Pattern of Diseases Presenting in Dermatology OPD of a Tertiary Care Hospital, Kathmandu

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ABSTRACT

Introduction: Dermatological conditions make up a significant burden of hospital visits. This study aims to calculate the prevalence of different dermatological conditions among OPD visits in a tertiary care hospital in Kathmandu, and describe the variation of those conditions with demographic variables and seasons.

Methods: This study was performed retrospectively using the data collected in the OPD register of a tertiary level hospital from 1th April 2017 to 13th April 2018. Analysis was conducted using MS Excel 2016 and Statistical Package for the Social Sciences (SPSS) v25.

Results: A total number of 24,332 OPD visits were recorded in the year. 54.3% of the visits were made by males and 45.7% by females and most common age group seeking dermatological consultation was 25 to 34 years. Noninfectious dermatoses were more common than infections. The most common noninfectious dermatoses were dermatitis/eczema, urticaria, angioedema and hypersensitivity, and pigmentary disorders in descending order of frequency. The common infectious dermatoses in decreasing order of frequency were fungal, viral, and parasitic/protozoal conditions. The infectious dermatoses were found to be significantly higher in males ($p<0.05$) while pigmentary disorders, urticaria and angioedema, autoimmune cutaneous disorders, disorders of pilosebaceous units and xerosis were significantly higher in females ($p<0.05$). Bacterial, fungal and viral infections, eczemas, urticarial/angioedema, papulosquamous disorders, xerosis, neoplasms and vasculitis showed significant seasonal variation.

Conclusions: Eczemas and fungal infections are the most common dermatoses. Infectious dermatoses and several non-infectious dermatoses vary significantly with seasons.

Keywords: dermatoses; infectious; noninfectious; seasons; variation

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INTRODUCTION

Skin diseases are major health problems because of their high prevalence, despite having relatively low morbidity.[1] Of the general population, nearly one third in the United States[2] and one fourth in the United Kingdom[3] are affected by skin disorders. A significant percentage of the disease burden in the low and middle income countries is made up by different dermatological conditions.[4] A study in rural Nepal showed a point prevalence of skin abnormalities as 62.2%.[5] According to the Annual Health Report of the Department of Health Services, skin diseases were the eighth largest cause for OPD visits in the year 2015/16.[6]

Nepal is a Himalayan country located 280 N, 840 E.[7] The country comprises of the mountains in the north, the central hills, and the southern terai plains, with climate varying from arctic type in the north to tropical type in the south.[7] The pattern of dermatological diseases varies from country to country and region to region within the same country.[8] Climatic variations influence the occurrence of certain dermatologic diseases.[9]

This study was conducted in a tertiary care centre with a wide catchment area. People from almost all districts visit this centre. The study was aimed at explaining the distribution of skin disorders in various age groups and sexes, as well as the seasonal variation of the most common skin diseases.

METHODS

This hospital based study was done among cases presenting to the Dermatology OPD of a tertiary care hospital in Kathmandu from 14th April 2017 to 13th April 2018. Biographic data including age and sex of patients, and date of OPD visit were recorded along with the diagnosis by the consultant dermatologists themselves. Diagnoses were made by dermatologists based on clinical examination and, when required, investigations including microscopic examinations, KOH mount, skin biopsies, etc were undertaken. Unclear diagnoses were either reconfirmed/validated or excluded. Cases with more than one diagnosis were taken into account. All new and follow-up cases presenting to the Dermatology OPD were enrolled irrespective of age and sex. Cases with no clinical diagnosis and/or incomplete data recorded were excluded. Anonymity of the patients was maintained throughout the process. The raw data were entered in the MS Excel 2016 and the required analyses were done using Statistical Package for the Social Sciences (SPSS) v25.

Skin diseases were classified into infective and non-infective dermatoses. Infective dermatoses were further classified into bacterial, fungal, viral, and parasitic infections. Leprosy and Sexually Transmitted Infections (STIs) were grouped separately under infectious diseases. Non-infective dermatoses were classified into eczemas, disorders of pilosebaceous unit, disorders of hair and nail, papulosquamous disorders, urticaria and angioedema, photodermatoses, autoimmune disorders, pigmentary disorders, drug reactions, vasculitis, neoplasms, scars, keloids and hypertrophic scars, pruritus, cutaneous manifestations of systemic disorders, xerosis, and physical disorders (heat, cold, radiation, others). Systemic diseases were put into a separate category and diseases that did not fit into any of the above categories were classified as "others". For the purposes of analysis, patients' ages were grouped into neonates (< 28 days), infants (< 1 year), < 5 years, 5 to 14 years, 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74 years, and >75 years. Seasonal analysis was done using the meteorological definition of seasons as follows: March to May: spring; June to August: Summer; September to November: Autumn;

December to February: Winter.[10] Descriptive statistics were calculated and bivariate analysis including chi-square test was done where applicable, and p value of <0.05 was considered significant.

