PREVALENCE OF SKIN DISORDERS AMONG PRIMARY SCHOOL CHILDREN IN URBAN RAJNANDGAON (CHHATTISGARH) - A CROSS SECTIONAL STUDY

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ABSTRACT

BACKGROUND

Children are more prone to develop skin diseases. Contact between classmates is an important cause of skin infection and infestation among school children. School survey is a useful tool to detect prevalence of various skin diseases, status of health and hygiene of society. Assessment of the burden and pattern of skin diseases at school may improve care of children through school health programme.

MATERIALS AND METHODS

This was a cross sectional school based study conducted in urban area of Rajnandgaon (Chhattisgarh) India. Children were clinically examined by a team of doctors. 1047 students present at the time of survey out of 1209 enrolled in class I to Class V were examined. Data obtained was tabulated and analysed statistically using chi-square test.

RESULTS

Total 1047 students were examined. Of these 460 (44%) were girls and 587 (56%) were boys. 712 (68%) were of 4–7 years age, and 335 (32%) of 8–12 years. Total 43.46% students were having one or more skin problems. Pediculosis capitis, pityriasis alba, and phrynodema were the commonest problems. Other common skin disorders were bacterial infections, scabies, fungal infections and angular cheilitis/stomatitis. Infections (bacterial and fungal) accounted for 22.91% and infestations (pediculosis and scabies) for 21.47% of total skin disorders. Difference between boys and girls was not significant. The prevalence of skin disorders is significantly higher in children of 8–12 years as compared to 4–7 years.

CONCLUSION

High prevalence of skin disorders was noted among primary school children in our area. Older age group (9–12 years) children were affected more than the younger ones (5–8 years). Pityriasis alba and phrynodema affected boys more than the girls, whereas female preponderance was seen for pediculosis capitis, bacterial infections and milia. Transmissible disorders, constituted around 40% of total skin diseases burden. Educating children to improve their hygiene may bring down the prevalence of transmissible diseases among them.

KEYWORDS

Skin Diseases, Primary School Children, Skin Disorders.

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BACKGROUND

Children are more prone to develop skin diseases. Contact between classmates is an important cause of skin infection and infestation among school children.¹ Skin diseases are a major health problem in the paediatric age group and are associated with significant morbidity. Skin diseases constitute 30% of all outpatient visits to a paediatrician, and 30% of all visits to a dermatologist involve children.^{2, 3}

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Paediatric dermatoses require a separate view from adult dermatoses as there are important differences in clinical presentation, treatment and prognosis. Dermatoses in children are more influenced by socioeconomic status, climatic exposure, dietary habits and external environment as compared to adults. Cutaneous infections are common in children during school going years. Some of the common skin disorders seen in children are viral warts, alopecia areata, pityriasis alba, acne, atopic dermatitis, eczema, psoriasis, phrynodema, scabies, impetigo, dermatophyte infections, and secondary bacterial infection like folliculitis.⁴ The prevalence and pattern of skin diseases varies with socioeconomic and cultural factors which in turn are related to hygiene and treatment seeking behaviour.⁵ Most of the skin problems though chronic are nonlethal, hence often neglected by families that is further worsened by poor health care access.

School survey is a useful yardstick as it is easy to conduct, less time consuming and large number of children of

particular age group can be screened for presence of disease at a time.⁶ It is also a useful tool to detect prevalence of various skin diseases and status of health and hygiene of society.⁷ Assessment of the burden and pattern of skin diseases at school may improve care of children through school health programmes.⁵ Health education on nutrition and personal hygiene can help improve health status of school going children.

With the above background, the present study was conducted to assess the prevalence of skin disorders among primary school children.

