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Clinico-epidemiological Profile of Facial Dermatoses among Adolescents

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ABSTRACT

Background: The face is an important component of individual identity and undesirable changes in facial skin affect the quality of life of individuals, particularly adolescents (10–19 years). They often experience issues like acne vulgaris due to hormonal changes and the consequent psychosocial impact is higher. In Nepal, adolescents represent 23.6% of the population. This study investigates the prevalence and types of facial dermatoses among Nepalese adolescents attending a tertiary care center.

Methods: A cross-sectional study was conducted among 290 adolescents with facial dermatoses presenting to Nepal Medical College Teaching Hospital from October 2023 to September 2024. Data was collected using a structured proforma and clinical examinations, with additional tests as required. Statistical analysis was performed using SPSS version 16.

Results: Of the 290 participants, 48.62% were male and 51.38% female, predominantly aged 17–19 years (36.55%). The majority (66.90%) were Hindu. The most common facial dermatoses were appendageal disorders (43.07%), infections and infestations (20.34%), and eczemas (16.55%). In appendageal disorders, acne vulgaris was most common representing 42.07% of all facial dermatosis. In infections, viral infection was the most common (11.72%) of all facial dermatosis and pityriasis alba was most common (7.59%) of eczemas seen, Males had higher rates of infections (67.80%), while eczemas were more common in females (58.33%). No significant association was found between gender and acne status (p=0.1), severity (p=0.19), bacterial infection (p-value= 0.502), fungal infection (p- value= 1), viral infection (p= 0.85), eczema (p= 0.449), pigmentary disorder (p= 0.071), vascular lesions (p= 1.2) and nevus (p= 0.069).

Conclusions: Facial skin disorders, particularly acne vulgaris, are prevalent among Nepalese adolescents and affect their well-being. The findings accentuate the importance of addressing these conditions to reduce their psychological and social impacts. Further research is needed to explore facial dermatoses across different regions of Nepal.

Keywords: Acne; adolescent; facial dermatosis.

INTRODUCTION

The face serves as an individual's observable identity. One's skin structure is affected by physiological changes like puberty, aging, and pregnancy, as well as by pathological conditions. Facial skin disorders can lead to social exclusion and reduced quality of life, especially among adolescents.[1,2] Adolescents, as defined by the WHO, are individuals aged 10-19 and constitute 23.6% of the population in Nepal.[3,4] They often face skin issues due to hormonal fluctuations, with acne vulgaris being the most common.[5] Other common dermatoses include atopic dermatitis, vitiligo, and seborrhoeic dermatitis. Despite comparable presentations, these conditions differ clinically. This study aims to assess the various facial dermatoses among adolescents in Nepal visiting a tertiary care hospital.

METHODS

The descriptive study was conducted in the Department of Dermatology, Nepal Medical College and Teaching Hospital (NMCTH), Gokarneshwor, Kathmandu from October 2023 to September 2024. Convenience sampling

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was done among all the new patients in the adolescent age group presenting with any facial dermatosis with or without hair/skin involvement after taking informed consent from the patient or their guardian (for patients <18 years).

A sample size of 289 was calculated using formula for single proportions, using the variable facial dermatoses, which was prevalent in 7.73% of adolescents as per an analogous clinic epidemiological study.[7]

Ethical clearance was taken from the Institutional Review Committee (IRC) of NMCTH (Ref no -24-080/81). All the patients fulfilling the inclusion criteria were examined and patient's demographic profile, complete history of symptoms, sites affected, their duration, onset, progression, distribution, evolution, associated symptoms, precipitating/aggravating factors, usage of any medication prior and after appearance of lesion, past history of similar episode, similar history in the family members, any comorbidities, previous treatment and procedures done on the face were recorded. The data pertaining to each case was entered in the predesigned proforma. For the diagnosis, a detailed clinical examination regarding the morphology and pattern of the lesions of the face was done and noted in the proforma. Furthermore, wood lamp examination, skin scrapings for potassium hydroxide mount, skin biopsy, and other relevant investigations were performed as needed. Exclusion criteria were- Patients who had only mucosal involvement including oral cavity and eyes; Age younger than 10 years or older than 19 years; patients who were unwilling to participate in the study; or ones already diagnosed and receiving any treatment for facial skin disorders.

