infected participants of our country and the healthcare providers might be familiar with recognizable symptoms such as- itching and positive contact history. Combined, these factors might reduce the risk of developing more severe forms of scabies.

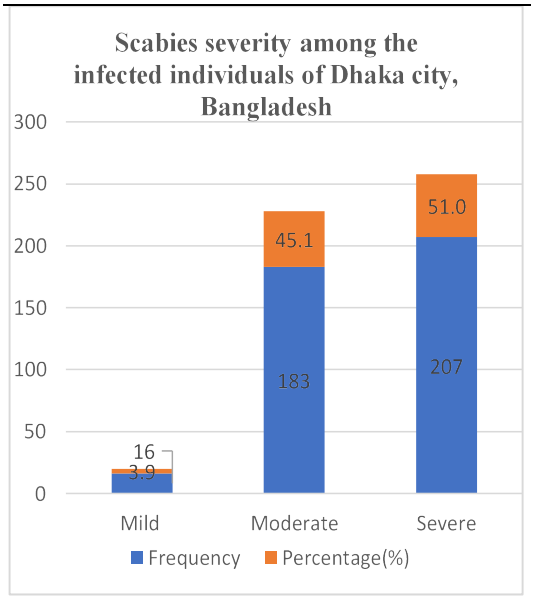

Figure 3(a): Scabies severity.

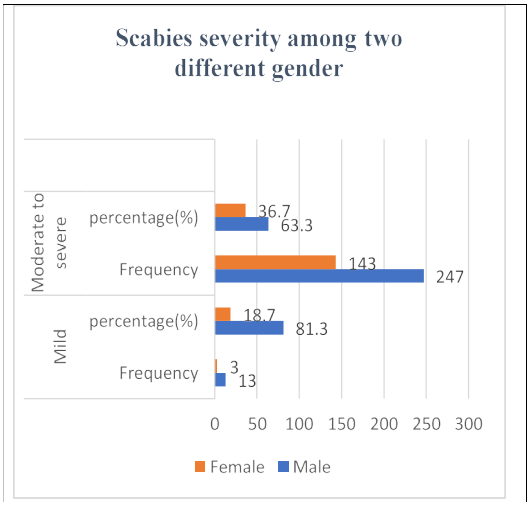

Figure 3(b): Scabies severity among two different gender groups.

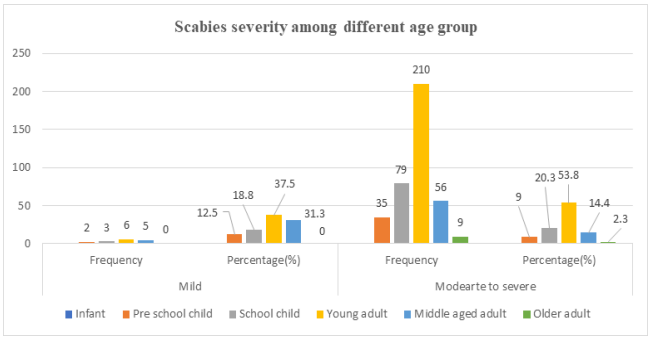

Figure 3(c): Scabies severity among different age group.

Table 1: Socio-demographic characteristics of scabies infected individual of Dhaka megacity, Bangladesh.

Variables	Frequence and Percentage	
Age (years)	N	%
1-1 Year (Infant)	1	0.2
1-5 Years (Pre-school child)	37	9.1
6-14 Years (school child)	82	20.2
15-44 Years (Young adult)	216	53.2
45-65 Years (Middle aged adult)	61	15
More than 65 Years (Aged adult)	9	2.2
Median =23, IQR=26		
Gender		
Male	260	64
Female	146	36
Residence		
City Corporation areas	364	89.7
Non-City corporation areas	42	10.3
Education level		
Primary or illiterate	220	54.2
Secondary and above	186	45.8
Occupation		
Garments worker	116	28.6
Day laborer	3	0.7
Rickshaw puller	40	9.9
Job	9	2.2
Business	63	15.5
Student(general)	32	7.7
Student(madrasah)	72	17.7
Farming	71	17.5
Family member		
Less than 4	154	37.9
More than 4	252	62.1
Family Income (BDT)		
Lower class	28	6.9
Middle class	147	36.2
Higher class	231	56.9
Median=30,000 IQR=10,00		

1 USD=122 BDT [57]

Table 2: Behavioral characteristics of scabies infected individuals of Dhaka city, Bangladesh.

Variables	Frequency and Percentage	
Sharing of articles	N	%
Yes	372	91.6
No	34	8.4
Bathroom sharing		
Yes	385	94.8
No	21	5.2
Bedroom Sharing		
Yes	375	92.4
No	31	7.6

Table 3: Hygienic characteristics of Scabies infected individuals of Dhaka megacity, Bangladesh.

