

Research Article

Prevalence of dermatological manifestations among the tribal school children of South India

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ABSTRACT

Background: Skin diseases are particularly significant in children as they have the capability of contributing risk in developing other life-threatening illnesses. The prevalence of skin diseases among children in India ranges from 8.7% to 35%. Factors like socioeconomic status, environmental conditions, dietary habits, climate, hygiene, cultural factors, genetic factors and education status of parents influence the presence of skin diseases in children. Aim of the study was to assess the prevalence of dermatological lesions and the associated factors among the school going children of tribal area in South India.

Methods: A cross sectional study was conducted at a community school in the tribal area of Yercaud in TamilNadu. The total number of children included in the study was 923 of various age groups. This school gives the complete representation of tribal children as this being the only school for a population of 10,000. The diagnosis of the dermatological lesions were made mainly by history and clinical examination and wherever required skin biopsy and skin scraping was done to confirm the diagnosis.

Results: 596 (64.6%) children had dermatologic manifestations. 386 (41.8%) children had only one skin disease, 160 (17.3%) had two skin diseases and 50 (5.5%) children had 3 or more skin diseases. Skin diseases were more common among the 5-9 age group (66.8%) children and 10-14 age group (69.4%). Factors like infrequent bathing and wearing clothes without regular washing had influenced the dermatological lesions in the children.

Conclusions: Health education, regular periodical examination of the children by the teachers is the need of the hour. Early diagnosis and treatment measures for the affected children need to be taken to prevent and control the outbreak of skin diseases.

Keywords: Tribal area, Prevalence, Dermatological lesions

INTRODUCTION

Skin is the largest protective organ covering all the organs in our body. Skin diseases are one of the three common causes of morbidity in the developing countries in India along with malaria and diarrhea.¹ Skin diseases are being considered as a major health problem in children, as it leads to discomfort and significant morbidity among them. A recent survey showed that 30%

of all outpatient visits to a paediatrician have one or the other skin lesions.²

The prevalence of skin diseases in children ranges from 8.7% to 35%, which was highlighted in a recent school-based survey across India.² Skin diseases are particularly significant in children as they have the capability of contributing risk in developing other life-threatening illnesses. One such example is the development of acute

glomerulonephritis following skin infection with Group A β -hemolytic streptococcus has been demonstrated to be a risk factor for albuminuria and hematuria in adult life.³⁻⁵ It is essential, in the light of this, to pay attention to bacterial skin infections complicating scabies and insect bites.⁶

Skin diseases can be acute or chronic and even sometimes it was recurrent. Many a times the skin problem has the tendency in causing psychological disturbances to the affected children. Most of the skin lesions can be easily diagnosed and managed at a very early stage in such a way that it would reduce the suffering among the children. Mostly the skin diseases were ignored both by the children and their parents. This can harm not only the child but also the other family members and the other children in the school, as most of the skin lesions are contagious.⁷

Studies had shown that many factors like socioeconomic status, environmental conditions, dietary habits, climate, hygiene, cultural factors, genetic factors and education status of parents influence the presence of skin diseases in children. The pattern of skin diseases also varies in different parts of India and across urban, rural and the tribal areas.

Especially in tribal areas the inaccessibility to the health system and the lack of awareness would make the condition more worsen.⁸

Furthermore, routine and deliberate examination for skin lesions in hospitalized children improves the diagnostic accuracy, as they sometimes occur as part of the signs of more serious diseases, whereas identifying the skin lesions at the community level still remains as a disease of iceberg.⁹ Therefore, the present study was carried out to determine the prevalence and pattern of dermatological lesions among the school children in a tribal area. As of today many studies on assessing the skin diseases among school children have been done in urban and rural areas, but as such in India it was only few and with respect to tribal areas the studies were still lesser. So the current study would give us a real magnitude of the skin diseases among the children of tribal area in South India.

Aim of the study was to assess the prevalence of dermatological lesions and the associated factors among the school going children of tribal area in South India.

METHODS

A cross sectional study was conducted at a Community school in the tribal area of Yercaud in TamilNadu. The study was conducted during the period of Feb 2014-January 2015. A regular weekly camp is being conducted in that school on every Wednesday and a team of doctors from our hospital usually visit the school and examine the children for various health related issues. The school has students from 1st standard to 12th standard and all the

students were examined for the skin lesions with the help of a dermatologist. This school gives us the complete representation of all the tribal village children as this being the only school in that area for a population of 10,000. The study was carried out after getting the clearance from the institutional ethical committee and the informed consent was obtained from the school head master for examining the children. The total number of children included in our study was 923 of various age groups.

