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Dermatological Health and Associated Risk Factors Among Residents of Bhit Island, Pakistan: A Cross-Sectional Study

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Original Article

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Keywords

Acne Vulgaris; Contact Dermatitis; Psoriasis; Pediculosis Capitis; Psoriasis; Scabies

Abstract

The objective of this study is to determine the skin health of people of Bhit Island, and to investigate the prevalence, awareness, and treatment of common skin diseases, as well as related environmental, socioeconomic, and behavioural factors. Between October-December 2024 we conducted a cross sectional survey using simple random sampling in Bhit Island, Kemari Town in Karachi, Pakistan. Three hundred residents aged ≥15 years, living on the island for at least six months, were interviewed using a pre-tested structured questionnaire. Data collection included demographics, skin disease history, hygiene practices, treatment behaviour, and psychological impact. The photographs of skin conditions of participants were taken with their consent. Using Chi-square tests ($p \leq 0.05$ considered significant) statistical relationship was analyzed. 68.3% participants has experienced at least one skin disease in the previous six months. The most common diseases were scabies (43.7%), ringworm (21.3%), and acne (15.7%). In case of pediculosis capitis the significant association was seen with age, gender, occupation, education, recent experience, and recurrence. Scabies was significantly associated with education, income, recent experience, and recurrence and acne show association with age, gender, occupation, education, recent experience, and recurrence. Poor living conditions, sharing personal items, and infrequent nail cutting were linked to higher disease prevalence. Treatment challenges included high costs and limited access to healthcare. Results shows that high skin disease frequency is influenced by environmental and socioeconomic variables, poor hygiene practices, and treatment barriers. Enhancing hygiene education, improving living conditions, and

increasing access to affordable healthcare are essential for reducing dermatological disease burden on Bhit Island.

Introduction

Skin conditions, such as acne, alopecia, ringworm, vitiligo, bacterial infections, atopic and contact dermatitis, fungal infections, pruritus, psoriasis, cellulitis, scabies, urticaria, viral infections, and other skin and subcutaneous diseases, are extremely prevalent in general public and are leading causes of the global disease burden that not only affect physical health but also affects mental well-being and quality of life (Gisondi et al., 2023; Kavita, Thakur, & Narang, 2023)**.** Children belonging to families with low incomes are more prone to health issues because of poor sanitation, unavailability of medical services, and difficulties paying for appropriate hygiene and treatment (Chung & Simpson, 2019). Scabies affect up to 10% of the population overall and 65% of children in areas with limited resources (Sánchez-Borges, González-Aveledo, Capriles-Hulett, & Caballero-Fonseca, 2018). The clinical dermatology section of Aga Khan University Hospital in Karachi studied the medical records of 863 patients who were diagnosed with superficial fungal infection (SFI) between January and December 2019 (Najam Us, Tabassum, Sajid, Khabir, & Faheem, 2025).

Previous studies in Pakistan have reported varying gender distributions among patients suffering from psoriasis, one study from Jinnah Hospital, Lahore, reported 58 % of men and 42 % women patients. Similarly, research conducted at Liaquat University of Medical and Health Sciences found 56% men and 44% women patients suffering from psoriasis (Amer, Majid, & Arshi, 2013).

In the case of vitiligo, research has reported that approximately 1.5% of individuals living in Quetta had this condition. It is more commonly observed in women than in men. The condition also shows association with age, as it frequently develops around the age of 20. While it can be present from birth, its visibility tends to increase significantly by early adulthood (Rasheed et al., 2020). Another study conducted in Lahore revealed that pediculosis affects 77.40% of school-aged children, with boys comprising 52.45% of the cases. This suggests that the occurrence of pediculosis varies across different groups of school-aged boys (Shah, Memon, Salik, Muhyyud, Din, & Kamal, 2021). Similarly, in Pakistan, contact dermatitis affects over 20 % of people, with a higher prevalence in women than in men (Arif & Haroon, 2001).

