

Research Article

Patterns of Skin Disease and Prescribing Trends in Rural India

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Abstract: The study aims to determine the patterns of skin diseases among the patients who visited the dermatology department of K.S. Hegde Charitable Hospital. It also involves the study on prescribing patterns on those patients with skin disorders. A total of 400 patients with skin diseases were selected during the five months study period. Out of this, 191 patients were males and 209 patients were females. The majority of patients were in the age group of 21-30 years. The prevalence of allergic skin disease was found to be highest which includes eczema 66 (16.5%), followed by dermatitis 59 (14.75%), urticaria 30 (7.5%) and Polymorphic Light Eruption 19 (4.75%). The second most were the fungal infections. Tinea infections (10.25%) constitute the most common which include T. incognito, T. corporis, T. cruris, T. vulgaris. P. versicolor followed by intertrigo (2.75%). In sebaceous hair follicle disorders, acne and alopecia were identified. The commonly prescribed drugs were antihistamines (25.6%) followed by antifungals (24.5%), antibiotics (15%) and corticosteroids (12.5%). Antifungals including ketoconazole and fluconazole were found to be used widely. The next common class of drug prescribed was antibiotics where doxycycline and mupirocin was highly prescribed. It was concluded that eczema was the highest presentation and antihistamines was the most commonly prescribed drugs.

Keywords: Skin diseases, patterns, prescribing trends.

INTRODUCTION

Skin diseases in developing countries have a serious impact on people's quality of life and bring out significant burden to the nations. It affects more than 60% of the general population [1]. The prevalence of skin disease in any region or country depends on various factors, such as genetics, racial constitution, social and hygienic standards, customs and occupations. Transmissible skin diseases are observed in people who are living under poor socioeconomic and unhygienic conditions [2]. In India there is a significant incidence of infectious disorders in rural communities because of underdeveloped economy and social backwardness [3]. Ignorance on seriousness of the disease and improper medication worsens the condition [4]. Medicines can induce skin reactions and some are potentially life threatening [5]. Up to 80% of the populace suffering from skin problems may not seek medical help [6]. The most common approaches include skin maintenance care techniques, topical anti-inflammatory agents, systemic antihistamine, topical or systemic antibiotics and selectively, systemic corticosteroids [7].

Most of the Indian population belongs to low socio economic status and they did not bother about the seriousness of skin problems. It is believed that half of the population does not take proper medication, even after consulting health care specialists. This ignorance leads to more severe complication especially

in skin conditions. Our study aims in determining the patterns of skin diseases and drug prescribing trends among the patients who visited the dermatology department of K.S. Hegde Charitable Hospital.

METHODOLOGY

The study was conducted at the outpatient department of K S Hegde Charitable Hospital. It is a 750-bedded private tertiary care teaching hospital centrally located in Dakshina Kannada, Mangalore. The Dermatology department of this hospital provides well established health care services for patients with different type of skin diseases.

It is a non-interventional, prospective study in which data of 400 outpatients with skin disease were collected from the period of June 2011-October 2011. Patients under all ages are included in the study. A specially designed medical record abstract form was used for each patient separately which included age, gender, source of referral, clinical symptoms, diagnosis and drug therapy management. Institutional ethics permission was obtained before initiating the study.

RESULTS AND DISCUSSION

Demographic Data

A total of 400 patients with skin diseases were enrolled from the dermatological outpatient department

during the study period of five months. Out of this, 191 patients were males and 209 patients were females (Table.1). It shows that there was a slight preponderance in females (52%) with males (48%). The majority of patients were in the age group of 21-30 years. This indicates that in general, adult group were more prone to skin disease as they may be exposed more to the allergic substances. The subjects were categorized depends on their age group with gender distribution. It was noted that in age groups of 31-40, 51-60 and 61-70 the females were mostly affected. The majority of the male patients were in the age group of 11-20 (24.08%) and the majority of female patients were in the age group of 21-30 years (21.05%) The detailed information is given in the Table 1.

Table 1: Gender And Age Wise Distribution of Patients

| Age Group | Male (n=191) | Female (n=209) |
|-----------|-----------------|-------------------|
| 0-10 | 17 (8.90) | 20 (9.57) |
| 11-20 | 46 (24.08) | 33 (15.78) |
| 21-30 | 41 (21.47) | 44 (21.05) |
| 31-40 | 37 (19.37) | 43 (20.57) |
| 41-50 | 29 (15.18) | 28 (13.39) |
| 51-60 | 13 (6.8) | 18 (8.61) |
| 61-70 | 7 (3.66) | 17 (8.13) |
| 71-80 | 1 (0.52) | 3 (1.44) |
| 81-90 | - | 3 (1.44) |

Co Morbidities

In this study, 95% of the patient had no co morbidities and the remaining 5% reported with co morbidities which includes diabetes and hypertension. In diabetes, there is a suppression of the cell mediated immunity which may leads to infectious lesions. In our study, tinea infections were observed in diabetic patients.

