

Screened Out Before Takeoff: The First Study from Pakistan on Dermatological Disqualification of Gulf-Bound Workers

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Abstract

Background High incidences of skin diseases affecting employability, quality of life, and medical fitness are seen in expatriate populations. Despite their importance, data on the prevalence and clinical profile of dermatological disorders in pre-departure medical examination is scarce.

Objective To assess the prevalence and spectrum of skin disorders among the potential expatriates, to study the influence of socio-demographic variables on the diagnosis, and to identify factors associated with being medically unfit for deployment.

Methods We conducted a cross-sectional analysis of 512 applicants during March–August, 2025 at Atlas Medical center plus Caring and curing center, Peshawar. Inclusion criteria covered only those who were intended for migration to Gulf States. Descriptive statistics were computed on SPSS (version 30) and Chi-square (χ^2) tests were carried out at 95% confidence level to assess associations. Binary logistic regression was utilized to identify predictors for medically unfit to deploy.

Results Out of 512 candidates, a total of 17.3% (n=89) were unfit to deploy. The common conditions were Vitiligo (17.3%), Pityriasis versicolor (14.6%) and Psoriasis (10.1%). Chi-square test revealed a statistically significant association of diagnosis with occupation ($P=.012$), age group ($P<.001$) and residence ($P=.010$). In separate binary logistic regression models, severe disease (OR=3.210, 95% CI: 1.756–5.869) and chronic duration (>3 months) (OR=2.750, 95% CI: 1.632–4.634) independently predicted unfitness.

Conclusion The result highlights the burden of skin disorders among these potential expatriates. Targeted screening, early diagnosis and treatment, environmental health planning and education campaigns could maximize health gains in this population.

Keywords Dermatology; Immigrants; Middle east; Pakistan; Public health; Skin diseases.

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Introduction

Epidemiology is fundamental in understanding the prevalence, age, sex, and geographic distribution of diseases of skin. According to Sir Richard Doll, it helps to quantify the burden of disease within human

populations. It also acts as one of the most direct and powerful tools for identifying the causes of dermatological conditions.¹ Skin diseases do not just affect an individual through their appearance. The impact includes social stigma, influencing quality of life, social relationships, psychological well-being,

daily activities, and productivity.² In the context of clinical evaluations for overseas employment, especially for those planning to migrate to Gulf countries, skin diseases take on additional medical and socioeconomic significance. Many destination countries, particularly in the Gulf region, have strict medical fitness requirements and the presence of certain skin conditions especially infectious, contagious or chronic visible ones even certain autoimmune disorders may render a candidate medically unfit for travel and employment abroad.³ According to the Gulf Health Council (GHC) rules, they must be free of pathological signs of leprosy and other chronic skin diseases such as eczema and psoriasis, or any other infectious skin diseases such as chronic *Tinea corporis* and other fungal infections, and scabies.⁴

Khyber Pakhtunkhwa, Pakistan, has seen a significant outflow of people heading to the Gulf States for employment and residence abroad. Peshawar plays a major role in the pre-departure medical examination, particularly of people intending to seek employment in the Middle East. The vast majority of potential emigrants undergo clinical clearance with compulsory dermatological screening for infectious diseases, chronic dermatoses, and other conditions relevant to public health.

The pattern and prevalence in migrant groups, specifically laborers, depend on many factors, such as overcrowding, poor hygiene, weather conditions, stress, occupational exposures, and changes in lifestyle. Most laborers live in overcrowded homes with less than satisfactory sanitation. Workers in construction, painting, metal work, and manual labor are continuously exposed to provocative irritants such as cement, adhesives, asbestos, acids, fiberglass, chromates, and rubber. This adds to the

problems of occupational skin diseases.⁵ The changes in climate, diet, and other environmental factors usually cause stress-related or climate-induced reactions in skin conditions among students and workers. Low awareness of this problem combined with scarce resources for dermatologic consultations creates difficulty in the early diagnosis and treatment of these conditions. Adding to the challenge, certain weather conditions foster the spread of fungal infections, bacterial skin conditions, and exacerbates existing skin infections, particularly working under the harsh high temperatures.⁶

Despite the significance of these concerns, very few studies have investigated the burden of skin diseases especially among potential expatriates undergoing pre-departure screening in Pakistan. Since skin diseases often have low mortality, they are frequently overlooked in public health research, despite their high impact on quality of life and employability. With this background, the present study is the first study in Pakistan aiming to investigate the pattern, socio-demographic correlations of skin diseases and also to investigate the factors which are most likely to be responsible for causing disqualification in the potential expatriate population undergoing pre-Gulf departure clinical screening, highlighting the significance of dermatological conditions in determining medical eligibility for travel and employment abroad.

