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Prevalence, Risk Factors, and Awareness of Scabies Among Patients Attending Dermatology Outpatient Department at a Tertiary Care Hospital in Swat, Pakistan

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Abstract

Background: Scabies is a neglected parasitic skin infestation caused by Sarcoptes scabiei var. hominis, and remains a public health challenge, especially in low-resource settings. Despite its high prevalence, the disease is underreported and awareness levels are poor, contributing to ongoing transmission.

Objective: To determine the prevalence, risk factors, and awareness of scabies among patients presenting to the dermatology outpatient department (OPD) at Saidu Group of Teaching Hospital, Swat, Pakistan.

Methodology: A hospital-based cross-sectional study was conducted on 300 patients clinically diagnosed with scabies. Inclusion criteria encompassed patients of all ages and genders presenting with pruritic skin lesions. Data on demographics, socioeconomic characteristics, hygiene practices, and awareness were collected using a structured and pretested questionnaire. Diagnosis was made by dermatologists using standard criteria, with dermoscopy and ink test applied in doubtful cases. Data were analyzed using SPSS version 27.0, applying descriptive and inferential statistics.

Results: The mean age of participants was 29.6 ± 20.5 years, with the highest prevalence observed in the 20–50 years age group (58.7%). Females (55.7%) were more affected than males (44.3%). Most participants resided in rural areas (72%) and belonged to lower socioeconomic classes (79%). Overcrowding (78%) and close contact with infected individuals (97%) were major risk factors. Daily washing of clothes and bedding was practiced by only 2% of participants. Awareness was extremely poor, with 97.7% reporting no prior knowledge of scabies, and misconceptions regarding transmission and prevention were common.

Conclusion: Scabies was highly prevalent in rural, low-income populations characterized by overcrowding, poor hygiene, and limited awareness. Strengthening health education, improving living conditions, and implementing community-level interventions are essential to reduce the burden and prevent reinfestation cycles.

Keywords: Awareness, Hygiene practices, Risk factors, Sarcoptes scabiei, Scabies.

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Introduction

Scabies is a highly contagious parasitic infestation caused by Sarcoptes scabiei var. hominis that affects millions of individuals globally, with a disproportionately high burden in resource-limited regions [1,2,3]. The disease is characterized by intense nocturnal pruritus, erythematous papules, and burrows, which, if left untreated, may progress to crusted scabies. Secondary bacterial infections, such as impetigo and cellulitis, are frequent complications and can result in serious sequelae, including post-streptococcal glomerulonephritis and rheumatic heart disease [4]. In addition to its physical morbidity, scabies carries psychosocial implications such as stigma, sleep disturbances, and reduced quality of life.

Transmission occurs predominantly via prolonged skin-to-skin contact, although indirect spread through shared clothing, bedding, and towels has also been documented [5]. The condition is particularly endemic in settings characterized by overcrowding, poverty, and limited access to healthcare, such as schools, refugee camps, and prisons. Recognizing its public health importance, the World Health Organization (WHO) officially classified scabies as a neglected tropical disease in 2017 [6].

Despite this recognition, scabies remains underreported, with limited epidemiological data available from many developing countries [7]. Public awareness is low, and misconceptions about its transmission and prevention are widespread. Contributing factors such as poverty, poor hygiene, and migration amplify disease transmission, while lack of integration into national health programs perpetuates neglect. Although treatment with topical permethrin or oral ivermectin is effective, reinfestation from untreated contacts, poor adherence, and limited drug availability restrict long-term control [8].

In Pakistan, few systematic studies have examined the epidemiology and community awareness of scabies, particularly in rural and semi-urban settings. Important questions remain regarding its demographic distribution, risk factors, and the role of hygiene and socioeconomic determinants. Addressing these gaps is essential for developing effective, evidence-based prevention and control strategies.

The present study was conducted to determine the prevalence, risk factors, and awareness of scabies among patients presenting to the dermatology OPD at Saidu Group of Teaching Hospital, Swat. By examining the clinical presentation, sociodemographic factors, and knowledge–attitude–practice (KAP) of affected individuals, this research aims to generate evidence that can guide integrated public health interventions for scabies control.exercise prescriptions while providing a clearer understanding of the physiological dynamics underlying physical exertion.

