



# Frequency and pattern of Skin Disorders in Adolescents in a School of Kathmandu

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## Abstract

**Introduction:** Skin disorders are one of the major causes of morbidity in Nepal. The objectives of this study are to determine the relative frequency and pattern of skin disorders in a cohort of adolescents 9-18 years of age.

**Methods:** The study was conducted in a residential school of Kathmandu. A detailed information about the study was given to the student members of a school club and they in turn, informed all the other students of the dermatologic health camp, which was conducted subsequently. All students appearing at the camp were examined by a dermatologist and information regarding age, gender, school grade and diagnosis were recorded in a pre-validated format.

**Results:** In the school there were a total of 950 students (627 m, 323 f). Of them 242 (116 m, 126 f) had skin disorder with a point prevalence of 25.5%. Female students had significantly higher prevalence (29%) than male (18.5%). The most common skin disorders were acne, eczemas and urticaria, and the 10 most frequent diagnoses comprised 87% of all skin conditions.

**Conclusion:** This study demonstrates that 1/4 of the students had one or more identifiable skin disorders. Despite the wide range of dermatoses, only a few of them accounted for a major proportion of the skin disorders. This study provides data for targeting health care programs for prevention and treatment of skin disorders in this age group.

**Key words:** Skin disorders, adolescents, frequency, pattern

## Introduction

Globally skin disorders (SD) are a major health problem. However there is wide a variation in overall prevalence (25% to 45.3%) and disease pattern between countries, climates, seasons, occupations, cultures, and skin types<sup>1-3</sup>. In Nepal, SDs are one of the leading causes of morbidity, with approximately 2,700,000 registered visits to outpatient clinics per year corresponding to the 4<sup>th</sup> most common cause for consultation<sup>4</sup>. In a recent study from the central

development region of Nepal we found the overall point prevalence of SDs to be 25%<sup>1</sup>. However, the prevalence varied significantly in the three eco-climatic regions, highest in the humid terai district (39.9%) and lowest in the mountainous region (17.5%)<sup>1</sup>. The population of Nepal is 26.5 million, and about 24% i.e. 6.4 million of them are adolescents (WHO definition 10-19 years)<sup>5</sup>. SDs are common in young people, and among all skin conditions



acne is worldwide the most common, with a prevalence as high as 60 -90%<sup>6-8</sup>. It has also been shown that SDs have a major impact on quality of life specifically in young age<sup>9-11</sup>. However, to our knowledge there is no information about the prevalence of SDs in adolescents, in Nepal. This is a transitional and vulnerable phase of life, when youths develop attitudes and health practices that are carried on into adulthood.

The objectives of this study were to determine the relative frequency and pattern of SDs in a cohort of school-children 9 to 18 years of age.

Such knowledge will provide a basis to develop a strategy for early diagnosis and treatment to reduce long-term effects and improved quality of life in this age group.

### Materials and methods

The study was conducted in a residential school of Kathmandu with a total of 950 students (627 m, 323 f), in the month of June, 2014.

The study was performed in two steps. First 10 student members of a school club participated in half a day detailed information about the coming study. There was a brief presentation of the most common SDs and the students were given a list of the 10 most common skin problems. They were instructed to ask all the students of the school, if they had any of these or other skin problems. Those with skin problems were invited, to the dermatologic health camp.

Subsequently, after 2 weeks, a dermatologic health camp was conducted at the school. The 250 students (118 m, 132 f), who appeared for dermatologic consultation, were examined by one of the dermatologists. Information regarding age, gender, school grade and diagnosis were recorded in a pre-validated format<sup>1</sup>. Genital and breast areas were examined in a separate room by a dermatologist of the same gender. Those who needed surgery or long term follow up were referred to Tribhuvan University Teaching Hospital.

The study was performed according to the ethical principles of the Helsinki declaration and approved by the Institutional Review Board of the Institute of Medicine, Tribhuvan University, Kathmandu.

The data were analyzed using SPSS 20. Fisher's exact test (two tailed) was used for significance testing.

### Results

Of the 250 students who showed up for dermatologic consultation, 242 (116 m, 126 f) in the age group 9-18 year (mean age  $13.3 \pm 2.2$ ) had one or more skin problems (Figure 1). A total of 207 students had one SD, 30 had two and 5 were diagnosed with more than 2 SDs. Five students were referred, three of them for scooping of molluscum contagiosum and two for electro cauterization of skin tags.

