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Scabies Unveiled! Gadap Town's Battle Against a Silent Epidemic: A Retrospective Study

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ABSTRACT

Background: Scabies is a neglected parasitic skin disease causing significant morbidity in overcrowded, resource-poor communities. Despite its endemic presence in Pakistan, data from peri-urban localities like Gadap Town, Karachi, remain limited, especially regarding trends in pyo scabies and gender-specific burden. **Objective:** This study aimed to determine the prevalence and temporal trends of scabies and pyo scabies among dermatology outpatients at a tertiary care hospital in Gadap Town, focusing on age, gender, and diagnostic shifts from 2022 to 2023. **Methods:** A retrospective cross-sectional study was conducted at Fatima Hospital, Baqai Medical University, Karachi. Patient records from May–December 2022 and February–July 2023 were reviewed (n = 6,710). Inclusion criteria encompassed all genders and ages with documented diagnoses of scabies or pyo scabies. Data were extracted from outpatient records, with diagnoses based on clinical evaluation. Ethical approval was obtained from the Faculty Research, Review & Ethics Committee (FRREC) on November 13, 2024, ensuring compliance with the Helsinki Declaration. Data were analyzed using SPSS v26, applying descriptive statistics, chi-square tests, and odds ratios with 95% confidence intervals. **Results:** Scabies prevalence increased from 27.1% (n = 1,078/3,984) in 2022 to 29.3% (n = 799/2,726) in 2023 (OR = 1.12; 95% CI: 1.00–1.25). Pyo scabies cases rose sharply from 1.3% (n = 52) to 4.8% (n = 132) (OR = 3.85; 95% CI: 2.78–5.32), with a notable gender shift as all 2023 cases occurred in females. Non-scabies diagnoses declined (OR = 0.76; 95% CI: 0.69–0.85), and a seasonal peak shifted from autumn to spring/summer. **Conclusion:** The findings reveal an increasing and gender-skewed burden of scabies and pyo scabies in Gadap Town, emphasizing the need for gender-sensitive surveillance, early intervention, and public health strategies tailored to seasonal and demographic patterns.

Keywords: Scabies, Pyo Scabies, Prevalence, Gender Distribution, Cross-Sectional Studies, Dermatology, Public Health

INTRODUCTION

Scabies, caused by the mite *Sarcoptes scabiei* var. *hominis*, is a neglected tropical disease that disproportionately affects underprivileged and densely populated communities across the globe, contributing significantly to dermatological morbidity (1). Its transmission is facilitated by direct skin-to-skin contact, often leading to outbreaks in overcrowded living conditions such as refugee camps, prisons, and low-income neighborhoods (2). The infestation triggers intense itching and a characteristic rash, with secondary bacterial infections like impetigo commonly complicating the condition due to persistent scratching and poor hygiene (3, 4). Despite the high global prevalence and its debilitating impact on individual well-being and public health, scabies remains underdiagnosed, underreported, and inadequately managed, prompting the World Health

Organization (WHO) to classify it as a neglected tropical disease (5). Effective management and prevention require early detection and appropriate treatment strategies; however, these are often hampered by limited healthcare access and lack of community awareness in vulnerable regions (6).

In Pakistan, scabies continues to pose a serious public health challenge, with documented prevalence across diverse age groups and geographic locations (7, 8). Nevertheless, granular data remain sparse in certain peri-urban and underserved settings, such as Karachi's Gadap Town, where inadequate infrastructure, poor sanitation, and limited healthcare access exacerbate the spread of communicable skin conditions. While national estimates suggest endemic levels, specific local studies to inform targeted interventions are largely missing. The existing literature highlights variability in disease prevalence based on

region, age, gender, and socioeconomic status, yet fails to capture micro-level dynamics in communities like Gadap, where living conditions are ripe for sustained transmission (9–12). Importantly, previous reports from various regions of Pakistan and other South Asian countries reveal that children and adolescents are often disproportionately affected, and complications such as pyo scabies contribute to heightened disease severity and potential sequelae (13, 14).

Though hospital-based data can offer critical insights into disease trends, scabies often goes unnoticed in clinical records due to diagnostic challenges and social stigma. In Gadap Town, the combination of diagnostic delay, unstandardized reporting, and constrained public health outreach calls for epidemiological scrutiny. Furthermore, emerging global data suggest seasonal and demographic shifts in scabies incidence, which could be influenced by local environmental and behavioral factors (10, 15, 16). Given these challenges, localized, data-driven investigations become indispensable to understanding scabies' evolving epidemiology in resource-constrained settings.