All the collected data was entered using Statistical Package for Social Science (SPSS) version 16. As a quantitative variable, age was computed for mean and standard deviation. Qualitative variables like gender, religion, age group and pattern of various dermatoses were presented as frequency and percentage. Acne status and grading, infection and infestations, eczemas, pigmentary disorders, vascular lesions were compared between males and females and chi-square test was applied. p-value less than 0.05 was considered statistically significant.

RESULTS

Of the 290 cases of facial dermatoses encompassing the study, 141(48.62%) individuals were males and 149(51.38%) females, indicating a balanced gender representation. The most common age group was 17-19 years, 106(36.99%) followed by 14-16 years, 95(32.76%). Religious affiliation among the participants revealed a predominant representation of Hindus,194(66.90%) followed by Buddhist, 95 (32.76%) (Table 1). The mean age of the study population was 15.02 ± 0.17.

Table 1. Socio-demographic characters of the study population. (n=290)

Variable		Frequency(n)	Percentage (%)
Gender	Male	141	48.62
	Female	149	51.38
Age group	10-13	89	30.69
	14-16	95	32.76
	17-19	106	36.55
Religion	Hindu	194	66.90
	Buddhist	95	32.76
	Muslim	1	0.34

Our study identified a spectrum of facial dermatoses among participants, categorized as depicted in Table 2. Appendageal disorders emerged as the most common facial dermatoses, comprising of 125(43.10%) of the total study population which was followed by infections and infestations, 59(20.34%), eczemas, 48(16.55%) and pigmentary disorders and disorders of keratinization, 12(4.14% each) (Table 2). Among appendageal disorders, acne vulgaris was the commonest consisting of, 122(42.07%) of all facial dermatosis, with Grade II being the most frequent, 54(18.62%) (Fig 1). In terms of gender distribution, Grades I and IV are more common in females, Grade III is more common in males while Grade II shows equal distribution among genders, with higher overall female preponderance, 70(57.38%) as compared to males, 52(42.62%). (Table 3)

Table 2. Pattern of various dermatoses observed in the study population.

DERMATOSIS	Frequency	Percentage (%)
Appendageal Disorders	125	43.10
Infection And Infestations	59	20.34
Eczemas	48	16.55
Pigmentary Disorders	12	4.14
Disorders of Keratinization	12	4.14
Vascular Lesions	6	2.07
Disorders of Photodermatosis	6	2.07
Papulosquamous Disorders	2	0.69
Miscellaneous	12	4.14
Total	290	100

Table 3. Pattern of subtypes of different dermatoses categories observed across genders.

