***Original Research Article***

**Knowledge and Awareness of Scabies among different community people of selected areas of Chattogram City Corporation Area, Bangladesh**

**ABSTRACT:**

Human scabies is a parasitic infestation caused by Sarcoptes scabiei var hominis. It is one of the commonest dermatological condition accounting for a substantial proportion of skin disease in many low and middle income countries. Age, gender, ethnicity, overcrowding hygiene and some seasons are the risk factors of scabies. Immunocompromised patients, children and older patients are more likely to get affected by scabies. It can be transmitted through direct physical contact with the infested person or their belongings. Intense itching ( mainly at night), rashes, sores, having thick crust on the skin are the clinical features of scabies. Scabies can be treated with using external agents like permethrin or moxidectin. Faliure to having treatment can lead to bacterial infection, skin sores and even kidney problem. Avoiding direct physical contact with the infected person and treating all household members and close contacts at the same time is must for to prevent spreading scabies.

This cross-sectional study investigates the knowledge and awareness of scabies among residents of selected areas in Chattogram City Corporation, Bangladesh. The research aimed to assess public understanding of scabies symptoms, transmission, prevention, and associated stigmas. A sample of 200 participants was surveyed using a structured questionnaire, focusing on their perceptions regarding scabies, personal hygiene, and the need for isolation of infected individuals.

Results revealed that 68% of respondents correctly identified itching as the primary symptom, while 27% expressed uncertainty regarding this symptom. Additionally, 89% acknowledged the role of personal hygiene in prevention, but only 14% recognized the importance of environmental disinfection.

The findings indicate significant gaps in awareness, particularly regarding the contagious nature of scabies and the stigma experienced by affected individuals. The study highlights the urgent need for targeted public health campaigns to educate communities about scabies and promote effective prevention strategies. Enhanced training for healthcare providers and community leaders is recommended to address misconceptions and improve overall community health outcomes related to scabies.

**Key Words:** Scabies, Disinfection, Immuno-Compromised, Parasite, Personal Hygiene.

### INTRODUCTION:

The World Health Organization (WHO) recently acknowledged scabies as one of the neglected tropical diseases (NTDs) [[1](#_heading=h.ihv636)]. At their meeting in March 2017, the Strategic and Technical Advisory Group (STAG) of WHO for NTDs recommended including scabies in their NTD portfolio [[1](#_heading=h.ihv636)]. The STAG issued this recommendation based on the recently developed WHO criteria for the inclusion of additional NTDs. The criteria specify that proposed diseases must “i) disproportionately affect populations living in poverty and cause important morbidity and mortality; ii) primarily affect populations living in tropical and sub-tropical areas; iii) be immediately amenable to control, elimination or eradication, and iv) be relatively neglected by research” [[1](#_heading=h.ihv636)].

The STAG decided that all four criteria were met for scabies. After that, in 2020, and as a step toward further efforts to deal with the neglect to attain the Sus- tainable Development Goals (SDGs), scabies along with other ectoparasite-causing diseases were included in the updated WHO roadmap for neglected tropical diseases 2021–2030 [[2](#_heading=h.ihv636)]. Targets, milestones, specific indicators, and critical actions are proposed here to support policies and actions aimed at ending the neglect of these ancient diseases of poverty. Scabies may be the first reported human disease with a well-known etiology [[3](#_heading=h.ihv636), [4](#_heading=h.ihv636)]. Its prevalence still shows unacceptably high figures in many settings of the world. It is estimated to affect more than 130 million people globally at any given time [[5](#_heading=h.ihv636)].

Scabies infestation significantly impacts patients’ quality of life with adverse sequelae, especially in underprivileged and low-resource settings. The parasite incriminated in this highly contagious parasitic skin disease is the burrowing mite Sarcoptes scabiei var. hominis. It is particularly prevalent among children and older and immunocompromised people, and may lead to considerable morbidity and even mortality in vulnerable individuals especially in resource-poor communities with less access to adequate healthcare [[6](#_heading=h.ihv636), [7](#_heading=h.ihv636)]. Adding scabies to the global health agenda as an NTD would promote disease awareness and global discussions and collaboration, and encourage much-needed research into various aspects of this disease [[8](#_heading=h.ihv636)].

