

## Utilization Pattern of Dermatological Procedures for Skin Disorders in a Tertiary Care Hospital, Telangana

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### Abstract

**Background:** Globally, skin diseases pose a significant public health problem both in developing and industrialized countries. During the last decade, there have been a lot of changes in diagnostic and therapeutic modalities in dermatology, hence the present study was undertaken to outline the spectrum of various skin diseases and investigates treatment modalities & their adherence.

**Methods:** This cross-sectional study was conducted among 250 patients from March to May 2022. A semi-structured questionnaire was used to evaluate the socio-demographics, pattern of skin diseases, utilization of dermatological procedures, treatment adherence, and preventive strategies for skin disorders.

**Results:** Among 250 study samples, 86(34.4%) had infectious and 164 (65.6%) had non-infectious skin disorders respectively. Eczema represented a high prevalence of 54(22.4%) followed by Pigmentary conditions 44(17.6 %) in both genders. The majority of respondents received combination therapy, particularly drug prescription 130(52%) as the preferred treatment followed by prescription of cosmetic products 60(24%) and topical retinoids 16 (6.4%). A few patients had received phototherapy 10 (4%), chemical peelers 10(4%), soft tissue fillers 5(2%), and Hyaluronic acid 8 (3.2%) respectively.

**Conclusion:** The present study concluded that there was a higher prevalence of non-infective skin diseases than infective skin diseases. The surprisingly high overall prevalence of skin diseases and the great need for treatment warrant further epidemiologic studies on the factors which are associated with skin diseases. A well-implemented skin health preventive approach throughout the lifespan might reduce the frequency and severity of cutaneous diseases.

**Keywords:** Skin diseases, Dermatological procedures, Treatment adherence

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## Introduction

Globally, skin diseases pose a significant public health problem both in developing and industrialized countries. [1] A recent Global Burden of Disease Study finding revealed that skin diseases rank 18 in the top 20 diseases in terms of Disease Adjusted Life Years (DALYs) and are the fourth leading cause of nonfatal disease burden. [2] The epidemiological pattern varies; acne, atopic dermatitis, and eczematous conditions are more common in developed countries. [3] whereas infections and infestations were common in developing countries. [4] These patterns of skin diseases in developing country like India was influenced by several problems such as a developing economy, lack of education, lower standards of hygiene, tropical climate, overcrowding, industrialization, quality accessible health care, nutrition, and different religious ritual and cultural factors. [5] Various therapeutic options are available for patients with dermatological diseases, including topical therapy, systemic therapy (orally or by injection), and phototherapy. Many previous studies have assessed adherence to topical treatments and reported low non-adherence scores. [6] In the context of dermatological conditions, a combination approach is the best treatment modality. Thereby, skin diseases also pose a huge financial burden along with psychosocial consequences due to the stigma attached to them and even their families. Several skin diseases are often neglected and people refrain from going to the doctor or end up doing self-treatment. [7] Further, there are numerous factors influencing treatment adherence in dermatology including patient characteristics and beliefs, treatment efficacy and duration, administration routes, chronicity of the disease, and the disease itself. Both patient factors, as well as physical factors such as doctor-patient communication, physician time availability, and doctor's

empathy, are equally important. Improvement in the standard of living, education of the general public, improvement in environmental sanitation, good nutritious food, awareness regarding various treatment modalities, and their source of information may help to bring down skin diseases in any community. Further, very few studies were done in this particular geographical region newly formed Telangana state, South India. Therefore, the present study aimed to determine the pattern of various skin disorders and to know the weightage of dermatological consultation and procedures among patients appearing in the Dermatology Department of a tertiary care hospital, which will help people to understand the scale of the increasing prevalence, utilization pattern of treatment modalities and possible preventive measures by identifying the risk factors is the most effective approach that can be undertaken to curtail it.