This retrospective study was therefore designed to investigate the prevalence and seasonal variation of scabies among patients presenting with dermatological complaints at Fatima Hospital, a tertiary care facility serving the population of Gadap Town, Karachi. By leveraging clinical data from May 2022 to July 2023, the study aims to fill the knowledge gap surrounding scabies burden in this overlooked setting, highlighting diagnostic patterns, gender and age distributions, and emerging trends such as pyo scabies. The research seeks to inform clinicians, public health professionals, and policymakers by identifying vulnerable subgroups and timeframes for potential intervention. It is hypothesized that scabies prevalence has risen during the study period and that specific demographic groups and seasonal factors are significantly associated with increased disease burden.

MATERIALS AND METHODS

This retrospective observational study was conducted to assess the prevalence of scabies and pyo scabies among patients presenting with dermatological complaints at Fatima Hospital, a tertiary care teaching hospital affiliated with Baqai Medical University, Karachi, Pakistan. The study population included all patients who attended the dermatology outpatient department between May 2022 and July 2023 with symptoms of rash and itching. Inclusion criteria comprised individuals of any age and gender who received a clinical diagnosis of scabies or pyo scabies during the defined period. Patients who did not meet these criteria or were diagnosed with other dermatological conditions without evidence of scabies were excluded from the analysis. All eligible participants were identified through a review of archival hospital records; no direct recruitment or prospective follow-up was involved, and as such, individual informed consent was not applicable.

However, prior institutional permission to access and utilize the anonymized data was obtained, and confidentiality was maintained throughout the study by restricting data access to the research team only. The primary outcome was the prevalence of scabies among patients presenting with

dermatological symptoms, while the secondary outcomes included the temporal distribution of cases, demographic patterns (age and gender), and the frequency of pyo scabies diagnoses. Diagnoses were made by qualified physicians based on clinical signs, including pruritic rash, distribution of lesions, and response to empirical treatment, in accordance with routine dermatological practice. The data were extracted manually from physical and digital outpatient records and subsequently compiled into a spreadsheet for statistical analysis. Each record included patient age, gender, date of visit, and final diagnosis. No additional laboratory tests, imaging, or scoring instruments were employed during the clinical evaluation or data collection process.

The study protocol received ethical approval from the Faculty Research, Review & Ethics Committee (FRREC) of Baqai Medical University, Karachi, under approval dated November 13, 2024. The investigation was conducted in full compliance with the ethical principles of the Declaration of Helsinki. Data confidentiality was ensured by anonymizing all identifiable patient information prior to analysis, and all records were securely stored with access limited to the research investigators.

Statistical analysis was carried out using IBM SPSS version 26. Descriptive statistics were employed to calculate frequencies and percentages for categorical variables, such as gender, diagnosis type, and visit month. Age was analyzed as a grouped variable to examine distribution patterns across different cohorts. Comparative analysis across years and diagnostic categories was conducted using chi-square tests, and a p-value of less than 0.05 was considered statistically significant. No imputation for missing data was necessary, as incomplete records were excluded from the dataset prior to analysis. No sensitivity analyses or adjustments for confounders were performed, as the study design was exploratory in nature and based solely on descriptive and univariate comparisons.

RESULTS

A total of 3,984 patients were evaluated in 2022 and 2,726 patients in 2023 at the Dermatology Outpatient Department of Fatima Hospital, Gadap Town. The proportion of patients diagnosed with scabies increased from 27.1% ($n = 1,078$) in 2022 to 29.3% ($n = 799$) in 2023, reflecting a modest upward trend. Concurrently, pyo scabies cases rose significantly from 1.3% ($n = 52$) to 4.8% ($n = 132$), indicating a sharp increase in more severe presentations of the disease. In contrast, diagnoses attributed to other dermatological conditions declined from 71.6% ($n = 2,854$) in 2022 to 65.8% ($n = 1,795$) in 2023. Analysis of gender-specific patterns revealed key disparities in disease burden. In 2022, scabies was more prevalent in males ($n = 749$) than females ($n = 329$), while pyo scabies primarily affected females ($n = 51$), with no recorded male cases. Similarly, in 2023, scabies continued to be predominantly diagnosed in males ($n = 631$), and all 132 cases of pyo scabies were reported in females, underscoring a strong gender-linked pattern. The combined gender-wise distribution across both years is depicted in Figure 1, where the overlaid line graph illustrates the total number of cases per diagnosis, further emphasizing the disease burden hierarchy.