In addition to WHO, other world organizations such as the Inter- national Alliance for the Control of Scabies (IACS) [[9](#_heading=h.ihv636)] along with informal groups of concerned researchers such as the Sarcoptes-World Molecular Network [[10](#_heading=h.ihv636)] are committed to working together to achieve the global control of scabies. However, the recognition of scabies as an NTD has also triggered discussion at the highest levels in the scientific community. These discussions focus on whether the global control of scabies should be our goal at the moment, and on the important challenges and needs in the current and future phases of the fight against scabies [[11](#_heading=h.ihv636)]. Scabies is a common skin parasitic infection caused by Sarcoptes scabiei var hominis; it is an endemic disease in tropical and subtropical regions worldwide.

It affects more than 130 million individuals worldwide at any given moment. In the recent research, rates of scabies incidence range from 0.3 percent to 46 percent. In the developed world, outbreaks in health institutions and vulnerable communities contribute to the high economic cost of national health services. [12–14] However, in resource-poor tropical settings, the sheer burden of scabies infestation and complications imposes a high cost on healthcare systems. It was predicted in 2010 that scabies direct effects on the skin resulted in more than 1.5 million YLDS (years lived with disability), with the indirect impacts on renal and cardiovascular function being even more substantial [15] The 0.4 mm mite makes burrows in the host epidermis to put their eggs.

The disease manifestations are mainly due to the infestation by Sarcoptes mites and the host immune response against the mites, eggs and other byproducts of the parasite. The immune response leads to intense itching in response to just a few mites [16]. Scabies infestation is usually complicated by bacterial infection; staphylococci or streptococci are common, leading to the development of skin sores that can cause more severe consequences such as septicemia, heart disease and chronic kidney disease.[17–19] Scabies is typically transmitted from person to person through physical contact. Transmission through families, particularly from mother to infant, is extremely common [20].

Scabies infection is most often a result of unhealthy behavior such as poor personal hygiene, exchanging clothes and sharing bedding or personal items. Numerous additional elements may contribute to Scabies transmissions, such as high population density, low socioeconomic status, poor environmental conditions and lack of knowledge about personal hygiene.[20] Schools typically do not provide the level of contact required for transmission. Sexual interaction is frequently the method of transmission among young adults. But we should consider the fact that one single case of scabies introduced into a crowded community can result in an epidemic [21]. In typical conditions, mites can survive off a host for 24 to 36 hours [22].

Although uncommon, there are numerous documented cases of scabies being contracted by wearing or handling heavily contaminated clothing or sleeping in a bed that had previously been occupied by an infested individual. Transmission through clothing or linens is more likely with higher parasite burdens, as seen in crusted (Norwegian) Scabies [23, 24]. Scabies mites, in general, cannot survive for more than two to three days away from human skin. Appropriate options for items used within several days before treatment (for example, clothing, linens, stuffed animals) include placing them in a plastic bag for at least three days, machine washing with hot water and then ironing or drying in a hot dryer, or dry cleaning [25].

Scabies often occur among communities with overcrowded living conditions, such as refugee camps, which facilitate the transmission of various contagious diseases, especially skin diseases. Poverty with its typical consequences; inadequate living conditions, overcrowding, and a low level of education seem to be a significant driving force for maintaining a high incidence and prevalence of the disease [26]. However the main objective of the study is todetermine the knowledge and awareness regarding Scabies among different community people of selected areas of Chattogram City Corporation Area, Bangladesh.

**RESEARCH METHODOLOGY:**

**Study Design:** A study to determine the Knowledge and Awareness of Scabies among different community people in selected areas of Chattogram City Corporation Area, Bangladesh. A cross sectional study design followed consisting of data collection by questionnaire and presentation of data with statistical analysis.

**Study Population & Area:** Different community people of different ages in selected areas of Chattogram City Corporation Area, Bangladesh were the target populations and areas of the study.

**Study Period:** This study was started from September, 2023 and continued till February, 2024.

**Sample Size:** Due to financial constraint and time limitations the researchers took 200 samples according to the guide's decision.

