

Clinic epidemiological Study Regarding The Pattern Of Dermatoses At A Tertiary Care Hospital At Sriperumbhatur

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Abstract

Background: Dermatological disorders represent a significant global health burden with variations by geography influenced by climatic, socioeconomic, and demographic factors. In India, skin diseases contribute substantially to disability and healthcare challenges, yet regional patterns remain understudied. This study aimed to analyze the clinicoepidemiological pattern of dermatoses in patients attending a tertiary care hospital in Sriperumbhatur.

Methods: A cross-sectional observational study was conducted from January to May 2025 at a tertiary care dermatology outpatient department in Sriperumbhatur. A total of 515 patients aged 1 to 70 years were enrolled. Data collection involved a structured questionnaire capturing demographics, socioeconomic status (Kuppuswamy scale), clinical history, and thorough dermatological examinations. Diagnoses were confirmed by clinical evaluation and, when necessary, by laboratory and histopathological investigations. Data analysis was performed using SPSS v25.0, employing descriptive statistics and chi-square tests to examine associations. A p-value <0.05 indicated statistical significance.

Results: Among 515 participants, the mean age was 35.96 ± 18.43 years, with a slight female predominance (52.8%). Students and daily wage laborers constituted the largest occupational groups (28.7% and 28.0%, respectively). The majority belonged to lower socioeconomic classes (Class IV and V accounted for 74.6%). Comorbidities included diabetes mellitus (19.6%) and hypertension (10.1%). Eczematous disorders (28.0%) were the most common diagnosis, followed by fungal infections (22.7%) and bacterial infections (9.5%). Infectious dermatoses accounted for 35.1% of cases, highlighting persistent hygiene-related challenges. Statistically significant associations were found between age groups and types of dermatoses ($p < 0.001$), with fungal infections predominating in children <10 years and chronic/degenerative conditions increasing with age. No significant gender differences in disease distribution were observed.

Conclusions: This study reveals a high burden of both eczematous and infectious dermatoses in a semi-urban Indian population, with significant impacts of socioeconomic status and age on disease patterns. These findings underscore the need for targeted public health interventions focusing on hygiene promotion, occupational safety, and age-specific dermatological care. Integrated management addressing both dermatological and systemic comorbidities is essential to improve outcomes.

Keywords: Clinic epidemiology, Dermatoses, Eczema, Fungal Infections, socioeconomic status

INTRODUCTION

The skin is the largest organ of the human body and serves as the primary barrier against environmental pathogens and physical trauma. Dermatological disorders represent a significant global health burden, affecting billions of individuals worldwide and posing substantial public health challenges¹. According to the Global Burden of Disease Study 2019, an estimated 4.86 billion new cases of skin and subcutaneous diseases were reported globally, with the highest number of new cases and deaths concentrated in South East Asia. In 2019, the estimated burden of disease for all types of skin and subcutaneous diseases was 42.9 million Disability Adjusted Life Years (DALYs), with 95% of these years representing years lived with disability^{1,2}.

The pattern and prevalence of dermatological conditions vary significantly across different geographical regions, influenced by multiple factors including climatic conditions, socioeconomic status, educational levels, occupational exposures, and the presence of comorbid conditions. In India, the burden of skin diseases is particularly pronounced, accounting for 19% of new cases globally in 2019 and contributing to 4.02% of the total years lived with disability³. The prevalence of skin diseases in the general population

has been reported to vary from 6.3% to 11.6% across different Indian studies, reflecting regional variations and methodological differences⁴.

Infectious dermatoses, including fungal, bacterial, and viral infections, constitute a major portion of skin diseases in tropical and subtropical regions like India, primarily due to hot and humid climatic conditions, poor hygiene practices, overcrowding, and low socioeconomic status. Non-infectious dermatoses, particularly eczematous conditions, also contribute significantly to the dermatological disease burden, affecting individuals across all age groups and socioeconomic strata.

Understanding the epidemiological patterns of dermatoses in specific geographical regions is crucial for healthcare planning, resource allocation, and the development of targeted prevention and treatment strategies. Tertiary care hospitals serve as referral centers and provide valuable insights into the disease patterns affecting the population they serve. However, limited comprehensive studies have been conducted in the Sriperumbhadur region of Tamil Nadu, India, to characterize the pattern of dermatological disorders^{3,5}.