DERMATOSIS	Frequency(%)	MALE N (%)	FEMALE N(%)	P-value
1.INFECTION AND INFESTATIONS				
a. Bacterial	**11(3.79%)**	**7(63.63%)**	**4(36.36%)**	**0.502**
Impetigo	6(2.07%)	4(66.67%)	2(33.33%)	
Folliculitis	3(1.03%)	2(66.67)	1(33.33%)	
Cellulitis	1(0.34%)	1(100%)	0(0%)	
Tuberculoid leprosy	1(0.34%)	0(0%)	1(100%)	
b. Fungal	**12(6.90%)**	**10(83.33%)**	**2(16.67%)**	**1.0**
Tinea faciei	6(2.07%)	5(83.33%)	1(16.67%)	
Pityriasis versicolor	6(2.07%)	5(83.33%)	1(16.67%)	
c. Viral	**34(11.72%)**	**22(64.70%)**	**12(35.29%)**	**0.85**
Varicella	17(5.86%)	10(58.82%)	7(41.18%)	
Verruca plana	8(2.76%)	6(75.00%)	2(25.00%)	
Molluscum contagiosum	6(2.07%)	4(66.67%)	2(33.33%)	
Herpes	3(1.03%)	2(66.67%)	1(33.33%)	
d.Parasitic	**2(0.69%)**	**1(50%)**	**1(50%)**	
Cutaneous leishmaniasis	1(0.34%)	0(0%)	1(100%)	
Demodex folliculitis	1(0.34%)	1(100%)	0(0%)	
Total (a+b+c+d)	**59(20.34%)**	**40(67.80%)**	**19(32.20%)**	
2. Eczemas				
Pityrasis alba	22(7.59%)	11(50%)	11(61.11)	
Allergic contact dermatosis	18(6.20%)	7(38.89%)	11(61.11%)	
Seborrheic dermatitis	8(2.76%)	2(25%)	6(75%)	
Total	**48(16.55%)**	**20(41.67)**	**28(58.33%)**	**0.449**
3.PIGMENTARY DISORDERS				
Vitiligo	1(0.34%)	0(0%)	1(100%)	
Melasma	4(1.38%)	1(25%)	3(75%)	
Perioral hyperpigmentation	4(1.38%)	4(100%)	0(0%)	
Freckles	2(0.69%)	2(100%)	0(0%)	
Periocular hyperpigmentation	1(0.34%)	1(100%)	0(0%)	
Total	**12(4.14%)**	**8(66.67%)**	**4(33.33%)**	**0.071**
4.PAPULOSQUAMOUS DISORDERS				
Pityriasis rosea	2(0.69%)	2(100%)	0(0%)	
Total	**2(0.69%)**	**2(100%)**	**0(0%)**	
5.APPENDAGEAL DISORDERS				
Acne vulgaris	122(42.07%)	52(42.62%)	70(57.38%)	
Grade I	51(17.59%)	17(33.33%)	34(66.67%)	
Grade II	54(18.62%)	27(50%)	27(50%)	
Grade III	10(3.45%)	6(60%)	4(40%)	
Grade IV	7(2.41%)	2(28.57%)	5(71.43%)	

Table 3. Pattern of subtypes of different dermatoses categories observed across genders.

DERMATOSIS	Frequency(%)	MALE N (%)	FEMALE N(%)	P-value
Post-acne Scar	1(0.34%)	0(0%)	1(100%)	
Miliaria	2(0.69%)	1(50%)	1(50%)	
Total	**125(43.10%)**	**53(42.40%)**	**72(57.60%)**	
6.VASCULAR LESIONS				
Pyogenic Granuloma	5(1.72%)	3(60%)	2(40%)	
Rosacea	1(0.34%)	0(0%)	1(100%)	
Total	**6(2.07%)**	**3(50%)**	**3(50%)**	**1.2**
7.NEVUS				
Linear Epidermal Verrucous Nevus	3(1.03%)	0(0%)	3(100%)	
Nevus of Ota	3(1.03%)	2(66.67%)	1(33.33%)	
Congenital Melanocytic Nevus	2(0.69%)	0(0%)	2(100%)	
Total	**8(2.76%)**	**2(25%)**	**6(75%)**	**0.069**
8.DISORDERS OF KERATINIZATION				
Keratosis Pilaris	12(4.14%)	9(75%)	3(25%)	
Total	**12(4.14%)**	**9(75%)**	**3(25%)**	
9.PHOTODERMATOSIS				
Polymorphic light eruptions	6(2.07%)	2(33.33%)	4(66.67%)	
Total	**6(2.07%)**	**2(33.33%)**	**4(66.67%)**	
10.MISCELLANEOUS				
Hypertrophic scar	1(0.34%)	1(100%)	0(0%)	
Milia	3(1.03%)	0(0%)	3(100%)	
Papular urticaria	7(2.41%)	1(14.29%)	6(85.71%)	
Dermatosis papulosa nigra	1(0.34%)	0(0%)	1(100%)	
Total	**12(4.14%)**	**2(16.67%)**	**10(83.33%)**	
TOTAL (1-10)	**290(100%)**	**141 (48.62%)**	**149 (51.37%)**	