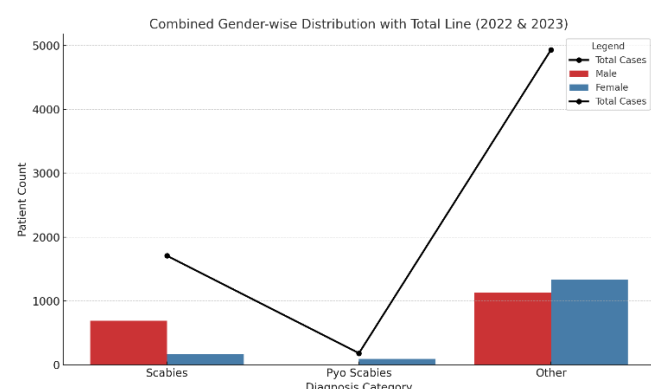
Table 1 Combined Diagnosis and Gender Distribution Table

Year	Diagnosis	Cases	Percentage	Male	Female	Total Patients per Year
2022	Scabies	1078	27.1	749	329	3984
2022	Pyo Scabies	52	1.3	0	51	3984
2022	Other	2854	71.6	0	0	3984
2023	Scabies	799	29.3	631	0	2726
2023	Pyo Scabies	132	4.8	0	132	2726
2023	Other	1795	65.8	0	0	2726

Table 2 Odds Ratios And 95% Confidence Intervals

Diagnosis	Odds Ratio	95% CI Lower	95% CI Upper
Scabies	1.12	1.00	1.25
Pyo Scabies	3.85	2.78	5.32
Other Diagnoses	0.76	0.69	0.85

To evaluate the year-over-year risk, odds ratios (OR) and 95% confidence intervals (CI) were computed. The odds of being diagnosed with scabies in 2023 were 1.12 times higher than in 2022 (OR = 1.12; 95% CI: 1.00–1.25), indicating a borderline statistically significant increase. For pyo scabies, the increase was far more pronounced and statistically robust, with patients in 2023 being 3.85 times more likely to be diagnosed compared to those in 2022 (OR = 3.85; 95% CI: 2.78–5.32). Conversely, the odds of receiving a diagnosis unrelated to scabies significantly decreased (OR = 0.76; 95% CI: 0.69–0.85), suggesting a clinical shift in dermatologic presentations or diagnostic prioritization. The composite bar chart (Figure X) visually consolidates these findings, illustrating male and female distribution per diagnosis category, along with a superimposed trend line capturing total case counts. The line peaks in the “Other Diagnoses” category and reflects the significant jump in pyo scabies cases among females. This figure reinforces the increasing burden and shifting epidemiological landscape of scabies in Gadap Town, with implications for both gender-specific public health planning and seasonally adjusted healthcare preparedness.

**Figure 1 Combined Gender-wise Distribution**

DISCUSSION

This study presents a comprehensive retrospective assessment of scabies and pyo scabies cases among patients attending the dermatology outpatient department at Fatima Hospital, Gadap Town, across two timeframes: May–December 2022 and

February–July 2023. The results confirm a substantial burden of scabies within this underserved population, with an overall prevalence of 27.1% in 2022 and an increase to 29.3% in 2023. Notably, pyo scabies—a more severe, secondarily infected form—demonstrated a dramatic rise from 1.3% to 4.8% over the same period. Gender-specific trends showed persistent male predominance in scabies cases, while pyo scabies was almost exclusively reported in females, particularly in 2023. The visualized diagnostic breakdown and total burden, reflected in our composite bar-line chart, further underscore the clinical and epidemiological shift occurring in this population.