Methods

This was a cross-sectional study conducted in two Gulf Health Council approved centres. i.e. Atlas medical centre and Caring and curing medical centre in Peshawar for six months, starting from March to August 2025. Participants were enrolled consecutively thus, 512 participants were recruited in the final analysis having the different skin conditions.

Eligible participants included all male and female individuals undergoing compulsory pre-departure medical screening for employment in GCC

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countries. Participants with incomplete laboratory or clinical records and those with a known history of chronic infectious diseases i.e. HIV, hepatitis B, hepatitis C, tuberculosis and syphilis were excluded from final analysis in order to ensure the reliability of data.

Data collection was through a self-structured questionnaire designed by the research team in consultation with Yashfeen college of Pharmacy, Lahore and consultant dermatologists of the both the clinics in Peshawar. Demographic characteristics, occupational background, clinical diagnosis, duration, and severity of dermatological conditions were considered in the questionnaire. Informed consent in written form was obtained from each participant, and after that, the dermatologist administered the questionnaire.

All data were entered and analysed using the IBM SPSS Statistics version 30. Descriptive statistics expressing the frequency and percentage of categorical variables and mean $\pm$ SD of continuous variables were computed. Chi-square tests assessed associations of categorical variables such as diagnosis, socio-demographic factors, and fitness status. Independent predictors of medical unfitness were then determined using binary logistic regression analysis. The level of statistical significance was set at a probability (p) value of <0.05 .

The study was conducted at Atlas Medical Centre and Caring and Curing Centre, Peshawar that are affiliated with Yashfeen College of Pharmacy, Lahore, under a formal Memorandum of Understanding (MoU) governing academic and research activities between the institutions. Ethical approval for the study was obtained from the Ethical Committee of Yashfeen College of Pharmacy, Lahore (YES/ERC/01-25/01/0009 dated 06.01.2025). Written informed consent was taken from all participants before commencing the study, and ethical research standards were adhered to concerning data confidentiality.

Result

A total of 512 participants undergoing pre-departure medical screening was included in the final analysis. Out of 512 candidates, a total of 17.3% (n=89) were unfit to deploy. The study population comprised both males and females aged 17 years and above, representing a wide range of occupational and residential backgrounds across Khyber Pakhtunkhwa (Table 1).

Among the screened population, various dermatological conditions were identified (Table 1).

Table 1 Socio-demographic profile and prevalence of skin conditions in potential expatriates

Category		n (%)
Gender	Male	506 (98.8)
	Female	6 (1.2)
Age group	17-25	155 (30.2)
	26-35	190 (37.1)
	36-45	123 (24)
	46+	44 (8.5)
Occupation	Labor	343 (66.9)
	Driver	63 (12.3)
	Farmer	17 (3.3)
	Students	30 (5.8)
	Others	59 (11.5)
Residence	Swat	112 (21.8)
	Peshawar	89 (17.3)
	Dir	78 (15.2)
	Mardan	46 (9.0)
	Charsadda	37 (7.2)
	Bannu	33 (6.4)
	Swabi	22 (4.3)
	Nowshera	22 (4.3)
	Buner	14 (2.7)
	Kohat	10 (2.0)
	Waziristan	8 (1.6)
	Shangla	5 (1.0)
	Karak	5 (1.0)
	Batkhela	5 (1.0)
	Others	26 (5.0)
Skin diagnosis	Vitiligo	89 (17.3)
	Psoriasis	52 (10.1)
	Pityriasis versicolor	75 (14.6)
	Tinea corporis	33 (6.4)
	Scabies	50 (9.7)
	Acne vulgaris	48 (9.3)
	Eczema	32 (6.3)
	Thermal burn sequelae	29 (5.7)
	Alopecia	26 (5.07)
	Miscellaneous	78 (15.2)