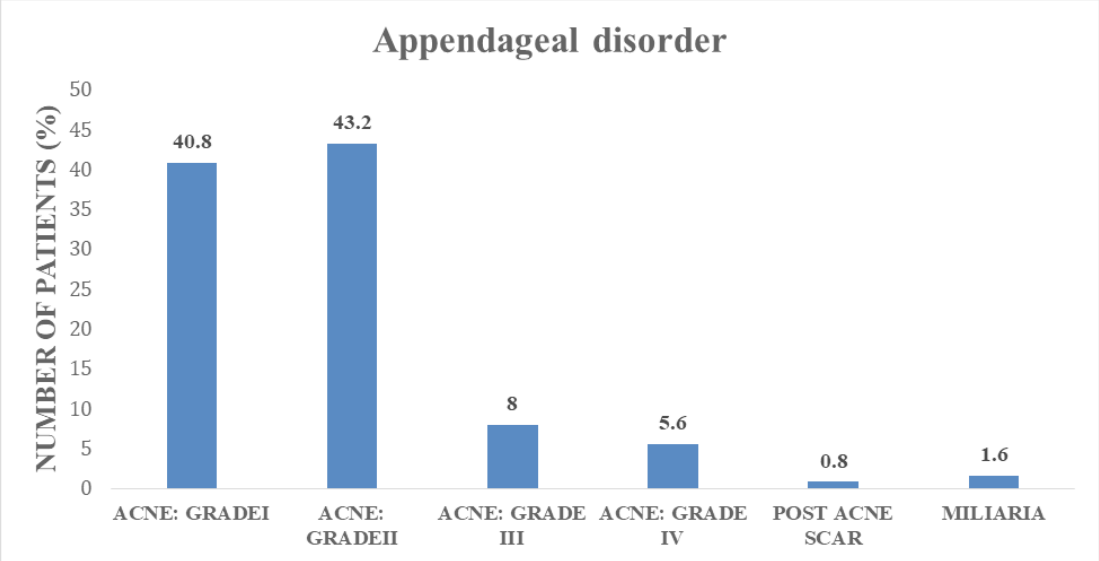

Figure 1. Distribution of different types of Appendageal disorders.

Among infectious dermatoses, Varicella was found to be the most common 17(28.7% out of all infections), followed by verruca plana, 8(13.5%) (Fig 2). Overall, infections and infestations are more common in males, 40(67.80%) than in females, 19(32.20%) (Table 1). Eczemas form the third most common category with 48(16.55%) of cases, with higher prevalence in females, 28 (58.33%) than in males, 20(41.67%). Pityriasis alba is the most regular type, 22(45.8%) indicating a frequent occurrence of this type of eczema (Fig. 3). Melasma and perioral hyperpigmentation form the most common type of hyperpigmentation, 4(33.3%) each (Fig 4). Other smaller categories show variation in gender distribution- nevus, pigmentary disorders, disorders of photodermatosis and miscellaneous conditions are more common in females while papulosquamous disorders and disorders of keratinization are more common in males. Vascular lesions were found to have an equal gender distribution (Table 3).