## Material & Methods

A hospital-based descriptive study was conducted during March-May 2022 among 250 patients who attended OPD in the Department of Dermatology, Prathima Institute of Medical Sciences, Karimnagar. The study protocol was approved by the institutional ethics committee and written informed consent was obtained before enrolling the patient in the study. A semi-structured questionnaire consisting of the socio-demographic characteristics, environmental and occupational characteristics, and risk factors for the occurrence of skin diseases, various dermatological disorders, and their utilization pattern of dermatological procedures and factors responsible for treatment adherence and preventive strategies for skin disorders was administered to n=250 patients attending OPD clinic. Patients of all ages newly registered at dermatology OPD with skin

diseases and both sexes, those who gave consent and were willing to participate in the study were included. Those patients on follow-up care and with the doubtful diagnosis were excluded from the study. A thorough medical history with a detailed cutaneous examination was done on every patient. Various dermatological disorders, symptoms, and involvement of commonest body sites were noted in detail with help of a proforma. Information regarding the utilization of various treatment modalities and factors for treatment adherence suggested preventive strategies were also collected.

**Statistical analysis:** The information was gathered, entered into an MS Excel spreadsheet, and examined using SPSS version 22. (Chicago, IL, USA). While qualitative variables were expressed in proportions and percentages, quantitative data were expressed using means and standard deviations. To determine the difference

between the two proportions, Fisher's exact test was performed.

### Results

In the present study, the majority n=166 (66.4%) were between the age group of 18-60 years. Among the study participants, n=114 (45.6%) were male and n=136 (54.4%) were female. About n=106(42.4%) of the study participants are residing in rural areas, while 144(57.6%) were from urban areas. Most of them were n=74(29.6%) cases were illiterate, n=62(24.8%) cases were having primary education while n=46 (18.4 %) were graduates. Regarding occupational status, the majority of them were farmers n=58(23.2%) followed by students n=50(20%) and housewives constituting 45 (18 %) respectively followed by others such as job-holders n=40(16%), construction workers/daily wages n=32(12.8%), unemployed n=20(8%) and retired 5(2%) and majority, n=94(37.6%) cases were belonging to the upper Lower class. (Table1)

**Table 1: Socio-demographic characteristics of respondents**

	Variables	Number	Percentage
Age	<18	49	19.6
	18 -60	166	66.4
	>60	35	14.0
Sex	Male	114	45.6
	Female	136	54.4
Residence	Rural	106	42.4
	Urban	144	57.6
Education	Illiterate	74	29.6
	Primary school	62	24.8
	Secondary school	30	12.0
	Intermediate	38	15.2
	Graduate	46	18.4
Occupation	Housewives	45	18.0
	Job	40	16.0
	Daily wage/ Construction worker	32	12.8
	Student	50	20.0
	Farmer/carpenter	58	23.2
	Retired	5	2.0
	Unemployed	20	8.0

Socio-economic status	Upper	24	9.6
	Upper Middle	52	20.8
	Lower Middle	38	15.2
	Upper lower	94	37.6
	Lower	42	16.8
Total		250	100%

The distribution of dermatological disorders has been given in table 2 the table shows the prevalence of different types of skin diseases among patients according to gender.

**Table 2: Distribution of Infectious dermatological disorders in the cases of the study**

Infectious disorders		Males	Females	Total
		53(21.2%)	33(13.2%)	86(34.4%)
Bacterial 15(6%)	Folliculitis	1(0.4)	1(0.4)	2(0.8)
	Balanitis	1(0.4)	1(0.4)	2(0.8)
	Impetigo	3(1.2)	1(0.4)	4(1.6)
	Pyoderma	2(0.8)	1(0.4)	3(1.2)
	Hansen disease	3(1.2)	1(0.4)	4 (1.6)
Fungal 53(21.2%)	Tinea capitis	3(1.2)	2(0.8)	5(2.0)
	Tinea cruris	10(4.0)	2(0.8)	12(4.8)
	Tinea faciei	3(1.2)	3(1.2)	6(2.4)
	Tinea corporis	3(1.2)	2(0.8)	5(2.0)
	Pityriasis rosea	3(1.2)	2(0.8)	5(2.0)
	Pityriasis versicolor	2(0.8)	4(1.6)	6(2.4)
	Pityriasis alba	2(0.8)	4(1.6)	6(2.4)
	Seborrheic dermatitis	3(1.2)	0(0.0)	3(1.2)
	Onychomycosis	3(1.2)	2(0.8)	5(2.0)
Viral 13(5.2%)	Genital wart	2(0.8)	1(0.4)	3(1.2)
	Herpes zoster	1(0.4)	1(0.4)	2(0.8)
	Herpes labialis	0(0.0)	2(0.8)	2(0.8)
	Molluscum contagiosum	1(0.4)	0(0.0)	1(0.4)
	Varicella	2(0.8)	1(0.4)	3(1.2)
	Hand-foot mouth disease	1(0.4)	1(0.4)	2(0.8)
Parasitic 5(2%)	Scabies	4(1.6)	1(0.4)	5(2.0)

The non-infectious diseases and the distribution in the cases of the study have been described in table 3.