A structured and pre-tested questionnaire was prepared which includes the complete demographic data, family history, personal hygiene and the questions related to various other factors which had influenced the dermatological lesions. The diagnosis of the dermatological lesions were made mainly by history and clinical examination and wherever required skin biopsy and skin scraping was done to confirm the diagnosis.

All the data were entered and analysed using Epiinfo. Descriptive statistics such as frequencies, proportions for qualitative data and mean, standard deviation for quantitative data was computed. Chi-square test was used to derive the statistical inference.

RESULTS

All the children in the school were examined. 923 children were examined. 530 (57.4%) of the children were males and 393 (42.6%) were females. The mean age group was 11.29 years (Range 5-21 years, SD=3.96). 377 (40.8%) children were in the age group of 5-9 years, 314 (34%) in 10-14 years, 232 (25.1%) in the age group of 15 years and above. (Table 1) The mean height of the children was 133.16 centimeter's (Range 98-178 cms, SD=18.783) and mean weight was 27.48 Kilograms (Range 11-60 kgs, SD=11.575).

Table 1: Age wise distribution of children with skin manifestations.

Age group (Years)	Present (%)	Absent (%)	Total
5-9	252 (66.8)	125 (33.2)	377
10-14	218 (69.4)	96 (30.6)	314
>15	126 (54.3)	106 (45.7)	232
Total	596 (64.6)	327 (35.4)	923

P<0.01

Table 2: Sexwise distribution of children with skin manifestations.

Sex	Present (%)	Absent (%)	Total
Male	335 (63.2)	195 (36.8)	530
Female	261 (66.4)	132 (33.6)	393
Total	596 (64.6)	327 (35.4)	923

P>0.05

596 (64.6%) children had dermatologic manifestations. 386 (41.8%) children had only one skin disease, 160 (17.3%) had two skin diseases and 50 (5.5%) children had 3 or more skin diseases.

Skin diseases were more common among the 5-9 age group (66.8%) children and 10-14 age group (69.4%). It was statistically significant. (Table 1) 46.3% of the Children with two skin diseases were in the age group of 5-9 years, and 53.5 % of the Children with three skin diseases were in the age group of 5-9 years, 57.1% of the Children with four skin diseases were in the age group of 5-9 years. 5-9 year age group was the more vulnerable group for multiple skin diseases. 261 (66.4%) of female children and 335 (63.2%) of male children are affected with skin manifestations. Females were more affected than males but it was not statistically significant. (Table 2).

The most common presentation observed was dryness of skin (Xerosis) in 166 (18%) of the children, followed by scabies (16.9%), pyoderma (12.1%), Acne, Pityriasis alba, Pediculosis capitis, fungal infections. 7.2% of the children had chicken pox scars which was diagnosed based on the past history of chicken pox. Active Chicken

pox lesions were found in two children. It suggests that chicken pox is one of the diseases common in that area (Table 3).

Table 3: Distribution of children according to skin manifestations.

Disease	Number of children (%)
Xerosis	166(18%)
Scabies	156 (16.9%)
Pyoderma	112(12.1%)
Acne	87 (9.4%)
Pityriasis alba	74(8%)
Chickenpox scars	66(7.2%)
Pediculosiscapitis	60(6.5%)
Pityriasisversicolor	42 (4.6%)
Nail white pigmentation	25 (2.7%)
Wounds	23 (2.5%)
Impetigo	21(2.3%)
Pallor	19(2.1%)
Infective dermatitis	17(1.8%)
Warts	14(1.5%)
Tinea infections	12 (1.3%)

Table 4: Age wise distribution of children with skin lesions.

