

Prevalence of Scabies and Associated Factors in the Rural Area of Maraka, Punjab, Pakistan

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ABSTRACT

Background: Scabies has a high global burden affecting more than 200 million people worldwide. Scabies has been a major burden on dermatological presentations in Pakistan. This study aimed to determine the prevalence of scabies and identify associated factors among residents of a rural area of Maraka, Punjab, Pakistan.

Methods: A cross-sectional study was conducted in Maraka village, Punjab, with a sample of 250 participants from May to September 2023. The data were collected using systematic random sampling. A structured questionnaire was formulated to collect data.

Results: A high rate of prevalence of scabies was found, as 50.4% of the sample population had signs of clinical scabies. Risk factors for contracting scabies included unemployment status (43.7%, p-value = 0.006), family income of less than 30,000 PKR (74.7%, p-value = 0.050), joint family system (53.4%, p-value = 0.005), and living in close quarters (64.1%, p-value = 0.001). Significant association of developing clinical scabies was observed with positive travel history to endemic areas (39.8%, p-value = 0.001), history of scabies in partners (54.4%, p-value = 0.001), frequent skin-to-skin contact (58.3%, p-value = 0.001), and history of itching in sexual partners (24.3%, p-value = 0.001). The most common presentation was nighttime itching (41.2%, p-value = 0.001). The most common affected area was the armpits (26.2%), followed by the finger webs (25.2%; p-value = 0.001). A family history of scabies was strongly associated with clinical scabies (54.4%, p-value = 0.001).

Conclusion: Scabies was reported to be high in the participants in Maraka. Lower socio-economic groups and those living in proximity are more likely to contract scabies. Family history and particularly scabies in partners pose a major risk factor for developing scabies.

Keywords: Scabies; Prevalence; Risk Factors; Rural Population; Socioeconomic Status; Pakistan.

INTRODUCTION

Scabies is a contagious infestation transmitted by skin-to-skin contact and by contact with contaminated materials caused by *Sarcoptes scabiei* var. *hominis*.^{1,2} The global burden of scabies is significant, affecting 200 million people with an estimated prevalence ranging from 0.2 to 71%. The prevalence of scabies in developed regions such as the Americas and the Pacific is 17.76%.³ Ethiopia and Cameroon reported greater Scabies prevalence rates at 33.3% and 17.8%, respectively.⁴ Scabies is the most

common skin infection in Pakistan, contributing to 50% of dermatological infections in children.⁵ In a study conducted in 2020 in a rural area of Abdul Hakim, Pakistan, the prevalence was found to be 10.3%.⁶

Males and females of every socioeconomic background and race are impacted. Sexual promiscuity, overcrowded living conditions, poor hygiene, and poverty are recognized as significant risk factors for scabies.⁷ In addition, the population most commonly affected includes individuals with disabilities, immunocompromised and malnourished people, and patients taking systemic or potent topical glucocorticoids.⁸ Scabies is also commonly detected in individuals living in institutional facilities.⁹

In Pakistan, scabies is recognized as a prevalent skin infection, particularly in rural areas due to poor health education, poor hygienic conditions, and overcrowding.¹⁰ Skin problems are given little attention due to low mortality and the stigma associated with these diseases. Research in rural areas is limited, and many cases go unreported. A study conducted in Ethiopia found a prevalence rate of 21.5% among children under 15 years of age.¹¹ Similarly, A study in India reported an incidence of 13 to 59% in rural and urban areas.¹²

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It is important to recognize the factors that influence scabies prevalence to inform interventions to prevent and control infestation among people. This study aimed to determine the risk factors associated with scabies infestation among people in the rural area of Maraka, on the outskirts of Lahore.

SUBJECTS AND METHODS

This community-based cross-sectional study was conducted at Maraka Village, Lahore (a developing peri-urban area). It also provides a suitable rural population for community outreach activities (74.15° W, 31.37° N). This study was carried out from May 2023 to September 2023. The study was reviewed and approved by the Institutional Review Board of Akhtar Saeed Medical College, Lahore (Reference No.M-23/118/CM). Consent was obtained from all participants before data collection. Formal assent was obtained from minors, and written informed consent was obtained from parents or legal guardians.