Methodology

Study Design

A hospital-based, cross-sectional study was conducted at the outpatient department (OPD) of the Tertiary Health Care Centre, Saidu Group of Teaching Hospital, Swat. This design was chosen because it allows the estimation of prevalence and assessment of risk factors at a single point in time, which is suitable for epidemiological studies of common community-acquired conditions such as scabies. Patients were recruited using a non-probability consecutive sampling technique, where every eligible patient presenting during the study period was included until the required sample size was achieved. This method was considered practical and efficient for hospital-based research where the target population is readily available [9].

Ethics

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Ethical Review Board of Saidu Medical College on January 24, 2025 (Diary No. 19-ERB/SMC/025). Informed consent was taken from all participants or their guardians (in the case of minors), ensuring confidentiality and anonymity throughout the study.

Setting

The study was carried out in the dermatology OPD of Saidu Group of Teaching Hospital, a tertiary care facility located in Swat, Pakistan. The hospital provides services to both rural and urban populations, thereby offering an appropriate setting to capture a wide sociodemographic range of patients affected by scabies.

Participants

A total of 300 patients presenting with complaints of pruritus and rashes suspected to be scabies were included. Inclusion criteria comprised patients of all ages and genders with clinical signs and symptoms consistent with scabies. Patients with concurrent dermatological conditions such as eczema or psoriasis and those already treated for scabies were excluded to avoid confounding.

Table 1: Questionnaire for Data Collection

Domain	Variables	Questions	Response Options
Demographics	Age	What is your age?	Open response (in years)
	Gender	What is your gender?	Male / Female / Other
	Marital status	What is your marital status?	Single / Married / Divorced / Widowed
	Education level	What is your highest education level?	None / Primary / Secondary / College / University
	Occupation	What is your current occupation?	Student / Employed / Unemployed / Housewife / Other
Socioeconomic Status	Residence	Do you live in a rural or urban area?	Rural / Urban
	Household income	What is your approximate monthly household income?	<20,000 PKR / 20,000–40,000 PKR / 40,000–60,000 PKR / >60,000 PKR
	Type of housing	What type of house do you live in?	Mud / Brick / Rented / Owned
Household Environment	Household size	How many people live in your household?	Numeric response
	Crowding index	How many people sleep in the same room?	Numeric response
	Bedding	Do you share bedding with others?	Yes / No
	Pets/animals	Do you keep domestic animals in your house?	Yes / No
Hygiene Practices	Bathing frequency	How often do you take a bath?	Daily / Every 2–3 days / Weekly / Less often
	Washing clothes	How often do you wash clothes?	Daily / Weekly / Monthly
	Washing bedding	How often do you wash bedding?	Daily / Weekly / Monthly
	Sharing personal items	Do you share towels/clothes with others?	Yes / No
Clinical History	Itching	Do you experience itching?	Yes / No
	Nocturnal itching	Is itching worse at night?	Yes / No
	Rash/lesions	Do you have a skin rash/lesions?	Yes / No
	Site of lesions	Where do the lesions appear?	Hands / Wrists / Between fingers / Elbows / Waist / Genitals / Other
	Family history	Do other family members have similar symptoms?	Yes / No
	Previous treatment	Have you ever been treated for scabies before?	Yes / No
Knowledge	Cause of scabies	What do you think causes scabies?	Parasite / Poor hygiene / Sharing clothes / Curse / Don't know
	Mode of transmission	How does scabies spread?	Skin-to-skin contact / Sharing towels/clothing / Bedding / Don't know
	Symptoms awareness	What symptoms do you think scabies causes?	Itching / Rash / Burrows / Don't know
Attitude	Seriousness	Do you consider scabies a serious disease?	Yes / No / Not sure
	Stigma	Would you feel embarrassed if diagnosed with scabies?	Yes / No
Practices	Home remedies	Have you tried any home remedies for scabies?	Yes (specify) / No

