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Original Research Article

# Skin lesions in school children: A survey from schools in an urban area of south India

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ABSTRACT

**Introduction:** Dermatoses are common among school children. Where community based surveys are much difficult to carry out, school surveys are helpful as they are easy and less time consuming. School surveys are more helpful than community based surveys as they are easy, less time consuming and children are available under the single roof. This study was done to find the prevalence and pattern of dermatoses in school children at Tumkur

**Materials and Methods:** Five hundred and thirty four students were screened in two different schools at Tumkur over a period of two months during November and December 2018.

**Results:** Dermatoses were prevalent in 323(60.48%) students . Noninfectious dermatoses, 311 (58.23%) were most common followed by infections and infestations, 79 (14.8%) and nutritional dermatoses, 40 (7.5%). Pityriasis alba and xerosis were most common type of dermatoses, seen in 93( 17.41%) and 62( 11.61%) students respectively. Pediculosis capitis was more prevalent among girls. Pityriasis alba, xerosis, papular urticatia were more prevalent among primary school children. Acne and pityriasis capitis were more prevalent among middle and high school children.

**Conclusions:** Health education regarding personal hygiene, nutrition and increasing the awareness about dermatoses among students, teachers, care takers and regular school health surveys help in reducing the burden of skin problems in school going children.



## 1. Introduction

Skin diseases are an important health problem in children that can lead to significant morbidity.[1] The health and hygiene status of a society can be judged by the prevalence of certain diseases in the children.[2] While the community based surveys are difficult and times not possible, school surveys are easy, less time consuming and a large number of children of a particular age group can be screened for the presence of d ermatoses.[3] The objective of this study was to find the prevalence and pattern of dermatoses in school children at urban schools in Tumkur city of Karnataka.

## 2. Materials and Methods

Institutional ethical committee clearance was obtained before starting the study. The study was conducted in the months of November and December 2018. After taking informed consent from the school principal, a total of 534 students in the age group of 5-16 years were screened at two schools in Tumkur. Students were interviewed for age, residence, and any specific complaint related to skin followed by a detailed dermatological examination . The findings were recorded on a proforma and the students who needed investigations and treatment were called to our institute. Descriptive statistics like mean, frequency and percentage were calculated. Chisquare test was done to analyse data wherever necessary.

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## 3. Results

Out of 534 students, there were 260(48.7%) boys and 274(51.3%) girls. Two hundred and eighty four (53.2%) students belonged to primary school ( 5-10yrs) and 250(46.8%) students belonged to middle and high school (11- 16) yrs.

Dermatoses were prevalent in 323 (60.48%) students. Among boys, 151(58.07%) had dermatoses and among girls 172( 62.77%) had dermatoses. Among primary school students, 170(59.85%) had dermatoses and among high school, 153(61.2%) had dermatoses. There was no significant difference in the prevalence of dermatoses among boys vs girls and primary school vs middle and high school students. Dermatoses were chategorised into three groups, 1. Infections and infestations, 2. Noninfectious dermatoses and 3. Nutritional dermatoses. Table 1 depicts the distribution of dermatoses among boys and girls and table 2 depicts the distribution of dermatoses among primary school and high school students.

Among the various dermatoses observed, noninfective dermatoses was most common, seen in 311(58.23%) students followed by infections and infestations in 79(14.8%) and nutritional dermatoses in 40(7.5%) students.

Infections and infestations were second common category of dermatoses with overall prevalence of 14.8%. Primary school students had a significantly increased number of infections compared to middle and high school students ($p<0.01$). There was no significant difference between boys and girls.

Pyoderma was most common infection, found in 17(3.2%) students, followed by warts in 9(1.7%), molluscum contagiosum and pityriasis versicolor in 4( 0.74% ) students each, tinea capitis (Figure 1) and tinea corporis in 2( 0.37%) students each.

Among the infestations, Pediculosis capitis (Figure 2 ) was seen in 40(7.49%) students, out of which 38(7.11%) were girls and only 2 (0.37%) were boys and the difference was significant ( $p<0.01$). Similarly pediculosis capitis was significantly more common among middle and high school students compared to primary school students.

Surprisingly, we did not come across any case of scabies in our study.

Non infectious dermatoses were most common category in our study with a prevalence of 58.07%. There was no significant difference in overall prevalence of noninfective dermatoses among boys vs girls and amomg primary school vs middle and hi gh school students.

Pityriasisalba and Xerosis were the most common noninfectious dermatoses and they were also the most common dermatoses found in our study, seen in 93(17.41%) and 62(11.61%) respectively. Both pityriasisalba and xerosis were significantly more common among primary school students compared to middle and high school students ($p<0.01$). Xerosis was more common among boys compared to girls.