Vitiligo was the most common diagnosis (89 cases; 17.3%), followed by pityriasis versicolor (n=75; 14.6%), psoriasis (n=52; 10.1%), scabies (n=50; 9.7%), acne vulgaris (n=48; 9.3%), eczema (n=32; 6.3%), tinea corporis (n=33; 6.4%), thermal burn sequelae (n=29; 5.7%) and alopecia (n=26; 5.0%) (**Figures 3-10**). Diagnoses with less than ten cases each were grouped under the category miscellaneous to ensure clarity in analysis. These were actinic keratosis (n=4), acute bullous allergic contact dermatitis (n=2), cellulitis (n=5), chicken pox (n=3), contact dermatitis (n=07), dermatitis artefacta (n=2), erythema multiforme (n=2), freckles (n=4), hemangioma (n=3), impetigo (n=5), cutaneous leishmaniasis (n=1), lichen planus (n=1), neurofibromatosis (n=4), post inflammatory hyperpigmentation (n=7), port wine stain (n=7), rosacea (n=6), sclerosis (n=2), urticaria (n=4) and viral warts (n=9) (**Figure 1**).

Of these, many had specific implications regarding fitness based on criteria laid down by the Gulf Health Council. As a rule, applicants suffering from severe eczema were generally considered unfit for travel. Applicants with Pityriasis versicolor were normally passed as fit after treatment. Psoriasis, being a chronic autoimmune disorder, was generally categorized as unfit, and cases of scabies were recommended to undergo treatment before their cases could be reconsidered for clearance.⁴

Chi-square analysis yielded an association between diagnosis and residence ($P=.010$), occupation ($P=.012$) and age group ($P<.001$). The associations were statistically significant. In Peshawar (n=89, 17%), Swat (n=112, 21.8%), and Dir (n=78, 15.2%) districts, the frequency of skin conditions was higher. Similarly, in the occupational

category, laborers (n=343, 66.9%) and Drivers (n=63, 12.3%) were more commonly affected, probably due to the fact that they are most exposed to the sun, experience profuse sweating, and often come into contact with irritating agents. (Detailed supplementary tables for residence and occupation are available.) No significant association was found between diagnosis and gender ($p=.636$), (**Table 2**).

Binary logistic regression was performed separately for both duration and severity of conditions to identify independent predictors of being declared medically unfit for deployment. The analysis revealed that both severe and chronic duration of the skin condition were significant predictors of unfitness ($P<.05$). The participants with severe skin manifestations had significantly higher odds of being unfit compared to those with mild or moderate conditions, (OR=3.210, 95% CI: 1.756–5.869). Similarly, individuals with chronic dermatological conditions (>3 months) were more likely to be categorized as unfit, with an (OR=2.750, 95% CI: 1.632–4.634). Participants with chronic conditions were 2.75 times more likely to be unfit compared to those with acute conditions ($P<.001$). However,

Table 2 Association of different socio-demographic factors with skin diagnosis

Variables	Value	Df	P-value	Monte Carlo Sig. 95% CI	
				Lower bound	Upper bound
Age × skin diagnosis	56.642	12	<0.001*	<0.001	<0.001
Gender × skin diagnosis	2.597	4	0.636	0.625	0.644
Occupation × skin diagnosis	25.374	12	0.012*	0.010	0.014
Residence × skin diagnosis	26.024	12	0.010*	0.009	0.013

* $p < 0.05$ was considered statistically significant.

Table 3 Binary Logistic regression analysis for duration of conditions across fitness categories (Fit vs. Unfit)

Variable	p-value	Unadjusted OR (95% CI)
<i>Duration of condition</i>		
Chronic vs. Acute	<0.001*	2.750 (1.632-4.634)
Sub-acute vs. Acute	0.963	1.018 (0.479-2.164)

Table 4 Binary Logistic regression analysis for severity of conditions across fitness categories (Fit vs. Unfit)

Variable	P-value	Unadjusted OR (95% CI)
<i>Severity of condition</i>		
Severe vs. Mild	<0.001*	3.210 (1.756-5.869)
Moderate vs. Mild	0.944	0.975 (0.473-2.006)

Duration and severity were analyzed in separate binary logistic regression models. ORs presented are unadjusted odd ratios. Reference category: acute for duration and mild for severity. * $p < 0.05$ was considered statistically significant.

there was no significant difference between sub-acute and acute condition ($P=.963$) (**Table 3, 4**). These results are represented in **Figure 2**, a forest plot showing odds ratios. Dots to the right of the null line ($OR = 1$) represent predictors associated with higher likelihoods of unfit.