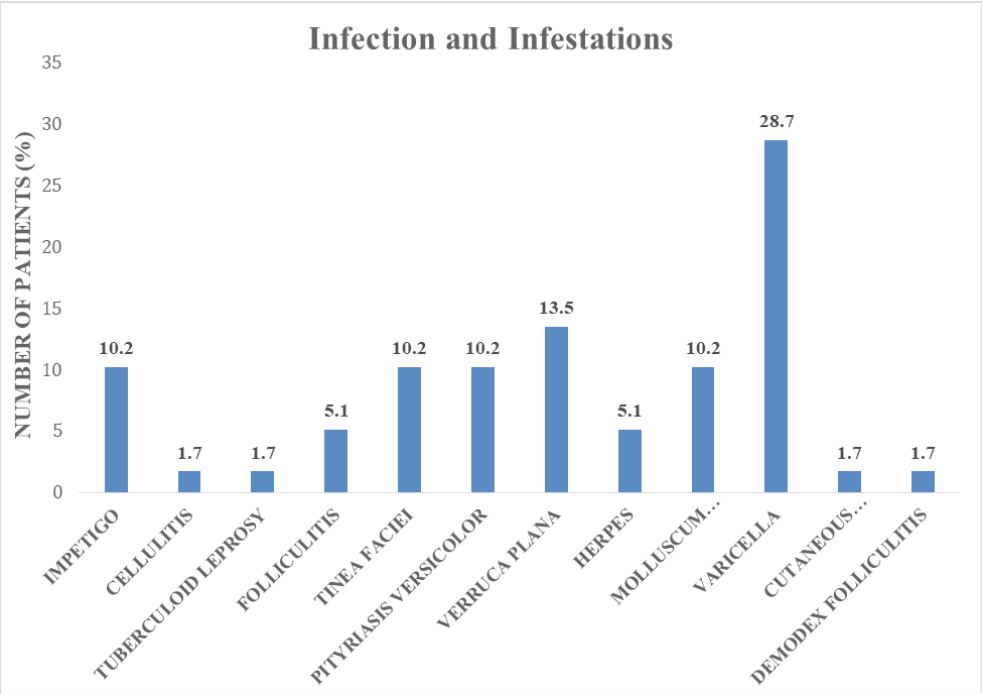

Figure 2. Distribution of various types of infections and infestations

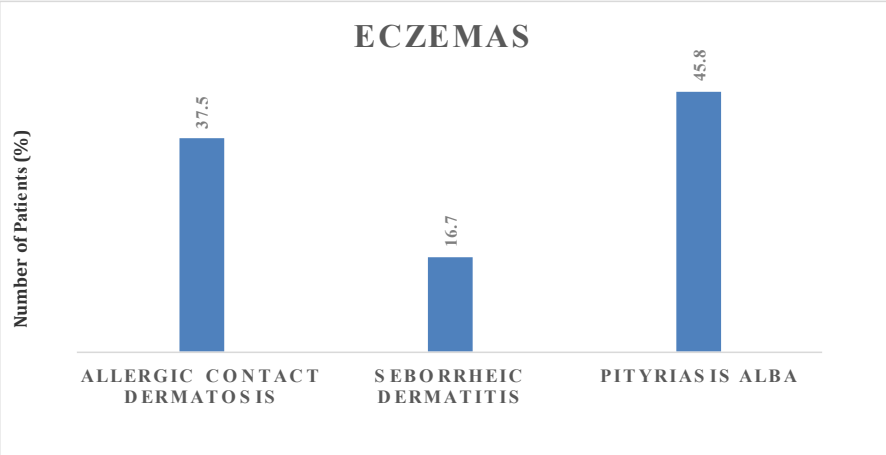

Figure 3. Distribution of various types of eczemas.

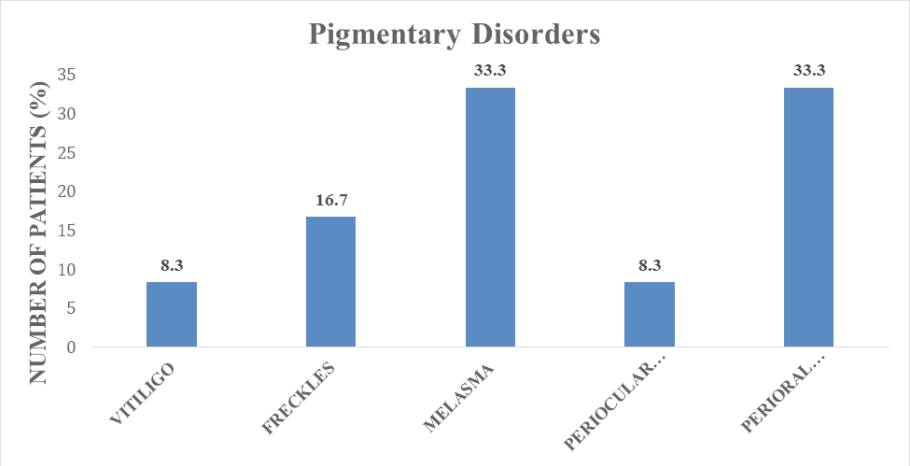

Figure 4. Distribution of pigmentary disorders.