MATERIALS AND METHODS

This was a cross sectional study conducted from September 2015 to November 2015 in urban area of Rajnandgaon (Chhattisgarh), India. Three government and two public schools were randomly selected within 5 km range from Government Medical College, Rajnandgaon. Study was carried out with due approval of college ethical committee. Only primary class students (from class I to class V) were included in our study. Parents of children were informed through the teachers one week prior to the study. Only those children whose parents gave written consent were examined. Total 1051 children were examined clinically by a team of doctors including a dermatologist. Out of them, 4 children aged >12 years were excluded from the study, thus obtained a sample size of 1047 children. Efforts were made to ensure privacy and proper lighting at the time of clinical examination. No investigation was done at school premises. All children who needed to be investigated were referred to Government Medical College Hospital, Rajnandgaon with referral slips. To other affected children prescription and instructions slips were given to the teachers. Data was tabulated and checked for its completeness and correctness. Data was analysed by using statistical test (chi-square test). The p value of <0.05 was considered statistically significant.

RESULTS

As shown in Table 1, total 1047 students were included in the present study, to assess the prevalence of skin disorders among them. Age of these students ranged between 5–12 years. Only 51 (4.88%) were aged 12 whereas 92 (8.78%) were 5 at the time of study. For the convenience of analysis, we grouped children in two age groups i.e. 5–8 years and 9–12 years. We found that 712 (68%) children were 5–8 years of age, and 335 (32%) were 9–12 years. Of these 460 (44%) were girls and 587 (56%) were boys.

Age (Years)	Gender	
	Boys	Girls
5 to 8	395	317
9 to 12	192	143
Total	587	460

Table 1. Age and Sex wise Distribution of Study Subjects

Out of 1047 students, 466 were noted to have one or more skin problem. Thus, overall prevalence of skin disorders among primary students was calculated as 44.50%.

Students with Skin Problems	No. of Students (%)
No Skin Problems	581 (55.49)
1 Skin Problem	315 (30.09)
2 Skin Problems	135 (12.89)
>2 Skin Problems	16 (1.53)

Table 2. Distribution of Study Subjects as per Number of Skin Problems They Suffered

As given in Table 2, among 466 students, 315 (30.09%) had only one skin problem, whereas 151 (14.42%) had two or more lesions at the time of examination. 581 (55.49%) children were not affected by any skin disease.

Diagnosis	No.	%
Pediculosis capitis	76	11.97
Pityriasis alba	132	20.79
Phrynoderma	125	19.69
Scabies	37	5.83
Bacterial Infection	108	17.01
Fungal infection	35	5.51
Angular cheilitis/Stomatitis	32	5.04
Nevi	22	3.46
Atopic dermatitis	21	3.31
Milia	18	2.83
Alopecia areata	9	1.42
Warts	5	0.79
Vitiligo	3	0.47
Contact dermatitis	3	0.47
Acne	2	0.31
Others	7	1.10
Total diagnoses	635	100.00

Table 3. Distribution of Various Skin Disorders among Primary School Students

Table 3 shows distribution of skin disorders among study subjects. A total of 635 diagnoses were made from 1047 children. Most common skin problems found in our study were pityriasis alba, phrynoderma and pediculosis capitis, which contributed 20.79%, 19.69% and 11.19% respectively. Collectively, these three problems accounted for more than half of the total burden of skin diseases of our study subjects. Other important skin disorders noted were bacterial infections, scabies, fungal infections and angular cheilitis/stomatitis which contributed for 17.01%, 5.83%, 5.51% and 5.04% of total diagnoses respectively.

Transmissible disorders were found responsible for a fair number of disease burden. Infections (bacterial infections and fungal infections) accounted for 22.52% and infestations (pediculosis capitis and scabies) for 17.80% of total skin disorders found among the study subjects. Thus, transmissible disorders formed 40.32% of total skin problems observed in this study.

Other problems noted were nevi (3.46%), atopic dermatitis (3.31%), milia (2.83%), alopecia areata (1.42%), warts (0.79%), vitiligo (0.47%), and contact dermatitis (0.47%) in children. Only 2 cases of acne vulgaris were found. Both were girls from older age group. Single cases and doubtful diagnoses were grouped as "other" category. Birth marks were not included for analysis.