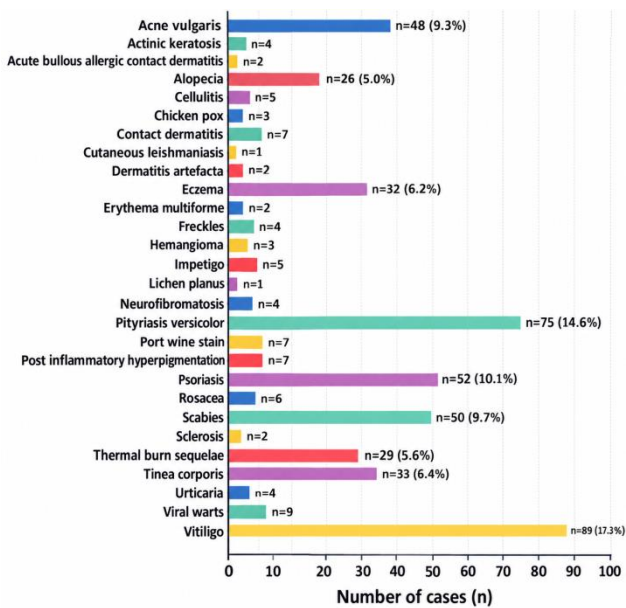


Figure 1 Distribution of dermatological conditions among the screened population.

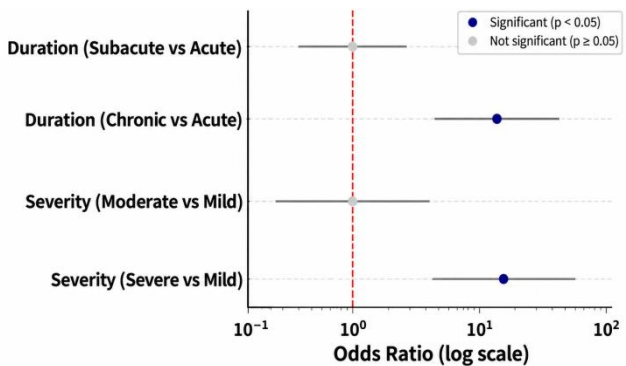


Figure 2 Forest plot of severity and duration of condition.

Forest plot showing the odds ratios ($OR=3.210$, 95% CI: 1.756–5.869, $OR=2.75$, 95% CI: 1.632–4.634) for severity and duration of condition respectively in relation to fitness status. The red dashed line represents the null value ($OR = 1$). Dark blue dots show significant predictors ($P<.05$), where odds ratios > 1 suggest higher likelihood of being unfit compared to the reference group. Light grey dots

denote non-significant predictors whose confidence intervals cross the null line.



Figure 3 Psoriasis

Figure 4 Vitiligo



Figure 5 Acne

Figure 6 Pityriasis versicolor



Figure 7 Scabies

Figure 8 Tinea versicolor



Figure 9 Eczema

Figure 10 Eczema on face

The clinical images used in this research were taken while carrying out screening and clinical examinations of the study participants after obtaining their consent and reflect the findings obtained at the time of evaluation.

Discussion

The spectrum of dermatologic disorders highlighted in the current study is wide. The most common among them are vitiligo, psoriasis, pityriasis versicolor, tinea corporis, scabies, impetigo, and eczema. The findings underscore the fact that dermatological conditions have key implications for health, function, and even fitness to work or travel when duration, severity, and socio-demographic factors are considered.