Xerosis	5-9 (%)	10-14 (%)	>15 (%)	Total	P<0.0001
Present (%)	80(48.2)	69 (41.6)	17(10.2)	166 (18%)	
Absent (%)	297 (39.2%)	245 (32.4)	215 (28.4)	757 (82%)	
Total	377 (40.8)	314 (34)	232 (25.2)	923 (100)	
Scabies					
Present (%)	60(38.5)	62 (39.7)	34(21.8)	156 (16.9)	P>0.05
Absent (%)	317 (41.3)	252 (32.9)	198 (25.8)	767 (83.1%)	
Total	377 (40.8)	314 (34)	232 (25.2)	923 (100)	
Acne					
Present (%)	0	17 (19.5)	70(80.5)	87(9.4%)	P<0.0001
Absent (%)	377 (45.1%)	297 (35.5)	162 (19.4)	836 (90.6%)	
Total	377 (40.8)	314 (34)	232 (25.2)	923 (100)	
Pediculosiscapitis					
Present (%)	6 (10)	25 (41.7)	29(48.3)	60 (6.5)	P<0.001
Absent (%)	371 (43%)	289 (33.5)	203 (23.5)	863 (93.5)	
Total	377 (40.8)	314 (34)	232 (25.2)	923 (100)	
Anemia					
Present (%)	5(26.3)	10 (52.6)	4(21.1)	19(2.1)	P>0.05
Absent (%)	37 2(41.2)	304 (33.6)	228 (25.2)	904 (97.9)	
Total	377 (40.8)	314 (34)	232 (25.2)	923 (100)	

Herpes Simplex lesions, chickenpox, koilonychia, urticaria, and Lichen planus were noted in 2 children. 3 had PityriasisRosea, 4 platynychia, 4 had angular cheilitis, 13 had naevus, and 11 had Vitamin A deficiency lesions. The other diseases noted were leprosy, molluscum, atopic dermatitis, vitiligo, ichthyoses, and herpes zoster in one child each. Xerotic skin or dry skin

was noted in 166 (18%) of the children. Of them 48.2% were in the 5-9 age group, followed by 41.6% in the 10-14 age group. It was statistically highly significant (P<0.0001) (Table 4). 83 (21.1%) of the female children and 15.7% of males had dry skin. It was statistically significant (P<0.05).

Scabies was found in 156 (16.9%) of the children. 39.7% and 38.5% of them were in the age group of 10-14 and 5-9 years ($P>0.05$) respectively. 106 (20%) of the male children and 50 (12.7%) of females had scabies. It was statistically significant ($P<0.01$) (Table 5). Pyodermas were found in 112 (12.1%) children. 46.4% of them were in the 5-9 age group followed by 10-14 age group.

87 (9.4%) of children had acne. No difference was found between the sexes, 37 (9.4%) of females and 50 (9.4%) of males had Acne. 70 (80.5%) children with acne were fifteen years and above, followed by 17 (19.5%) in the 10-14 age group. This was statistically highly significant ($P < 0.001$).

Table 5: Sexwise distribution of children with dermatological manifestations.

Xerosis	Male (%)	Female (%)	Total	
Present	83 (15.7)	83 (21.1)	166 (18)	P<0.05
Absent	447 (84.3)	310(78.9)	757 (82)	
Total	530 (57.4)	393(42.6)	923 (100)	
Scabies				
Present	106 (20)	50 (12.7)	156(16.9)	P<0.01
Absent	424 (80)	343(87.3)	767(83.1)	
Total	530 (57.4)	393(42.6)	923 (100)	
Acne				
Present	50 (9.4)	37 (9.4)	87 (9.4)	P>0.05
Absent	480(90.6)	356(90.6)	836(90.6)	
Total	530 (57.4)	393(42.6)	923 (100)	
Pediculosiscapitis				
Present	17(3.2)	43 (10.9)	60 (6.5)	P<0.001
Absent	513 (96.8)	350(89.1)	863(93.5)	
Total	530 (57.4)	393(42.6)	923 (100)	
Anemia				
Present	6 (1.1)	13 (3.3)	19(2.1)	P< 0.05
Absent	524 (98.9)	380(96.7)	904(97.9)	
Total	530 (57.4)	393(42.6)	923(100)	

Pityriasis alba, was seen in 74 (8%) of the children of whom 41.9% were in the 10-14 age group. 8.1% of the females and 7.9% of the males were affected with Pityriasis alba.

66 (7.2%) of the children had scars of chicken pox. 7.1% of the females and 7.2% of the males had scars of chicken pox. 60 (6.5%) children had Pediculosis capitis. 48.3% of them were more than 15 years age, followed by 41.7% were in the 10-14 year age group. This was statistically highly significant ($P<0.001$). 71.7% of the children with Pediculosis capitis were females.

10.9% of the females and 3.2% of the males were affected with Pediculosis capitis. It was statistically highly significant ($P<0.001$).