Diagnosis	Boys		Girls		p value
	No.	%	No.	%	
Pediculus capitis	12	2.04	64	13.91	<0.001
Pityriasis alba	92	15.67	40	8.70	<0.001
Phrynodema	84	14.31	41	8.91	0.0075
Scabies	24	4.09	13	2.83	0.2722
Bact. Infection	45	7.67	63	13.70	0.0015
Fungal infection	21	3.58	14	3.04	0.6333
Naevi	13	2.21	9	1.96	0.7266
Atopic dermatitis	11	1.87	10	2.17	0.7311
Milia	2	0.34	16	3.48	<0.001
Alopecia areata	5	0.85	4	0.87	0.9753
Warts	4	0.68	1	0.22	0.2797
Angular cheilitis/ stomatitis	13	2.21	19	4.13	0.0739
Vitiligo	1	0.17	2	0.43	0.4269
Acne	0	0.00	2	0.43	0.1146
Contact dermatitis	2	0.34	1	0.22	0.711
Others	5	0.85	2	0.43	0.4112
	n=587		n=460		

Table 4. Prevalence of Various Skin Disorders among Boys and Girls

Prevalence of skin disorders among boys and girls are shown in Table 4. The overall prevalence rate for skin disorders was calculated as 56.90% in boys and 65.43% in girls. The difference in prevalence was not found significant. ($\chi^2 = 2.653$, $p > 0.05$).

While on analysing various skin problems separately, the difference in prevalence between boys and girls was found significant for pediculosis capitis ($\chi^2 = 53.9659$, $p < 0.001$), phrynodema ($\chi^2 = 11.3951$, $p < 0.001$), pityriasis alba ($\chi^2 = 7.1451$, $p = 0.0075$), bacterial infections ($\chi^2 = 10.135$, $p = 0.0015$), and milia ($\chi^2 = 15.0257$, $p < 0.001$). Pediculosis capitis, bacterial infections, and milia were more prevalent in girls, whereas boys were more affected by pityriasis alba and phrynodema.

Diagnosis	5 - 8 years		9 - 12 years		p value
	No.	%	No.	%	
Pediculus capitis	39	5.48	37	11.04	0.0012
Pityriasis alba	29	4.07	103	30.75	<0.001
Phrynodema	53	7.44	72	21.49	<0.001
Scabies	16	2.25	21	6.27	0.001
Bact. Infection	66	9.27	42	12.54	0.1049
Fungal infection	20	2.81	15	4.48	0.1612
Naevi	9	1.26	13	3.88	0.0059
Atopic dermatitis	10	1.40	11	3.28	0.0411
Milia	3	0.42	15	4.48	<0.001
Alopecia areata	5	0.70	4	1.19	0.4214
Warts	0	0.00	5	1.49	0.0012
Angular cheilitis/ stomatitis	19	2.67	13	3.88	0.2879
Vitiligo	1	0.14	2	0.60	0.1973
Acne	0	0.00	2	0.60	0.039
Contact dermatitis	1	0.14	2	0.60	0.1995
Others	4	0.56	3	0.90	0.5365
	n=712		n=335		

Table 5. Prevalence of Various Skin Disorders According to Age of Study Subjects

Table 5 shows age wise prevalence of skin disorders in present study. The overall prevalence of skin disorders was found higher in children of 9–12 years as compared to 5–8 years. This difference was found highly significant when tested statistically. ($\chi^2 = 24.6528$, $p < 0.001$)

On analysing individual diseases separately, many skin problems showed higher prevalence rate in older age group. On analysing the difference in prevalence rate between the two age groups, significant difference was computed in pediculosis capitis ($\chi^2 = 10.4887$, $p = 0.0012$), pityriasis alba ($\chi^2 = 13.0122$, $p < 0.001$), phrynodema ($\chi^2 = 42.7665$, $p < 0.001$), scabies ($\chi^2 = 10.8073$, $p = 0.001$), nevi ($\chi^2 = 7.582$, $p = 0.0059$), atopic dermatitis ($\chi^2 = 4.0926$, $p = 0.0431$), milia ($\chi^2 = 22.1838$, $p < 0.001$), warts ($\chi^2 = 10.5206$, $p = 0.0012$), and acne ($\chi^2 = 4.2589$, $p = 0.039$).