Cellulitis affects an estimated 14.5 million individuals annually in the US, resulting in approximately 650,000 hospital admissions and incurring around $3.7 billion in outpatient care costs each year(Brown & KL, 2019) . Climate change has various impacts on individuals residing in coastal regions (Shamsuddoha et al., 2024). Water with excessive salt levels is associated with dermatological problems, high blood pressure, diarrhoea, and dysentery (Sinha et al., 2024). The nearby area of Kemari Town in Karachi, Pakistan, is known as Baba Bhit Island. It consists of two small fishing islands located in Karachi's harbour centre. With 4 km² of land area these islands have population of 25000. Members of the Fishermen Community, who are roughly 300 years old, make up the entire hamlet. (Shahzad, 2020).

The study aimed to understand the dermatological health of people living on Bhit Island by examining the prevalence of skin diseases, their awareness and treatment options for common skin diseases. It also examined their ability to recognize symptoms, their knowledge of prevention methods, available treatment options, and the difficulties they faced in seeking treatment. Furthermore, it also looked at environmental and living conditions, such as access to clean water, crowding, and cleanliness practices as possible causes of skin health problems. Socioeconomic factors were also part of the study. The study's ultimate goal is to direct future investigations and public health initiatives in Bhit Island and other communities dealing with comparable problems.

Materials and Methods

Using a cross-sectional survey this study was conducted on residents of Bhit Island in October-December 2024 to investigate their dermatological health, awareness levels, and access of treatment within the community. It includes residents of different ages, genders, and social backgrounds.

Those residents who are participating in this study had to be willing to give their consent, be at least 15 years old, have lived on Bhit Island for at least six months. Those who decline take part, were too young, or suffered from any disability or illness that prevented them from communicating effectively were excluded.

Sampling and Sample Size

The sample size for this study was determined by using the OpenEpi Version 3 (SSPropor) open-source calculator and simple random sampling technique was used. Using a population of 1,000,000, ±5% a margin of error and a design effect of 1 the sample size was determined.This resulted in a required sample of 361 participants for 95% confidence level as reported in the study (El-Essawi, Musial, Hammad, & Lim, 2007).

Data Collection Tools and Procedure

Data on demographics, history of skin diseases, hygiene habits, treatment behaviour, and mental health consequences were collected by using a pre-tested, standardized, and structured questionnaire and analysed using SPSS-21. The questionnaire was developed after reviewing previous literature (Richard et al., 2022; Sharma et al., 2024) and adapted to the local situation context. A face-to-face data collection was conducted with 350 individuals, only 300 were fully completed and included in the final analysis by taking consideration cultural preferences and literacy disparities, in-person interviews were performed in the local language. The photographs of visible skin conditions (Figure 1) were taken with the full permission of participants, on voluntary consent.

Figure 1. Photographs of Different Skin Conditions of Residents of Bhit Island

This study prioritized ethical guidelines, informed participants of the goals, procedures, and results, obtained informed consent, provided the freedom to decline participation, and protected confidentiality and privacy.

Results and Discussions

Out of 300 individuals, 350 had completed the questionnaire, with a response rate of 85.71%. 33% of participants were aged between 31- 45 years, and 75.7% were female. 52.7% were married, and 33.3% were housewives, which makes up the largest occupational group. Education levels varied, with 35.7% having completed high school and 32.7% having no formal education. The most common monthly household income ranges between PKR 10,000–20,000 (31.3%), as shown in Table I.

Table I. Demographic Characteristics of the Studied Population

Characteristics	Numbers (%)
Age group	
Under 18	69 (23.0%)
18-30	73 (24.3%)
31-45	100 (33.3%)
46-60	46 (15.3%)
Above 60	12 (4%)
Gender	
Male	73 (24.3%)
Female	227 (75.7%)
Marital Status	
Single	132 (44.0%)
Married	158 (52.7%)
Widow	7 (2.3%)
Divorced	3 (1.0%)
Occupation	
Fishing	50 (16.7%)
Student	75 (25.0%)
Shopkeeping	5 (1.7%)
Employed	36 (12.0%)
Unemployed	33 (11.0%)
Housewife	100 (33.3%)
Businessman	1 (0.3%)
Highest level of Education	
No formal education	98 (32.7%)
Primary school	63 (21.0%)
High school	107 (35.7%)
College/university	30 (10.0%)
Postgraduate	2 (0.7%)
Monthly household income	
Less than PKR 10,000	69 (23.0%)
PKR 10,000-20,000	94 (31.3%)
PKR 20,000-30,000	83 (27.7%)
Above PKR 30,000	54 (18.0%)

Among 300 participants, 205 people (68.3%) reported that they or a family member had experienced skin diseases in the past 6 months. While 95 people (31.7%) reported that they did not experience any skin diseases during this period. As some people reported more than one disease, the total number of responses may exceed the number of participants.