On examining the relationship between gender and the presence of acne and gender and Acne grading (Table 4 and 5), there was no statistically significant association between the two parameters at the significance level of 0.05. Acne status (p=0.1) and severity (p=0.19) does not significantly differ between genders in this dataset. Also, there was no significant difference in gender in patients with bacterial infection (p-value= 0.502), fungal infection (p- value= 1), viral infection (p= 0.85), eczema (p= 0.449), pigmentary disorder (p= 0.071), vascular lesions (p= 1.2) and nevus (p= 0.069). (Table 3)

Table 4. Bivariate Analysis between Gender and Acne status

Gender	Acne Status		x^2-Value (P-value)
	No	Yes	
Female	79	70	2.63 (0.10)
Male	89	52	

Table 5. Bivariate Analysis between Gender and Acne grading

Gender					x^2-Value (P-value)
	Grade I	Grade II	Grade III	Grade IV	
Female	34	27	4	5	4.80 (0.19)
Male	17	27	6	2	

DISCUSSION

Facial skin differs distinctly from the skin of other parts of the body. Thus, facial dermatoses stand out in terms of clinical presentation and remedial measures.[6] Moreover, facial skin conditions are linked to lower self-esteem, psychological issues and have an unfavorable effect on the quality of life of the afflicted.[7] For individuals who are in the transitional stage between childhood and adulthood, the psychosocial implications of facial skin lesions cannot be ignored. Hence, it is important to have knowledge about the various skin disorders related to facial skin lesions for timely and adequate management.

In a study done by Ravindranath et al. in India, adolescent facial dermatoses had a prevalence of 7.3%, representing 18.1% of the adolescents attending the OPD during the research timeframe.[6]

The present study showed a slight female preponderance with 51.38% of female patients and 48.62% of male patients. This is in concordance with similar studies carried out in India by Suryanarayana et al., Ravindranathan et al and Charles et al.[6, 8,9] However, other studies from India showed a male preponderance for facial dermatoses.[10,,11]A study conducted by Amulya et al. has concluded that facial dermatoses are common among adolescent girls.[12] Enthusiasm for skin care and obsession with clear skin is often more pronounced among adolescent girls, which makes facial dermatoses an issue of significant cosmetic concern for them.

In this study, the majority of the adolescents (36.55%) were between 17 and 19 years of age, categorized as late adolescents. Similar findings were noted in other studies as well.[10,12] Moreover, in the present study, Acne vulgaris was noted to be the most common facial dermatosis (42.07%), followed by infections (20.34%) and eczema (16.55%). These findings were akin to that of the study conducted by Ravindranath et al., in which the most common dermatoses were found to be acne vulgaris (34.8%) followed by infections (15.3%) and eczema (12.9%).[6]

49.2% of participants in our study diagnosed with acne vulgaris were late adolescents, followed by early and mid-adolescents with each accounting for 25.4% of cases. A comparable study by Hemalingiah et al. revealed that most of the adolescents with acne (80.3%), belonged to the age group of 16-19 years.[10] In another study, conducted by Hmar et al. in Northeast India, most adolescents suffering from acne were of 17-19 years of age.[13] Delayed presentation of acne in late teens may be attributable to the easy availability of over-the-counter medications and also a variety of skin care products from online portals. Furthermore, various factors such as being influenced by peers, lack of timely and conveniently attainable service, distance, and lack of knowledge have been associated with delayed health-seeking behavior of adolescents.[14]

Regarding the gender distribution of acne vulgaris in the present study, females accounted for more patients (57.38%) than males (42.62%). Similar findings were noted in a study conducted by Radhamani M and Rahim JA.[11] However, another study demonstrated that males constituted a higher number of acne patients than females.[10] A similar study revealed that the frequency of acne vulgaris among adolescents is similar between both genders.[15] Although a statistically significant association between acne and gender was not found in our study (p=0.1), a significant relationship between the two parameters was observed in a comparable research.[11]

In this study, the second most common category of dermatoses observed was that of infections and infestations (20.34%). In this group various dermatoses observed were impetigo (2.06%), cellulitis (0.34%), tuberculoid leprosy (0.34%), folliculitis (1.03%), tinea faciei (2.06%), Pityriasis versicolor (2.06%), verruca plana (2.75%), herpes labialis (1.03%), molluscum contagiosum (2.06%), varicella (5.86%), cutaneous leishmaniasis (0.34%) and Demodex folliculitis (0.34%). The aforementioned study conducted by Ravindranath et al. also reported infections (15.3%) as the second most common facial dermatoses in adolescents. Another study carried out in India by Narayan and Chandan reported infections as the third most common group of facial dermatoses. Among the common infections were tinea faciei (35.6%), tinea barbae (6.78%), molluscum contagiosum (15.25%), impetigo (11.86%) and herpes labialis (8.46%).[8] A 2019 study conducted by Bhagwat et al revealed infections to be the most common among facial dermatoses, out of which Tinea facei was the most prevalent.[16]