The participants were selected using systematic random sampling, targeting every third household, for a total of 250 participants. The sample size was calculated in OpenEpi at a 95% confidence level with an acceptable margin of error. Individuals aged 12 and older were recruited for their ability to understand and reliably respond to questions. Participants belonged to all socioeconomic classes, and those willing to participate were included in this study. People unwilling to participate in the study, or those absent at the time of the study, or those below 12 years of age were excluded from the study.

The study variables included socio-demographic characteristics (age, gender, marital status, education, occupation, monthly family income, type of family, household size, and number of children and adults in the house), environmental factors (number of rooms and overcrowding), personal hygiene practices (frequency of bathing, hand washing, changing clothes, washing and ironing clothes, and bedding habits), exposure history (close contact with persons having itching, travel history, skin-to-skin contact, and history of itching in sexual partner), medical history and treatment-related factors, knowledge regarding preventive measures, health-seeking behavior, and the presence of skin problems including itching as the main outcome variable.

Data collection used a self-developed, structured questionnaire based on an extensive review of similar literature and published studies. The collected data were entered, coded, and analyzed using SPSS (Statistical Package for the Social Sciences) version 2023. The chi-square tests of significance were applied, and p -values ≤ 0.05 were considered statistically significant.

RESULTS

Of the 250 participants in this study, 50.4% were affected by scabies. The majority (106 [42.4%]) of individuals were aged 12-24 years. The total number of females was 142 (56.8%) in this study. Among the participants, 159 (63.6%) individuals were married. Of 250, 90 (36%) were illiterate, followed by 87 (34.8%) who had received primary education. Almost half of the participants (43.6%) were unemployed. The majority of the participants, 89 (35.6%), had a monthly income of PKR 20,000-30,000 (USD exchange rate PKR 307). The frequency of participants living in a nuclear family was 143 (57.2%). A total of 131 (52.4%) participants had 4-6 persons in their household.

Of 250 participants, 126 (50.4%) had skin manifestations of scabies, including itching, boils, blisters, and pustules. Of the 126 with skin problems, 91 (72.2%) had daytime itching as the main symptom. More than half of the participants (58.8%) denied itching at night. Of 91 participants who experienced itching during the day, 26 (28.6%) reported it on the armpit, followed by 22 (24.2%) between the fingers and thighs. Of 103 participants with nighttime itching, 67 (65%) had taken treatment for it. Of the 67 participants who had taken treatment, 54 (80.6%) received treatment from the doctor. The treatment duration was in weeks for 44.7% of participants, followed by months for 21 (31.3%) individuals. 158 (63.2%) did not report any family member having complaints of itching. Of 92 participants with family members who reported itching, 44 (47.8%) had only 1 family member affected. Of 103 participants with itching, 24 (23.3%) wore clothes after ironing, and 22 (21.4%) changed clothes regularly.

Bivariate analysis was performed to identify risk factors associated with the outcome. It was observed that there was no age difference in scabies prevalence across groups. Although the maximum frequency was observed in the 12-24-year age group (37.9%), no statistically significant differences were found among age groups. Females showed a greater number of participants (51.5%) with clinical scabies, but statistically, there was no gender difference observed (Table 1).

Risk factors of contracting scabies included being unemployed (p -value = 0.006), family income of less than PKR 30,000 (p -value = 0.050), joint family system (p -value = 0.005), and living in close quarters (p -value = 0.001). For measures adopted for prevention and control, it was observed that, even with scabies, people were not ironing their clothes (p -value = 0.021), not changing bed linen frequently (p -value = 0.039), and not bathing daily (p -value = 0.031).

Significant associations with the development of clinical scabies were observed for a positive travel history to endemic areas (p -value = 0.001), a history of scabies in

Table 1: Bivariate analysis for associated risk factors and adopted behaviours for prevention and control