Pityriasis versicolor, was seen in 42 (4.6%) of the children of whom 81% were in the 5-9 age group. 5.3% of

the males and 3.6% of the females were affected with Pityriasis versicolor.

Wounds were found in 23 (2.5%) of the children. 73.9% were in the 5-9 age group. 73.9% of the children with wounds were males. 3.2% of the males than 1.5% of the females had wounds.

Pallor was noted in 19 (2.1%) of the children. 52.6% were in the 10-14 age group. 68.4% children with pallor were females. 3.3% of the females and 1.1% of the males had pallor. It was statistically significant ($P < 0.05$).

Highly statistically significant associations was associated with Children of illiterate mothers 104 (93.7%), from low economic status 266 (78.5%), with low BMI 376 (70.5%), with poor hygiene 429 (78.4%), who did not bath daily 240(70%), who did not wear washed clothes daily 394 (69.1%), with previous skin infection 452 (75.7%) and skin diseases (Table 6).

Table 6: Various factors associated with dermatological lesions.

Mother's Education	Present (%)	Absent (%)	Total	Chi square and P value.
Illiterate	104 (93.7)	7 (6.3)	111	$\chi^2=160$; $P<0.001$
Primary	357 (75.8)	114 (24.2)	471	
High School	118(40)	177 (60)	295	
Others	17 (36.9)	29 (63.1)	46	
Total	596	327	923	
Socioeconomic status	Present (%)	Absent (%)	Total	
Class I	2 (33.3)	4 (66.6)	6	$\chi^2=52$; $P<0.001$
Class II	18 (40.9)	26 (59.1)	44	
Class III	94 (61)	60 (39)	154	
Class IV	216 (56.8)	164 (43.2)	380	
Class V	266 (78.5)	73 (21.5)	339	
Total	596	327	923	
BMI	Present (%)	Absent (%)	Total	
<18	376 (70.5)	157 (29.5)	533	$\chi^2=75$; $P<0.001$
18-25	214 (59.9)	143 (40.1)	357	
>25	6 (18.2)	27 (81.8)	33	
Total	596	327	923	
Personal Hygiene	Present (%)	Absent (%)	Total	
Good	167 (44.4)	209 (55.6)	376	$\chi^2=112$; $P<0.001$
Bad	429 (78.4)	118 (21.6)	547	
Total	596	327	923	
Bath Daily	Present (%)	Absent (%)	Total	
Yes	356(61.4)	224 (38.6)	580	$\chi^2=6.95$; $P<0.01$
No	240(70)	103 (30)	343	
Total	596	327	923	
Wear washed clothes	Present (%)	Absent (%)	Total	
Daily	202 (57.2)	151 (42.8)	353	$\chi^2=16$; $P<0.001$
Not Daily	394(69.1)	176 (30.9)	570	
Total	596	327	923	
Previous skin infection	Present (%)	Absent (%)	Total	
Yes	452 (75.7)	145 (24.3)	597	$\chi^2=92$; $P<0.001$
No	144 (44.2)	182 (55.8)	326	
Total	596	327	923	

DISCUSSION

The present study had shown that the overall prevalence of dermatological lesions among the children of a tribal area was 64% and the most common dermatological manifestation was found to be Xerosis (dry skin), which might be due to the environmental factor, as they all live in the hill station. The prevalence estimated in our study was almost in par with the various studies done at different places by Ewaldo V Komba et al, RA Valia et al in Varanasi, Vikas Bhatia et al in Chandigarh where the prevalence was 57.3%, 54% and 51% respectively but all these studies had been conducted in the rural areas.^{7,10,11} Similarly few other studies done in urban areas by Rita voraetal, KA Khalifa et al and Kumar et al had shown the prevalence to be 15%, 40.9%, 49.1% respectively.¹²⁻¹⁴ So

from the above figures it is proven that the dermatological lesions were more common in tribal areas when compared to the rural and urban areas.