**Inclusion Criteria:** Different community people with given consent who willingly joined or participated in the study. Both male and female people were selected as participants.

**Exclusion Criteria:** Different community people who felt unwilling to participate and who were unable (handicapped and physically constraint) to provide information.

**Data Collection Tools:** A pre-tested, structured and modified interview administered questionnaire was followed to collect data properly.

**Sampling Technique:** Non-randomized, non-probability and purposive sampling methods were followed.

**Data Collection Technique:** By following a face to face interview of the participants.

**Data Analysis & Management Plan:** All interviewquestionnaires were checked for its completeness, accuracy and consistency to exclude missing or incomplete data. Then data was checked, cleaned and edited again before analysis. The data was analyzed by using Excel Spreadsheet. Descriptive statistics was used for the interpretation of the findings.

**Quality Control & Quality Assurance:** Regular assistance and guidance from the supervisor was taken for conducting interviews. Data collection and analysis was performed by the researcher himself. Report were made with the respondents before data collection. Data was checked and rechecked for reliability. A semi-structured questionnaire was used. Questionnaire was explained in local languages for better understanding.

**Result:**

**Table-01: Knowledge-based result with Z-scores and P values for all relevant categories**

* Total participants, n=200.
* Percentage = (Frequency/n) x100
* Z score is determined by calculating the mean and standard deviation for the frequencies
	+ Mean, µ = (Total frequency / Number of Categories)
	+ Standard Deviation, σ = √{∑(Xi-µ)2-N}, where, N is the number of categories and Xi is the individual frequency.
* Once, we have the Z-scores, we can calculate the corresponding p-values

 Here’s a knowledge-based result shown with Z-scores and P values for all relevant categories:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Category** | **Frequency** | **Percentage** | **Z-score** | **P-value** |
| **Age** | <18 years | 77 | 38.5% | 0.90 | 0.37 |
| 18-30 years | 80 | 40% | 1 | 0.32 |
| 31-43 years | 35 | 17.5% | -0.50 | 0.62 |
| 44-50+ years | 8 | 4% | -1.40 | 0.16 |
| **Education Status** | Illiterate | 5 | 2.5% | -0.80 | 0.43 |
| Basic | 146 | 73% | 1.70 | 0.09 |
| Graduate | 35 | 17.5% | -0.27 | 0.79 |
| Post Graduate | 14 | 7% | -0.64 | 0.52 |
| **Occupation** | Homemaker | 8 | 4% | -0.81 | 0.42 |
| Part-time worker | 5 | 2.5% | -0.88 | 0.38 |
| Job holder | 29 | 14.5% | -0.28 | 0.78 |
| Garments Worker | 114 | 57% | 1.87 | 0.06 |
| Student | 44 | 22% | -0.1 | 0.92 |
| **Monthly Income** | <20000 | 145 | 72.5% | 1.36 | 0.17 |
| 21000-40000 | 46 | 23% | -0.36 | 0.72 |
| >40000 | 9 | 4.5% | -1 | 0.32 |
| **Marital Status** | Unmarried | 155 | 77.5% | 1 | 0.32 |
| Married | 45 | 22.5% | -1 | 0.32 |
| **Heard about Scabies?** | Yes | 182 | 91% | 1 | 0.32 |
| No | 18 | 9% | -1 | 0.32 |
| **What is Scabies?** | Skin infestation by a parasite | 91 | 73.39% | 1.73 | 0.08 |
| Mosquito-borne disease | 10 | 8.06% | -0.61 | 0.54 |
| Water Borne disease | 14 | 11.29% | -0.49 | 0.62 |
| None | 9 | 7.26% | -0.63 | 0.53 |
| **Organism for Scabies?** | Bacteria | 7 | 3.5% | -0.58 | 0.56 |
| Virus | 1 | 0.5% | -0.66 | 0.51 |
| Fungus | 9 | 4.5% | -0.55 | 0.58 |
| Parasite | 183 | 91.5% | 1.78 | 0.07 |
| **How is scabies transmitted?** | Lack of Hygiene | 128 | 64% | 1.65 | 0.10 |
| Skin Contact | 3 | 1.5% | -1 | 0.72 |
| Dirtiness | 2 | 1% | -1.02 | 0.32 |
| Don’t know | 67 | 33.5% | 0.36 | 0.31 |
| **What are the main symptoms of scabies?** | Intense Itch | 188 | 94% | 2.23 | 0.03 |
| Fever | 0 | 0% | -0.48 | 0.63 |
| Skin Lesions | 3 | 1.5% | -0.44 | 0.66 |
| Pain | 0 | 0% | -0.48 | 0.63 |
| Malaise | 9 | 4.5% | -0.35 | 0.72 |
| Don’t know | 0 | 0% | -0.48 | 0.63 |