Past Medical History

While considering previous medical history, 90% of the patients did not have any previous skin related disorders. The remaining few patients had some related disorders where, 3% of patients had atopy. In this study, eczema was commonly found in patients who had atopy previously. A study conducted by Scaria S *et al.*, also found that 56.7% patients reported to have eczema had a clear family history of atopy [8]. The details are mentioned in Table 2.

Table 2: Previous Medical History

| History | No. of patients | Percentage |
|------------------------------------------|-----------------|------------|
| Atopy | 12 | 3.0 |
| Photosensitivity | 4 | 1.0 |
| Psoriasis Vulgaris | 2 | 0.5 |
| Itching | 3 | 0.8 |
| Allergic to dust | 2 | 0.5 |
| Angioedma | 1 | 0.2 |
| Acid peptic disease | 1 | 0.2 |
| Atopic Dermatitis | 1 | 0.2 |
| Allergic to sulphha drugs | 1 | 0.2 |
| Acute or chronic alcoholic liver disease | 1 | 0.2 |
| Bronchial Asthma | 1 | 0.2 |
| Chronic kidney disease | 1 | 0.2 |
| Hansens disease | 1 | 0.2 |
| Keloid | 1 | 0.2 |
| Swelling of lips | 1 | 0.2 |
| Tinea corporis | 1 | 0.2 |
| Trauma | 1 | 0.2 |
| White lesion | 1 | 0.2 |
| Xerosis | 1 | 0.2 |
| No History | 363 | 90.8 |
| Total | 400 | 100 |

Type of Skin Diseases

Among the study population, allergic skin diseases was found to be the highest which includes eczema 66 (16.5%), followed by dermatitis 59 (14.75%), urticaria 30 (7.5%) and Polymorphic Light Eruption (PLE) 19 (4.75%). In this study, we observed fungal infections, as the second most common disease. In that, Tinea infections (10.25%) constitute the most common fungal infections which include T.incognito, T. corporis, T.cruis, T.vulgaris. P.versicolor (6%) followed by intertrigo (2.75%). In sebaceous hair follicle disorders, acne seems to be 5.5% in 22 patients and 1.75% alopecia in 7 patients. In parasitic infection, scabies (5.75%) was also reported. Papulo-squamous disorders like psoriasis accounts for 20 patients (5%) were also found. Similar findings were obtained from the study conducted in Mediterranean island and their report tells that psoriasis was the leading cause of dermatological consultation in account of papulo-squamous disease [9]. Folliculits, pigmentory disorder like vitiligo, and other skin disorders like keloid and xerosis were also reported

in this study. The overall presentation of allergic skin disorders was found to be 45% and the infectious disease was 28.5%. This may be due to overcrowding, poor hygiene, and easiness of exposure to contagions. Further information's are elaborated in Table 3.

Table 3: Distribution of Patients According to Types of Skin Diseases

| Disease | No. of patients (n=400) | Percentage (%) |
|-----------------------------|-------------------------|----------------|
| Acne vulgaris | 22 | 5.5 |
| Alopecia | 7 | 1.75 |
| Dermatitis | 59 | 14.75 |
| Eczema | 66 | 16.5 |
| Folliculitis | 15 | 3.75 |
| Intertrigo | 11 | 2.75 |
| Juvenile plantar dermatosis | 6 | 1.5 |
| Keloid | 6 | 1.5 |
| P.versicolor | 24 | 6 |
| PLE | 19 | 4.75 |
| Psoriasis Vulgaris | 20 | 5 |

| | | |
|-----------|----|-------|
| Urticaria | 30 | 7.5 |
| Scabies | 23 | 5.75 |
| Tinea | 41 | 10.25 |
| Vitiligo | 5 | 1.25 |
| Xerosis | 5 | 1.25 |
| Others | 41 | 10.25 |

Skin Diseases- Gender Wise

The patterns of skin diseases vary between male and female. The commonest presentation according to the gender is presented in the Table 4. In this study, eczema and dermatitis was the most common skin disorder in both male and females. Similar findings were also observed from the study conducted by Goh CL et al [10]. In sebaceous hair follicle skin disorders acne (6.81%) was higher in male patients compared to females (4.31%). We have observed urticaria (allergic skin disorder) mostly seen in male patients (8.90%). Fungal infections are found to be distributed almost similarly in male and female patients probably due to hot and humid climate which cause increased sweating. The rate of bacterial infections, papulo-squamous disorders, pigmentary disorders and hair disorders are higher in females, while the parasitic disease are significantly higher in males.