	Self-medication	Have you used any creams/medicines without a doctor's advice?	Yes / No
	Medical consultation	Did you consult a doctor for this problem?	Yes / No
Prevention Knowledge	Preventive measures	How can scabies be prevented?	Maintain hygiene / Avoid overcrowding / Treat all family members / Avoid sharing clothes / Don't know

Variables

The primary outcome variable was the presence of clinically diagnosed scabies. Independent variables included demographic characteristics (age, gender, marital status, education, occupation), socioeconomic factors (residence, income, housing), household and environmental conditions (household size, crowding index, bedding sharing, domestic animals), hygiene practices (frequency of bathing, washing of clothes and bedding, sharing of personal items), and knowledge–attitude–practice (KAP) variables regarding scabies.

Data Sources/Measurement

Diagnosis of scabies was made clinically by qualified dermatologists using standardized diagnostic criteria: (1) history of intense nocturnal pruritus, (2) presence of characteristic burrows, papules, or nodules in typical anatomical sites such as interdigital spaces, flexural areas, wrists, axillae, waist, and genitalia, and (3) close contact with affected family or community members [14,15]. In doubtful cases, dermoscopy and the "ink test" were performed to improve diagnostic accuracy [16]. Data regarding sociodemographic factors, hygiene practices, household conditions, and awareness were collected using a structured questionnaire developed after an extensive literature review of scabies epidemiology and KAP studies [1–6]. The tool was adapted to the local sociocultural context, validated by two dermatologists and one public health expert, and pretested on 20 patients. Trained interviewers administered the questionnaire in the local language to minimize misinterpretation and enhance response accuracy.

Bias

To minimize selection bias, consecutive sampling was used to ensure inclusion of all eligible patients during the study period. Diagnostic bias was reduced through dermatologist-led evaluations and supportive tests where necessary. Recall bias in reporting hygiene practices was addressed by cross-verifying responses during interviews, while social desirability bias was minimized by maintaining confidentiality and framing questions in neutral language.

Study Size

The sample size was calculated using the standard formula for cross-sectional studies:

$$n = \frac{Z^2 \times P \times (1 - P)}{d^2}$$

where Z corresponds to the standard normal distribution at 95% confidence level, P represents the estimated prevalence, and d denotes the margin of error. Assuming a prevalence of 25% from earlier studies [10–12], a margin of error of 5%, and 95% confidence interval, the required sample size was determined to be 300 [13].

Quantitative Variables

Age was recorded as a continuous variable and categorized into subgroups for analysis. Household size and crowding index were measured numerically, while categorical variables included gender, residence, socioeconomic status, hygiene practices, and awareness-related factors.

Statistical Methods

Data were entered and analyzed using SPSS version 27.0. Descriptive statistics such as means and standard deviations were computed for continuous variables, while categorical variables were expressed as frequencies and percentages. Prevalence rates were presented with 95% confidence intervals. Bivariate analysis was used to assess associations between scabies prevalence and independent variables. Results were displayed in tabular and graphical formats for clarity.

Results

Participants

A total of 300 patients clinically diagnosed with scabies were included in the study. The age of participants ranged from 1 to 89 years, with a mean age of 29.6 ± 20.5 years. The majority of participants were young to middle-aged adults, reflecting the active working population most likely to seek medical care. Of the total, 133 (44.3%) were male and 167 (55.7%) were female, indicating a slightly higher representation of women. In terms of marital status, 156 (52%) were unmarried, while 144 (48%) were married,

suggesting that both groups were equally susceptible to scabies infestation.

Descriptive Data

Socio-demographic analysis revealed that a majority of the patients, 216 (72%), resided in rural areas, while 84 (28%) lived in urban settings. Socioeconomic distribution showed a predominance of scabies among individuals from lower socioeconomic backgrounds (79%), followed by middle-class participants (19%), and only a small proportion (2%) belonged to higher socioeconomic groups. Regarding educational attainment, 38.3% of participants had no formal education, while only 8.3% had completed university-level studies. Among female participants, nearly one-third (29.3%) were housewives, highlighting the vulnerability of this subgroup due to close household contact.