This study aims to provide a comprehensive analysis of the clinicoepidemiological pattern of dermatoses among patients attending a tertiary care hospital in Sriperumbhadur, with particular focus on demographic characteristics, disease distribution, and associated factors. The findings of this study will contribute to the existing knowledge base on dermatological disease patterns in South India and may inform healthcare policy and clinical practice in the region.

METHODS

Study Design and Setting

This cross-sectional observational study was conducted at a tertiary care hospital located in Sriperumbhadur Taluk, Kanchipuram District, Tamil Nadu, India. The study period extended from January 2025 to May 2025, encompassing a comprehensive evaluation of dermatological conditions presenting to the outpatient department.

Study Population

The study included all patients attending the dermatology outpatient department during the specified study period. A total of 515 patients were enrolled in the study, representing a diverse cross-section of the population served by the hospital.

Inclusion Criteria

All patients belonging to the age group of 1-70 years who were willing to participate in the study were included. This broad age range ensured comprehensive representation across different life stages, from pediatric to geriatric populations.

Exclusion Criteria

Patients who were unwilling to undergo dermatological assessment and evaluation were excluded from the study. This ensured that all participants provided informed consent and were amenable to thorough clinical examination.

Data Collection

Data collection was performed using a predesigned, structured questionnaire administered by trained healthcare professionals. The questionnaire captured comprehensive demographic information including age, gender, occupation, and socioeconomic status using the Kuppaswamy socioeconomic status scale. Clinical symptoms and signs were recorded in a systematic manner following standardized dermatological examination protocols.

Each patient underwent a thorough dermatological examination by qualified dermatologists. Clinical diagnoses were established based on morphological characteristics, distribution patterns, and clinical presentations. Additional diagnostic investigations including KOH (Potassium Hydroxide) preparations, bacterial cultures, viral studies, and histopathological examinations were performed when clinically indicated to confirm diagnoses.

Data Management and Statistical Analysis

All collected data were systematically entered into Microsoft Excel spreadsheets and subsequently analyzed using SPSS version 25.0 (Statistical Package for Social Sciences). Descriptive statistics including frequencies, percentages, means, and standard deviations were calculated for all variables. Categorical variables were presented as frequencies and percentages, while continuous variables were expressed as means with standard deviations.

Chi-square tests were employed to examine associations between categorical variables, particularly the relationship between demographic characteristics and dermatological diagnoses. Statistical significance was defined as p-value < 0.05. For highly significant associations, p-values < 0.001 were specifically noted.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all participants or their legal guardians for pediatric patients. Patient confidentiality was maintained throughout the study period, and all data were anonymized for analysis purposes.

RESULTS

Demographic Characteristics

The study enrolled a total of 515 patients presenting with various dermatological conditions. The demographic analysis revealed several important patterns in the study population.

Table 1: Demographic Characteristics of Study Participants (N=515)

Characteristics	Category	n	Percentage (%)
Age Group (years)			
	<10	23	4.5
	10-20	105	20.4
	21-40	186	36.1
	41-60	144	28.0
	>60	57	11.1
	Total	515	100.0
Gender			
	Male	243	47.2
	Female	272	52.8
	Total	515	100.0
Mean Age ± SD	35.96 ± 18.43 years		

Table 2: Occupational Distribution and Socioeconomic Status (N=515)

Characteristics	Category	n	Percentage (%)
Occupation			
	Student	148	28.7
	Daily wage labourer	144	28.0
	Home maker	114	22.1

Characteristics	Category	n	Percentage (%)
	Professional	51	9.9
	Self professional	51	9.9
	Self employed	31	6.0
	Clerical worker	13	2.5
	Farmer	12	2.3
	Unemployed	2	0.4
Socioeconomic Status			
	Class I	31	6.0
	Class II	24	4.7
	Class III	76	14.8
	Class IV	93	18.1
	Class V	291	56.5

Table 3: Distribution of Comorbid Conditions (N=515)