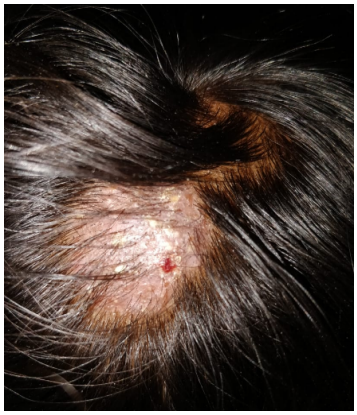

**Fig. 1:** Tinea capitis

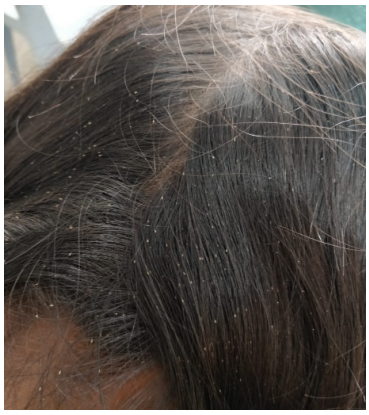

**Fig. 2:** Pediculosis capitis with nits

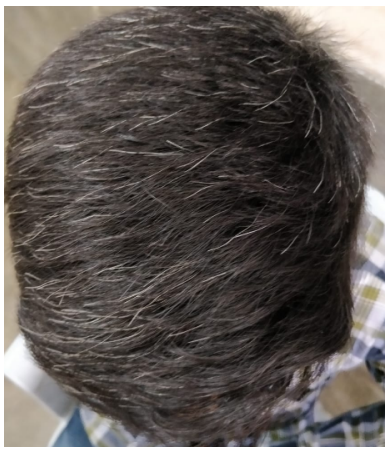

**Fig. 3:** Premature canitis

Another common noninfectious dermatoses in our study was papular urticaria which was seen in 31(5.8%) students. It was also significantly more common among primary

**Table 1:** Pattern of dermatoses among boys vs girls

| Category of dermatoses | Type of dermatoses | Boys | Girls | Total (%) n=534 | p value |
|---|---|---|---|---|---|
| Infections | Pyoderma | 8 | 9 | 17(3.18) | 0.8912 |
| | Wart | 6 | 3 | 9(1.68) | 0.2764 |
| | Molloscum contagiosum | 1 | 3 | 4(0.74) | 0.3413 |
| | Varicella | 1 | 0 | 1(0.18) | 0.4869 |
| | Tinea capitis | 2 | 0 | 2(0.37) | 0.2366 |
| | Tinea corporis | 2 | 0 | 2(0.37) | 0.2366 |
| | Pityriasis versicolor | 2 | 3 | 5(0.93) | 0.6961 |
| Infestations | Pediculosis capitis | 4 | 36 | 40(7.49) | 0.000001 |
| Nutritional dermatoses | Angular cheilitis | 17 | 14 | 31(5.80) | 0.4803 |
| | Phrynoderma | 5 | 4 | 9(1.68) | 0.6766 |
| Noninfectious dermatoses | Pityriasis alba | 46 | 47 | 93(17.41) | 0.8696 |
| | Xerosis | 38 | 24 | 62(11.61) | 0.3473 |
| | Acne vulgaris | 23 | 28 | 51(9.55) | 0.5895 |
| | Papular urticaria | 13 | 18 | 31(5.80) | 0.4382 |
| | Pityriasis capitis | 3 | 13 | 16(2.99) | 0.1498 |
| | Polymorphic light eruption | 5 | 7 | 12(2.24) | 0.6225 |
| | Premature canitis | 6 | 3 | 9(1.68) | 0.2764 |
| | Eczema | 5 | 1 | 6(1.12) | 0.0877 |
| | Juvenile plantar dermatoses | 3 | 3 | 6(1.12) | 0.9484 |
| | Naevi | 2 | 3 | 5(0.93) | 0.6961 |
| | Palmoplantar hyperhydrosis | 2 | 3 | 5(0.93) | 0.6961 |
| | Acanthosis nigricans | 1 | 2 | 3(0.56) | 0.5936 |
| | Café au lait macules | 1 | 1 | 2(0.37) | 0.9703 |
| | Icthyosis | 0 | 2 | 2(0.37) | 0.4994 |
| | Keloid | 2 | 0 | 2(0.37) | 0.2366 |
| | Lichen planus | 1 | 1 | 2(0.37) | 0.9703 |
| | Morphea | 1 | 0 | 1(0.18) | 0.4869 |
| | Pityriasis rosea | 1 | 0 | 1(0.18) | 0.4869 |

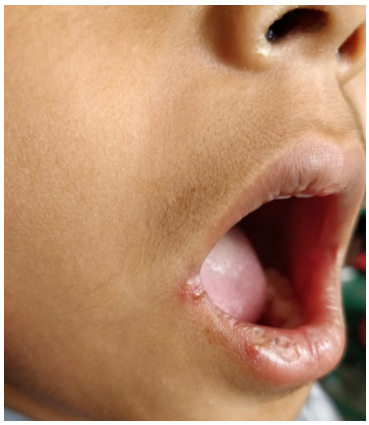

**Fig. 4:** Angular cheilitis

school students ( $p<0.01$). Acne vulgaris and pityriasis capitis were seen in 51(9.55%) and 16(2.99%) students respectively. They were seen only among middle and high school students except for one case of pityriasis capitis among primary school students.