Outcome Data

The primary clinical symptom was pruritus, reported by 252 individuals (84%), while 48 patients (16%) presented mainly with rash or skin lesions. The age-wise distribution showed that the 20–50 years age group had the highest prevalence (58.7%; n = 176), followed by the 5–20 years group (17%; n = 51). Very low prevalence was seen among infants (0.6%; n = 2). Household characteristics further revealed that 78% of patients lived in congested environments with three or more people per room, and 97% reported direct contact with another infected person, underscoring the role of overcrowding and interpersonal exposure in disease transmission.

Main Results

The findings indicate that scabies disproportionately affected individuals from rural and low-income backgrounds with poor hygiene practices. Only 2% of participants reported daily washing of clothes and bedding, while the majority (56.7%) washed weekly and 25% washed clothes monthly, creating conditions favorable for reinfestation. Awareness levels were strikingly low, with 97.7% of participants lacking prior knowledge of scabies. Although more than half (56.3%) identified direct skin-to-skin contact as the main mode of transmission, misconceptions persisted, with 28.7% attributing it to sharing of towels or clothing and 15% uncertain about its spread. Preventive beliefs were also inadequate, as most respondents (73.7%) emphasized personal hygiene alone, while fewer recognized the importance of treating all family members (22%) or avoiding overcrowding (4.3%). Collectively, these results highlight that scabies in this population is driven by a combination of demographic vulnerabilities, poor living conditions, and lack of awareness, emphasizing the need for community-wide interventions, hygiene education, and improved healthcare outreach.

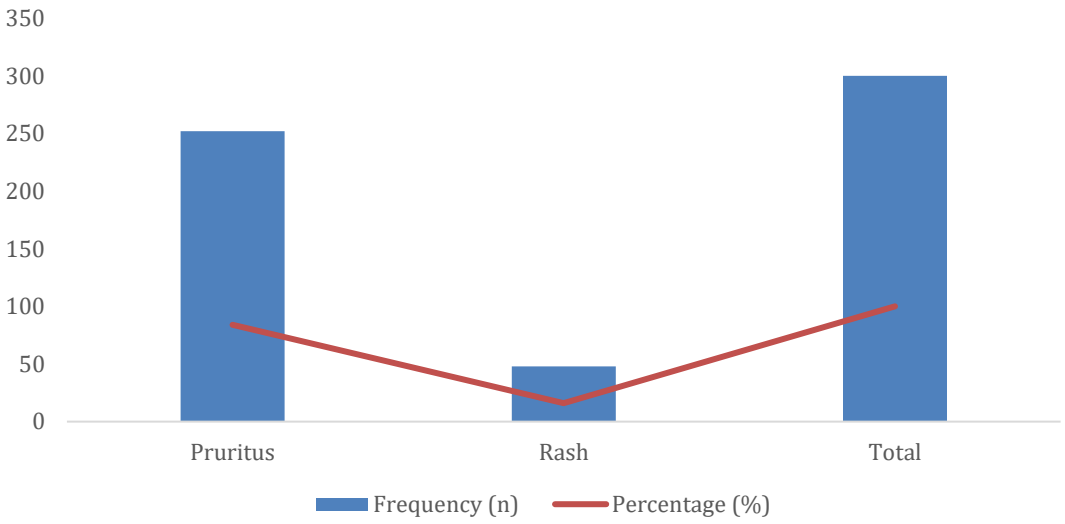


Figure 1: Clinical Presentation of Scabies Patients

Table 2: Age of the participants

Age Group (years)	Frequency (n)	Percentage (%)
0 – 1	2	0.6
1 – 5	25	8.3
5 – 20	51	17.0
20 – 50	176	58.7
>50	46	15.4
Total	300	100

Table 3: Hygiene Practices, Household Characteristics, and Awareness of Participants

