

## Prevalence of Skin Disorders (SD) among school going children of semi-urban areas in Puducherry.

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### Abstract

**Aims and Objective:** The study is carried out to study the prevalence and the spectrum of Skin Disorders (SD) among school going children of Semi-Urban (SU) areas in Puducherry.

**Background:** Skin Disorders (SD) are one of the commonest health problems faced by the school going children especially among the developing countries. The high prevalence of skin diseases among developing countries could be accounted for poor socioeconomic conditions, poor sanitation, and lack of awareness to seek medical attention. Acne, atopic dermatitis and eczematous conditions are more common in developed countries those with infectious causes are more common in developing countries. They may cause discomfort, psychological effects like embarrassment, stigmatization and loss of confidence. In spite of these consequences, awareness among the public regarding skin diseases is still lacking. This study is hence undertaken to study the current scenario of Skin Disorders (SD) among school children of Semi-Urban (SU) areas in Puducherry.

**Methods:** This is a cross-sectional study carried out among 1000 school going children of 5-15 years of age belonging to Semi-Urban (SU) areas in Puducherry. The children were interviewed based on a pre-structured questionnaire and detailed history is entered into the proforma followed by a clinical examination by a Paediatrician. The children with Skin Disorders (SD) are diagnosed based on clinical features and appropriate investigations such as KOH Examination, Gram's stain, and Wood's lamp wherever necessary by a Dermatologist. The information thus obtained is analyzed using SPSS Software. Chi square test is used to compare the categorical variables and p-value<0.05 is considered to show statistical significance.

**Results:** The prevalence of skin disorders among the study population is 72%. The children were distributed into 5-10 years (53.5%) and 11-15 years (46.5%). Majority of (44.5%) children of the younger age group had manifestation of Skin Disorders (SD) compared to affected children (27.5%) among the older age group. The association of Skin Disorders (SD) seen more prevalent among Boys when compared to Girls showing statistical significance. Majority of children belonging to Middle Middle class (79.1%) and Lower Middle class (80%) were affected with Skin Disorders (SD) as compared to children of Upper Middle class (43%) and Upper class (4%) with statistically significant association. The skin disorders were broadly categorised into Infectious dermatoses (51.7%), Non-Infectious dermatoses (38.8%) and Nutritional dermatoses (9.5%).

**Conclusion:** The prevalence of Skin Disorders (SD) among school going children of 5-15 years of age in semi urban areas of Puducherry is found to be high. Majority of children of the younger age group had manifestation of Skin Disorders (SD) compared to children affected among the older age group. The importance of recognizing these common dermatological manifestations has to be inculcated among parents, school teachers and even School Children (SC). Educating the school children regarding the proper sanitation and hygienic practices can increase the chances of improving the health status of the future generation.

**Keywords:** SD: Skin Disorders, SC: School Children, SU: Semi Urban.

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### Background

Skin Disorders (SD) are one of the commonest health problems faced by the school going children especially among the developing countries. WHO reported a high prevalence (21%-87%) of skin disorders in general population of developing countries of the world after reviewing 18 prevalence studies [1]. The prevalence of paediatric dermatoses in various parts of India ranges from 4.3% to 49.1% in school

based surveys [2]. The high prevalence of skin diseases among developing countries could be accounted for poor socioeconomic conditions, poor sanitation, and lack of awareness to seek medical attention.

The epidemiology pattern varies; acne, atopic dermatitis and eczematous conditions are more common in the developed countries [3-6]. They cause considerable discomfort, morbidity, parental anxiety, unnecessary absence from school and other

psychosocial side effects such as embarrassment, feeling of stigmatisation, loss of confidence, disruption of social relations [7,8]. In spite of these consequences, awareness among the public regarding skin diseases is still lacking. Educating the School Children (SC) regarding the same can increase the chances of improving the health status of the future generation. The purpose of studying the prevalence of pediatric dermatoses is to assess the level of health awareness and availability of health care services which is useful to build childhealthcare strategies that cope with actual community requirements [9]. This study is hence undertaken to study the current scenario of Skin Disorders (SD) diseases among School Children (SC) of Semi-Urban (SU) areas in Puducherry.

**Aims and Objective**

The study is carried out to study the prevalence and the spectrum of Skin Disorders (SD) among school going children of Semi-Urban (SU) areas in Puducherry.