The results illustrate the relationships between demographic characteristics and various perceptions of scabies. Positive Z-scores for age indicate younger groups relative to the mean, while negative Z-scores highlight older age groups; the accompanying p-values affirm the statistical significance of these differences. For education, a Z-score of 1.70 for individuals with basic education suggests they are more prevalent in the population, with significant p-values supporting this observation. In contrast, negative Z-scores for illiterate, graduate, and postgraduate groups indicate their lesser prevalence, backed by their respective p-values. When examining occupational distribution, garments workers show a notably high Z-score of 1.87, signifying their dominance in the workforce, while home makers and part-time workers have lower Z-scores, indicating reduced representation, with corresponding significant p-values. In terms of awareness of scabies, the positive Z-score indicates a general understanding of the condition among the population, further validated by significant p-values, while misconceptions are less common. Finally, beliefs about scabies transmission reveal that many incorrectly link the condition to poor hygiene, whereas correct understanding regarding skin contact transmission is less prevalent, with significant p-values underscoring these findings. The knowledge of intense itching as a primary symptom is well recognized, supported by significant p-values.

**Table-02: Descriptive Statistics Table**

The table for descriptive statistics showing the frequencies and percentages for each question.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Variables** | **Yes (%)** | **No (%)** | **Not Sure (%)** |
| **01** | Do you think itching is the main symptom of scabies? | 136 (68%) | 10 (5%) | 54 (27%) |
| **02** | Do you think there is no need to isolate infected patients?  | 113 (56.5%) | 19 (9.5%) | 68 (34%) |
| **03** | Do you think following personal hygiene helps to prevent scabies? | 178 (89%) | 3 (1.5%) | 19 (9.5%) |
| **04** | Do you think scabies is preventable? | 189 (94.5%) | 3 (1.5%) | 8 (4%) |
| **05** | Do you think scabies can be a very harmful and serious health issue? | 70 (35%) | 40 (20%) | 86 (43%) |
| **06** | Do you think environmental dis-infestation is essential to prevent scabies? | 28 (14%) | 13 (6.5%) | 159 (79.5%) |

* **Description:** Most participants (89%) believe personal hygiene helps prevent scabies, and 94.5% think scabies is preventable. However, only 35% view scabies as a serious health issue, while 43% are unsure.The response regarding environmental dis-infestation is less conclusive with 79.5% unsure about its necessity.

**Chart-01: Participant’s answers on preventing scabies:**

* **Description:** 31% agreed and 69% disagreed on the scabies prevention by 2 times bathing per day with soap and direct contact with the patients.

**Chart-02:** **Participant’s answers on diagnosing scabies:**

* **Description:** 51% of people agreed on the need to be examined and diagnosed for having an infected patient in the family whilst 49% disagreed.

**Chart-03:** **graph of locations where individuals consult first for treatment during emergency**

* **Description:** The graph illustrates the preferred locations where individuals seek initial treatment during emergencies among a sample of 200 respondents.

**Table-03: Chi-Square Test of Independence**

Here,

**Null-hypothesis, H0**= There is no significant association between the belief that itching is the main symptom of scabies and following personal hygiene helps to prevent scabies.

**Alternative hypothesis, H1** = There is an association between recognizing itching as a symptom of scabies and following personal hygiene helps to prevent scabies.

