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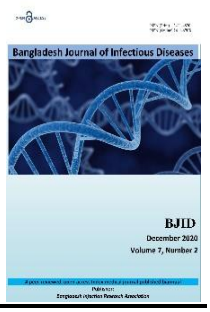

Scabies Prevalence and Management in Bangladesh: A Narrative Review

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Abstract

A parasitic skin illness, scabies disproportionately affects underprivileged population. Significant morbidity is brought on by the illness, which also includes immune-mediated illness and serious bacterial infections. *Sarcoptes scabiei* is an obligatory parasite of human skin, is the cause of the infectious illness scabies. People of all ages, genders, and socioeconomic backgrounds are impacted by the disease. Direct contact with an infected individuals and personal objects like clothing and bed linens are the primary ways that the infection is spread. The etiology of scabies in Bangladesh is linked to environmental pollution, poor living conditions, personal hygiene, water sanitation, and socioeconomic profile. Thus, the goal of this review was to represent the prevalence of scabies, its contributing causes, illness characteristics, diagnosis and management, and other relevant things. [*Bangladesh Journal of Infectious Diseases, June 2025;12(1):151-158*]

Keywords: Scabies; Prevalence; Infestation; Management; *Sarcoptes scabiei*

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Introduction

Scabies mostly found in lower- and middle-income nations in sub-Saharan Africa and South-East Asia, is one of the neglected tropical diseases. Every year, this illness affects about 565 million individuals globally, mostly children[1]. It has significant negative impact on the expense of therapy, job or school, and psychology[2]. According to its etiology, *Sarcoptes scabiei* var. hominis is the causative agent of scabies, an infectious skin disease. This infection is spread by coming into close, continuous contact with infected skin or by handling contaminated personal items[3].

The most common clinical sign is crippling itching and scratching, which is followed by bacterial infection-related problems such cellulitis, impetigo, and abscesses, as well as a breakdown of the skin barrier function[4].

Social attitudes, migration, access to healthcare, housing environment, hygienic conditions, and crowding all have an impact on the spread of scabies. Common risk factors for scabies include living in cramped quarters, sleeping together, sharing clothing and towels, not practicing good hygiene, being malnourished, and visiting places where scabies outbreaks are occurring[5-6]. The most frequent sufferers of scabies are children from lower socioeconomic backgrounds, particularly those who reside in filthy, congested settings like boarding schools and urban slums. Because of their tight quarters and the crowded living conditions, the infection frequently spreads quickly among these kids[7]. Additionally, these people are difficult to treat because to limited access to healthcare, delayed diagnosis, poor treatment compliance, malnourishment, related bacterial and allergy diseases, and insufficient follow-up[8].

Scabies is still one of the most significant under-recognized worldwide health issues, despite its high prevalence, particularly in lower- and middle-income nations. For instance, according to a study, about 77.0% of children in Bangladesh have had scabies[9]. Despite the nation's epidemiological transition and the growing burden of non-communicable diseases, the overall frequency of scabies among a few specific groups, such as urban slums and residential religious schools, remained essentially unchanged[10]. The majority of homes and environmental facilities have subpar living conditions, with crowded and unclean living quarters that put inhabitants at risk for scabies. Knowing the prevalence, treatment, and risk factors of scabies infection in Bangladesh's broader community may help direct the implementation of additional preventative measures. Thus, the goal of the current article was to represent the prevalence of scabies, its contributing causes, illness characteristics, and management, and other relevant things.

Prevalence of scabies in Bangladesh

The socio-demographic characteristics of children infested with community-acquired scabies in densely populated residential Madrasahs in and around Dhaka were studied by Karim et al[10] in their community-based survey conducted in 2007. They concluded that immediate attention should be given to Madrasah children to develop sustainable long-term intervention programs to combat scabies hyperendemicity (silent epidemics) and save thousands of those children from impending serious complications[10]. According to Moniruzzaman et al[11] scabies infection management among outdoor patients at BIRDEM General Hospital in Dhaka is more prevalent in crowded settings and is said to impact anyone, regardless of social standing, personal hygiene, occupation, gender, age, or ethnicity. However, they stated that Bangladesh still has a moderate level of classical scabies (Table 1).