Among the reported diseases, scabies was the most common, with 131 responses, followed by ringworm (64), contact dermatitis (43), acne (47), pediculosis capitis (31), psoriasis (2), vitiligo (1), and cellulitis (1).

The statistical analysis of various skin diseases revealed that ringworm showed a significant association with recent experience and reoccurrence. Contact dermatitis, shows significant associations with gender, income, recent experience, and recurrence. Pediculosis Capitis was significantly associated with gender, occupation, income, recent experience, and recurrence. Education, income, recent experience, and recurrence were significantly associated with Scabies. In Vitiligo, age was found to be the only significant variable, while none of the examined variables showed statistically significant associations for Cellulitis.

Significant relationships of psoriasis were observed with age and recurrence for Psoriasis.

For Acne, significant associations were found with age, gender, occupation, education, recent experience, and recurrence.

These findings showed that some conditions, such as acne and pediculosis capitis, were significantly influenced by a broad range of factors, while others, like vitiligo and cellulitis, showed limited associations. Acne was strongly associated with age, gender, and occupation, suggesting the interplay of biological, hormonal, and occupational factors in its occurrence. Similarly, conditions like contact dermatitis and pediculosis capitis showed significant associations with income, gender, and recurrence rates, pointing to multiple determinants of skin health that span personal, occupational, and socioeconomic domains, as shown in Table II.

Table II. Statistical Association Between Skin Diseases and Contributing Factors

Associated factors with various skin diseases	Chi-square	p-value	Decision
Ringworm			
Age	0.669	0.955	Non-significant
Gender	1.933	0.164	Non-significant
Occupation	6.142	0.407	Non-significant
Education	1.458	0.834	Non-significant
Income	4.112	0.250	Non-significant
Experienced in the last 6 months	32.795	0.000	Significant
Recurrence	34.228	0.000	Significant
Separate room	0.314	0.575	Non-significant
Cellulitis			
Age	3.120	0.538	Non-significant
Gender	0.323	0.570	Non-significant
Occupation	2.007	0.919	Non-significant
Education	1.810	0.771	Non-significant
Income	2.623	0.453	Non-significant
Experienced in the last 6 months	0.465	0.495	Non-significant
Recurrence	3.359	0.645	Non-significant
Separate room	3.010	0.083	Non-significant
Contact dermatitis			
Age	12.957	0.538	Non-significant
Gender	5.027	0.025	Significant
Occupation	11.926	0.06	Non-significant
Education	2.702	0.609	Non-significant
Income	8.423	0.038	Significant
Experienced in the last 6 months	15.291	0.000	Significant
Recurrence	15.234	0.009	Significant
Separate room	0.706	0.401	Non-significant
Scabies			
Age	8.350	0.080	Non-significant
Gender	2.303	0.129	Non-significant
Occupation	8.044	0.235	Non-significant
Education	13.284	0.010	Significant
Income	13.691	0.003	Significant
Experienced in the last 6 months	96.917	0.000	Significant
Recurrence	81.157	0.000	Significant
Separate room	1.457	0.227	Non-significant
Acne			

