



## Prevalence and life cycle in patients with scabies infection-a study in Kumudini Women's Medical College Hospital, Tangail, Bangladesh

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### Abstract

**Introduction:** Scabies is a common contagious parasitic dermatosis. Transmission of the mite *Sarcoptes scabiei* var *hominis* generally occurs by skin-to-skin contact, but with crusted scabies it may also occur through fomites, such as infected clothing or bedding. Diagnosis is usually clinical.

**Objective:** To find out prevalence and life cycle in patients with scabies infection.

**Materials and Methods:** Scope and Delimitation of the Study. This study focused the management of scabies. This study was conducted among the OPD patients in Kumudini Women's Medical College Hospital, Tangail, Bangladesh and BSMMU. The study was conducted from July 2021 to August 2022. The diagnoses of scabies of the potential respondents were based on the set criteria. Only those diagnosed clinically with scabies were included in this study. There were no scraping procedures (acarous test) done to confirm the diagnosis of scabies. Other skin diseases aside from scabies were not included in the study.

**Results:** In our study 110 scabies patients it appears that maximum population affected with Scabies infection were aged between 0-6 years (16.3%) and 7-12 years (20.9%) and minimum were between 43-48 years (prevalence 3.6%) and 49-54 years (prevalence 3.6%). The highest prevalence 13.63% in female were in the 7-12 years and lowest prevalence 0.95% in 49-54 years. The highest prevalence 6.36% in male were in the 7-12 years and lowest prevalence 0.95% in 25-30 years and 31-36 years. November (29.09%), December and January (34.54%) show the highest prevalence in scabies infection. In Bangladesh, these three months represent a winter season. On the other hand, July to October represent almost hot condition. So from my result, it is concluded that scabies infection is more prevalent in winter than summer. Scabies infection is not a serious problem for our country because the highest prevalence 50% of severity of scabies infection is limited to moderate (second stage of classical scabies infection) category. Classical scabies is more active in Bangladesh; on the other hand crusted scabies is limited to a person in Bangladesh.

**Conclusion:** Scabies is more common where overcrowded conditions prevail; it can affect any individual irrespective of social status, personal hygiene, profession, gender, age or ethnic origin. These include increased number of household members, presence of other family members with scabies, overcrowding, poverty and low educational attainment. Children (1-12 yrs.) have the highest incidence of scabies as compared to the other age group.

**Keywords:** Scabies, Prevalence, Skin Disease, Socioeconomic groups

### Introduction

Scabies infection is an important skin disease. It is a public health problem. There are many public health problems from which people of the under developed countries suffer much because of ignorance, illiteracy, poverty and apathy towards health problem. Prevalence estimates in the recent scabies-related literature range from 0.2% to 71%.

Scabies is endemic in many resource-poor tropical settings, with an estimated average prevalence of 5–10% in children. Recurrent infestations are common. The global prevalence of scabies is estimated at 300 million cases <sup>[1]</sup>, with large variations between countries. In the UK, no up-to-date robust prevalence data exist, but general practitioners recorded approximately 1200 new cases per year in the 1990s <sup>[2]</sup>. In resource-rich communities, scabies tends to occur in cyclical epidemics, particularly within institutional-living situations such as nursing homes <sup>[3]</sup>, or the army <sup>[4]</sup>. There is some seasonal variation with incidence being greater in the winter than the summer, perhaps related to the tendency for more indoor overcrowding in colder weather <sup>[2]</sup>. In resource-poor communities, the occurrence pattern is quite different with the disease being endemic in many areas <sup>[5]</sup>. It is associated with densely population, poverty, wanting of health education and social upheaval when hygiene becomes relatively unimportant. Scabies infection increase when people are herded together and facilities for washing the body and clothes are reduced. Our geographical and socioeconomic condition is suitable for scabies infection. There are a number of variables that can make people more susceptible to a scabies infection. It occurs throughout the world, but is particularly problematic in areas of poor sanitation, overcrowding, and social disruption. For example, the prevalence of scabies among the remote Aboriginal communities of Northern Australia is around 50% in children and 25% in adults <sup>[6]</sup>. The prevalence of infection in a community is potentially influenced by changes in social attitudes, population movements, wars, misdiagnosis, inadequate treatment, and changes in the immune status of the population. Scabies infestation represents a considerable burden of ill health in many communities, and although the disease is rarely life threatening, it causes widespread debilitation and misery <sup>[7]</sup>. The life cycle of *S. scabiei* begins with the pregnant female laying two to three eggs a day in burrows several millimetres to several centimetres in length in the stratum corneum (outermost layer) of the skin. After about 50 to 72 hours, larvae emerge and make new burrows. They mature, mate, and repeat this 10- to 17-day cycle. Mites usually live for 30 to 60 days <sup>[7]</sup>. Humans are the main reservoir for *S. scabiei* var. *hominis* (variety of the mite named to reflect the main host species). Scabies is usually 2 Interventions for treating scabies. Published by John Wiley & Sons, Ltd. spread person to person via direct skin contact, including sexual contact, though transfer via inanimate objects such as clothing or furnishings is also possible <sup>[8]</sup>. Humans can also be transiently infected by the genetically distinct animal varieties of *S. scabiei* (eg var. *canis*), though cross infectivity is low <sup>[9, 10, 11]</sup>.