According to a study conducted in Bangladesh, patients experienced social isolation and feelings of embarrassment as a result of the stigma and shame surrounding scabies, which had a moderate impact on their quality of life. Compared to children, all of these abnormalities were more commonly seen in adult patients[12]. Prior to the intervention, the prevalence of scabies in Bangladeshi madrasahs was 61.0% and 62.0%, but following widespread scabies treatment, the prevalence dropped to 5.0% and 50.0%. The intervention at madrasahs also significantly improved personal hygiene behaviors[13]. Important information about the environmental, clinical, and sociodemographic aspects linked to scabies infection is provided by another study. The results showed that among forcibly displaced Myanmar nationals residing in Cox's Bazar district in Bangladesh, multiple factors, such as age, marital status, education level, prior scabies and skin infections, family history, living conditions, animal contact, dust exposure, and seasonal variations, are linked to scabies infection[14]. A recent study showed that children residing in Dhaka, Bangladesh's madrasahs, or Islamic boarding schools, have a high prevalence of scabies. Scabies was substantially linked to factors including male gender, early puberty age, overcrowding, sharing personal belongings, poor cleanliness, and close contact with infected persons[15].

Table 1: **Summarized Results from Literature/Study Conducted in Bangladesh**

Study type	Year	Area	Findings	Reference
Pediatric Research	2007	Bangladesh	Many children are infested with community-acquired scabies in densely populated residential Madrasahs in and around Dhaka.	Karim et al[10]

Study type	Year	Area	Findings	Reference
Original Research	2020	Bangladesh	Scabies is more prevalent in areas with high population density; it can afflict anyone, regardless of socioeconomic standing, personal hygiene, occupation, gender, age, or ethnic background. Classical scabies is more prevalent in Bangladesh as a mild type.	Moniruzzaman et al[11]
Cross Sectional Study	2022	Bangladesh	Patients' quality of life was moderately impacted by the stigma and shame associated with scabies, which caused them to feel socially isolated and embarrassed.	Baker et al[12]
Survey Research	2013	Bangladesh	Prior to the intervention, the prevalence of scabies in Bangladeshi madrasahs was 61.0% and 62.0%, but following widespread scabies treatment, the prevalence dropped to 5.0% and 50.0%.	Talukder et al[13]
Original Research	2024	Bangladesh	Lot of Myanmar nationals residing in Cox's Bazar district in Bangladesh affected by scabies infection.	Rahman et al[14]
Original Research	2024	Bangladesh	This study showed that children residing in Dhaka, Bangladesh's madrasahs, or Islamic boarding schools, have a high prevalence of scabies.	Hasan et al[15]

Transmission and Complications

Even though scabies is an old disease, we still don't fully understand how it spreads. Investigating the relative effects of various control measures, life cycle of mite including through mathematical modeling, requires an understanding of transmission dynamics[16]. Herd immunity was earlier suggested by the known cycles of scabies occurrence in some temperate environments, which gave rise to the misleading moniker "7-year itching." Recurrent infestations, on the other hand, are frequent in many tropical environments and manifest symptoms earlier than the first infection[17]. Some of these environments maintain extremely high population frequency, indicating that variables other than herd or personal immunity are more likely to account for differences over time and across geographic regions[18-19].

The participation of people with the uncommon clinical variety crusted scabies (formerly known as Norwegian scabies), which is typically linked to immunosuppression (disease- or drug-related) or neurological disorder, is particularly significant in terms of transmission. In certain populations, people with crusted scabies serve as key transmitters since they are extremely contagious and can carry dozens to millions of mites[20]. The effectiveness of control programs may be jeopardized if these persons are difficult to identify and manage[21]. Though very few cases of crusted scabies have been reported in other high prevalence settings, it is unclear why the disease is so common in northern Australia despite the lack of known immunosuppressive factors[22-23].

More research is required to determine the pathogenic connections between scabies, impetigo, the infectious complications of *Staphylococcus aureus* and *Streptococcus pyogenes*, and the immune-mediated problems of *Streptococcus pyogenes*. The case for investing in scabies control will be stronger for governments, possible funders, and other stakeholders if these high-mortality conditions can be more conclusively connected to scabies and can be demonstrated to be efficiently averted through scabies control[24-26]. The Pacific region, where impetigo is highly prevalent, has given the most extensive consideration of the pertinent relationships; nevertheless, the few data from other regions indicate that endemic scabies occurs in situations where impetigo frequency is lower. This pattern must be accurately measured, and if there is a deviation, then should be investigated further[27]. *Streptococcus pyogenes*-induced impetigo is a leading cause of acute

glomerulonephritis, which raises the prevalence of chronic kidney disease in low-income areas[28]. According to estimates, rheumatic heart disease kills over 300,000 people annually, and its global distribution crosses over into regions where scabies is quite common[29]. In 2018, a global resolution on rheumatic heart disease and fever was accepted by the World Health Assembly[30]. Scabies control may be a key element in preventing these illnesses by preventing streptococcal skin infections in the first place[31].