RESULTS

A total of 24,332 OPD visits were recorded during the study, with most visits recorded in the month of May (10%) and lowest visits in February (6.6%). 45.7% of OPD visits were females and 54.3% were males. The most common age group was 25 to 34 years (27.0%) followed by 35 to 44 years (16.0%), and 45 to 54 years (13.4%). Noninfectious dermatoses were more common (75.5%) than infectious (30.1%). 5.6% of cases had both infectious and non-infectious dermatoses concurrently.

Among infectious cases (Table 1), fungal infections (predominantly tinea cruris, tinea corporis, pityriasis versicolor, onychomycosis) were the most common (53.7%) followed by viral infections (17.0%, mostly warts, herpes zoster, varicella). 13.2% of cases were parasitic/protozoal infections (mostly scabies). As shown in Table 2, maximum weightage of non-infectious cases was carried by eczema (36.2%) followed by urticaria, angioedema and hypersensitivity (8.0%), pigmentary disorders (7.7%), xerosis (7.5%), and disorders of pilosebaceous and eccrine gland (7.3%).

Eczema was the most common diagnosis among all age groups except among 15 to 24 years where disorders of pilosebaceous and eccrine glands and fungal infections were more common than eczema. Among infectious diseases, parasitic infections were most common in children less than five years, whereas fungal infections were most common in all other age groups.

Table 1. Infectious diseases presenting to Dermatology OPD

Diseases	Disease burden	Percentage
Fungal infections	3927	53.7
Viral infections	1245	17.0
Parasitic and protozoal infections	964	13.2
Bacterial infections	486	6.6
STIs	410	5.6
Leprosy	283	3.9

Table 2. Non-infectious diseases presenting to Dermatology OPD

Diseases	Cases	Percentage
Dermatitis	6650	36.2
Urticaria and angioedema	1475	8
Pigmentary disorders	1410	7.7
Xerosis	1370	7.5
Disorders of pilosebaceous units	1338	7.3
Papulosquamous disorders	1224	6.7
Photodermatoses	1004	5.5
Physical disorders	804	4.4
Hair disorders	734	4
Pruritus	706	3.8
Neoplasm	454	2.5
Scar, keloid and hypertrophic scar	335	1.8
Autoimmune disorders	268	1.5
Cutaneous manifestations of systemic diseases	172	0.9
Nail disorders	67	0.4
Vasculitis	55	0.3
Sexual dysfunctions	35	0.2
Drug rashes	32	0.2
Psychocutaneous disorders	8	0.04
Hereditary and genodermatoses	3	0.02
Others	226	1.2

Table 3. Sex distribution of skin disorders

Skin disorders	No of cases		p value
	Female	Male	
Bacterial infections	153	224	0.046
Fungal infections	1111	2161	0
Viral infections	402	637	0
Parasitic, protozoal infections	309	436	0.019
Dermatitis	2604	3131	0.643
Disorders of pilosebaceous units	632	506	0
Papulosquamous disorders	489	560	0.525
Nail disorders	37	20	0.003
Hair disorders	253	363	0.02
Urticaria and angioedema	678	503	0
Photodermatoses	350	369	0.098
Autoimmune disorder	130	100	0.001
Pigmentary disorders	796	390	0
Drug rashes	9	20	0.113
Vasculitis	34	14	0
Neoplasm	189	185	0.056
Scar, keloid and hypertrophic scar	131	161	0.782
Pruritus	380	297	0
Cutaneous manifestations of systemic diseases	73	75	0.37
Psychocutaneous disorders	2	6	0.241
Hereditary and genodermatoses	1	2	0.668
Leprosy	29	227	0
STIs	59	272	0
Sexual dysfunctions	2	32	0
Xerosis	642	558	0
Physical disorders	390	267	0
Others	74	109	0.154