Domain	Variable	Response Category	Frequency (n)	Percentage (%)
Hygiene Practices	Frequency of washing clothes	Daily	6	2
		Weekly	170	56.7
		Monthly	75	25
	Frequency of washing bedding	Daily	6	2
		Weekly	161	53.7
		Monthly	81	27
Household Factors	Household crowding (≥3 per room)	Yes	234	78
		No	66	22
	Contact with infected person	Yes	291	97
		No	9	3
Awareness	Prior knowledge of scabies	Yes	7	2.3
		No	293	97.7
	Knowledge of transmission	Skin-to-skin contact	169	56.3
		Sharing towels/clothes	86	28.7
		Don't know	45	15
Prevention Beliefs	Best preventive strategy	Maintain personal hygiene	221	73.7
		Treating all family members	66	22
		Avoid overcrowding	13	4.3

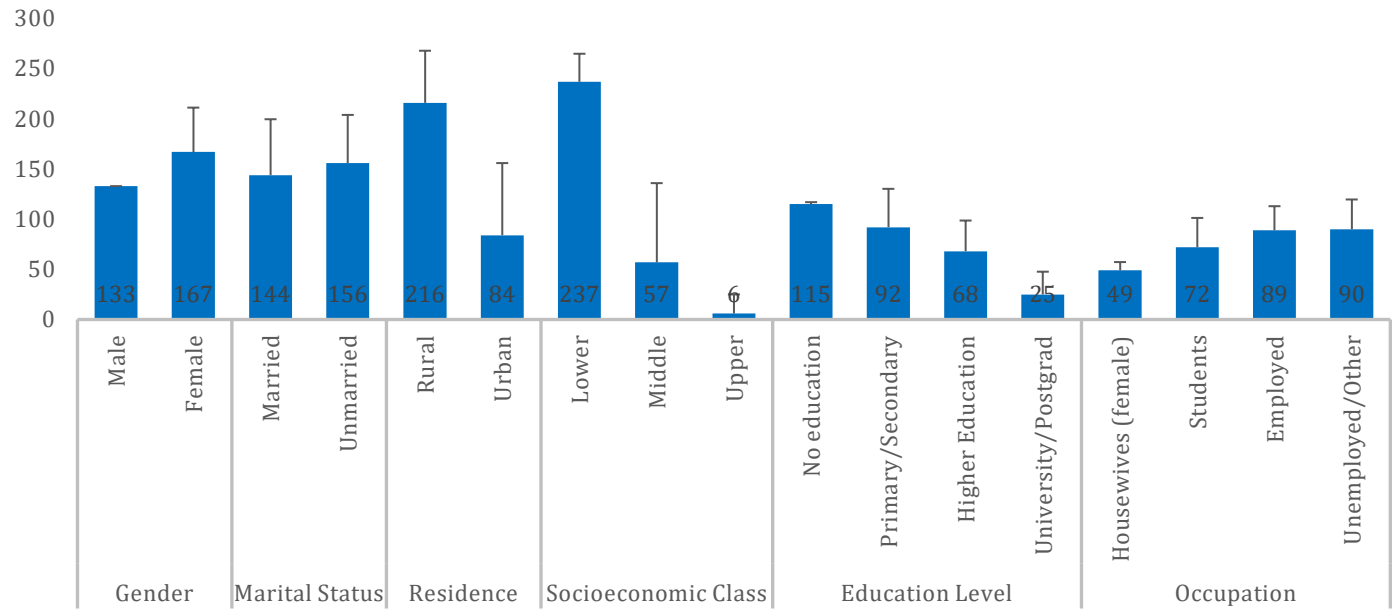


Figure 2: Socio-demographic Characteristics of Participants

Discussion

This study provides important insights into the demographic distribution, risk factors, and awareness levels of scabies among patients presenting to a dermatology outpatient department in Swat, Pakistan. The findings reinforce that pruritus remains the cardinal symptom of scabies, reported by 84% of patients in this cohort. This is consistent with previous literature describing nocturnal itching as the hallmark feature of Sarcoptes scabiei infestation, resulting from a delayed hypersensitivity response to mite antigens [17]. Skin rash was less frequently reported (16%), highlighting that itching is the main clinical feature prompting patients to seek medical care, in line with prior studies where scratching and pruritus were dominant presentations [18].