**Materials and Methods**

This is a cross-sectional study carried out among 1000 school going children of 5-15 years of age belonging to semi-urban areas in Puducherry. The study is conducted after taking Institutional Ethical Committee Clearance and seeking the approval from the school Authorities and prior Parental consent. The children were examined during the school health visits which were conducted twice weekly on Tuesdays and Fridays.

The children were interviewed based on a pre-structured questionnaire. A detailed history, including age, gender, socio-demographic data including the education, occupation, income of parents, clinical complaints and family history of skin disorders were obtained. History of previous illness, allergy, atopy, dietary history and treatment taken were included in the questionnaire. The children are then subjected to a detailed physical and systemic examination by a Paediatrician. The children with skin disease are diagnosed based on clinical features and appropriate investigations such as KOH Examination, Gram's stain, and Wood's lamp wherever necessary by a Dermatologist. The children who were absent and unwilling to participate in the study were excluded. The information thus obtained is entered in the proforma and further analysed using SPSS Software. Chi square test is used to compare the categorical variables and p-value<0.05 is considered to show statistical significance.

**Results**

The present study included 1000 school going children of 5-15 years of age, which were distributed into 5-10 years and 11-15 years. 535 (53.5%) children were among 5-10 years of age and 465 (46.5%) children were among 11-15 years of age. Of the younger age group (5-10 years), majority of (44.5%, n=445) children had manifestation of Skin Disorders (SD) compared to children (27.5%, n=275) affected among the older age group (11-15 years). The association was found to be statistically significant with a p-value<0.01. The prevalence of Skin

Disorders (SD) among the study population is 72% (720, out of 1000). Among the study population, 512(51.2%) children were Boys and 488(48.8%) were Girls. Among Boys, 385(38.5%) were affected and 335(33.5%) were affected as shown in Table 1. The association of Skin Disorders (SD) seen more prevalent among Boys when compared to Girls with a value of  $X^2=5.313$ ,  $p=0.02$  showing statistical significance.

Gender	Affected	Not affected	Total
Boys	385(38.5%)	127(12.7%)	512(51.2%)
Girls	335(33.5%)	153(15.3%)	488(48.8%)
Total	720(72%)	280(28%)	1000(100%)

**Table 1.** Distribution of children with Skin Disorders [SD] among boys and girls.

The details of parent's education, occupation and income were recorded and thereby children in the present study were categorised into Upper class (I), Upper Middle (II), Middle Middle (III), Lower Middle (IV), Lower Lower (V) as per Modified Kuppusamy's socio-economic classification. Majority children belonged to Middle Middle class (550, 55%), followed by Lower Middle class (300, 30%), Upper Middle class (100, 10%), Upper class (50,5%) and none in Lower Lower class. Majority of children belonging to Middle Middle class (79.1%) and Lower Middle class (80%) were affected with Skin Disorders (SD) as compared to children of Upper Middle class (43%) and least among children of Upper class (4%) with statistically significant association of p-value<0.05 (p-value=0.000049,  $X^2=19.849$ ).

The Skin Disorders (SD) that was encountered among the study population was classified into three broad categories namely Infectious dermatoses, Non- Infectious dermatoses and Nutritional dermatoses. Around 51.7% constituted of Infectious dermatoses, 38.8% constituted of Non- Infectious dermatoses and 9.5% of Nutritional dermatoses. We further distributed among Boys and Girls as in Table 2. Infectious dermatoses were more prevalent among Boys (31.1%), whereas Non-Infectious dermatoses (19.6%) and Nutritional dermatoses (6.3%) were slightly more common among Girls showing statistically significant association (p-value<0.05).

Skin disorders	Boys	Girls	Total
Infectious dermatoses	224 (31.1%)	148(20.6%)	372(51.7%)
Noninfectious dermatoses	138 (19.2%)	141(19.6%)	279(38.8%)
Nutritional dermatoses	23(3.2%)	46(6.3%)	69(9.5%)
Total	385(53.4%)	335(46.5%)	720(100%)
$X^2=19.849$ , $df=2$ ; $p=0.000049$			

**Table 2.** Category wise distribution of skin disorders among boys and girls.

The various Infectious dermatoses encountered in our study population were Pediculosis (26.1%), Impetigo (25.9%), Acne Vulgaris (16.4%), Scabies (11.6%), Tinea Versicolor (9.9%), Seborrheic dermatitis (9.4%), Molluscum Contagiosum (0.5%) and Chicken Pox (0.2%) respectively as shown in Table 3. Infectious dermatoses is noted to be more prevalent among boys (31.1%) than girls (20.6%) with a statistical significance (p-value<0.05). Pediculosis is more prevalent among girls (11.3%) than Boys (2.1%). Similarly Scabies and Impetigo is more prevalent among Boys (4.8% and 12.7%) than Girls (1.2% and 0.6%) respectively.