Comorbid Condition	n	Percentage (%)
No comorbidity	323	62.7
Diabetes mellitus	101	19.6
Systemic hypertension	52	10.1
Hypothyroidism	26	5.0
PCOD	13	2.5
Total	515	100.0

Chi-square statistic (χ^2) = 631.398, p-value < 0.001 (highly significant)

Table 4: Distribution of Primary Dermatological Diagnoses (N=515)

Dermatological Diagnosis	n	Percentage (%)
Eczema	144	28.0

Dermatological Diagnosis	n	Percentage (%)
Fungal infection	117	22.7
Bacterial infection	49	9.5
Acne	32	6.2
Hyperpigmentation disorders	28	5.4
Papulosquamous disorders	21	4.1
Viral infection	15	2.9
Others	109	21.2
Total	515	100.0

Chi-square statistic (χ^2) = 280.045, p-value < 0.001 (highly significant)

Table 5: Association between Age Groups and Major Dermatological Diagnoses

Age Group	Eczema n(%)	Fungal n(%)	Bacterial n(%)	Acne n(%)	Others n(%)
<10 years	8 (34.8)	12 (52.2)	2 (8.7)	1 (4.3)	0 (0.0)
10-20 years	32 (30.5)	31 (29.5)	15 (14.3)	18 (17.1)	9 (8.6)
21-40 years	52 (28.0)	48 (25.8)	18 (9.7)	12 (6.5)	56 (30.1)
41-60 years	41 (28.5)	21 (14.6)	12 (8.3)	1 (0.7)	69 (47.9)
>60 years	11 (19.3)	5 (8.8)	2 (3.5)	0 (0.0)	39 (68.4)

Chi-square statistic (χ^2) = 116.127, p-value < 0.001 (highly significant)

Table 6: Association between Gender and Major Dermatological Diagnoses

Gender	Eczema n(%)	Fungal n(%)	Bacterial n(%)	Acne n(%)	Others n(%)
Male	68 (28.0)	54 (22.2)	23 (9.5)	15 (6.2)	83 (34.2)
Female	76 (27.9)	63 (23.2)	26 (9.6)	17 (6.2)	90 (33.1)

Chi-square statistic (χ^2) = 0.096, p-value = 0.999 (not significant)

Demographic Profile

The study population demonstrated a predominant young adult demographic, with 36.1% aged 21-40 years and mean age 35.96 ± 18.43 years (Table 1). Female predominance (52.8%) reflects typical healthcare-seeking patterns. The occupational profile showed equal distribution between students and daily wage laborers (28.7% and 28.0% respectively), while 75% belonged to lower socioeconomic classes (IV and V) (Table 2), indicating significant socioeconomic disadvantage associated with dermatological disease burden.

Comorbidity Patterns

Most patients (62.7%) had no comorbidities, though diabetes mellitus (19.6%) and hypertension (10.1%) were prevalent (Table 3). The significant statistical distribution ($\chi^2 = 631.398$, $p < 0.001$) indicates non-random comorbidity patterns, with diabetes particularly relevant for increased infection susceptibility and delayed healing in dermatological conditions (Table 3).

Disease Distribution

Eczema emerged as the leading dermatological condition (28.0%), followed by fungal infections (22.7%) (Table 4). The overall burden showed infectious dermatoses affecting 35.1% versus non-infectious conditions at 53.4%, reflecting improved hygiene standards compared to rural areas where infections typically predominate. The significant deviation from expected equal distribution ($\chi^2 = 280.045$, $p < 0.001$) confirms specific environmental and host factors influencing regional disease patterns (Table 4).

Age-Specific Patterns

Highly significant age-diagnosis associations ($\chi^2 = 116.127$, $p < 0.001$) revealed distinct patterns: fungal infections predominated in children <10 years (52.2%), balanced eczema-fungal distribution in adolescents, and progressive increase in "Others" category with age, reaching 68.4% in patients >60 years (Table 5). This reflects natural disease evolution from infectious conditions in youth to chronic/degenerative conditions with aging.