**Table 3: Distribution of non-Infectious dermatological disorders in the cases of the study**

Non-infectious disorders		Males	Females	Total
		61(24.4%)	103(41.2%)	164 (65.6)
Eczema 56(22.4%)	Contact dermatitis	18(7.2)	20(8.0)	38(15.2)
	Eczema	4(1.6)	8(3.2)	12(4.8)
	Urticaria	2(0.8)	4(1.6)	6(2.4)
Keratinization 5(2%)	Follicular hyperkeratosis	0(0.0)	1(0.4)	1(0.4)
	Phrynoderma	0(0.0)	2(0.8)	2(0.8)
	Callosities/corns	0(0.0)	2(0.8)	2(0.8)
	psoriasis	3(1.2)	2(0.8)	5(2.0)

Autoimmune 16(6.4%)	Psoriasis vulgaris	3(1.2)	2(0.8)	5(2.0)
	Lichen planus	4(1.6)	2(0.8)	6(2.4)
Pigmentary disorders 44(17.6%)	Vitiligo	2(0.8)	4(1.6)	6(2.4)
	Post-inflammatory hyperpigmentation	4(1.6)	10(4.0)	14(5.6)
	Melasma	4(4.0)	16(6.4)	20(8.0)
	Freckles	1(0.4)	3(1.2)	4(1.6)
Skin appendages 18(7.2)	Acne vulgaris	6(2.4)	8(3.2)	14 (5.6)
	Acneiform eruptions	2(0.8)	1(0.4)	3(1.2)
	Sebaceous cyst	0(0.0)	1(0.4)	1(0.4)
Deficiency 2(0.8)	Pellagra	0(0.0)	2(0.8)	2(0.8)
Hair disorder 4(1.6)	Alopecia areta	1(0.4)	3(1.2)	4(1.6)
Miscellaneous & Cosmetic Consultation 19(7.6)	Insect bite	3(1.2)	3(1.2)	6(2.4)
	Acanthosis nigricans	1(0.4)	0(0.0)	1(0.4)
	Keratosis	0(0.0)	2(0.8)	2(0.8)
	Adverse drug eruption	2(0.8)	4(1.6)	6(2.4)
	Unwanted hair removal	0(0.0)	2(0.8)	2(0.8)
	Keloid	0(0.0)	1(0.4)	1(0.4)
	Ear piercing	0(0.0)	1(0.4)	1(0.4)
Total				

The majority n=58(23.2%) reported the longer duration of exposure to the sun as a risk factor for skin disorders followed by not using personal protective measures n=38(15.2%) and exposure to air pollutants (smoke & soot) from exposure to traffic smoke 20(8.0%). About n=62 (24.8%) reported that not aware of risk factors for skin disorders (Table 4)

**Table 4: Distribution of respondents in relation to Risk factors & symptoms**

Variables		Male	Female	Total
Risk factors for skin disorders	Stress & psychological factors	7(2.8)	3(1.2)	10(4.0)
	Poor personal hygiene (Bathing practices)	8(3.2)	4(1.6)	12(4.8)
	Lack of sleep	0	2(0.8)	2(0.8)
	Long duration of exposure to sun & cold	18(7.2)	40(16.0)	58(23.2)
	Exposure to air pollutants (soot & dust from traffic)	12(4.8)	8(3.2)	20(8.0)
	Poor nutrition	6(2.4)	2(0.8)	8(3.2)
	Medications (OCP, pain killers)	0	2(0.8)	2(0.8)
	H/o cigarette smoking	2(0.8)	0	2(0.8)
	Sharing personal belongings (linen)/ cosmetics	8(3.2)	4(1.6)	12(4.8)
	Not using personal protective measures	28(11.2)	10 (4.0)	38(15.2)
	Wearing tight-fitting & non-cotton clothes	4(1.6)	10(4.0)	14(5.6)
	Side effects of cosmetic products	1(0.4)	5(2.0)	6(2.4)
	Using allergic products like dyes, detergents, pesticides, animals, rubber gloves	1(0.4)	3(1.2)	4(1.6)
	Scarcity of water	2(0.8)	2(0.8)	4(1.6)
	Consuming certain types of food (oily)	2(0.8)	6(2.4)	8(3.2)

	foods & fast foods)			
	Recreation habits like swimming	2(0.8%)	0	2(0.8)
	Don't know	20(8.0)	42(16.8)	62(24.8)