Clinical Features

Clinical signs of scabies in humans can resemble a variety of different skin conditions, including contact dermatitis, eczema, itching, impetigo, fungal infections, and allergic reactions, making diagnosis challenging[32]. The incubation period for scabies lasts between four to six weeks, though it could be quicker if there is a significant initial infection. Therefore, before therapy is started, the affected individuals become a source of infection. As a result, everyone living together, including family members, should receive treatment[33]. According to research by Johnson and Mellanby[34], individuals who exhibit almost no symptoms may actually have a significant parasite infection, but even those with a low parasite infestation may exhibit considerable clinical indications. A secondary infection frequently arises if scabies is not treated properly. A secondary infection caused by *Staphylococcus aureus* and A. streptococci results in pyoderma[35].

Pruritus is one of the primary presenting symptoms, and it gets worse at night. Rarely, skin lesions with diagnostic value manifest as normal comma-like or irregular hole that range in size from a few millimeters to a few centimeters. A female scabies mite digs the tunnels, positioning herself at the end of the tunnel[36]. Typical lesions in newborns and young children, such as vesicles, pustules, and nodules, are typically dispersed unevenly, appearing on the hands, feet, and in the folds of the body. Infants may also have problems with their head, hands, and foot soles, unlike older kids and adults[37, 38]. Scabies is frequently misdiagnosed in the elderly because the itching may be mistakenly attributed to senile pruritus, which could complicate the diagnosis process[39]. Round, smooth nodules that are 5–8 mm in diameter and have red (or reddish) and brownish coloring are the initial appearance of skin lesions. The lesions never affect the hands or feet, but they are prevalent in places with extremely thin skin, like the genitalia or inguinal folds[40]. Based on the findings of earlier research, no mites were found in the nodules, and it is believed that these nodules are the consequence of a delayed hypersensitive reaction to the mites rather than an active infection[41]. This is a somewhat rare kind of scabies that typically affects the elderly. It may resemble bullous pemphigoid both histologically and clinically, and even in the presence of immunofluorescence results. When the parasite or its feces are not visible on epidermal scrapings, the diagnosis becomes even more challenging[42-43]. The following are the main risk factors for this infectious disease and its frequent spread: living in close quarters with other families, poverty and low parental educational attainment, sharing personal items like floor mats, bed linens, and sheets, poor personal hygiene, poor bathing, low socioeconomic status, and so forth.

Diagnosis of Scabies

The lack of a dependable, repeatable, and standardized method of diagnosis hinders both population-level control and scabies mapping. Approaches to diagnosing scabies were inconsistent, according to two systematic assessments of diagnostic techniques[44-46]. Although skin scraping microscopy is quite specific, it is insensitive and operator dependent, making it generally useless in open area to visualize mites and eggs. The 2018 IACS Criteria for Scabies Diagnosis in Research and Epidemiological Settings were developed by an international panel of experts called by the International Alliance for the Control of Scabies (IACS) using a Delphi consensus process in order to close this gap[47]. These standards allow for the identification and reporting of scabies in three diagnostic certainty bands: clinical, suspected, and confirmed. The mite must be identified using microscopy or non-invasive visualization methods like dermoscopy and videomicroscopy in order to diagnose confirmed scabies[48]. The classification of clinical and suspected scabies is based on characteristics of the clinical examination and history. As a result, the criteria can be modified for application in a range of contexts, such as field surveys, and may aid in standardizing the reports and improving research methodology. It is now necessary to validate these requirements in various contexts before creating standardized training materials and techniques[49].

Molecular methods such as PCR[50] and loop-mediated isothermal amplification[51] have been proposed for direct skin-based testing for infestation, but none of these are yet ready for programmatic application. Antigens from scabies and house dust mites are cross-reactive, which has

impeded the development of ELISA-based techniques to detect antibodies against scabies antigens[52]. Serodiagnosis is one recent development in this field that shows rises hope, but further study is needed to assess its effectiveness at clinical settings in tropical area[53].

Major Impact of Scabies in Bangladesh

Scabies is a major public health concern, especially in refugee camps and densely populated areas of Bangladesh. Skin sores, bacterial infections (like impetigo), and possibly more serious illnesses like glomerulonephritis and rheumatic heart disease can result from excessive itching and scratching. Scabies affecting social relationships and quality of life by causing anxiety, despair, and shame. Children may experience social isolation and bullying. Because of the tight quarters and hygienic measures, studies have revealed a significant frequency of scabies at madrasahs, or Islamic religious institutions in Bangladesh. People in crowded environments, children, and teenagers are particularly impacted. Scabies is far more common in refugee camps, underscoring the effect of living circumstances. Scabies causes severe itching, which makes disruption in sleeping and affecting daily activities.