Variables	Clinical scabies n (%)	No scabies n (%)	p-value
Age distribution (years)			
12-24	39 (37.9%)	67 (45.6%)	0.585
25-34	35 (34.0%)	40 (27.2%)	
35-44	18 (17.5%)	23 (15.6%)	
>45	11 (10.5%)	17 (11.6%)	
Gender			
Male	50 (48.5%)	58 (39.5%)	0.153
Female	53 (51.5%)	89 (60.5%)	
Occupational status			
Farmer	1 (1%)	2 (1.4%)	0.006
Laborer	17 (16.5%)	13 (8.8%)	
Shopkeeper	17 (16.5%)	14 (9.5%)	
Government employee	1 (1.0%)	2 (1.4%)	
Private employee	7 (6.8%)	4 (2.7%)	
Self-employed	6 (5.8%)	6 (4.1%)	
Unemployed	45 (43.7%)	64 (43.5%)	
Others*	9 (8.7%)	42 (28.6%)	
Monthly family income (PKR)			
Less than 30000	77 (74.7%)	87 (59.2%)	0.050
More than 30000	22 (21.4%)	56 (38.1%)	
Type of family			
Nuclear	48 (46.6%)	95 (64.6%)	0.005
Joint	55 (53.4%)	52 (35.4%)	
People living in close quarters			
	66 (64.1%)	58 (39.5%)	<0.001
Ironing clothes before wearing			
	67 (65.0%)	115 (78.2%)	0.021
Changing bedding frequently			
	63 (61.2%)	108 (73.5%)	0.039
Bathing practices			
Daily	68 (66%)	114 (77.6%)	0.031
Alternate day	25 (24.3%)	20 (13.6%)	
Twice/thrice a week/less than once a week	10 (9.7%)	13 (8.9%)	
Wash your hands frequently?			
	84 (81.6%)	135 (91.8%)	0.015
Traveled to an area where scabies is common?			
	41 (39.8%)	26 (17.7%)	0.001
Partner suffering from scabies?			
	68 (66%)	46 (31.3%)	0.001
Frequent skin-to-skin contact			
	60 (58.3%)	43 (29.3%)	0.001
History of itching in the sexual partner			
	25 (24.3%)	12 (8.2%)	0.001
Clinical presentation of scabies			
Blisters	13 (12.6%)	1 (0.7%)	0.001
Boils	5 (4.9%)	1 (0.7%)	
Itching	70 (68%)	21 (14.3%)	
Pustules	13 (12.6%)	2 (1.4%)	
Body part experiencing maximum itching			
Armpit	27 (26.2%)	6 (4.1%)	0.001
Back	13 (12.6%)	4 (2.7%)	
Between fingers and thighs	26 (25.2%)	3 (2.0%)	
Breast /chest	5 (4.9%)	1 (0.7%)	
Face	10 (9.7%)	3 (2.0%)	
Trunk	11 (10.7%)	2 (1.4%)	
Any other area	9 (8.7%)	6 (4.1%)	
Family member with scabies			
	56 (54.4%)	36 (24.5%)	0.001
No. of family members affected			
1	19 (18.4%)	25 (17.0%)	0.001
2	13 (12.6%)	8 (5.4%)	
3	21 (20.4%)	2 (1.4%)	
More	3 (2.9%)	1 (0.7%)	

* Others= housewife, student, retired person

partners (p-value = 0.001), frequent skin-to-skin contact (p-value = 0.001), and a history of itching in sexual partners (p-value = 0.001). The most common presentation was nighttime itching (p-value = 0.001). The most common area affected was the armpits (26.2%), followed by the finger webs (25.2%), with a p-value of 0.001. Family history of scabies was strongly associated with the development of clinical scabies (p-value = 0.001). A history of scabies in three or more family members was also associated with clinical scabies (p-value = 0.001) (Table 1).

Only 67 participants with scabies (65%) received treatment. Of those receiving treatment, 54 (80.6%) consulted doctors, 4 (6%) obtained medication from homeopathic sources, and 9 (13.4%) used home remedies and other treatments.

DISCUSSION

Scabies is a significant public health challenge in Pakistan. Despite medical advancements and evolving healthcare systems, the prevalence of scabies remains a persistent concern, impacting the well-being of this population.

The highest prevalence of scabies (37.9%) was among the 12-24-year-old age group. However, no significant difference (p-value=0.585) was found among clinical scabies patients and healthy participants. A study conducted in Khyber Pakhtunkhwa showed the highest prevalence of scabies among the 21-50-year-old population¹³, indicating that this age group was most vulnerable to scabies. The association between gender and clinical scabies was insignificant; an almost equal incidence was observed among male (48.5%) and female (50.5%) participants. In a study conducted in the Wonosobo district of Indonesia, the incidence of scabies was slightly higher among males (83.1%).¹⁴ Another study conducted in Mirpurkhas, Sindh, depicted a higher prevalence (59.8%) of scabies among females.¹⁵