Note: some are multiple responses

Figure 1 and 2 represents the commonest sites affected by skin diseases and their associated symptoms among respondents. The commonest site affected by skin disorder was the face n=68(27.2 %) followed by the upper limb n=28(11.2%) and lower limb 24(9.6%)

respectively. About n=52(20.8%) reported the multi-site involvement of skin disorders. A maximum of the study participants reported Itching n=74(29.6%) as the predominant symptom.

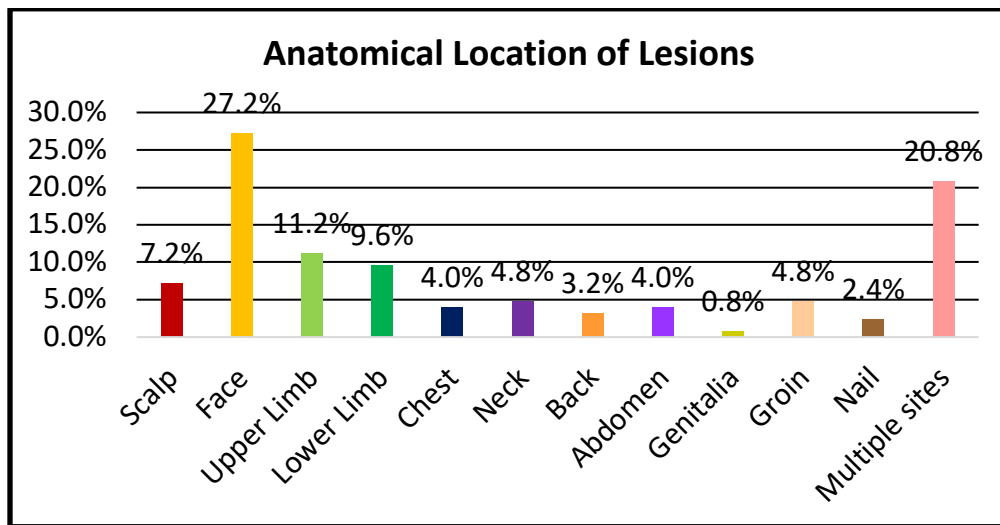


Figure 1: Anatomical location of the lesions in the cases of the study

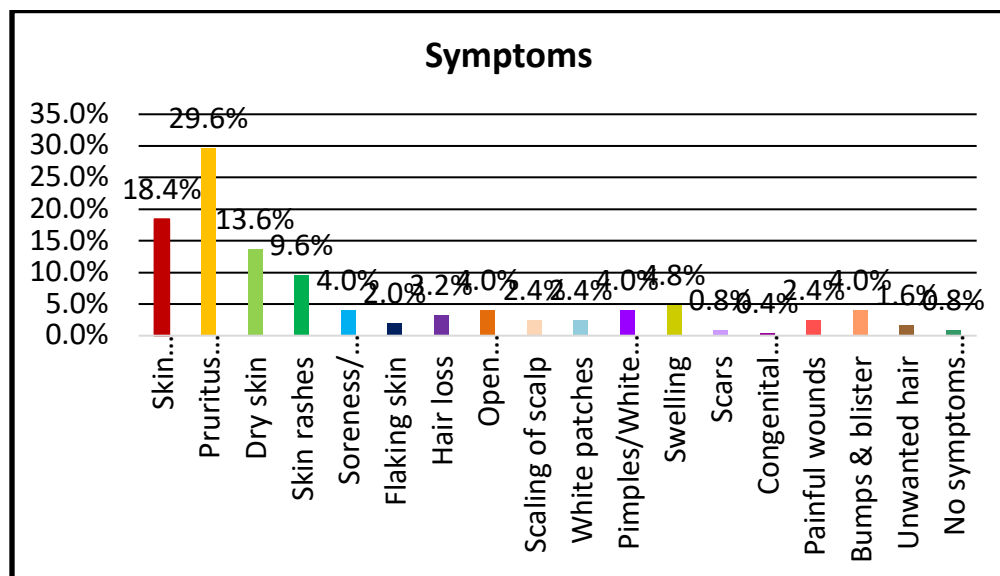


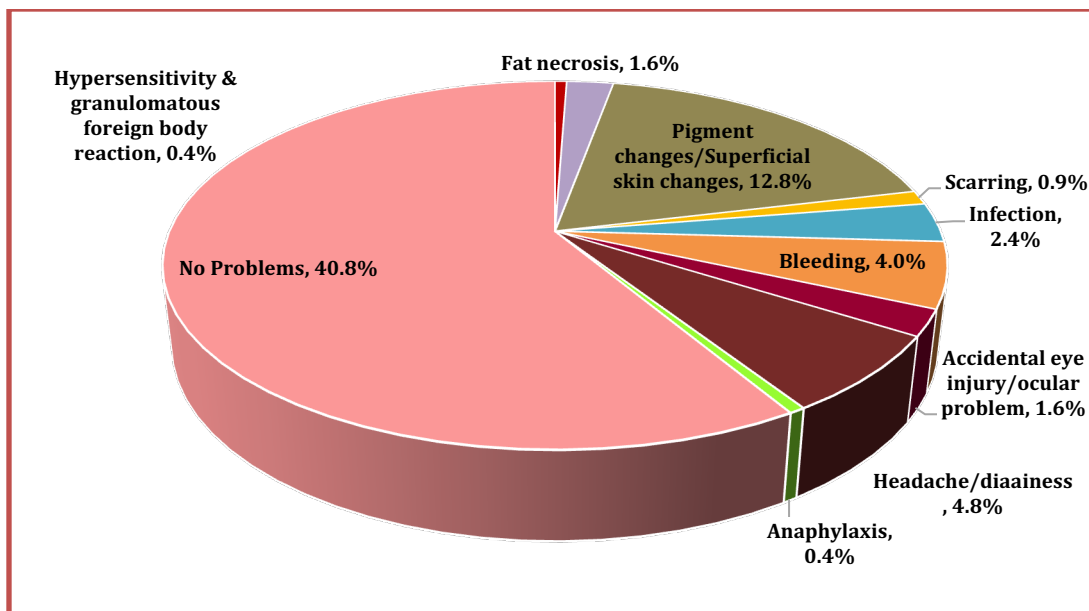
Figure 2: Distribution of symptoms reported by the cases of the study

**Table 5: Distribution of respondents in relation to treatment options & dermatological procedures**

	<b>Variables</b>	<b>Males</b>	<b>Females</b>	<b>Percent</b>
Available treatment options	Drug prescription	70 (28)	60(24)	130(52)
	Prescription of cosmetic products (Sunscreen, Facials)	18(7.2)	42(16.8)	60(24)