Table 4: Distribution of Patients According to Gender

| Disease | Male(n=191) | Percentage(%) | Female(n=209) | Percentage(%) |
|-----------------------------|-------------|---------------|---------------|---------------|
| Acne vulgaris | 13 | 6.81 | 9 | 4.31 |
| Alopecia | 3 | 1.57 | 4 | 1.91 |
| Dermatitis | 26 | 13.61 | 33 | 15.78 |
| Eczema | 32 | 16.75 | 34 | 16.27 |
| Folliculitis | 3 | 1.57 | 12 | 5.74 |
| Intertrigo | 5 | 2.62 | 6 | 2.87 |
| Juvenile plantar dermatosis | 4 | 2.09 | 2 | 0.96 |
| Keloid | 2 | 1.05 | 4 | 1.91 |
| P.versicolor | 12 | 6.28 | 12 | 5.74 |
| PLE | 12 | 6.28 | 7 | 3.35 |
| Psoriasis Vulgaris | 17 | 8.90 | 13 | 6.22 |
| Urticaria | 5 | 2.62 | 15 | 7.18 |
| Scabies | 14 | 7.33 | 9 | 4.31 |
| Tinea | 21 | 10.99 | 20 | 9.57 |
| Vitiligo | 2 | 1.04 | 3 | 1.43 |
| Xerosis | 1 | 0.52 | 4 | 1.91 |
| Others | 19 | 9.95 | 22 | 10.53 |

Distribution of skin diseases by age groups

The highest rate of skin disease by was observed in the age groups of 11-20, 21-30, and 31-40. Eczema and dermatitis was seen in almost all ages. Where, dermatitis was highest (27.11%) in 31-40 years age group and eczema (19.7%) in 11-20 years age group. This shows that eczema and dermatitis was more

common in the adult patients. Acne vulgaris was mostly seen in 21-30 years age group. Skin infections like tinea infections (26.8%) and bacterial infections like folliculitis (66.6%) were most prevalent in 21-30 years age group, but parasitic infections are more commonly seen in 11-20 (34.8%) years age group. Psoriasis vulgaris (30%) and the

pigmentary disorder like vitiligo (40%) were highest in 31-40 and 11-20 years age group respectively. A literature has indicated that psoriasis and vitiligo were considered the two dermatological disorders mostly

affecting the quality of life of the patients [11]. Table 5 demonstrates the complete distribution of skin diseases by age groups.