Age	20.474	0.000	Significant
Gender	9.369	0.002	Significant
Occupation	17.475	0.008	Significant
Education	10.482	0.033	Significant
Income	3.625	0.305	Non-significant
Experienced in the last 6 months	21.388	0.000	Significant
Recurrence	32.445	0.000	Significant
Separate room	0.154	0.659	Non-significant
Psoriasis			
Age	14.171	0.007	Significant
Gender	0.133	0.715	Non-significant
Occupation	0.133	0.715	Non-significant
Education	0.548	0.969	Non-significant
Income	5.916	0.116	Non-significant
Experienced in the last 6 months	1.404	0.236	Non-significant
Recurrence	14.600	0.012	Significant
Separate room	0.112	0.738	Non-significant
Vitiligo			
Age	24.080	0.000	Significant
Gender	0.323	0.570	Non-significant
Occupation	2.007	0.919	Non-significant
Education	3.774	0.437	Non-significant
Income	4.571	0.206	Non-significant
Experienced in the last 6 months	0.465	0.495	Non-significant
Recurrence	1.367	0.928	Non-significant
Separate room	3.010	0.083	Non-significant
Pediculosis capitis			
Age	2.356	0.671	Non-significant
Gender	11.519	0.001	Significant
Occupation	23.660	0.001	Significant
Education	2.784	0.595	Non-significant
Income	19.601	0.000	Significant
Experienced in the last 6 months	13.485	0.000	Significant
Recurrence	18.141	0.003	Significant
Separate room	0.187	0.666	Non-significant

$p \leq 0.05$ is statistically significant

According to our study in Bhit Island, psoriasis and ringworm are the skin conditions that were found to be more common than the diseases like cellulitis, vitiligo, scabies, contact dermatitis, acne, and pediculosis capitis. Residents of Bhit Island shows clear patterns in personal hygiene habits and their relation with skin diseases. Those residents who bath or wash their body frequently did not show statistically significant associations with any of the skin diseases.

However, the poor cleanliness of living spaces was significantly associated with conditions including Ringworm ($\chi2=13.351$, $p = 0.004$), Cellulitis, Acne ($\chi2=9.376$, $p = 0.025$), and Pediculosis capitis ($\chi2=18.780$, $p = 0.000$). In addition, sharing personal items was linked to Scabies ($\chi2=5.831$, $p = 0.016$), Acne ($\chi2=5.680$, $p = 0.017$), and Psoriasis ($\chi2=4.128$, $p = 0.042$) in our study.

The frequency of nail cutting showed significant associations with certain skin conditions. Ringworm ($\chi2=8.032$, $p = 0.045$), Cellulitis ($\chi2=11.538$, $p = 0.009$), and Contact dermatitis ($\chi2=12.194$, $p = 0.007$) showed a significant relationship with this characteristic, suggesting that it may play an essential role in preventing diseases.

The correlation between medication adherence, including complete course completion, treatment sought, treatment location, and prescription usage, without a doctor's consultation. and treatment methods for various skin disorders were investigated in this study. For Ringworm, Significant associations were found in each area that was studied.

For psoriasis, acne, cellulitis, and vitiligo, most factors showed no significant associations. However, psoriasis showed a significant association with completing the full course of treatment.

Scabies and Contact dermatitis had significant associations with the place of treatment and treatment-seeking behaviour. Scabies also showed a significant link with prescription use without a doctor's consultation. Pediculosis capitis showed significant treatment-seeking behaviour, but no significant associations for other factors in our study.

Treatment-seeking behaviour emerged as another critical factor influencing skin disease outcomes. Conditions like ringworm, scabies, and contact dermatitis were significantly associated with treatment adherence, choice of consultation place, and inappropriate prescription use without proper medical guidance (Table III).

Table III. Association Between Skin Diseases and Treatment Approaches (Chi-square test results)

Variables	Chi-square value	p-value	Decision
Ringworm			
Treatment sought	32.642	0.000	Significant
Place of treatment	52.855	0.000	Significant
Prescription use without a doctor's consultation	4.662	0.031	Significant
Full course completion	25.678	0.000	Significant
Contact dermatitis			
Treatment sought	18.238	0.000	Significant
Place of treatment	19.498	0.002	Significant
Scabies			
Treatment sought	59.170	0.000	Significant
Place of treatment	64.165	0.000	Significant
Prescription use without a doctor's consultation	7.953	0.005	Significant
Psoriasis			
Full course completion	10.145	0.017	Significant
Pediculosis capitis			
Treatment sought	8.161	0.004	Significant

p≤0.05 is statistically significant

Residents of Bhit Island were using a range of prescription medications to treat their skin conditions, according to data gathered from them. The most often prescribed drugs were Dexamethasone/neomycin cream (13), Betamethasone/clotrimazole cream (7), and Permethrin lotion (4).