The overall prevalence of SDs in this group of students was 25.5% (242/950; 95% CI 22.7 – 28.3), significantly higher in females (29.0%) than in males (18.5%) ( $p < 0.0001$ ).

A total of 282 SDs were diagnosed comprising altogether 51 different diagnoses. The most common SD categories were acne, eczemas, urticaria, pigmentary disorders, nevi, viral infections, keratosis pilaris, pruritus, fungal infections and xerosis (Table 1). These 10 most frequent skin disorders comprised 87% of all skin conditions diagnosed (Figure 2). The absolute majority of acne were in the age group 12-18 years and 2/3 (58%) of those was in the age group 15-18 years. Eczema and urticaria were more prevalent in the two younger age groups 9-11 and 12-14 years (Table 2).

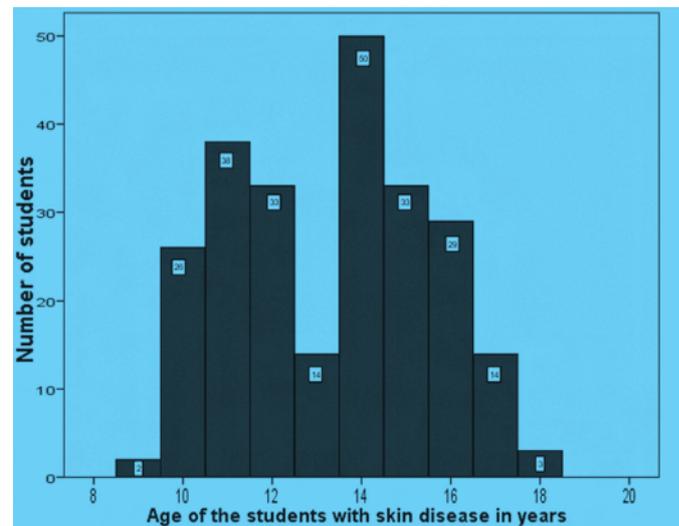


Figure 1 Age of the students with skin disease in years

Frequency and pattern of Skin Disorders

Table 1 Frequency of SDs with ≥0.5%, among 950 students

Diagnosis	Number of cases (Frequency)		
	Total	Male	Female
Acne	73 (7.7%)	32 (5.1%)	41(12.7%)
Eczemas	60 (6.3%)	33 (5.3%)	27(8.4%)
Pityriasis alba	31 (3.3%)	20 (3.2%)	11(3.4%)
Allergic contact dermatitis	13 (1.4%)	5 (0.8%)	8 (2.5%)
Chronic hand &foot eczema	5 (0.5%)	2 (0.3%)	3 (0.9%)
Others	11(1.2%)	5 (0.8%)	6 (1.9%)
Urticaria	29 (3.1%)	14 (2.2%)	15 (4.6%)
Pigmentary disorders	17 (1.8%)	5(0.5%)	12(1.3%)
Post inflammatory hypermelanosis	7 (0.7%)	5 (0.8%)	2 (0.6%)
Others	10 (1.1%)	-	10 (3.1%)
Nevi	16 (1.7%)	6 (0.9%)	10 (3.1%)
Melanocytic nevi	14 (1.5%)	4 (0.6%)	10 (3.1%)
Others	2 (0.2%)	2 (0.3%)	-
Viral infections	15 (1.6%)	9 (1.4%)	6 (1.8%)
Wart	12 (1.3%)	7 (1.1%)	5 (1.5%)
Others	3 (0.3%)	2 (0.3%)	1 (0.3%)
Keratosis pilaris	12 (1.3%)	5 (0.8%)	7 (2.2%)
Pruritus	9 (0.9%)	7 (1.1%)	2 (0.6%)
Fungal infections	7 (0.7%)	2 (0.3%)	5 (1.5%)
Xerosis	7 (0.7%)	3 (0.5%)	4 (1.2%)
Hyperhidrosis	6 (0.6%)	5 (0.8%)	1 (0.3%)
Others	31 (3.3%)	14 (2.2%)	17 (5.3%)

Table 2 Age groups and SDs

Disease categories	Age group in years (Number of students with SD)			
	9-11 (66)	12-14 (97)	15-18 (79)	Total (242)
Acne	3	28	42	73
Eczema	23	27	10	60
Urticaria	16	13	0	29
Pigmentary disorders	1	10	6	17
Nevi	7	5	4	16
Viral infections	4	5	6	15
Keratosis pilaris	3	5	4	12
Pruritus	5	4	0	9
Fungal infections	2	2	3	7
Xerosis	2	4	1	7
Others	8	12	17	37
Total (number of SD)	74	115	93	282