Other noninfectious dermatoses found in our study were polymorphic light eruption, premature canitis (Figure 3), eczema, juvenile plantar dermatoses, naevi, palmoplantar hyperhydrosis,acanthosis nigricans, café aulait macules, icthyosis, keloid, lichen planus, morphea and pityriasis rosea. The prevalence of these dermatoses were similar among boys and girls and among primary school and middle and high school students and were statistically insignificant.

Among the nutritional deficiency dermatoses, angular cheilitis (Figure 4) was common, observed in 31(5.8%) students followed by phrynoderma in 9(1.6%) students. There was no significant difference in the prevalence of nutritional dermatoses among boys vs girls and primary school vs middle and high school students.

## 4. Discussion

Dermatoses are one of the major problems in school going children. Sociodemographic and environmental factors play a major role in determining the pattern of dermatoses in this age group.

In our study, the prevalence of skin disorders was 60.48% , which was comparable to earlier studies done by Valia *et al*[4] (53.6%), Jose *et al*[5] (68.2 %), Saurabh *et al*[6] (69%), Upendra *et al*[7] (72.1%) and Rao *et al*[3] (76.65%).

Infectious dermatoses in our study was 14.8%, similar to a study done by Rao *et al*[3] (19%). Jose *et al*[5] (50.73%) and

**Table 2:** Pattern of dermatoses among Primary school students vs Middle and high school students

| Category of dermatoses | Type of dermatoses | Prmary school students(5-10 yrs) | Middle and high school students (11-16yrs) | Total (%) n=534 | p value |
|---|---|---|---|---|---|
| Infections | Pyoderma | 15 | 2 | 17(3.18) | 0.0032 |
| | Wart | 4 | 5 | 9(1.68) | 0.5961 |
| | Molloscum contagiosum | 4 | 0 | 4(0.74) | 0.1266 |
| | Varicella | 1 | 0 | 1(0.18) | 1.0 |
| | Tinea capitis | 2 | 0 | 2(0.37) | 0.5011 |
| | Tinea corporis | 2 | 0 | 2(0.37) | 0.5011 |
| | Pityriasis versicolor | 0 | 5 | 5(0.93) | 0.022 |
| Infestations | Pediculosis capitis | 11 | 29 | 40(7.49) | 0.0011 |
| Nutritional dermatoses | Angular cheilitis | 22 | 9 | 31(5.80) | 0.6299 |
| | Phrynoderma | 5 | 4 | 9(1.68) | 0.8856 |
| | Pityriasis alba | 62 | 31 | 93(17.41) | 0.0059 |
| | Xerosis | 54 | 8 | 62(11.61) | 0.0001 |
| | Acne vulgaris | 0 | 51 | 51(9.55) | 0.00001 |
| | Papular urticaria | 24 | 7 | 31(5.80) | 0.0053 |
| | Pityriasis capitis | 1 | 15 | 16(2.99) | 0.00036 |
| Noninfectious dermatoses | Polymorphic light eruption | 9 | 3 | 12(2.24) | 0.1255 |
| | Premature canitis | 3 | 6 | 9(1.68) | 0.125 |
| | Eczema | 3 | 3 | 6(1.12) | 0.8751 |
| | Juvenile plantar dermatoses | 3 | 3 | 6(1.12) | 0.8751 |
| | Naevi | 2 | 3 | 5(0.93) | 0.5528 |
| | Palmoplantar hyperhydrosis | 2 | 3 | 5(0.93) | 0.5528 |
| | Acanthosis nigricans | 1 | 2 | 3(0.56) | 0.4895 |
| | Café au lait macules | 0 | 2 | 2(0.37) | 0.2187 |
| | Icthyosis | 0 | 2 | 2(0.37) | 0.2187 |
| | Keloid | 0 | 2 | 2(0.37) | 0.2187 |
| | Lichen planus | 0 | 2 | 2(0.37) | 0.2187 |
| | Morphea | 0 | 1 | 1(0.18) | 0.4682 |
| | Pityriasis rosea | 0 | 1 | 1(0.18) | 0.4682 |

Bhatia V[1] (63.5%) reported a high prevalence of infectious dermatoses in their study. This may be due to the conduct of study in urban schools where there is improved hygiene, more awareness about dermatoses and early seeking of health care facilities.