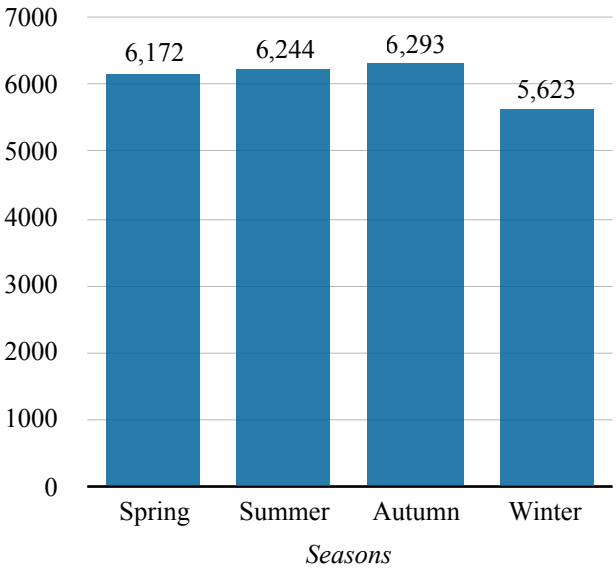

Fig 1. OPD visits by seasons

As shown in Table 3, all infectious dermatoses including fungal, bacterial, viral, parasitic along with STIs and leprosy were found to be significantly higher in males ($p<0.05$). Pigmentary disorders, urticaria and angioedema, autoimmune cutaneous disorders, disorders of pilosebaceous units and xerosis showed preponderance in females ($p<0.05$). Eczema, papulosquamous disorders, photodermatoses and skin tumors did not show significant variation with sex.

Regarding seasonal trends (fig 1), the total numbers of cases did not show much variations in winter where there was a decrease (23.1% of total visits). As shown in Table 4, the proportion of infectious dermatoses among total cases was found to be highest during summer (31.7%) and lowest during

Table 4. Proportion of infectious diseases by seasons

Seasons	Non-infectious dermatoses (%)	Infectious dermatoses (%)
Spring	74.4	25.6
Summer	68.3	31.7
Autumn	70.4	29.6
Winter	73.1	26.9

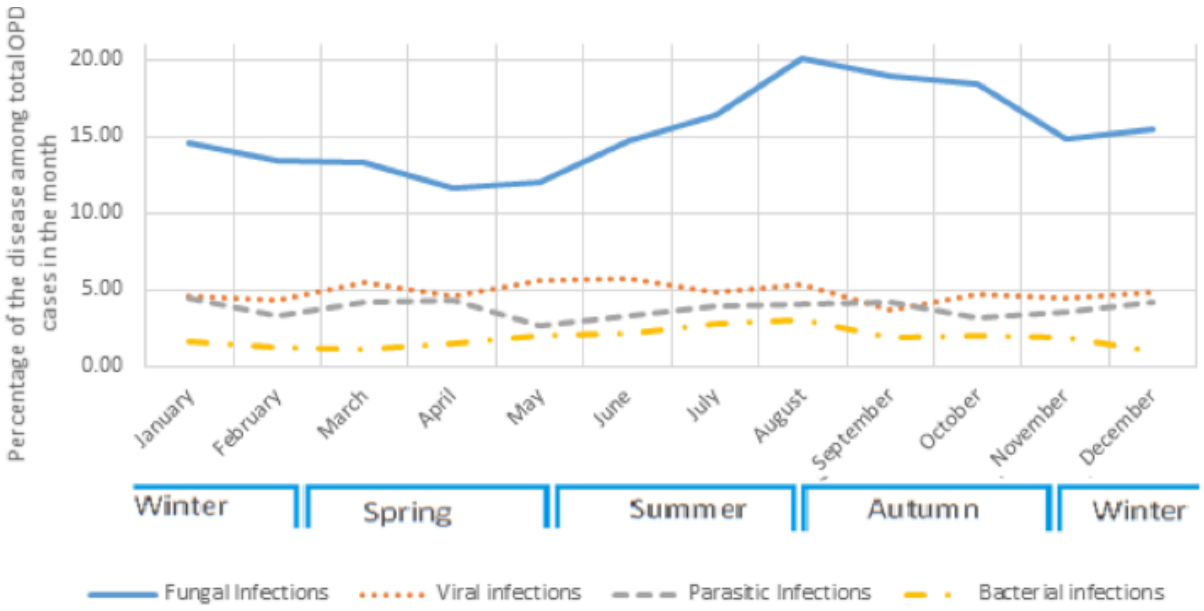

Fig 2. Monthly distribution of the most common infectious dermatoses

winter (26.9%). The monthly distribution of the most common non-infectious and infectious dermatoses are given in Figures 2 and 3. Among infectious diseases (Table 5), bacterial (most common in summer followed by autumn), fungal (autumn, summer), and viral infections (summer, spring) showed statistically significant seasonal variation, while parasitic infections, STIs and leprosy had statistically insignificant variation with seasons. Among non-infectious dermatoses (Table