Furthermore, Clotrimazole lotion, Dexamethasone/Clotrimazole cream, Polymyxin B sulphate/bacitracin ointment, Hydrocortisone/clotrimazole cream, and Fusidic acid/hydrocortisone acetate cream, these were the medications seen in two prescriptions. Some medications, such as benzyl benzoate lotion, itraconazole pills, Diflucortone valerate, Levofloxacin capsules, azithromycin capsules, and Fluconazole

capsules, were only prescribed once, this indicate the variety of medications the people of Bhit was using for their skin conditions.

Furthermore, participants were allowed to select multiple problems they faced during their treatment course. Figure 2 shows the major problems faced by participants during treatment.

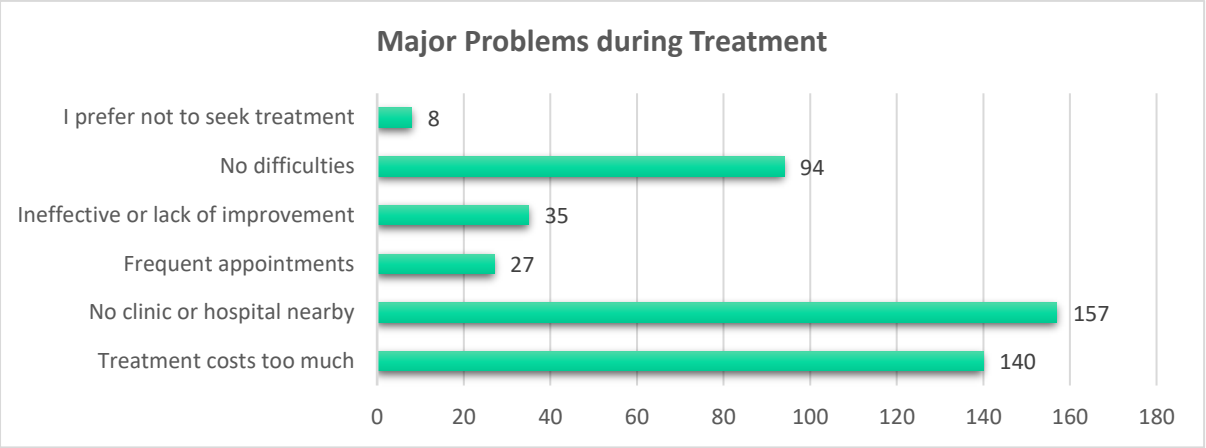

Figure 2. Major Problems Faced by Participants During Treatment

The psychological impact of skin diseases was assessed among respondents. A total of 218 respondents (72.7%) reported that skin diseases affect their daily life, whereas according to 82 respondents (27.3%) skin diseases do not affect their daily life.

212 respondents (70.7%) reported that they frequently experienced anxiety or depression due to skin conditions. However, 24 respondents (8.0%) experienced it occasionally, 7 (2.3%) rarely, and 57 (19.0%) reported never that they had never experienced such symptoms, as shown in Figure 3.