Table 5: Distribution of Skin Diseases by Age Groups

| Disease | Age groups | | | | | | | | |
|-----------------------------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| | 0-10 (n=37) | 11-20 (n=79) | 21-30 (n=85) | 31-40 (n=80) | 41-50 (n=57) | 51-60 (n=31) | 61-70 (n=24) | 71-80 (n=4) | 81-90 (n=3) |
| Acne vulgaris (n=22) | - | 9 (40.9) | 10 (45.45) | 3 (13.63) | - | - | - | - | - |
| Alopecia (n=7) | - | - | 3 (42.8) | 1 (14.3) | 3 (42.8) | - | - | - | - |
| Dermatitis (n=59) | 2 (3.4) | 6 (10.2) | 12 (20.33) | 16 (27.12) | 12 (20.3) | 7 (11.9) | 2 (3.4) | 1 (1.7) | 1 (1.7) |
| Eczema (n=66) | 6 (9.1) | 13 (19.7) | 12 (18.18) | 11 (16.7) | 5 (7.6) | 7 (10.6) | 11 (16.7) | 1 (1.5) | - |
| Folliculitis(n=15) | 1 (6.7) | 1 (6.7) | 10 (66.5) | 1 (6.7) | 1 (6.7) | 1 (6.7) | - | - | - |
| Intertrigo(n=11) | - | 2 (18.2) | - | 2 (18.2) | 4 (36.3) | - | 3 (27.3) | - | - |
| Juvenile plantar dermatosis (n=6) | 1 (16.7) | 5 (83.3) | - | - | - | - | - | - | - |
| Keloid (n=6) | - | 1 (16.7) | 1 (16.7) | 2 (33.2) | 1 (16.7) | - | 1 (16.7) | - | - |
| P.versicolor (n=24) | 2 (8.3) | 5 (20.8) | 5 (20.8) | 9 (37.5) | 3 (12.5) | - | - | - | - |
| PLE (n=19) | 3 (15.8) | 5 (26.3) | 3 (15.8) | 4 (21) | 3 (15.8) | 1 (5.3) | - | - | - |
| Psoriasis vulgaris (n=20) | - | 2 (10) | 2 (10) | 6 (30) | 3 (15) | 4 (20) | 3 (15) | - | - |
| Urticaria (n=30) | 8 (26.7) | 5 (16.7) | 3 (10) | 7 (23.3) | 5 (16.7) | 2 (6.6) | - | - | - |
| Scabies (n=23) | 6 (26) | 8 (34.8) | 3 (13.04) | 3 (13.04) | - | 1 (4.34) | - | 1 (4.34) | 1 (4.34) |
| Tinea (n=41) | 3 (7.5) | 10 (24.4) | 11 (26.8) | 7 (17) | 7 (17) | 1 (2.4) | 2 (4.9) | - | - |
| Vitiligo (n=5) | - | 2 (40) | 1 (20) | - | 1 (20) | 1 (20) | - | - | - |
| Xerosis (n=5) | - | - | 1 (20) | 1 (20) | - | 1 (20) | - | 1 (20) | 1 (20) |
| Others (n=41) | 5 (12.2) | 5 (12.2) | 8 (19.51) | 7 (17) | 9(21.9) | 4 (9.76) | 3 (7.32) | - | - |

Symptom Wise Distribution Of Patients

The details of symptoms among the study population were categorized in Table 6. Majority of the patients consulted to the dermatology department with the symptom of itching (55.25%). A study from Netherlands showed a substantial proportion of patients with skin disease experience physical symptoms, with itch being reported by more than 50% of all patients [12]. Second highest symptom was found to be lesion (17.5%), followed by 2% of discolouration, 5% of skin eruption, 2.5% of hair loss and 4% of white patches were reported in this study.

Table 6: Symptom Wise Distribution of Patients

| Symptoms | No. of patients (n=400) | Percentage (%) |
|----------------|-------------------------|----------------|
| Discolouration | 8 | 2 |
| Itching | 221 | 55.25 |
| Skin eruption | 20 | 5 |

| | | |
|------------------|----|------|
| Lesion | 70 | 17.5 |
| Hair loss | 10 | 2.5 |
| Scaling of scalp | 11 | 2.75 |
| White patches | 16 | 4 |
| Pain | 3 | 0.75 |
| Others | 22 | 5.5 |
| No symptoms | 19 | 4.75 |

Affected Body Site

It was found that skin diseases are mostly affected in the areas of legs (13.75%). Allergic skin disease like dermatitis, eczema, urticaria, juvenile plantar dermatosis and PLE were highest in arms, leg, hand, face and foot as mentioned in the Table 7. A study conducted by Richard D et al., also reported that the dermatitis was diagnosed predominantly on the fore arm and upper arm [13]. In fungal infections, mostly tinea is found to be affected in groin and P. versicolor in the neck region.

Table 7: Distribution of patients according to the affected body sites

| Body site | No. of patients (n=400) | Percentage (%) |
|---------------|-------------------------|----------------|
| Arm | 30 | 7.5 |
| Leg | 55 | 13.75 |
| Groin | 35 | 8.75 |
| Face | 40 | 10 |
| Chest | 15 | 3.75 |
| Hand | 25 | 6.25 |
| Foot | 45 | 11.25 |
| Neck | 20 | 5 |
| Multiple site | 48 | 12 |
| Others | 87 | 21.75 |

Class of Drugs Prescribed

The prescribing pattern on prevalence of skin disease is categorized in Table 8. On a total of 854 drugs prescribed, antihistamines (25.6%) were mostly used in this hospital followed by antifungals (24.5%), antibiotics (15%) and corticosteroids (12.5%). The management of skin disease may depend on the duration of the diseased condition. Antihistamines, antibiotics and corticosteroids were widely used as these drugs may decrease skin inflammations, eliminate exacerbating factors and manage the itchy and dry skin. We found that the antihistamines were the most commonly prescribed drug category. The second commonly prescribed drugs were antifungals which include ketoconazole and fluconazole followed by antibiotics and corticosteroidal preparations. Antibiotics like Doxycycline and Mupirocin was found to be prescribed more and in corticosteroid preparations, topical formulations were commonly preferred during the study period.