	Use of topical retinoid	8(3.2)	8(3.2)	16(6.4)
	Use of collagen	2(0.8)	4(1.6)	6(2.4)
	Autologous fat	0(0.0)	3(1.2)	3(1.2)
	Hormone replacement therapy	0(0.0)	1(0.4)	1(0.4)
	Phototherapy	6(2.4)	4(1.6)	10(4.0)
	Laser therapy	2(0.8)	4(1.6)	6 (2.4)
	Chemical peelers	4(1.6)	6(2.4)	10(4.0)
	Soft tissue fillers	2(0.8)	3(1.2)	5(2.0)
	Injection of Botulism toxin type A	4(1.6)	6(2.4)	12(4.8)
	Hyaluronic acid injection	4(1.6)	4(1.6)	8(3.2)
	Laser skin resurfacing	1(0.4)	3(1.2)	3 (1.2)
Drug prescription (Total =130)	Anti-histamines	24(9.6)	18(7.2)	42(16.8)
	Antifungal	14(5.6)	10(4.0)	24(9.6)
	Anti-scabetic drugs	4(1.6)	1(0.4)	5(2.0)
	Topical steroids	6(2.4)	9(3.6)	15(6.0)
	Antibiotics	4(1.6)	6(2.4)	12(4.8)
	Anti-infective with corticosteroids	2(0.8)	4(1.6)	6(2.4)
	Emollient & skin protective	2(0.8)	4(1.6)	6(2.4)
	Lubricants	4(1.6)	4(1.6)	8 (3.2)
	Moisturizer & Vitamins	4(1.6)	6(2.4)	10(4.0)
	Immunomodulators	0(0.0)	2(0.8)	2(0.8)

*Note: some are multiple responses*

Table 5 depicts the utilization of various dermatological procedures for skin diseases for all the cases presented in the study.