Variables	**Frequency and Percentage**	
Regular bathing	N	%
Yes	353	86.9
No	53	13.1
Use of soap during bathing		
Yes	60	14.8
No	346	85.2
Habit of cutting of nails in time		
Yes	49	12.1
No	357	87.9

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Table 4: Distribution on scabietic lesion in different body parts of infected individual.

Site of lesion	Frequency	Percentage
Finger web	100	24.6
Breasts	5	1.2
Genitals	44	10.8
Forearm	13	3.2
Legs	65	16
Buttock	34	8.4
Wrists and hands	77	19
Others site	68	16.7

Table 5: Association between several studied variables and scabies severity among scabies infected individuals residing in Dhaka megacity, Bangladesh.

Variables	Mild scabies vs. Moderate to severe scabies	
	Odds ratio with 95% confidence interval	P value
Age (Children vs Adult)	0.66 (0.22-1.9)	0.46
Gender (Male vs Female)	2.5 (0.70-8.95)	0.19
Residence (City corporation vs Noncity corporation area)	0.32 (0.1-1.05)	0.07
Occupation (Student vs. Others)	2.35 (0.85-6.47)	0.138
Education (Primary vs Secondary and above)	0.65 (0.24-1.77)	0.45
Income (Lower class vs Middle to higher class)	10.03 (3.35-30.14)	**0.001**
Family member (Less than 4 vs More than 4)	1.23 (0.47-3.35)	0.79
Bedroom share (Yes vs No)	1.78 (0.39-8.20)	0.35
Bathroom share (Yes vs No)	2.79 (0.59-13.16)	0.19
Articles share (Yes vs No)	2.6 (0.7-9.8)	0.14
Bathing status (Yes vs No)	0.31 (0.10-0.92)	**0.04**
Soap Use during bathing (Yes vs No)	0.37 (0.05-2.88)	0.48
Regular basis nail cutting (Yes vs No)	0.47 (0.06-3.67)	0.70
Clinical scabies B1(Yes vs No)	0.02 (0.006-0.08)	**<0.001**
Clinical scabies B2 (Yes vs No)	1.18 (0.40-3.50)	0.80
Clinical scabies B3 (Yes vs No)	0.11 (0.04-0.35)	**<0.001**
Itch (Yes vs No)	0.09 (0.03-0.34)	**<0.001**
Contact history (Yes vs No)	0.07 (0.03-0.23)	**<0.001**
Previous treatment status (Yes vs No)	0.73 (0.27-1.99)	0.54

(According to WHO, Children < 18 years and adults > 18 years)

In spite of being a tropical disease, scabies remains neglected in context of research and prevention policies. In Bangladesh, scabies remains underestimated and lacks of national strategy for prevention and mitigation for control at community level like other tropical diseases including dengue, malaria, kala azar and tuberculosis. The current epidemiological study on scabies infestation in 2024 investigates the socio-demographic, behavioral, hygienic, and clinical characteristics, along with the severity of scabies, among affected individuals in Dhaka, Bangladesh. To our knowledge, this might be the first study addressing scabies severity and its associated factors among individuals infected with scabies residing in the densely populated Dhaka megacity.

However, the study has several limitations. Data was collected from a single hospital in the city, which may not fully represent the overall situation in Dhaka. The study employed the IACS 2020 clinical diagnostic criteria for scabies, meaning that the diagnostic accuracy relied on the clinical skills and expertise of the examining physicians, which could vary. Additionally, it was challenging to count rash numbers uniformly across all body parts, particularly in sensitive areas of female participants, which may have affected the diagnosis and severity assessment of scabies in this study.

Conclusion

Our study underscores the significant severity of scabies among the infected individuals living in Dhaka megacity, Bangladesh. We identified that low social status, regular bathing habits, the presence of burrows in the skin, itching, and recent contact with scabies-infected individuals (within the last two months) were significantly associated with higher severity of scabies. Given the risks of complications from chronic infestation and bacterial superinfection of affected skin areas, an urgent response from the healthcare sector is imperative. Interventional strategies such as improving personal hygiene, promoting health education, and minimizing contact with scabies infected individuals might be integrated into helminth control programs to address this neglected tropical disease effectively.

Data availability: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Ethics approval and consent to participate

Ethical consideration

The study received initial approval from the Ethical Review Board of Mugda Medical College, Dhaka. Subsequently, Institutional Review Board (IRB) approval was obtained prior to the commencement of the study (Reference: IREB/MuMC/ECC/2024/74). Participants were fully informed about the study's objectives, procedures, and significance. Written informed consent was obtained from each individual diagnosed with scabies before inclusion in the survey. For participants under the age of 12, written consent was acquired from their legal guardian or the accompanying adult responsible for the patient. Ethical considerations, including the right to decline participation or withdraw at any stage of the study, were strictly adhered to in line with the principles outlined in the Helsinki Declaration of 2013, as recommended by the World Medical Association[34].

Consent for publication

Two photos were taken from an infected participant concealing his face and others identifying traits with informed written consent to publish those photos for better understanding of scabies rashes.

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