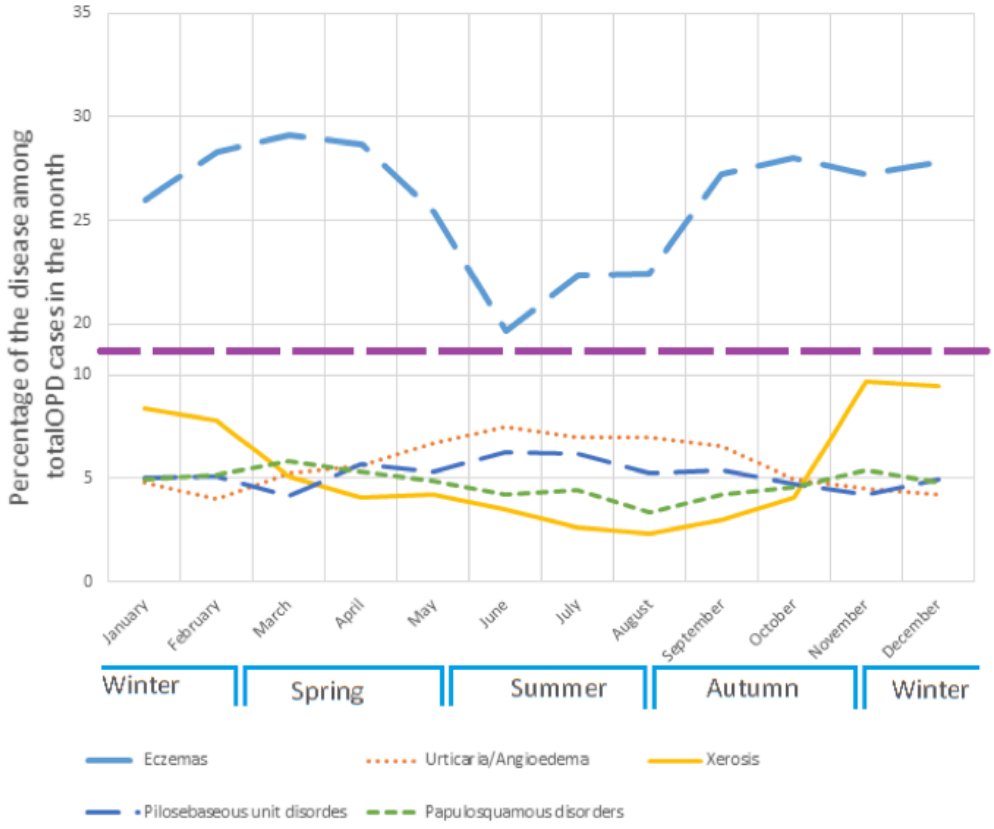

Fig 3. Monthly distribution of the most common non-infectious dermatoses

Table 5. Infectious skin diseases by seasons

Infectious Diseases	Spring	Summer	Autumn	Winter	p value	Remarks
Fungal infections	805	1131	1131	860	0.000	*
Viral infections	341	352	281	271	0.007	*
Bacterial infections	105	176	128	77	0.000	*
Parasitic infections	239	248	237	240	0.541	
STIs	117	116	88	89	0.100	
Leprosy	69	87	75	52	0.121	

**Significant*

6), eczemas (most common in spring), urticarial/ angioedema (summer), papulosquamous disorders (spring, winter), disorders of pilosebaceous unit (summer, spring), photodermatoses (summer, spring), physical disorders (winter, spring), xerosis (winter), neoplasms (summer, spring), and vasculitis (summer) showed significant statistical variation with seasons. Pigmentary disorders, disorders of hair and nail, autoimmune disorders, and drug reactions showed insignificant seasonal variation.