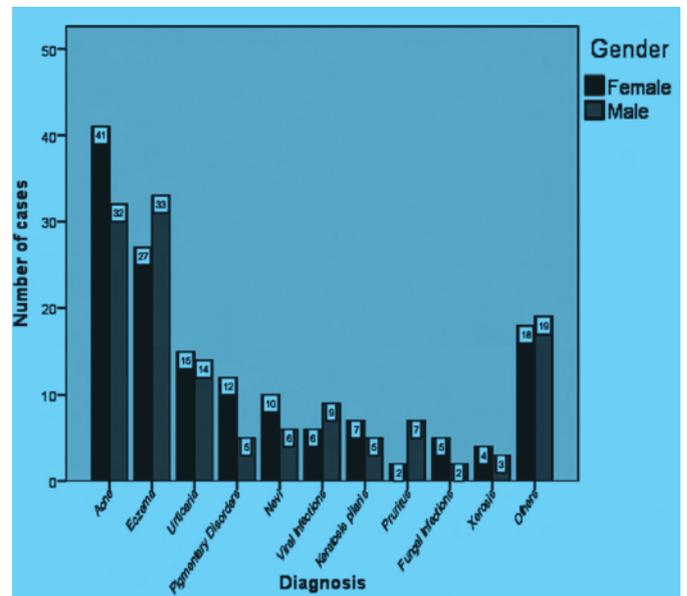


Figure 2 The 10 most common SD categories and the number of cases.

## Discussion

In the present study we found the overall point prevalence of SDs in adolescent students in a residential school of Kathmandu to be 25.5%. This is considered a minimum prevalence as a point prevalence study of this type has certain limitations. There might be some students with SDs which come and go or are of short duration. Other students do not come for consultation since they already have satisfactory medical treatment from a dermatologist. However, it is reassuring that there is no significant difference to the overall prevalence in the population of the central developmental region of Nepal<sup>1</sup>. Despite the fact that SDs account for a considerable burden in most countries there are only a few publications on SDs in adolescents.

In those studies there is a wide variation in prevalence between countries from 24% in Mauritius<sup>12</sup> to 70% in Nigeria<sup>13,14</sup>. Prevalence studies comprising both children and adolescents range between 22.8% and 38.8%<sup>15-17</sup>. Due to differences in study design it is not possible to compare our results with these studies. In addition important factors accounting for SDs like variation in climate, nutritional status, level of hygiene and socio-economic standard differs in developing countries. In this study the prevalence was significantly higher in females (29%) than in males (18.5%) ( $p < 0.0001$ ). It was interesting to note that in our previous study a similar difference was observed in the general population (30.1% f and 19.7% m.) of Nepal<sup>1</sup>. That women in developing countries like Nepal generally have more skin problems than men, has been ascribed to the fact that they are usually involved in both household and fieldwork without access to protective articles. We do not believe that this explains the gender difference in this cohort of students, but it is possible that female students are more concerned about their appearance and come eagerly for consultation.

As expected in the present age group acne was the most common of all skin problems, which is in line with studies that surveyed strictly adolescents<sup>12-14</sup> or included considerable numbers of adolescents<sup>17,18</sup>. Eczemas, mainly Pityriasis alba (3.3%), chronic hand and foot eczema, and allergic contact dermatitis, accounted for the second most common skin condition. As P. alba is the disease of childhood and early adolescents it was not a surprise that the proportion in the general population of Nepal was much lower (1.6%)<sup>1</sup>. The frequency of urticaria was similar (3.1%) to the general population of Nepal (2.9%)<sup>1</sup>. Pigmentary disorders (1.8%) were less common than in the general population (6.8%)<sup>1</sup>.

In this study we have demonstrated that SDs are very common in adolescents with a prevalence similar to the general population, but with a different disease pattern. Adolescence is a sensitive period in life where skin problems are of significant importance. Acne might lead to lifelong embarrassing scars and many other evident skin lesions like eczemas might as well affect the well-being and self-image and lead to psychological problems. The results from this study provide data for prevention and treatment of skin diseases in adolescents in Kathmandu.

**Conflict of interest:** None declared.

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