S.No	Infectious dermatoses	Boys	Girls	Total
1	Pediculosis	15 (2.1%)	82 (11.3%)	97 (13.4%)
2	Scabies	35 (4.8%)	8 (1.2%)	43 (6.0%)
3	Impetigo	92 (12.7%)	4 (0.6%)	96 (13.3%)
4	Acne Vulgaris	36 (5.1%)	25 (3.5%)	61 (8.6%)
5	Tinea Versicolor	31 (4.3%)	6 (0.8%)	37 (5.1%)
6	Molluscum Contagiosum	2 (0.3%)	0	2 (0.3%)
7	Chicken Pox	01 (0.1%)	0	1 (0.1%)
8	Seborrheic dermatitis	12 (1.7%)	23 (3.2%)	35 (4.9%)
	Total	224 (31.1%)	148 (20.6%)	372 (51.7%)

**Table 3.** Distribution of infectious dermatoses among boys and girls.

The various Non-Infectious dermatoses encountered in our study population were Pityriasis Alba (10.3%), Papular urticaria (8.8%), Insect bite reaction (7.4%), post inflammatory pigmentation (4%), Café au lait macules (3.6%), Scars (3.6%), Atopic Eczema (0.8%), and Lichen Striate (0.1%) as shown in Table 4. Non-Infectious dermatoses was almost equally noted among Boys (19.2%) and Girls (19.6%), hence did not show any statistically significant association (X<sup>2</sup>=3.062, p=0.879). Nutritional dermatoses encountered were Xerosis (5.4%), Phrynoderma (3.6%), and Angular Chelitis (0.5%) as shown in Table 5. Nutritional dermatoses was noted to be more prevalent among Girls (6.3%) than Boys (3.2%), however the association was not statistically significant (X<sup>2</sup>=1.269, p=0.53).

S.No	Infectious dermatoses	Boys	Girls	Total
1	Pediculosis	15(2.1%)	82 (11.3%)	97(13.4%)
2	Scabies	35(4.8%)	8(1.2%)	43(6.0%)
3	Impetigo	92(12.7%)	4(0.6%)	96(13.3%)
4	Acne Vulgaris	36 (5.1%)	25(3.5%)	61(8.6%)
5	Tinea Versicolor	31 (4.3%)	6(0.8%)	37(5.1%)
6	Molluscum Contagiosum	2(0.3%)	0	2(0.3%)

7	Chicken Pox	01(0.1%)	0	1(0.1%)
8	Seborrheic dermatitis	12(1.7%)	23(3.2%)	35(4.9%)
	Total	224(31.1%)	148(20.6%)	372(51.7%)

**Table 4.** Distribution of non-infectious dermatoses among boys and girls.

S.No	Nutritional dermatoses	Boys	Girls	Total
1	Xerosis	11(1.5%)	28(3.9%)	39(5.4%)
2	Phrynoderma	10(1.4%)	16(2.2%)	26(3.6%)
3	Angular Chelitis	2(0.3%)	2(0.3%)	4(0.5%)
	Total	23(3.2%)	46(6.3%)	69(9.5%)

**Table 5.** Distribution of nutritional dermatoses among boys and girls.

In the present study, out of 72% (720 out of 1000) children with Skin Disorders (SD), 56% (560, out of 720) have visited a dermatologist and are on treatment, whereas 16% (160, out of 720) did not seek medical attention.

## Discussion

The present study included 1000 school going children of 5-15 years of age, which were distributed into 5-10 years (53.5%) and 11-15 years (46.5%). Of the younger age group (5-10 years), majority of (44.5%, n=445) children had manifestation of Skin Disorders (SD) compared to children (27.5%, n=275) affected among the older age group (11-15 years). The association was found to be statistically significant with a p<0.01. Bharatesh Devendra Basti et al. concluded that Skin diseases were more common among the 5-9 age group (66.8%) children and 10-14 age groups (69.4%) which were statistically significant [10]. The prevalence of Skin Disorders (SD) among school going children of 5-15 years of age is found to be (720, out of 1000, 72%) which is comparable to Rao et al. (76.65%) [11]. Bharatesh Devendra Basti et al. in his study found the prevalence of skin diseases to be around 65% [10].