In the present study about 25% of the children had more than one skin disease in which 17.3% had two skin diseases and 5.5% children had 3 or more skin diseases and a similar type of results was also seen in a study conducted in Chandigarh where it had shown that 30% of the children in the age group between 6-14 years had more than one type of dermatological lesion.¹¹ The prevalence of skin lesions among the males and females in our study was found to be similar with acne and Pediculosis capitis found to be more prevalent among females and pityriasis and scabies more among the males and similar type of results were also seen in the study done by Rita voraet al and Evaldoetal Acne, Pediculosis capitis was more common among > 15 years age

group.^{12,7} Pityriasis alba, pallor, scabies in 10-14 year age group. Dryness, pyoderma, wounds, pityriasis versicolor were common in 5-9 year age group. These were comparable to the studies by R J Valia et al in Varanasi¹⁵, KS Negi et al in Uttar Pradesh and Sharma et al in tribal area of Himachal Pradesh.^{12,16}

Prevalence of skin diseases was high in children of illiterate mothers and the association was found to be statistically significant and it is similar to the study done by Khalifa KA et al.¹³

There was a significant association between the prevalence of skin diseases and the factors like infrequent bathing and wearing clothes without regular washing. Similarly, Amin TT et al in his study found a significant association between infrequent washing of clothes and infrequent bathing with soap in their study.¹⁷

Most of the skin diseases observed in our study are mostly preventable and are amenable to treatment. Teachers need to be sensitised to look for some common and preventable skin diseases. Regular and periodical screening of the children by the teachers for skin diseases has to be emphasised is needed. As most of the skin lesions are contagious and easily spread among children and so early diagnosis and treatment would control the probable outbreak.

CONCLUSION

Dermatologic manifestations are one of the neglected problems especially in tribal children. Dryness, Infestations, infections are some of the common problems noted. Most of the manifestations are preventable, and can be cured. Health education, regular periodical examination of the children by the teachers is the need of the hour. Early diagnosis and treatment measures for the affected children need to be taken to prevent and control the outbreak of skin diseases.

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REFERENCES

- Schmeller W, Dzikus A. Skin diseases in children in rural Kenya: Long-term results of a dermatology project within the primary health care system. *Br J Dermatol* 2001;144:118-24.
- Sharma NK, Garg BK, Goel M. Pattern of skin diseases in urban school children. In *J Dermatol Venereol Leprol*. 1986;52:330-1.
- Turnbull PR. Aetiology of acute glomerulonephritis. *Br Med J*. 1973;2:666.
- Brown J, Shriner DL, Schwartz RA, Janniger CK. Impetigo: an update. *Int J Dermatol*. 2003;42:251-5.
- White AV, Hoy WE, McCredie DA. Childhood post-streptococcal glomerulonephritis as a risk factor for chronic renal disease in later life. *Med J Aust*. 2001;174:492-6.
- Svartman M, Finklea JF, Earle DP, Potter EV, Poon-King T. Epidemic scabies and acute glomerulonephritis in Trinidad. *Lancet*. 1972;1:249-51.
- Komba EV, Mgonda YM. The spectrum of dermatological disorders among primary school children in Dar es Salaam *BMC Public Health*. 2010;10:765.
- Ghosh SK, Saha DK, Roy AK. A clinico-aetiological study of dermatoses in paediatric age group. In *J Dermatol*. 1995;40:29-31.
- Karthikeyan K, Thappa DM, Jeevankumar B. Pattern of pediatric dermatoses in a referral centre in South India. In *Pediatrics*. 2004;41:373-7.
- RA Valia, SS Pandey, Paramjeet Kaur, Gurm Singh prevalence of skin diseases in Varanasi school children Year.1991;57(3):141-3.
- Vikas Bhatia Extent and pattern of paediatric dermatoses in rural areas of central India. *Indian J Dermatol Venereol Leprol*. 1997;63:22-5.
- Vora R, Bodiwala N, Patel S. Prevalence of various dermatoses in school children of Anand district. *Natl J Community Med*. 2012;3:100-3.
- Khalifa KA, Al-Hadithi TS, Al-Lami FH, Al-Diwan JK. Prevalence of skin disorders among primary-school Children in Baghdad governorate, Iraq. *EMHJ*. 2010;16(2):209-13.
- 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;54:300-2.
- Valia RA, Pandey SS, Kaur P, Singh G. Prevalence of skin diseases in Varanasi school children. *Indian J Dermatol Venereol Leprol*. 1991;57:141-3.
- Negi KS, Kandpal SD, Parsad D. Pattern of skin diseases in children in garhwal region of Uttar Pradesh. *Indian Pediatr*. 2001;38(1):77-80.
- Amin TT, Ali A, Kaliyadan F. Skin disorders among male primary school children in Al Hassa, Saudi Arabia: prevalence and socio-demographic correlates- a comparison of urban and rural populations. *The International journal of Rural and Remote Health research*. 2011;11(1):15-7.

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