For all these skin problems, the older age group is affected more than the younger age group. None of the disease showed significant affection towards younger age group.

DISCUSSION

School survey is a useful parameter to screen large number of children of particular age group for presence of disease. These surveys are easy to conduct, less time consuming but may not be representative of true prevalence and incidence of a disease in the community especially in a country like India, as fair number of children do not go to school.

The pattern of skin diseases in India is influenced by the developing economy, level of literacy, social backwardness, varied climate, industrialisation, access to primary health care, and different religious, ritual and cultural factors.⁸

The prevalence of skin disorders among students was calculated as 44.50% in our study. While in other studies it is found as 76.65%, 53.6%, 69.38%, and 69.0%, by Kuruvilla,⁹ Vallia,¹⁰ Yaseen,¹¹ and Suman Saurabh,⁵ respectively in school children. This might be because students in our study belong to urban area whereas these study subjects came from rural background. In Rita Vora's¹² study, semiurban population were examined and they found overall prevalence as 15.14%.

In our study, transmissible skin disorders were responsible for 40.32% of total skin disease burden whereas Suman Saurabh⁵ observed it 71.2%, Vallia¹⁰ 43%, K.S. Negi¹ 50.9%, Kuruvilla⁹ 42.68%, and Rita Vora's¹² 18.14 % in their studies. The difference in hygienic status, socioeconomic status and background (rural or urban) of the subjects of these studies could be the possible cause of variation of prevalence of transmissible disorder found by these researchers.

Pediculosis, Phrynodema and P-alba were the most common disorders found. Only these three problems accounted for 51.62% of total diagnoses made. Suman Saurabh⁵ also found pediculosis a major skin problem in their study subjects, in whom pediculosis, pyoderma and scabies constituted 77% of total diagnoses. P-alba was found among the 3 most common skin problems by Anand et al,¹³ Rita Vora et al¹¹ and Valia et al.⁹

In our study, we found significantly higher prevalence of skin diseases in 9-12 year age group as compared to 5-8 year age group students. Yaseen and Hassan¹⁰ and Suman Saurabh⁵ also got similar findings in their study where prevalence in 9-14 years and 9-10 years age group students respectively were found higher.

No sex preponderance was found for overall prevalence rate, though on analysing various disorders separately, pityriasis alba and phrynoderma showed male preponderance; and pediculosis capitis, bacterial infections and milia showed female preponderance.

CONCLUSION

Skin diseases in the paediatric population are common all over the world. Similarly, we found a high prevalence of skin disorders among primary school children in our area. Pediculosis, Phrynoderma and Pityriasis alba were the most common disorders found among students of our study. In accordance with other studies, we too observed that the older age group (9–12 years) is affected more than the younger ones (5–8 years). While pityriasis alba and phrynoderma showed male preponderance, female preponderance was seen in pediculosis capitis, bacterial infections and milia.

As a high prevalence and variation in the pattern of paediatric dermatoses found all over the country, there is an obvious need for diagnostic and therapeutic training for dermatologists, general practitioners and paediatricians in this group of disorders.

Transmissible disorders, constituted around 40% of total skin disease burden in the subjects of present study. Educating children to improve their hygienic status might have beneficial consequences to bring down the prevalence of transmissible diseases among them and this can be easily carried out at school level. Nutritional deficiencies were also noted in a significant number of students and hence cannot be overlooked. Strengthening of School Health Services and educating children for eating healthy food could contribute to improve health status of children. Regularity of distribution of iron-folic acid and periodic deworming of school children at schools under Rashtriya Bal Swasthya Karyakram should be ensured. Also, supply of standardised and good quality food should be taken care of by the government.

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