## Materials and Methods

**Scope and Delimitation of the Study.** This study focused the management of scabies. This study was conducted among the OPD patients in Kumudini Women's Medical College Hospital, Tangail, Bangladesh and BSMMU. The study was

conducted from July 2021 to August 2022. The diagnoses of scabies of the potential respondents were based on the set criteria. Only those diagnose clinically with scabies were included in this study. There were no scraping procedures (acarous test) done to confirm the diagnosis of scabies. Other skin diseases aside from scabies were not included in the study.

**Data Gathering:** Data was collected through face to face interview of the respondents by using a pre-tested interviews schedule, before data collection the patients were examined by the professional doctor and confirmed about the scabies infection, the purpose of the study was explained first to the patients to build the concept so that the patients answer the question to the base of their knowledge, each interview took about fifteen minutes. The interview schedule was rechecked. Other skin diseases were diagnosed by the researcher like psoriasis, contact dermatitis, folliculitis, chronic urticaria, insect bites and scabies with secondary bacterial infection (impetigo). The collected data from the respondents were transferred to a suitable designed master sheet for processing and subsequent analysis. Then the statistics was calculated.

## Observation and Results

In our study 110 scabies patients it appears that maximum population affected with Scabies infection were aged between 0-6 years (16.3%) and 7-12 years (20.9%) and minimum were between 43-48 years (prevalence 3.6%) and 49-54 years (prevalence 3.6%) (Table-1).

**Table 1:** Distribution of population by age groups (n=110)

Age group in year	Number of patients	Prevalence (%)
0-6	18	16.36
7-12	23	20.9
13-18	12	10.9
19-24	16	14.54
25-30	9	8.18
31-36	5	4.54
37-42	8	7.27
43-48	4	3.63
49-54	4	3.63
55+	11	10
Total	110	100

**Table 2:** Distribution of population by sex group (n=110)

Sex group	Number of patients	Prevalence (%)
Female	65	59.09
Male	45	40.9
Total	110	100

The result shows that among the 110 scabies infected patients 65(59.09%) were female and 45(40.9%) were male. It shows that the sex ratio in scabies infection patients is female: male 1.4:1. So it appears that females are more affected than male (Table-2).

**Table 3:** Distribution of population by age compare to sex (n=110)

Age group in year	Female	Prevalence (%)	Male	Prevalence (%)	Total Prevalence
0-6	11	9.09	7	6.36	15.45
7-12	15	13.63	9	8.18	21.81
13-18	7	6.36	6	5.45	11.81
19-24	7	6.36	9	8.18	14.54
25-30	9	8.18	1	0.9	9.08
31-36	4	3.63	1	0.9	4.53
37-42	3	2.72	3	2.72	5.44
43-48	2	1.81	2	1.81	3.62
49-54	1	0.9	3	2.72	3.62
55+	6	5.45	4	3.63	9.08
Total	65	59.1	45	40.9	100

The highest prevalence 13.63% in female were in the 7-12 years and lowest prevalence 0.95% in 49-54 years. The highest prevalence 6.36% in male were in the 7-12 years and lowest prevalence 0.95% in 25-30 years and 31-36 years (Table-3).