DISCUSSION

A total of 24332 OPD visits were recorded, among which 45.7% were females and 54.3% were males. The large number of OPD visits points to significant burden of dermatological diseases in the community. A study conducted in rural Nepal found that 47.4% of dermatological conditions was present in female.[5] Other hospital-based studies conducted in Nepal and India have found percentage of OPD visits by females ranging from 43.6% to 51.5%.[8,11,12] A camp-based study about dermatological conditions in hilly region of Nepal found 47.9% were males and 52.1% females.[13] However, a community health camp based study in remote hilly region of Western Nepal found that 82.7% were females and the remaining males.[14]

In our study, patients' age ranged from three days to 102 years. However, the most common age group to seek dermatological consultation was 25 to 34 years, followed by 35 to 44 years. Several factors likely contribute to this including increased likelihood of exposure to the environment in these physically active age groups, higher concern for physical appearance as well as health in general, as well as easier access to health facilities. Other studies have reported similar findings. A study conducted in the hilly region of Nepal concerning the impact on quality of life of dermatological conditions found that age groups most frequently represented were 5 to 14 (31%), 15 to 24 (26%) and 25 to 34 years (15.3%).[13] A tertiary level hospital from Kolkata in India reported that the maximum number of study population was aged 15 to 24 years.[8] Studies in different regions of Nepal found 15 to 30 years age group to be the most common.[11] Health camp-based studies in Nepal have found age groups 10 to 19 years, 15 and <15 years to be the most represented in their study populations.[14]

Maximum OPD visits were recorded in the autumn season and lowest in winter. We found that infectious diseases comprised of a larger portion of cases in the summer and autumn season. Increased humidity and temperature likely contribute to this rise. A study on seasonal variation of

Table 6. Non-infectious skin diseases by seasons

Non-infectious Diseases	Spring	Summer	Autumn	Winter	p value	Remarks
Eczemas/Dermatitis	1811	1428	1804	1607	0.000	*
Urticaria/Angioedema	388	479	347	261	0.000	*
Papulosquamous diseases	349	269	312	294	0.006	*
Disorders of pilosebaceous unit	336	393	313	296	0.009	*
Photodermatoses	323	346	213	122	0.000	*
Xerosis	292	190	380	508	0.000	*
Physical disorders	229	177	175	223	0.000	*
Neoplasms	129	136	90	99	0.008	*
Scars, keloids, hypertrophic scars	75	118	83	59	0.000	*
Others	72	64	42	48	0.024	*
Cutaneous manifestations of systemic diseases	47	61	28	36	0.004	*
Vasculitis	17	20	4	14	0.014	*
Pigmentary disorders	351	375	353	331	0.771	
Pruritus	189	186	183	148	0.542	
Disorders of hair	180	190	193	171	0.961	
Autoimmune diseases	58	77	69	64	0.467	
Nail disorders	17	20	16	14	0.872	
Sexual dysfunctions	10	7	5	13	0.146	
Drug reactions	5	15	6	6	0.052	
Psychocutaneous disorders	2	0	5	1	0.086	
Hereditary and genodermatoses	2	0	0	1	0.296	

**Significant*

dermatological conditions based on OPD visits found that spring season (28.6%) had the most number of visits.[10]

Our study found that the non-infectious dermatoses were more common than infectious cases with a 5.6% overlap between infectious and non-infectious cases. This can be attributed to the chronicity of non-infectious dermatoses which require multiple follow up visits and are prone to relapses. The symptoms of non-infectious dermatoses are more disruptive and interfere with daily working pattern and therefore patients are more likely to seek clinical attention. This is corroborated by findings of several studies, although the actual proportion of non-infectious diseases varies in the different studies from 82.2% to 54.3%.[8,12,16,17] A health camp based study in remote hilly region of Western Nepal found that infectious dermatoses (81.7%) were more than non-infectious group (18.3%).[14] These differences likely result from methodological differences including study population and study sites.