In our study viral infections (11.72%) were the commonest, followed by fungal (6.90%), bacterial (3.79%) and parasitic (0.69%). Ravindranath et al reported fungal infections were the most common (8.4%), followed by viral (4.9%) and bacterial (2%) infections.[6] In the study by Hemalingiah et al., common infections observed were fungal (2.5%) and viral (2.5%) followed by bacterial (1%).[10] Another study from India by Radhamani et al. reported that bacterial infections

were the most common, followed by fungal and viral infections.[11] Geographical variations and dissimilarities in study populations might have an impact on the frequency of infectious diseases.

Among eczemas, the frequency of pityriasis alba (7.59%) was the highest, followed by allergic contact dermatitis (6.20%) and seborrheic dermatitis (2.76%). Other studies have reported seborrheic dermatitis as the most frequently observed eczema.[6,10] Seborrheic dermatitis exhibits biphasic peaks, occurring in both infancy and adolescence.[17] Pityriasis alba, on the other hand, is known to primarily affect preadolescent children; often, the lesions go away by adolescence, but some reports suggest that they can persist into adulthood.[18] It appears that poor hygiene practices as well as excessive and unprotected sun exposure, are closely linked to the development of pityriasis alba.[19] Moreover, pityriasis alba presents frequently as hypopigmented lesions in the faces of individuals of color, becoming an issue of concern for parents who are anxious about its course and prognosis. Hence, they frequently seek out medical advice to distinguish it from vitiligo.

In the present study, pigmentary disorders constituted only 4.14% of the study population. Similar results were obtained from the study by Hemalingiah et al.[10] Pigmentary disorders were the commonest facial dermatoses among women in the study conducted by Reddy NS and Upadhyaya JA.[20] In another comparable study conducted by Charles et al, pigmentary disorders were again the most common dermatoses (41.4%).Similarly, the most common category of facial dermatoses was pigmentary disorder in a study conducted by Sharada VG and Ashok SH in India.[21]These differences are attributable to variations in the study populations included in the respective studies.

In our study, papulosquamous disorders accounted for 0.65% of the total population, of which all of them were cases of pityriasis rosea. Similar results were obtained from the study conducted by Ravindranath et al, where 0.5% of facial dermatoses were papulosquamous disorders.[6]

In our study, nevi accounted for 2.76% of facial dermatoses, which included linear epidermal verrucous nevus (1.03%), nevus of Ota (1.03%) and congenital melanocytic nevus (0.69%). However, in the study conducted by Hemalingiah et al., 2% of the study population consisted of nevus among which all of them were congenital melanocytic nevi.[10] Another study also showed nevi accounting for 2.4% of the total dermatoses.[6]

Keratosis pilaris accounted for 4.14% of the facial dermatoses included in our study, with males comprising 75%, demonstrating a male predominance. Another similar study also noted that keratosis pilaris constituted only 2% of the total dermatoses with 63.6% females, indicating a female preponderance.[6]

In the present study, polymorphic light eruptions accounted for 2.07% of the total dermatoses. Ravindranath et al also reported polymorphic light eruptions occurred in 3.7% of their total dermatoses.[6]

There is a multitude of studies on the prevalence of various skin ailments, conducted in the Nepalese population and published in academia. However, an extensive literature review established that studies concerning facial dermatoses in adolescents are lacking in Nepal. Hence, this study can be considered crucial in assessing the various facial dermatoses prevalent in the adolescents visiting a tertiary care hospital in Nepal. Limitation of our study is that it is a single center hospital based study and might not represent the general population.

CONCLUSION

Facial skin disorders, particularly acne vulgaris, are prevalent among Nepalese adolescents and affect their well-being. The findings accentuate the importance of addressing these conditions to reduce their psychological and social impacts. Further research is needed to explore facial dermatoses across different regions of Nepal.

CONFLICT OF INTEREST

Authors declare there are no any conflicts of Interest.

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