**Table 4:** Seasonal variation of scabies infection (n=110)

Month name	Number of patient	Prevalence (%)
April-May	10	9.09
June-July	13	11.81
August-September	17	15.45
October-November	32	29.09
December-January	38	34.54
Total	110	100

November (29.09%), December and January (34.54%) show the highest prevalence in scabies infection. In Bangladesh, this three months represent a winter season. On the other hand, July to October represent almost hot condition. So from my result, it is concluded that scabies infection is more prevalent in winter than summer (Table-4).

**Table 5:** Distribution of respondents by their educational status (n=110)

Educational Status	Number of respondents	Prevalence (%)
Primary level	45	40.9
Secondary level	5	4.54
Higher secondary level	10	9.09
Horns	21	19.09
Illiterate group	29	26.36
Total	110	100

It was draw from the table that Scabies infection is not completely dependable on educational status but need consciousness that stop hygienic practice and avoid over crowded place. Health education should be included in educational curriculum and patients especially mothers and teachers should be educated in the light of health education, that the peoples can be introduced to the self-care system for themselves from the childhood. Health education through the mass media should be provided in simple, easily understandable way regarding the cause and preventive measures of scabies infection. School health should be introduced for practical application of hygienic practice [Table-5].

**Table 6:** Distribution of respondents by their Occupation (n=110)

Occupation categories	Number of respondents	Prevalence (%)
Student	32	29.09
Nurse	10	9.09
Hospital patient	6	5.45
Housewife	9	8.18
Hostel member	16	14.54
Garments worker	23	20.9
Other	14	12.72
Total	110	100

Student and garments worker were mostly affected with scabies infection because they were busy with crowded place [Table-6].

**Table 7:** Counting rash number is used to determine the severity of scabies infection by CGS (clinical grading score) (n=110)

Rash number	Severity	CGS	No. of patient	Prevalence (%)
1-10	Mild	1	40	36.36
11-20	Moderate	2	55	50
21-30	Severe	3	14	12.72
30+	Crusted	4	1	0.9
Total			110	100

Scabies infection is not serious problem for our country because the highest prevalence 50% of severity of scabies infection limited with in Moderate (second stage of classical scabies infection) category. Classical scabies is more active in Bangladesh; on the other hand crusted scabies is limited person in Bangladesh (Table-7).

## Discussion

Based on the results of the study, most of the respondent's shares one bedroom while the rest did not shares bedrooms. The majority of the patients shared towels during bathing while the rest did not share towels. This may serve as a risk factor for the transmission of scabies among family members. These results are similar to a study done [12]. A delayed-type hypersensitivity reaction to mite allergens causes skin inflammation resulting in papules and pruritus. Excoriation of the lesions leads to secondary bacterial infections, eczema and longterm health consequences in the form of post streptococcal glomerulonephritis [13].