Laborers (16.5%) and shopkeepers (16.5%) seem to be mostly affected by scabies. According to a study conducted in rural Ethiopia, 90.7% cases of scabies cases were reported among farmers, followed by 9.3% among laborers.¹⁶ Another study conducted in Nasarawa State, Nigeria, showed scabies was more common (68.3%) in unemployed participants,¹⁷ suggesting that there is a relationship between scabies and unemployment. According to this study, scabies was more prevalent (74.7%) in participants earning less than PKR 30,000 per month. Similarly, in a study conducted in Peshawar, Pakistan, the prevalence of scabies was higher among families earning less than PKR 6000 per month, indicating an association between scabies and family income.⁷

This study shows a higher prevalence (64.1%) of scabies among individuals living or working in close

quarters. In a systematic study conducted in Malaysia, a family size of more than 4 was associated with a greater risk of scabies,¹⁸ indicating a higher risk of contracting scabies with a larger number of individuals in the household. Of the 250 participants in this study who presented with clinical scabies, 65% ironed their clothes before wearing them, and 61.2% changed their bedding frequently. In another study conducted in Khyber Pakhtunkhwa, among respondents who presented with scabies, 56% infrequently washed their bedding, 54% infrequently ironed their clothes, and 52% infrequently changed their bedding.¹⁹ This would suggest that the target population was having a hygienic lifestyle as compared to the other.

This data showed that 66% of the respondents who presented with clinical scabies used to take a bath daily, followed by 24.3% who took a bath on alternate days. An institution-based study conducted among schoolchildren in the Dabat District of Ethiopia found a higher likelihood of scabies among those who take baths infrequently.²⁰ A study conducted in Indonesia found a significant correlation (p-value=0.023) between scabies and bathing practices, with a 79.4% incidence of scabies among those with poor bathing practices.²¹ This indicates that our population was regular in taking baths as compared to Ethiopians and Indonesians. According to this study, 81.6% of participants with scabies were washing their hands frequently. A cross-sectional study conducted among schoolchildren in Ethiopia found that scabies was more common among children who washed their hands with water than among those who also used soap with water.²² This data revealed that it was beneficial for the children to wash their hands with soap. This study shows that 60.2% of the participants with scabies had no history of traveling to areas where scabies is common. Another study conducted in the Takusa district, Northwest Ethiopia, showed a significant association (p-value=0.01) between scabies and travel to scabies-prevalent areas.²³

The participants reported maximum itching in the armpits (26.2%), followed by finger webs (25.2%). A prospective cross-sectional study conducted in Uttar Pradesh, India, showed that finger webs were most commonly involved (85.3%), followed by genitalia (69.3%) and axilla (44%).²⁴ There is a similarity between these two studies regarding the prevalence of scabies in finger webs and the axilla. Of 250 participants, 52.4% had received treatment from a doctor. A cross-sectional study conducted in Ghana found that healthcare workers, such as doctors and nurses, diagnosed 61% of participants.²⁵ This highlights that a significant proportion of participants were well aware of the importance of medical professionals, and their diagnosis and treatment were done by trusted medical officials.

In this study, participants who experienced itching lived in a joint family (53.4%), compared with a study conducted in Turkey, where the most affected family type was nuclear (9.3%).²⁶ In this study, 54.4% of participants had family members with a history of scabies, compared to a study conducted in Indonesia, in which 66.67% of participants reported no cases in their family²⁷, indicating variation in the results of the two studies.

Among clinical signs and symptoms, 68% of participants reported itching as the main symptom, whereas 12.6% presented with pustules and another 12.6% with blisters. In a study conducted in Indonesia, 24.3% of respondents with scabies reported pustules.²⁸ This study showed 75.7% of the participants with scabies did not give a history of scabies in sexual partners. A study conducted in Chennai, India, mentioned genital scabies among the most common STIs, constituting 1.81% cases.²⁹ The results revealed 20.4% of the participants with scabies had 3 family members affected with scabies. In a study conducted in Indonesia, a significant number of individuals reported scabies in siblings.³⁰

CONCLUSION

Scabies is a significant public health concern in Maraka, as 50.4% of its population suffered from clinical scabies. The most common presentation was nighttime itching. The most common sites were armpits and finger webs. A significant association was observed among lower socioeconomic groups, unemployed individuals, and those living in joint families in close quarters with fewer than two rooms. Daily practices such as not ironing clothes, infrequent bedding changes, not taking baths, and washing hands regularly were also shown to impact the development of scabies significantly. The presence of scabies in sexual partners and close family members was also reported to be a major factor associated with it.

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