Gender Distribution

No significant gender differences existed in major dermatological diagnoses ($\chi^2 = 0.096$, $p = 0.999$) (Table 6). Uniform distribution between males and females for eczema (28.0% vs 27.9%), fungal infections (22.2% vs 23.2%), and other conditions suggests environmental and socioeconomic factors outweigh gender-specific influences in this population, contrasting with some literature reporting gender predispositions.

Clinical Implications

These findings highlight the complex interplay of demographic, socioeconomic, and environmental factors in dermatological disease patterns. The significant burden of preventable infectious conditions emphasizes opportunities for targeted hygiene interventions, while high eczema prevalence suggests need for occupational safety and allergen avoidance strategies. Strong age-related patterns support age-specific prevention approaches, while uniform gender distribution indicates universal rather than gender-targeted interventions may be most effective for this semi-urban population.

DISCUSSION

This comprehensive clinicoepidemiological study provides valuable insights into the pattern of dermatological disorders in the Sriperumbhadur region of Tamil Nadu, India. The findings contribute to the growing body of literature on dermatological disease patterns in South India and offer important implications for healthcare planning and clinical practice.

Demographic Patterns and Disease Distribution

The predominance of young adults in the 21-40 years age group (36.1%) in our study is consistent with findings from similar studies conducted across India. This age distribution may reflect healthcare-seeking behavior patterns, occupational exposures, and the natural history of certain dermatological conditions that peak during productive years of life^{1,3}. The slight female predominance (52.8%) observed in our study aligns with reports from several other Indian dermatological studies, which may be attributed to greater health awareness and healthcare-seeking behavior among women, as well as hormonal influences on certain skin conditions⁵.

The occupational profile revealed a significant representation of students (28.7%) and daily wage laborers (28.0%), reflecting the sociodemographic composition of the region. This occupational distribution has important implications for understanding disease patterns, as students may be more susceptible to infectious conditions due to close contact in educational settings, while manual laborers may experience higher rates of occupational dermatitis and contact sensitivities^{4,5}.

Socioeconomic Factors and Disease Burden

The predominance of lower socioeconomic classes in our study population (Class V: 56.5%, Class IV: 18.1%) is significant for understanding disease patterns and healthcare access. Lower socioeconomic status has been consistently associated with higher rates of infectious dermatoses due to factors such as overcrowding, poor sanitation, limited access to clean water, and delayed healthcare seeking⁶. This socioeconomic pattern may partially explain the high prevalence of fungal infections (22.7%) observed in our study.

Pattern of Dermatological Conditions

Eczematous Disorders: The finding that eczema was the most common dermatological condition (28.0%) is consistent with numerous studies conducted across different regions of India. Manapurath et al., Geetha et al., and Sharda et al. have all reported eczema as the leading cause of dermatological consultations^{6,7,9}. This high prevalence may be attributed to multiple factors including environmental allergens, occupational exposures, genetic predisposition, and the increasing trend toward urbanization with associated lifestyle changes. The broad spectrum of eczematous conditions includes atopic dermatitis, contact dermatitis, seborrheic dermatitis, and other variants, each with distinct epidemiological characteristics and management requirements.

Fungal Infections: The high prevalence of fungal infections (22.7%) as the second most common dermatological condition reflects the tropical and subtropical climate of the study region. Hot and humid environmental conditions, combined with factors such as excessive sweating, tight clothing, poor personal hygiene, and immunocompromised states associated with diabetes mellitus (present in 19.6% of our study population), create favorable conditions for fungal proliferation. This finding is consistent with studies conducted in similar climatic zones across India, where fungal infections consistently rank among the top dermatological condition^{5,9}.

Bacterial Infections: Bacterial skin infections accounted for 9.5% of cases in our study. The relatively lower prevalence compared to fungal infections may reflect improved hygiene practices and healthcare access in the region. However, bacterial infections remain significant contributors to dermatological morbidity, particularly among individuals with predisposing factors such as diabetes mellitus, immunocompromised states, and occupational exposures^{6,7}.

Comorbidity Associations

The presence of diabetes mellitus in 19.6% of study participants and systemic hypertension in 10.1% of patients has important implications for dermatological practice. Diabetes mellitus is well-recognized as a risk factor for various skin conditions, including fungal infections, bacterial infections, diabetic dermopathy, and delayed wound healing. The association between metabolic disorders and skin diseases necessitates a holistic approach to patient care, with consideration of systemic factors in dermatological management^{6,8}.