Our study indicates a high burden of fungal infections, including Pityriasis versicolor (14.6%) and Tinea corporis (6.4%), and parasitic infestations, such as scabies (9.7%), in younger adults (19-45) working in humid environments, performing manual occupations, and living under crowded conditions. These figures agree with the national estimates of fungal skin diseases, which have a prevalence of about 6.12 %, and scabies at 3.50 % among Pakistani individuals aged 5–94 years.⁷ The high prevalence of eczema and fungal infections among rural and peri-urban populations in Pakistan suggests that hygiene practices, occupational exposures, and residence are meaningful determinants of dermatologic morbidity.⁸ In our study, chronic or recurrent lesions particularly of Tinea corporis or Pityriasis versicolor can interfere with comfort, appearance, and adherence to hygiene standards, thus making them relevant to screening fitness for travel or employment. Although, Vitiligo and psoriasis are often reported with gender variation in the general population, our study did not observe such trends because female representation (1.2%) was extremely limited. In this male-dominant expatriate study (98.8%) these autoimmune dermatoses occurred mainly in adults and were more common among individuals from rural areas (52%). Worldwide, the prevalence of psoriasis varies greatly between as low

as 0.14 % in East Asia to as high as 1.99 % in Australasia among adults.⁹ In our study, severity and duration were the two independent predictors of causing unfitness in the participants. Studies on the distribution of the severity of psoriasis show that 50 % of patients have mild (<3% body surface area) involvement, 78 % have mild to moderate involvement (<10 % BSA) and only a small proportion of >2 % have extensive involvement of >50 % BSA.¹⁰ Long-standing eczema with recurrent flares can impair manual tasks, sleep, and concentration,¹¹ severe psoriasis can impede mobility, manual labour, and social interaction,¹² while untreated scabies may result in secondary bacterial infection and absence from work.¹³ During pre-departure screening or migrant evaluation, a widespread plaque psoriasis of long duration and resistant to therapy may need further assessment in terms of fitness to work or travel, especially if there is hand, feet involvement, or systemic comorbidities are present. It is not only diagnosis that matters but also the severity, chronicity and the potential for contagion or recurrent impairment in the context of pre-departure screening or migrant fitness assessment.

When considering socio demographic predictors, our findings highlight age as a consistent factor and showed a statistically significant association ($P<.001$). Fungal, parasitic infections and autoimmune/inflammatory conditions such as psoriasis and eczema peaked in late adolescence through adulthood (17-40). In our study, skin diseases do not show any striking gender differential ($P=.636$) but are strongly linked with socio-economic status, occupation ($P=.012$), and residence ($P=.010$). Occupation was also an important variable that emerged from our Pakistani sample in that persons engaged in manual labor (66.9%) and agriculture (3.3%) that required protective gear was more vulnerable to acquiring Tinea corporis, scabies, and impetigo. Residence, urban (48%) vs. rural (52%) affects hygiene habits, availability of dermatologic care, and crowding-all factors that modify disease prevalence and duration.⁷

The screening protocols should henceforth include a graded evaluation of dermatologic conditions-taking account of socio-demographic factors; occupation, residence, and previous duration/course-to determine the risk of fitness impairment rather than solely rely on a binary presence/absence of disease.

Our investigation evidences the growing literature that dermatologic conditions infectious, autoimmune/inflammatory, and fungal are common and socio-demographically patterned in Pakistan and that global trends reflect local realities. The interaction of age, gender, occupation, residence, with severity and chronicity, needs to apply to screening for fitness, particularly in contexts of migration or pre-departure evaluation. Longitudinal studies and migrant-specific research need to be done in order to quantify the direct influence of dermatologic disease severity/duration on unfitness and work/ travel outcomes.

Conclusion

Skin diseases constitute a huge burden among potential expatriates seeking pre-departure health examinations. Some of the most common skin diseases included vitiligo, pityriasis versicolor, and psoriasis. Disease severity and duration of chronicity have been found to be significantly associated with medical unfitness. It is recommended to enhance the screening process of skin diseases before departure as well as early treatment. Future multicentre studies are required in order to validate the results with the use of severity criteria and QoL assessments.

Limitations There are multiple limitations in this study. First, there is an imbalance in gender, as the majority (98.8%) of the participants were males. This may affect the generalizability of the results to females. Second, the study was done in two centres of Peshawar only thus, the results may not be applicable to other areas. Finally, PASI, BSA, and validated quality-of-life tools were not applied in this study, which may lead to the lack of objectivity in evaluating the severity of the disease and its effect

on patients' quality of life.

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Declaration of patient consent Authors certify that they have obtained all appropriate patient consent.

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Author's contribution

UA: Substantial contributions to interpretation of data and manuscript critical review.

MJQ: Substantial contributions to interpretation of data and manuscript writing.

AUAQ: Substantial contributions to acquisition of data, critical review of the manuscript.

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