It reported similar characteristics of a typical family with scabies including increased number of household members, presence of other family members with scabies, overcrowding, poverty and low educational attainment. These characteristics may contribute greatly to the transmission of the mites. In terms of age group, the majority are the children who are usually affected by the disease. The result of this study is coincide with the study done [12]. Children are usually affected because they hardly maintained their hygienic practices. The majority of the children are those who are non-schooling ages from 6months to 6year and in those children in both elementary level. Males were almost equally affected as females in our study in contrast to study by Das S *et al.*, where males outnumbered females [14]. In a predominantly rural setup, males report more frequently than the conservative female population. Study by Sambo *et al.*, reported almost equal male to female ratio of 1:1 [15]. The sites of the scabies lesions before treatment. The majority of respondents have lesions on the abdominal area, which has the highest prevalence of scabies lesion. The other top sites are as follows: finger and nail. These results more or less complemented another study made by Salazar, *et al.* [16], who reported the 6 preferred sites of scabies (in decreasing frequency): interdigital webs, wrists, arms, axilla, lower abdomen, buttocks and from the study of wherein she reported top site is at the abdominal area, the other top sites (in decreasing frequency) were pubic area (68.2%), buttocks and left hand (63.4%), right hand (60.9%), and left leg (46.3%) [12]. Although not in the same order, both studies imply that the most common site for mites to be found is between the folds in the skin, especially where the skin is thin. The pathognomic signs of scabies are burrows, erythematous papules, and generalized pruritus with nocturnal dominance. An atypical form, known as crusted scabies, presents as a psoriaform dermatitis with variable whitish scaling and mild or no pruritus [6]. Crusted scabies are frequently found in immunocompromised patients, such as patients infected with HIV, patients receiving immunosuppressive therapy, individuals with mental retardation, and a d institutionalized Elderly people. Within nursing homes, residents with unrecognized crusted Scabies often constitute a source for spread of scabies to other residents and staff members. Scabies outbreaks have been frequently documented in nursing homes. In a survey of 130 nursing homes in Canada, 25% reported cases of scabies among their residents during a 1-year period, over a 1-year period, 17% of Michigan's nursing homes reported scabies in the facility. Clinicians and drug companies recommended treatment of family members and close contacts at the same time as cases, to improve cure rates and reduce reinfection. Seasonal variation in scabies infection. From the result of table, November, December and January show the highest prevalence in scabies infection. In Bangladesh, these three months represent a winter season. On the other hand, July to October represent almost hot condition. So from my result, it is concluded that scabies infection is more prevalent in winter than summer which is matching with the study done by [2]. Serious adverse effects have been associated with the use of some antiscabietic treatments. Convulsions and aplastic anaemia have been reported with the use of lindane [17], and an increased risk of death amongst elderly patients has been reported with the use of ivermectin [18]. Evidence of cure ideally requires follow up for about one month. This allows time for lesions to heal and for any eggs and mites to reach

maturity if treatment fails (ie beyond the longest incubation interval). Patients should be warned that itching may persist for one to two weeks after treatment, even if the mite is successfully eradicated [17]. Because of this delay in symptom relief it may sometimes be difficult to distinguish reinfestation from primary treatment failure. Contacts of cases are usually advised to treat themselves at the same time as the case in order to reduce the risk of reinfestation [8]. Prevention is based on principles common to most infectious diseases, that is, limitation of contact with the mite. Using data from randomized controlled trials, this review examines the existing evidence of effectiveness of treatments for scabies. The incidence of scabies infection in the Bangladesh is not known. However, data on annual incidence of scabies seen in one health institution in Dhaka showed a rate of 45 per 1000 patients. Toxins secreted by the mites are responsible for the development of vesiculopapular lesions with pruritus. Initial predilection sites occur around finger webs, wrists or elbows, and anterior axillary folds. In untreated individuals, other parts of the body are involved. Based on study, the first evidence of parasitization consists of a small erythematous eruption or "watery blister" [16]. Susceptibility to scabies is universal. Since the principal mode of transmission is direct transfer of ectoparasites through personal contact, the disease is particularly rampant in overcrowded places without adequate sanitation. Children younger than 15 years have the highest prevalence of scabies. Other at-risk populations include persons who are sexually active, debilitated, or immunocompromised. Currently, there are numerous medical treatments available for scabies. Most of these are effective. Permethrin cream 5% (Elimite) is the current drug of choice, especially for infants more than 2 months and small children. Other standard treatment for scabies is topical application of 1% gamma benzenehexachloride, crotamiton, 5% tetraethylthiuram monosulfide, benzyl benzoate, and sulfur. Some of these are potentially toxic chemicals. There are some concerns about systemic toxicity. In fact, there are several herbal products that are as effective measures for some common diseases such as Scabies infection.

## Conclusion

In this setting, scabies is an important health problem requiring action by healthcare providers. The typical family of the respondents with scabies has certain characteristics that may contribute greatly to the spread of mites. These include increased number of household members, presence of other family members with scabies, overcrowding, poverty and low educational attainment. Children (1-12 yrs.) have the highest incidence of scabies as compared to the other age group. There is a slight preponderance of scabies among males. Scabies are more prominent in skin folds. Topical permethrin appears to be the most effective treatment for scabies. Ivermectin appears to be an effective oral treatment. Classical scabies is more active in Bangladesh as a moderate form.

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