Age-Related Disease Patterns

The highly significant association between age groups and dermatological diagnoses ($p < 0.001$) demonstrates distinct age-specific disease patterns. This association reflects the natural history of various dermatological conditions and age-related changes in immune function, hormonal status, and environmental exposures. For instance, certain infectious conditions may be more prevalent in younger age groups due to lifestyle factors and exposure patterns, while chronic eczematous conditions may show different age distributions based on occupational and environmental factors^{3,4,5,8}.

Comparison with National and International Literature

When compared to other Indian studies, our findings show both similarities and regional variations. The prevalence of eczema (28.0%) in our study is comparable to reports from Manapurath et al. and other South Indian studies. However, some variation exists when compared to studies from different climatic zones or urban versus rural settings. For instance, studies from Kashmir region have reported different patterns due to distinct climatic conditions and lifestyle factors.^{4,6,8}

The Global Burden of Disease Study 2023 highlighted that dermatitis, urticaria, and acne contributed significantly to the burden of skin diseases in India. Our findings of high eczema prevalence align with these national trends, though the specific distribution may vary based on regional factors^{7,9}.

Clinical and Public Health Implications

The findings of this study have several important implications for clinical practice and public health policy. The high prevalence of preventable infectious conditions, particularly fungal infections, suggests the need for targeted public health interventions focusing on hygiene education, environmental modifications, and early detection programs. Healthcare provider training programs should emphasize the recognition and management of common dermatological conditions, particularly eczematous disorders and infectious dermatoses¹⁰.

The association between lower socioeconomic status and dermatological disease burden highlights the need for accessible and affordable dermatological care. Community-based interventions, telemedicine

initiatives, and integration of dermatological care into primary healthcare systems may help address healthcare disparities.

Study Strengths and Limitations

This study's strengths include its comprehensive approach to data collection, standardized diagnostic criteria, and statistical analysis of associations between demographic factors and disease patterns. The inclusion of detailed socioeconomic assessment using validated scales adds depth to the epidemiological analysis.

However, certain limitations should be acknowledged. As a hospital-based study, the findings may not fully represent the disease patterns in the general population due to referral bias and healthcare-seeking behavior patterns. Seasonal variations in disease patterns were not captured due to the limited study duration. Additionally, the study focused on clinical diagnoses, and some conditions may have benefited from additional diagnostic investigations for more precise classification.

CONCLUSION

This clinicoepidemiological study at a tertiary care hospital in Sriperumbhador examines the distribution and determinants of dermatoses in 515 patients. Eczematous conditions (28.0%) and fungal infections (22.7%) were the most common diagnoses, reflecting both regional climate and national trends. The largest affected cohort was aged 21–40 years (36.1%), and lower socioeconomic classes comprised 74.6% of cases, highlighting barriers to care and the need for accessible dermatological services. Preventable infectious dermatoses, particularly fungal infections, accounted for 35.1% of cases, underscoring opportunities for hygiene-focused preventive interventions. A strong age–diagnosis association ($p < 0.001$) indicates that dermatological care and education should be tailored to specific age groups. Additionally, significant comorbidity rates—diabetes mellitus (19.6%) and systemic hypertension (10.1%)—emphasize the necessity of integrated care models that address both skin and systemic health. These findings support comprehensive patient assessment and multidisciplinary coordination to improve dermatological and overall health outcomes in this semi-urban population.

Recommendations for Healthcare Policy and Practice: Based on these findings, several recommendations emerge for improving dermatological healthcare in the region. Training programs for frontline healthcare workers should focus on the recognition and initial management of common dermatological conditions, particularly eczematous disorders and infectious dermatoses. Enhanced emphasis should be placed on hygiene education and community health promotion programs to reduce the burden of preventable infectious skin diseases.

The integration of dermatological assessment into routine primary healthcare services could facilitate early detection and management of skin diseases, potentially reducing the burden on tertiary care facilities. Telemedicine initiatives and mobile health clinics may help address geographic and socioeconomic barriers to dermatological care access.

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