Management and Prevention of Scabies

For scabies, there are a number of suggested treatment methods. Topical medications (Table 2) are the initial line of treatment and must be applied all over the body for several hours[54]. Over the course of days to weeks, several treatment doses are frequently advised. It might be necessary to administer topical or oral antibiotics if a secondary skin infection has emerged[55]. Close contacts of scabies patients should also receive treatment concurrently, as they may be infected without exhibiting symptoms yet and they can serve as an infection reservoir[56]. Since treating all contacts at once necessitates identifying and caring for each contact (such as family members, other co-inhabitants, medical and other supporting workers, and those who may come into contact with the index cases), the logistics are important.

In many countries, oral ivermectin has not been authorized for the treatment of scabies[57], and it is not generally used in Bangladesh but topical permethrin formulations are commonly used. Currently, there are some observational proofs that it works well to contain scabies epidemics in nursing homes and other institutional settings[58]. Ivermectin is ineffective against the younger stages of the parasite (whose nervous system is underdeveloped), is not ovicidal, and cannot sufficiently penetrate the thick egg shell of the scabies mite, which causes a delayed therapeutic response[59]. Due to the irritating effects of the different formulations, persistent post-scabies eczema (generalized eczematous dermatitis) is the most common side effect of topical scabicides[60]. These could exacerbate delayed-type eczema and xerosis. Furthermore, as currently available topical scabicidal agents like permethrin, lindane, benzoyl peroxide, and sulphur can cause serious cutaneous and systemic side-effects in addition to the issue of non-compliance, which results in poor treatment uptake, treating patients with secondary eczematization, erosions, or ulcers may be challenging.

Table 2: **Topical Treatment Options Used for Scabies Management**

Study type	**Cure Rate**	**Treatment Regimen**	**References**
Clinical exploratory study	48.0% (10/21)	Benzyl benzoate (22.5%)	Nnoruka and Agu[61]
Case study	12.0% (23/195)	Benzyl benzoate (50.0%)	Yonkosky et al[62]; Thomas et al[63]
In vitro study and systemic review analysis	-	Permethrin	Mbuagbaw et al[64]; Mounsey et al[65]
Review	Acaricidal effects against scabies mites	Tea tree oil	Thomas et al[66]
In vitro study		Permethrin 5.0%	Pasay et al[67]
Review	Compared the efficacy of permethrin with ivermectin	Permethrin 5.0%	Rosumeck et al[68]
In vivo study	Crotamiton	10.0% cream	Mila-Kierzenkowska et al[69]

Campaigns to raise awareness is essential in Bangladesh for controlling and avoiding scabies epidemics, particularly in congested places like religious boarding schools and refugee camps. Preventing the spread of scabies requires a strong emphasis on good personal hygiene habits, such as frequent hand washing and refraining from sharing personal belongings. People must learn about the signs and symptoms of scabies and how the disease is spread through close, prolonged skin contact. Access to sanitary facilities, soap, and clean water can all help to stop the spread of scabies. Making separate room for people and families can help to lower the likelihood of intimate physical contact. Medication distribution, like topical permethrin, can help to maintain outbreaks, but it should be combined with actions to address unhygienic circumstances.

Conclusion

People of all ages, genders, and lower socioeconomic backgrounds are impacted by the disease. Direct contact with an infected individuals and personal objects like clothing and bed linens are the primary ways that the infection is spread. The etiology of scabies in Bangladesh is linked to environmental pollution, poor living conditions, personal hygiene, water sanitation, and socioeconomic profile. Further defining the burden of disease, creating standardized methods for diagnosis and population burden estimation, developing innovative diagnostics and therapies, and assessing extensive community control measures are among most needed steps in Bangladesh. It is now necessary to provide interim scabies control guidelines.

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Conflict of Interest
The authors have no relevant conflicts of interest to declare.

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Authors' contributions
Conceptualization: RA, MH, MNH; Data curation: RA, MH; Formal analysis: RA, MH, MNH; Project administration: RA, MH, MNH; Supervision: RA, MH; Visualization: RA, MH, MNH; Writing original draft: RA, MH, MNH; Writing-reviewing & editing: RA, MH, MNH; Data availability: Not applicable; All authors read and approved the final manuscript.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Not applicable

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