Fungal infections were the most common infectious dermatological condition encountered in our study. It can be due to a large number of the patients who wear uniforms and boots for prolonged durations on a daily basis as required by their profession. Eczemas, urticaria/angioedema, and pigmentary disorders were the most common non-infectious dermatoses. Most of the people in Nepal work in the outside environment and are exposed to the sun light for extended period of time, this can account for a large number of photo-eczemas. Fungal infections and eczemas are consistently among the most common dermatological conditions reported in studies conducted in Nepal and India. Eczema is an immune reaction to any element that comes to contact to skin. The more hands-on type of work without use of safety barriers and increased exposure to external environment might increase the susceptibility to develop such conditions. A study in hilly areas found that the most common skin disorder categories were eczemas (12.2%), followed by pigmentary disorders (4.1%), acne (2.7%), urticaria (2.4%) and moles and lumps (1.6%).[13] A study among the OPD patients at a tertiary health care centre in Bhairahawa found that the maximum number of case was dermatophytoses (16.1%) followed by eczema (15.8%) and acne (6.7%).[11] A hospital-based study conducted in Kathmandu found that infectious disorders as a whole (36.4%) were the most common, followed by eczema (23.8%) and papulosquamous disorders (20.4%).[17] A large portion of the population in our country falls in the early reproductive age group which is susceptible for pilosebaceous disorders. Besides, the pilosebaceous disorders are primarily focused on the parts of body which are exposed like the face and patients seek dermatological consultation. Another study conducted at a tertiary hospital in Kavre in Nepal showed that among the non-infective diseases, pigmentary disorders were the most common (32.56%) followed by appendegeal disorders 22%, whereas fungal diseases were the most common infective disease condition accounting for the 5.5% of the cases.[12] Yet another health camp based study in rural VDC in Nepal reported that the most common disease category was eczemas (36.4%), followed by infections (28.4%), acne (22%), pigment disorders (34%) and urticaria (12.3%).[15] A health camp based study in rural Western Nepal found that among the infectious disorders, bacterial infections were most common (36.8%), followed by fungal infections (25.6%), viral infections (21.6%) and parasitic infections (16.0%) and among the non-infectious dermatoses, eczemas were most common (39.3%) followed by disorders of skin appendages (32.1%), pigmentary disorders (10.7%), and urticaria (10.7%).[14] A point prevalence study in rural Nepal found that the six most prevalent conditions were dermatophyte infections (11.4%), followed by pityriasis versicolor (8.9%), acne (7.7%), melasma (6.8%), eczema (5.6%) and pityriasis alba (5.2%).[5] A hospital in Guwahati found that eczema (23.1%), pyoderma (14.3%), fungal infection (14.2%) and psoriasis (5.8%) were the major skin diseases.[18] Another hospital in Kolkata in India found that among the infectious category, scabies was most common type (20.4%), followed by tinea (10.7%), impetigo (3.6%), folliculitis (2.2%), pyoderma (1.8%), and boils (1.3%). For non-infectious dermatoses, acne (12.4%) was the most common.[8] A study from Bangladesh found the most common skin conditions in the order of eczema (19.2%), fungal infections (17.7%), scabies (15.2%) and pyodermas (7.6%).[16]

Bacterial, fungal and viral infections showed significant variation with seasons as expected. The insignificant seasonal variation in leprosy may be because of a large proportion of follow-up cases as opposed to new diagnoses. Similarly, dermatitis

and papulosquamous disorders were more common in spring, urticaria/angioedema, disorders of pilosebaceous unit were more common in summer, and physical disorders were more common in winter. The allergic reactions are more common in spring due to increased exposure to allergens like pollen and tree blossom. Additionally, being the farming season, contact with plant allergens is more likely. Pilosebaceous disorders are more common in summer due to excessive secretions during the period. The decreased skin barrier function in winter due to loss of moisture from skin predisposes to physical disorders. A study in Kathmandu found that the seasonality of outpatient visits were statistically significant. Majority of the patients were diagnosed to have fungal infections, with a peak in summer (33.7%) and trough in winter (15.3%). The peaks and troughs of other diseases varied in different seasons.[10] The findings of our study are mostly similar to findings of previous studies in the field.

As the study included all recorded cases in the whole year, we could analyse the seasonal variation of diseases. Though we have tried our utmost to accurately represent the pattern of skin diseases in the hospital, our study is limited by the study design. Being a hospital-based study, it may not accurately reflect the general population. Due to the limited data available, we could not study the disease categories in detail or differentiate between new and follow-up cases.

Further studies can be conducted to elaborate on the patterns observed as well as to study the most common diseases in detail.

CONCLUSIONS

Eczemas and fungal infections are the most common non-infectious and infectious dermatoses respectively. Most skin diseases including eczemas, papulosquamous disorders, disorders of pilosebaceous unit and photodermatoses, as well as bacterial, fungal and viral infections vary significantly with seasons.

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