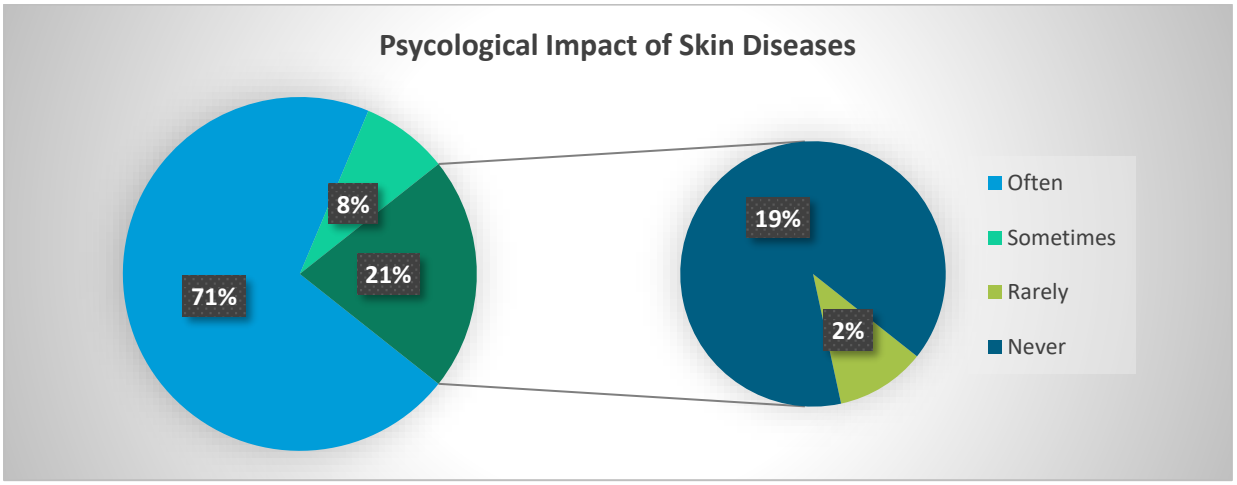

Figure3. Psychological Impact of Skin Diseases Based on Responses of Participants

Discussion

The objective of this study was to document the dermatological health of residents of Bhit Island. Sixty-eight-point-three percent of participants have experienced at least one skin disease in the last six months. Among them, the most prevalent were scabies, followed by ringworm, acne, contact dermatitis, pediculosis capitis, psoriasis, vitiligo, and cellulitis.

Furthermore, Ringworm was significantly associated with recent experience and with recurrence. Previous studies also supported recurrent infections as a significant factor in the occurrence of skin diseases (Ahmed, Paul, & Chowdhury, 2025).Moreover, gender, occupation, income, recent experience, and recurrence were found to be significantly correlated with pediculosis capitis. Also,

gender was reported as a significant factor in the prevalence of pediculosis capitis (Valero et al., 2024).Similar to previous research showing high prevalence in food-processing occupations (up to 11%) and identifying gender and income as significant factors, our study also found gender and income to be statistically significant, while age did not show a meaningful association (Dickel, 2023).

The Association of Personal Hygiene Practices, including frequency of bathing, washing, cleanliness of living spaces, sharing personal items, frequency of changing clothes, nail cutting, and skin diseases, found that cleanliness of living spaces was significantly associated with diseases such as Ringworm, Cellulitis, Acne, and Pediculosis capitis. Sharing personal items was linked to Scabies, Acne, and Psoriasis. These findings are linked to studies, which also showed that poor hygiene and overcrowded living spaces can lead to skin diseases. A recent study reported a high number of Pediculosis capitis cases, mainly due to the sharing of combs, beds, and other personal items (Abirami & Narmadha, 2024; Ortega, Monje, Valencia, Arteaga, & Salguero, 2020).

The association between treatment approaches for different skin conditions and medication adherence witnessed treatment sought for fungal infections (Ringworm), which included oral antifungal medications and topical agents (Ahmed, Paul, & Chowdhury, 2025). While psoriasis showed a significant association with completing the full course of treatment, which is consistent with previous research (Sain, Willems, Charokopou, & Hiligsmann, 2020).

In addition, the challenges faced by residents while seeking treatment portrayed that the majority of respondents faced the unavailability of clinics or hospitals in the area, other factors involved in expensive treatment, and access to affordable healthcare services remain significant challenges for many individuals (Amoako et al., 2023) .The impact of skin diseases on mental and psychological health revealed a significant association of depression and anxiety with skin diseases (Christensen & Jafferany, 2023; Salari, Heidarian, Hosseinian-Far, Babajani, & Mohammadi, 2024; Yew, Kuan, Ge, Yap, & Heng, 2020).

Conclusion

The current study was conducted to evaluate the prevalence of common skin problems among the residents of Bhit Island, which occur mostly due to poor hygiene, low income, and lack of proper medical facilities. The humid weather also makes it harder to control skin problems. The most frequently reported problems were scabies, ringworm, and acne that were linked to unhygienic living conditions, overcrowded homes, and a lack of awareness regarding skin diseases. Most of the participants reported that they go for self-treatment, which often results in incomplete or ineffective care, worsening the problem. In conclusion, in order to reduce these issues, there is an urgent need to improve hygiene practices and conditions through proper education and counselling and increase suitable healthcare facilities. By developing these fundamental areas we can protect the health of this underserved community.

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Disclaimer

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Conflict of Interest

The authors declare no conflict of interest.

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