**Figure 3: showing the various side effects suffered by the patients in the study**

Figure 3 shows the various side effects suffered by the respondents after the dermatological procedures. No side-effects were observed in n=102 (40.8%) of the respondents, whereas n=148(59.2%) had reported some side-effects after treatment procedures. Pain or irritation 48 (19.2%) was the most typical side effect.

**Table 6: Treatment adherence and suggestive preventive strategies for skin disorders for all cases.**

Variables		Male	Female	Total
		Number (%)	Number (%)	Number (%)
Reasons for treatment Adherence (n=186)	Detailed information from the doctor about the patient's disease	10 (4.0)	14(5.6)	24(9.6)
	Good doctor-patient relationship	2(0.8)	10(4.0)	12(4.8)
	Affordability of patient	24(9.6)	8(3.2)	32(12.8)
	Patient's personality	8(3.2)	6(2.4)	14(5.6)
	Doctor's personality	1(0.4)	3(1.2)	4(1.6)
	Provision of written handouts from doctors	21(8.4)	13(5.2)	34(13.6)
	Comfortable medication	14(5.6)	31(12.4)	45(18)
	Adequate time for consultation	12(4.8)	26(10.4)	28(11.2)
	Doctors' empathy	4(1.6)	6(2.4)	10(4.0)
	Non-adherent to treatment	26(10.4)	38(15.2)	64(25.6)
Preventive	Screening	8(3.2)	6(2.4)	14(5.6)
	Dietary & Hygienic counseling sessions &	32(12.8)	36(14.4)	58(23.2)



Strategies suggested by dermatologists in relation to skin disorders	Reassurance			
	Hand hygiene and washing practices (linen/clothes)	32(12.8)	16(6.4)	48(19.2)
	Early & proper diagnosis and evidence-based treatment	8(3.2)	16(6.4)	24(9.6)
	Use of combination therapy	20(8.0)	26(10.4)	46(18.4)
	Personal Protective measures (Clothing, hats, Sunscreen & weaving of clothes)	20(8.0)	48(15.2)	68(27.2)
	Referring	6(2.4)	4(1.6)	10(4.0)

## Discussion

Though skin diseases can cause considerable morbidity. During the last decade, there have been a lot of changes in diagnostic and therapeutic modalities in dermatology, in both medical and surgical fields. Hence the present study was undertaken to outline the spectrum of various skin diseases and investigates treatment modalities & treatment adherence for these skin diseases. The present study revealed that skin diseases were comparatively more prevalent in females (54.4%) than males (45.6%). This female preponderance may be due to mindfulness of their looks and high sensitivity to health-related issues. These study findings were consistent with a study conducted by Grover et al., [8] the prevalence of skin disorders presented with female preponderance and the largest group of the population (50.7%) was in their second and third decades. In this study prevalence of non-infective disorders n=164(65.6%) was reported to be more than that of infective disorders n=86(34.4%) and female patients were found more in non-infectious cases n=103(41.2%), and male patients were found in infectious cases n=53(21.2%) in the present study. This variance could be due to differing susceptibilities in different population groups in diverse geographical regions depending upon exposure to the environment, occupational stress, dietary and lifestyle practices, etc. Regarding the overall