Table 8: Class of Drugs Prescribed

| Class of drugs | No of drugs prescribed | Percentage of total drugs prescribed (%) |
|-------------------------------------|------------------------|------------------------------------------|
| Anthelmintics | 19 | 2.2 |
| Antihistamine | 219 | 25.6 |
| Corticosteroids | 107 | 12.5 |
| Antibiotics | 131 | 15.34 |
| Anti-infective with corticosteroids | 32 | 3.7 |
| Antifungals | 209 | 24.5 |
| Vitamin | 32 | 3.7 |
| Emollients & skin protectives | 40 | 4.7 |

| | | |
|-------------|-------|-------|
| Lubricants | 10 | 1.17 |
| Moisturizer | 12 | 1.4 |
| Others | 43 | 5.03 |
| Total | n=854 | 100.0 |

CONCLUSION

Our study has clearly defined the different types of skin disease among the patients attended to the dermatology department of K S Hedge Charitable Hospital, Mangalore. The study reveals that the people in this region are more prone to skin disease and the incidence of skin disease among females was more. The majority of the patients fall under the adult category. We found that allergic skin disease and skin infections were more common in this location. Antihistamines, antifungals, corticosteroids and antibiotics were the most common class of drugs prescribed in this hospital. The study represents a rough estimate of the incidence of skin disease in this location. It is clearly understood that the prevalence of skin diseases is more in this rural population. This may be due to joint family, nature of occupation and living in unhygienic environments. Public awareness regarding personal hygiene and healthy living is necessary to reduce the burden of skin diseases and for improved quality of life in people especially in rural areas and developing nations.

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REFERENCES

1. Kocinaj A, Kocinaj D, Berisha M; Skin disease among preschool children. J. Bacteriol. Res. 2009; 1(2): 25-29.
2. Al-saeed WY, Al-Dawood KM, Bukhari IA, Bahnassy A; Risk factors and co morbidity of skin disorders among female school children in eastern Saudi Arabia. Invest Clin. 2007; 48(2): 199-212.
3. Dayal SG, Gupta GD; A cross section of skin diseases in Bundelkhand region, UP. Ind. J. Derm. Ven. Leprol. 1972; 43: 258-261.
4. WHO Report on Infectious Diseases. Available from: <http://www.who.int/infectious-disease-report/pages/textonly.html>.
5. Lee A, Thompson J; Drug induced skin reactions. Adverse Drug Reactions, 2nd edition, Pharmaceutical Press 2006: 125-156.
6. Williams HC; Epidemiology of skin diseases. Rook's Textbook of Dermatology. 7th edition, Oxford: Blackwell Science; 2004: 6.1-6.21.
7. Smith KM; Allergic and drug-induced skin disease. In: Helms RA, Quan DJ, Herfindal ET, Gourley D, editors. Text book of

- therapeutics, Drug and disease management. 8th edition, New York: Lippincott Williams and Wilking, 2006: 181-201.
8. Scaria S, James E, Dharmaratnam AD; Epidemiology and treatment pattern of atopic dermatitis in patient attending a tertiary care teaching hospital. *Int. J. Res. Pharm. Sci.* 2011; 2(1): 38-44.
 9. Symvoulakis EK, Krasagakis K, Komninos ID, Kastrinakis I, Lyronis I, Philalithis A et al.; Primary care and pattern of skin disease in a Mediterranean Island. *BMC Family Practice*, 2006; 7(6): 1-6.
 10. Goh C, Ong D; A pattern of hospital admissions in a skin ward in Singapore. *Singapore Med. J.* 1987; 28(5): 425-428.
 11. Al-Zoman AY, Al-Asmari AK; Pattern of skin disease at Riyadh military hospital. *Egyptian Dermatology Online Journal*, 2008; 4 (2): 1-10.
 12. Verhoeven EW, Kraaimaat FW, Kerkhof VD, Weel CV, Duller P, Valk PG et al.; Prevalence of physical symptoms of itch, pain and fatigue in patients with skin disease. *Brit. J. Dermatol.* 2006; 156:1346-1349.
 13. Smith DR, Guo Y, Lee Y, Hsieh F, Chang S, Sheu H; Prevalence of skin disease among nursing home staff in southern Taiwan. *Ind. Health.* 2002; 40: 54-58.