Pediculosis capitis was one of the common dermatoses in our study, found in 7.49% students. Rao *et al*[3] , Basti and Radhakrishnan[8] and Upendra *et al*,[7] reported prevalence of pediculosis as 4.13%, 6.5% and 9.2% respectively, comparable to our study. Pediulosis capitis was significanthy more common among girls similar to earlier studies. This may be attributed to the long hair and also dec reased frequeny of hair washing in them.

Among the noninfectious dermatoses, pityriasis alba and xerosis had high prevalence which was present in 17.41% and 11.61% respectively, which was comparable to study done by Jose *et al*[5] who reported 9.23% students with of pityriasis alba and 8.21% students with xerosis. Valia *et al*[4] and Jose *et al*[5] also reported pityriasis alba as the most c ommon noninfectious dermatoses in their study. Basti and Radhakrishnan[8] observed xerosis as the most common dermatoses, found in 18% students in their study. Increased prevalence of xerosis in our study may also be attributed to the winter months during which we conducted

the study. Xerosis was more common in primary school childern compared to middle and high school childern and boys compared to girls which was similar to study done by Upendra *et al.*[7] Higher privalance of xerosis in primary school children may be because of the shorter length of dress worn by them and thus more exposure to old and dry winds. Higher prevalance of xerosis among boys may be due to more involvement in outdoor games.

Papular urticaria was seen in 5.8% of students which was comparable to study by Jose *etal*[5] (2.63%) and Ghosh *et al*[9] (4%). Papular urticaria was significantly more common among primary school students compared to middle and high school students. This may be attributed to their age as well as short dresses worn by the children in this group.

Acne was seen in 9.55% of students, comparable to studies by Upendra *et al*[7] and Basti and Radhakrishnan[8] who reported acne in 8.6% and 9.4% of students respectively. Acne and pityriasis capitis was signifiantly more common among middle and high school students compared to primary school students owing to the hormonal changes in middle and high school students. Acne and pityriasis cpitis was also more common among girls due to the earlier onset of puberty in girls compared to boys.

Nutritional deficiency dermatoses was seen in 7.49% of students in our study, comparable to study by Rao *et al*[3] (6.79%) and Jose *et al*[5] (12.17%). Upendra *et al*[7] reported less prevalence of nutritional dermatoses (1.7%) in their study, which they attributed to free nutritious meals, regular deworming and iron and folic acid supplementation for the students in their study. Limitation of our study was that the sample size was small.

## 5. Conclusions

The prevalence of dermatoses in school children was 60.48%. Noninfectious dermatoses were more common followed by infectious and nutritional deficiency dermatoses. Education regarding health, hygiene and nutrition among students, teachers and care givers is essential to reduce the burden of dermatoses among school going children. Education regarding health, hygiene and nutrition among students, teachers and care givers is essential to reduce the burden of dermatoses among school going children.

Routine school surveys help in the early detection of dermatoses thus reducing the morbidity among school children.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

## References

1. Extent and pattern of paediatric dermatoses in rural areas of central India. *Indian J Dermatol Venereol Leprol*. 1997;63(1):22–27.
2. Kumar V, Garg BR, Baruah MC. Prevalence of dermatological diseases in school children in a semi-urban area in Pondicherry. *Indian J Dermatol Venereol Leprol*. 1988;54(5):300–302.
3. Rao GS, Kumar SS, Sandhya. Pattern of skin diseases in an Indian village. *Indian J Med Sci*. 2003;57(3):108–118.
4. Valia RA, Pandey SS, Kaur P, Singh G. Prevalence of skin diseases in Varanasi school children. *Indian J Dermatol Venereol Leprol*. 1991;57(3):141–144.
5. Jose G, Vellaisamy SG, Govindarajan N, Gopalan K. Prevalence of common dermatoses in school children of rural areas of Salem; a region of South India. *Indian J Paediatr Dermatol*. 2017;18(3):202–210.
6. Saurabh S, Sahu SK, Sadishkumar A, Kakkanattu JC, Prapath I. Screening for skin diseases among primary school children in a rural area of Puducherry. *Indian J Dermatol Venereol Leprol*. 2013;79(2):268–268.
7. Y, Keswani SS, Pallava N, A. Prevalence of dermatoses among the tribal children studying in residential schools of South Chhattisgarh. *India Indian J Paediatr Dermatol*. 2018;19:15–20.
8. Basti BD, Radhakrishnan S. Prevalence of dermatological manifestations among the tribal school children of South India. *Int J Community Med Public Health*. 2016;3:1957–62.
9. Ghosh SK, Saha DK, Roy AK. A clinico-aetiological study of dermatoses in paediatric age group. *Indian J Dermatol*. 1995;40(1):29–31.

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