distribution of skin diseases in the present study, various forms of eczema and dermatitis represented a high prevalence of skin disorders with a prevalence of n=54(22.4%) followed by Pigmentary disorders n=44(17.6%) in both genders. In addition to variations in skin pigmentation and sun sensitivity between these study participants, the high frequency of contact dermatitis and photodermatitis in the present study might be explained by the fact that most inhabitants were either farmers or housewives who also worked in the fields, walked barefoot and worked with bare hands and used no sun protection during outdoor work and also use of detergents, particularly among housewives. The majority of them suffered from chronic irritant contact dermatitis, hand and foot eczemas, or chronic solar damage. After reviewing different studies [9, 10] it was clear that fungal or bacterial infections are the commonest infective skin disorder, instead of parasitic and protozoal infestations as found in a similar trend in the current study. Bommakanti J et al., [11] in their study had reported bacterial infections as the largest group with a prevalence of 15.53% followed by parasitic infestations with a prevalence of 13.48%. This is probably due to poor socioeconomic conditions and crowding in dwelling units. Among the Non-Infective conditions' eczema has been reported as the largest group, with prevalence varying from

17.48% to 39.21% found that allergies and eczema with a prevalence of 15.53% as compared to other studies, followed by Pigmentary disorders with a prevalence of 11.77 % which were consistent with findings of the present study. It has been observed that about 75.2% of participants were reported that aware of risk factors that contribute to the occurrence of skin diseases regardless of age and education level. The most common prevalent skin infection in this study, eczema, photodermatitis, and skin pigmentation disorders were partly due to long duration of exposure to the sun, a warm and humid climate, and further not using personal protective measures, working with bare hands and no protective clothing from sun exposure. The majority of the study population were students, housewives, and farmers where there were more chances for those skin disorders. G Ramamuthie et al., [12] reported that more than 50 % of participants were aware of the risk factors associated with a skin infection. A huge number of participants (71.9 %) knew that sharing their belongings could contribute to the chances of contracting skin infection, whereas 69.5 % of them were aware of heavy perspiration as a risk factor for skin infection. Only 45.6 % showed awareness of the risk of wearing tight-fitting and non-cotton clothes as a trigger to a skin infection. Epidemiological studies found a direct association between airborne (soot and smoke) exposure and the occurrence of prominent skin aging signs especially pigment spots, as well as wrinkles and in a study done by Huls A et al., [13] documented that an increase in soot and particles from traffic smoke was associated with 20% more pigment spots on forehead and cheeks. Various medications like antibiotics, diuretics, painkillers, and oral contraceptives (OCPs) can stimulate hyperpigmentation. [14] It was observed that skin infection was found to be the common reason for attending the dermatology OPD accounting for n=240

(96%) of the total number of patients and the rest of the 10(4.0) % came to seek cosmetic consultation. This finding is in agreement with a study conducted by Deepak et al., [15] and findings were in contrast to another study done by Thapa et al that 26% of the patients attending the Dermatology OPD were approached for a cosmetic consultation and the rest had various skin diseases. Various topical and systemic therapies are available which were chosen based on disease severity, relevant comorbidities, patient preference (including cost and convenience), efficacy, and evaluation of individual patient response. [16] It was observed that the majority of the respondents received combination therapy, particularly drug prescription n=130(52%) in form of anti-histamine, anti-fungal, topical corticosteroids, antibiotics, and moisturizers & emollients was preferred treatment as an indication for various skin diseases accounting more than half of respondents followed by prescription of cosmetic products n=60(24%) and topical retinoids n=16(6.4%) in the present study. A study conducted by Rathod SS et al., [17] reported that topical corticosteroids were prescribed in 28.4% of all the prescriptions. Antiallergics were the most commonly prescribed drug class followed by antacids and antifungals. Antacids were prescribed in 76% of all prescriptions. According to recently published studies, Topical corticosteroids are the preferred agents for localized Vitiligo whereas for generalized Vitiligo good alternative was Phototherapy. [18]

### Conclusion

The findings of the present study concluded that there was a higher prevalence of non-infective skin diseases than infective skin diseases requiring treatment. There was a vast majority of patients suffering from Allergic, Eczema & hyperpigmentation skin disorders which probably reflects the minor regional variance in the study area. While the high incidence of fungal and bacterial infections is

possibly due to poverty, overcrowding, poor hygiene, and lack of health education regarding risk factors. The surprisingly high overall prevalence of skin diseases and the great need for treatment warrant further epidemiologic studies on the factors which are associated with skin diseases. Due to the availability of various over-the-counter medications with inadequate evidence of safety and efficacy, patients are often confused about making the correct choice. Therefore, proper diagnosis with evidence-based treatment strategies can help in achieving promising results.

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