The observed rise in scabies prevalence, although modest (OR = 1.12; 95% CI: 1.00–1.25), is consistent with global patterns of increasing infestations in socioeconomically marginalized settings (9, 10). This trend aligns with findings from other South Asian contexts, including studies in Madrasahs in Bangladesh, which similarly highlighted elevated scabies prevalence in crowded, resource-limited environments (12). The sharp increase in pyo scabies (OR = 3.85; 95% CI: 2.78–5.32) may indicate not only a worsening of baseline disease severity but also a possible delay in diagnosis and treatment, particularly among women. This gendered distribution resonates with broader findings on hygiene accessibility and social behavior influencing scabies complications (14). The exclusively female burden of pyo scabies in 2023, when compared to a mixed but still predominantly female pattern in 2022, may reflect a deteriorating public health landscape for women in this community or culturally mediated barriers to early care. In contrast to scabies and pyo scabies, other dermatological conditions showed a significant relative decline (OR = 0.76; 95% CI: 0.69–0.85), suggesting a possible diagnostic or actual clinical shift. This could be attributed to greater awareness, increased screening focus on scabies due to its contagious nature, or an actual change in disease incidence patterns. Our age-disaggregated analysis, while not statistically stratified due to data constraints, pointed toward a demographic shift: in 2022, the majority of cases were seen in individuals aged 20–30 years, whereas in 2023, the highest burden transitioned toward children and adolescents under 20. This aligns with global

observations that scabies disproportionately affects younger populations, who are more susceptible due to close physical contact in schools and communal settings (10, 11).

Seasonal variation was another important dimension revealed in our data. The 2022 peaks in scabies incidence occurred in September and November, consistent with reports from other Pakistani cities indicating winter and late-autumn seasonality (17). However, 2023 witnessed a pronounced shift to summer peaks—particularly in May and July—suggesting possible changes in transmission dynamics. This could be driven by climate-related factors such as increased humidity or behavioral shifts like increased travel or community gatherings in warmer months. Such findings emphasize the need for localized temporal surveillance strategies, as seasonality appears not only geographically variable but also subject to temporal evolution.

These findings provide meaningful insights into the clinical and epidemiological behavior of scabies and its complications in a peri-urban, underserved setting. The strength of this study lies in its large sample size and the use of real-world, systematically documented hospital data over two seasonal cycles. Moreover, the integration of gender-disaggregated statistics and odds ratio analysis strengthens the interpretability and public health implications of the findings. However, several limitations should be acknowledged. The reliance on clinical diagnosis without dermatoscopic or microscopic confirmation may have introduced diagnostic bias. Furthermore, as a single-center, retrospective study, the results may not be generalizable to other regions of Pakistan or similar LMIC settings. The absence of variables such as socioeconomic status, hygiene practices, or environmental exposure limits a deeper exploration of causality or confounding factors. Additionally, the lack of follow-up data restricts our ability to comment on treatment outcomes or recurrence patterns.

Despite these constraints, the study has significant clinical relevance. It highlights an increasing burden of scabies and its severe form, particularly among vulnerable female populations, warranting urgent public health interventions. Education campaigns focused on hygiene, early symptom recognition, and timely treatment—especially in women and school-age children—could help curb disease transmission. The consistent rise in pyo scabies emphasizes the need for training primary care providers to detect early signs of secondary infection and manage complications promptly. Hospital-based screening protocols and community-level outreach, particularly during high-incidence months, may offer cost-effective ways to mitigate transmission and recurrence.

Future research should consider prospective, multi-center studies incorporating diagnostic confirmation and exploring behavioral and environmental risk factors. Evaluating the effectiveness of community-based interventions such as mass drug administration or school-based health education could further guide policy. Additionally, qualitative exploration of gender-specific barriers to early treatment might offer critical insights for addressing the disproportionate burden of pyo scabies among women. Ultimately, addressing scabies in Gadap

Town requires not just clinical vigilance but also a structural commitment to health equity, sanitation, and health education.

CONCLUSION

This retrospective study, titled "Scabies Unveiled! Gadap Town's Battle Against a Silent Epidemic," highlights a rising trend in scabies and a marked increase in pyo scabies cases among dermatological patients in a low-resource, underserved community. The findings reveal a persistent male predominance in scabies and an alarming gender-specific burden of pyo scabies among females, with shifting seasonal and age-related patterns over time. These observations underscore the need for timely public health interventions, including gender-sensitive awareness programs, improved diagnostic capacity, and infection control strategies tailored to seasonal surges. Clinically, the study advocates for enhanced vigilance in diagnosing and managing scabies complications, particularly in resource-limited outpatient settings. Future research should explore the sociobehavioral and environmental determinants of these trends to inform more effective, community-based preventive and therapeutic approaches in combating this neglected dermatological epidemic.