The age distribution showed that the disease predominantly affected the 20–50 years group (58.7%), which corresponds to the working and socially active population. Similar findings have been reported in the Global Burden of Disease Study, which highlighted peak prevalence among adolescents and young adults [19]. In Germany, a reemergence of scabies was noted among individuals aged 15–24 years, suggesting increased transmission in socially active groups [20]. In Ethiopia, however, a higher prevalence was observed in school-aged children [21]. These variations reflect differences in exposure risks, social interactions, and healthcare-seeking behaviors across regions.

A slightly higher prevalence was observed among females (55.7%) compared to males (44.3%). This finding may be linked to increased exposure within households, as women, particularly housewives, have more frequent contact with infected family members and shared household items. Similar gender differences have been reported in other epidemiological studies [22,23]. However, some reports indicate higher prevalence in males due to occupational exposure [24,25], suggesting that gender-based risks may vary by cultural and occupational contexts.

Socioeconomic and residential factors were strongly associated with scabies prevalence. Most cases were reported from rural areas (72%) and low-income households (79%). Previous studies have also demonstrated that scabies disproportionately affects marginalized communities, where overcrowding, poor housing conditions, and limited hygiene facilities create an environment conducive to infestation [26–28]. These findings highlight the role of poverty and inequities in perpetuating scabies transmission.

Hygiene practices emerged as critical determinants in this study. Although over half of participants reported weekly washing of clothes and bedding, only 2% did so daily. Poor hygiene practices are well-documented contributors to prolonged infestation cycles and reinfestation [27]. Additionally, 97% of patients reported direct contact with an infected individual, while 78% lived in congested

environments, confirming the role of close contact and overcrowding as the principal transmission routes.

Alarmingly, awareness of scabies was extremely low, with 97.7% of respondents reporting no prior knowledge. Although most participants (73.7%) recognized personal hygiene as a preventive strategy, very few identified treating family members or avoiding overcrowding as necessary measures. Similar gaps in awareness have been reported in studies from Afghanistan, Ethiopia, and Pakistan [21–25,29]. These results emphasize the urgent need for culturally tailored awareness campaigns to dispel misconceptions and promote early diagnosis and preventive practices.

Overall, this study reaffirms that scabies remains an underrecognized public health problem, strongly linked to socioeconomic disadvantage, overcrowding, and lack of awareness. Without comprehensive interventions—including education, improved hygiene infrastructure, and community-based control strategies—scabies is likely to persist as a neglected health issue in low-resource settings.

Limitations

This study has several limitations. First, being hospital-based, the findings may not fully represent the general population, particularly individuals who do not seek hospital care. Second, the use of self-reported data for hygiene practices and knowledge introduces the possibility of recall and social desirability biases. Third, the cross-sectional design restricts the ability to establish causal relationships between risk factors and scabies prevalence. Finally, the study did not include laboratory confirmation of cases, although clinical diagnosis by dermatologists, supplemented with dermoscopy and ink tests, minimized misclassification. Future community-based, longitudinal studies with larger and more diverse samples are recommended to validate and expand upon these findings.

Conclusion

Scabies continues to pose a significant public health burden, particularly among low-income, rural populations with limited hygiene and low awareness. This study demonstrated that overcrowding, poor hygiene practices, and lack of knowledge are major contributors to its spread. Females, rural residents, and individuals from lower socioeconomic strata were disproportionately affected. The extremely low awareness levels underscore the urgent need for health education campaigns and community-based interventions. Integrating scabies prevention into public health programs, ensuring timely treatment for all household contacts, and strengthening surveillance mechanisms are crucial for reducing the disease burden. Addressing these gaps will help in breaking reinfestation cycles and achieving sustainable scabies control in Pakistan and other resource-limited settings.

Authors' Contributions:

All authors meet the ICMJE criteria for authorship. They have reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Author 1: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 2: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 3: Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 4: Analysis and interpretation of data, critical revision, final approval, agreed to be accountable for all the work.
Author 5: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 6&7: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.

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