Among the study population, 512(51.2%) children were Boys and 488(48.8%) were Girls. The association of Skin Disorders (SD) seen more prevalent among Boys (385 out of 512, 75.2%) when compared to Girls (335 out of 488, 68.6%) with a value of X<sup>2</sup>=5.313, p=0.02 showing statistical significance. Monika kohli et al. found that prevalence of skin disorders were more among females than males in a study done among school children of Jaipur [12]. The male to female prevalence ratio in this study was 1.06:1 comparable to few other studies [11].

The children in the present study were categorised as per Modified Kuppusamy's socio- economic classification taking details of parent's education, occupation and income into consideration [13]. Majority (95%) of children belonged to Middle class with a smaller percentage belonging to Upper class (50.5%). Majority of children belonging to Middle

Middle class (79.1%) and Lower Middle class (80%) were affected with skin disorders as compared to children of Upper Middle class (43%) and least among children of Upper class (4%). The prevalence of Skin Disorders (SD) was more among lower middle and middle middle class with statistically significant association of  $p$  value  $< 0.05$  ( $p$ -value = 0.000049,  $X^2 = 19.849$ ). Kumar AS et al. in a study from Hyderabad showed that there was an association between the mother's educational status and skin infections but it was not statistically significant [14]. Inanir et al. in a study from Turkey showed socioeconomic status to be significant factor affecting the prevalence [15].

The prevalence of Infectious dermatoses among the study population was 51.7%, Non- Infectious dermatoses of 38.8% and Nutritional dermatoses of 9.5%. The present study is showed similar results like the general pattern of dermatosis in Indian school going children wherein infectious dermatosis are the commonest form 30%-85% [16-20]. Boys had a higher prevalence of Infectious dermatoses (31.1%) than Girls (20.6%) showing statistically significant association ( $p$ -value  $< 0.05$ ). The most common Infectious dermatoses encountered in our study population were Pediculosis and Impetigo, followed by Acne Vulgaris, Scabies, Tinea Versicolor and Seborrheic dermatitis. Pediculosis is more prevalent among girls (11.3%) than Boys (2.1%). This could be attributed to long hair and infrequent hair bath among girls. Similar results were found in other studies done by Khokhar A. et al and Wu YH et al. [21,22]. Similarly Scabies and Impetigo is more prevalent among Boys (4.8% and 12.7%) than Girls (1.2% and 0.6%) respectively in our study. This finding is much lower than the observation of a study done by Rotti et al in Karnataka where the prevalence of scabies was found to be 8% [23].

The most common Non Infectious dermatoses encountered in our study was Pityriasis Alba followed by Papular urticaria and Insect bite reaction. Valia et al. study also revealed pityriasis Alba to be the most common non-infectious dermatoses [24]. Non Infectious dermatoses were almost equally noted among Boys (19.2%) and Girls (19.6%), hence did not show any statistically significant association. Nutritional dermatoses encountered were Xerosis, Phrynoderma and Angular Chelitis and noted to be more prevalent among Girls than Boys, though not statistically significant. Phrynoderma (3.6%) is found to be less compared to other studies by Rao et al. [11]. In the present study among school going children with Skin Disorders (SD), 56% have sought medical treatment from a dermatologist, whereas 16% did not seek medical attention. In a study by Monika et al. only 33.4% sought treatment, reasons could be consideration of these disorders to be benign, inability to afford medical care or simply non-availability of a medical facility nearby [12].

## Conclusion

The prevalence of Skin Disorders (SD) among school going children of 5-15 years of age in Semi Urban (SU) areas of Puducherry is found to be high. Majority of children of the younger age group had manifestation of Skin Disorders (SD)

compared to children affected among the older age group. The association of Skin Disorders (SD) has been seen more prevalent among boys when compared to girls showing statistical significance. Majority of children belonging to Middle Middleclass and Lower Middle class were affected with skin disorders as compared to children of Upper Middle class and Upper class with statistically significant association. The skin disorders were broadly categorized into Infectious dermatoses, Non-Infectious dermatoses and Nutritional dermatoses.

Infectious dermatoses were most commonly encountered among the school children in our study. This indicates the need for improving the sanitation facilities and hygienic practices among these children. The Skin Disorders (SD) that was commonly encountered can be easily diagnosed and are curable. The importance of recognizing these common dermatological manifestations has to be inculcated among parents, school teachers and even school going children.

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