REFERENCES

1. Welch E, Romani L, Whitfield MJ. Recent Advances in Understanding and Treating Scabies. *Fac Rev.* 2021;10:28. doi:10.12703/r/10-28
2. Fernando DD, Mounsey KE, Bernigaud C, et al. Scabies. *Nat Rev Dis Primers.* 2024;10:74. doi:10.1038/s41572-024-00552-8
3. Niode NJ, Adjil A, Gazpers S, et al. Crusted Scabies, a Neglected Tropical Disease: Case Series and Literature Review. *Infect Dis Rep.* 2022;14(3):479–91.
4. Debash H, Shibabaw A, Ebrahim H, et al. Parasitological Prevalence of Scabies and Secondary Bacterial Infections Among Scabies Suspected Patients at Borumeda General Hospital, Northeast Ethiopia. *BMC Infect Dis.* 2024;24(1):1106.
5. World Health Organization. Scabies. 2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/scabies>
6. Schneider S, Wu J, Tizek L, et al. Prevalence of Scabies Worldwide: An Updated Systematic Literature Review in 2022. *J Eur Acad Dermatol Venereol.* 2023;37(9):1749–57. doi:10.1111/jdv.19167
7. Socio-Demographic Patterns, Perceptions, Prevalence and Communicability of Scabies in Islamabad, Pakistan. Available from: <https://bit.ly/4cqvrH>
8. Majeed A, Mahmood S, Tahir AH, et al. Patterns of Common Dermatological Conditions Among Children and Adolescents in Pakistan. *Medicina.* 2023;59(11):1905. doi:10.3390/medicina59111905
9. Gupta S, Thornley S, Morris A, et al. Prevalence and Determinants of Scabies: A Global Systematic Review and

-
- Meta-Analysis. *Trop Med Int Health*. 2024;29(12):1006-17. doi:10.1111/tmi.14058
10. Li J, Liu Z, Xia X. The Disability-Adjusted Life Years, Prevalence and Incidence of Scabies, 1990-2021: A Systematic Analysis From the Global Burden of Disease Study 2021. *PLoS Negl Trop Dis*. 2024;18(12):e0012775. doi:10.1371/journal.pntd.0012775
 11. Cox V, Fuller LC, Engelman D, et al. Estimating the Global Burden of Scabies: What Else Do We Need? *Br J Dermatol*. 2021;184(2):237-42. doi:10.1111/bjd.19170
 12. Hasan MJ, Rafi MA, Choudhury T, et al. Prevalence and Risk Factors of Scabies Among Children Living in Madrasahs of Bangladesh: A Cross-Sectional Study. *BMJ Paediatr Open*. 2024;8(1):e002421. doi:10.1136/bmjpo-2023-002421
 13. Rainer LA, Molefi TL, Kololo SO, et al. Prevalence and Associated Risk Factors of Scabies and Impetigo: A Cross-Sectional Study in Tutume District, Botswana. *PLoS Negl Trop Dis*. 2024;18(6):e0011495. doi:10.1371/journal.pntd.0011495
 14. Khoso MA, Nadeem MK, Chachar B, et al. Prevalence of Scabies at Dermatology Department PMCH Hospital Nawabshah. *Asian Pac J Nurs Health Sci*. 2019;2(2):1-6.
 15. Khatoon N, Khan A, Azmi MA, et al. Most Common Body Parts Infected With Scabies in Children and Its Control. *Pak J Pharm Sci*. 2016;29(5).
 16. Sharif S, Saleem MA, Mutti MU, et al. COVID-19 in a Dermatologist's Clinic: A Case From Pakistan. *Cureus*. 2021;13(11):e19984. doi:10.7759/cureus.19984
 17. Nawaz K, Khan S, Bibi A. Insights Into Scabies Prevalence and Risk Factors. *Bull Biol Allied Sci Res*. 2024;2024(1):68. doi:10.54112/bbasr.v2024i1.68
 18. National Guidelines on Infection Prevention and Control. Islamabad: National Institute of Health Pakistan; 2020.
 19. Pakistan Economic Survey 2019-20. Chapter 11: Health and Nutrition. Ministry of Finance, Government of Pakistan.