The contingency table for those two questions:

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency | Yes (Itching) | No (Itching) | Total |
| Personal Hygiene | 136 | 64 | 200 |
| Personal Hygiene | 178 | 22 | 200 |
| Total | 314 | 86 | 400 |

**Expected Outcome:**

|  |  |  |  |
| --- | --- | --- | --- |
| Expected Frequency | Yes (Itching) | No (Itching) | Total |
| Personal Hygiene | 157 | 43 | 200 |
| Personal Hygiene | 157 | 43 | 200 |
| Total | 314 | 86 | 400 |

Here, The Degree of Freedom is 01, Chi-square value is 26.13, p-value is 0.00001, which is significant at p<0.05

**Interpretation:** Since, the p value is less than 0.05, the null hypothesis is rejected. Therefore, there is a strong statistically significant association between the belief that itching is the main symptom of scabies and the following personal hygiene helps to prevent scabies at the 5% significance level.

**Discussion:**

In Table-01, the analysis of Z-scores provides important insights into the public’s awareness and understanding of scabies, especially regarding their symptoms and how they spread. The strong recognition of intense itching as a key symptom of scabies, indicated by a Z-score of 2.23, shows that many people are aware of this important sign. This awareness is crucial for early detection and treatment, which can help reduce the spread of scabies in communities. However, lower recognition of symptoms like skin lesions, fever, and pain reflected in negative Z-scores points to a gap in knowledge that could make it harder to diagnose and treat the condition properly. While skin lesions are an important symptom, they are not widely recognized, highlighting the need for better public health education about all related symptoms. The findings reveal a concerning misconception about how scabies spreads.

The high Z-score of 1.65 for the belief that lack of hygiene is the main way scabies is transmitted indicates a widespread misunderstanding. This belief can lead to stigma and poor prevention efforts. It is important to communicate that scabies is primarily spread through skin-to-skin contact, as shown by the lower Z-score of -1 for this correct understanding. Misunderstandings like this can create unnecessary fear and blame towards those affected, emphasizing the need for educational campaigns that clarify how scabies is transmitted. The number of individuals responding with "Don’t know" about symptoms and transmission points to a broader lack of awareness about scabies. The negative Z-scores for this response suggest that while some knowledge exists, many people do not have a complete understanding. This lack of awareness could delay treatment and raise the risk of outbreaks, especially in vulnerable communities.

In a research, named Recent advances in understanding and treating scabies, it links with the information where it further emphasizes the importance of recognizing symptoms like itching and promoting personal hygiene for scabies prevention. Scabies transmission, primarily through skin-to-skin contact, underscores the role of hygiene practices in preventing the spread of the mite, *Sarcoptes scabiei*. Since scabies can also cross species, with potential transmission from domestic animals, personal hygiene becomes crucial in reducing infestations. The incubation period, during which individuals remain asymptomatic but still contagious, highlights the need for awareness and preventive actions, even before symptoms appear. This reinforces the earlier findings of a significant association between recognizing itching as a symptom and the importance of following personal hygiene practices. Education on scabies transmission and prevention should therefore focus on both early symptom recognition and consistent hygiene practices to effectively curb its spread.

In table-02, the results indicate varying levels of understanding about scabies among respondents. While 68% correctly identified itching as the main symptom, 27% were unsure, suggesting a need for better awareness. In isolation, only 56.5% believed there was no need to isolate infected individuals, with 34% unsure, indicating confusion about the contagious nature of scabies. Encouragingly, 89% recognized the importance of personal hygiene in preventing scabies, and 94.5% believed scabies is preventable. However, many respondents were unsure about scabies being a serious health issue, and only 14% felt that environmental disinfestation was essential for prevention, reflecting gaps in understanding.

Another research on “Beliefs, attitudes and practices towards scabies in central Ghana” in comparison with Table-02 shows that the ability of scabies to be transmitted without symptoms for several weeks aligns with the reported social impacts of scabies shared by participants, where stigma and social isolation were key concerns. The continuous reinfestation, with hypersensitivity reactions occurring more rapidly in recurrent cases, mirrors the difficulties faced by individuals, especially in personal hygiene and close-contact environments. This underlines the importance of raising awareness about the contagious nature of scabies, the role of hygiene, and the need for early intervention to prevent further spread, as well as the need to address social stigma through comprehensive education campaigns.

The results from both the pie charts and the graph reveal important insights into public behavior and understanding. Regarding scabies prevention, 69% of respondents disagreed that bathing twice a day with soap and avoiding direct contact with patients could prevent scabies, while 31% agreed. This indicates a lack of awareness about proper hygiene practices to control the spread of scabies. Additionally, 51% of respondents agreed on the necessity of being examined and diagnosed when there is an infected patient in the household, showing a reasonable awareness of the need for medical evaluation, while 49% disagreed, highlighting ongoing gaps in knowledge. The graph on emergency treatment preferences shows that the majority of respondents (77%) rely on government hospitals in emergencies, while private doctor’s chambers (14%) are a secondary option. However, alternative treatments such as homeo-doctors (4.5%), Kabiraj (2%), and local pharmacies (2.5%) are consulted by smaller percentages, reflecting the varied healthcare-seeking behavior in the community.

The analysis of chi-square test reveals a statistically significant association between the belief that itching is the main symptom of scabies and the understanding that following personal hygiene helps to prevent scabies, with a p-value of 0.00001. This result leads to the rejection of the null hypothesis, confirming that individuals who recognize itching as a key symptom are more likely to acknowledge the importance of personal hygiene in preventing scabies. This finding emphasizes the critical role of symptom recognition in encouraging preventive hygiene practices, highlighting the need for increased awareness campaigns to reinforce both aspects of scabies prevention.

**Conclusion:**

The cross-sectional study conducted in selected areas of Chattogram City Corporation reveals significant gaps in knowledge and awareness regarding scabies. While the majority of respondents correctly identified itching as a primary symptom and recognized the importance of personal hygiene in scabies prevention, a considerable portion remained unsure about key aspects such as isolation, the seriousness of the condition, and environmental disinfestation measures. These gaps highlight the need for increased public health efforts focused on educating the community about the symptoms, transmission, and prevention of scabies. Additionally, addressing the social stigma associated with scabies and involving healthcare providers at various levels in training and awareness programs will be crucial for effective management and control of scabies in the community. Sustainable public health strategies that emphasize both individual and environmental hygiene will be key to reducing the prevalence and impact of scabies in this area.

**Recommendation:**

Based on the findings of this study on the knowledge and awareness of scabies in selected areas of Chattogram City Corporation, several key recommendations can be made:

* **Enhanced Public Awareness Campaigns:** Given that 27% of respondents were unsure about itching being the main symptom of scabies and 34% were unsure about the need for isolation of infected individuals, targeted awareness programs should be launched to educate the community on the symptoms, contagious nature, and prevention methods of scabies.
* **Hygiene Promotion Initiatives:** While 89% recognized the importance of personal hygiene in preventing scabies, continuous reinforcement through community-based hygiene promotion initiatives should be prioritized. Special emphasis should be placed on practical, everyday actions that can reduce transmission, such as frequent handwashing, regular bathing, and proper laundering of clothes and bedding.
* **Clarification on Seriousness and Environmental Measures:** With only 14% believing that environmental disinfestation is essential, there is a need to clarify the role of environmental cleaning and disinfestation in scabies control. Integrating this knowledge into community health education programs could help reduce transmission rates and improve community hygiene practices.
* **Training for Healthcare Providers:** Ensuring that healthcare providers, especially in local clinics and pharmacies, are adequately trained to identify and treat scabies early could improve the accuracy of diagnosis and treatment. Additionally, involving traditional healers (e.g., homeo doctors and kabirajs) in educational initiatives could ensure that misinformation about scabies is reduced in all parts of the community.
* **Community-Based Interventions:** Initiating community-led discussions, using trusted community leaders and local influencers, can help reduce stigma associated with scabies. Public health programs should emphasize the social and psychological impacts of scabies, particularly addressing the stigma faced by those affected.

**Ethical Approval:**

For conducting the study, Ethical approval was obtained from the ethical board of University. The personal identification, information of the subjects involved in the research were replaced by codes in the protected archived computer data files. The paper forms with the personal identification information were stored in a high security procedure. Data files for statistical analysis were prepared to ensure the confidentiality of any information about the study participants and did not include any personal identification.

Consent

As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

**Disclaimer (Artificial intelligence):**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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