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ORIGINAL RESEARCH

A study on the pattern of infectious dermatoses among school children

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ABSTRACT

Background: Infectious dermatoses are a major health concern among school children and are associated with significant morbidity and sick days. The pattern of infectious dermatoses varies according to region, place of study, climate and seasonal variation, personal hygiene, school sanitationand individual susceptibility to various diseases. School surveys help to detect chronic and neglected diseasesand to preventfurther transmission among children. **Aims and Objectives:** To study the clinical pattern of infectious dermatoses among school children and to promote health education. **Materials and methods:** This is a multicenter cross-sectionalstudy conducted at government schools and aided residential schools in the proximity of threetertiary health care centerssituated in urban,rural and tribal areas. A total of 2264 students were included in the study and a detailed history was taken along with a complete dermatological examination. **Results:** Out of 2264 examined, 868 cases showed skin disorders constituting non-infectious and infectious dermatoses and nutritional skin disorders. Infectious dermatoses constituted 395 cases(45.5%), of which parasitic were predominant with 32.6% of the cases followed by bacterial(29.6%),fungal (27.5%) and viral (10.3%). **Conclusion:** The most common infectious dermatoses among school children were parasitic infestations -scabies and pediculosis followed by Pyoderma. Early detection and prompt treatment of infestations and dermatophytosishelpin decreasing transmission among the children and within the family. These diseases when neglected for prolonged duration lead to significant morbidity. School health camps are useful in promoting health awareness regarding infectious dermatosesamong the children, parents and teaching staff in those schools.

INTRODUCTION

Infectious dermatoses among children are a major health concern and are associated with significant morbidity and sick days.In a developing country like India,a significant proportion of families are of low socioeconomic status and live in poor environmental conditions where the children are prone to various infectious skin diseases. These diseases when neglected lead to a plethora of complications in the children and also cause significant morbidity in the community.

There are many school health surveys on the prevalence of pediatric dermatoses but onlya few aresolely based on infectious dermatoses. In India, the prevalence of dermatoses in the pediatric population as per school surveys ranges from 4.3% - to 49.1%[1,2], of which infectious dermatoses range from 9.3 to 50.3% . [3]

The infectious dermatoses in children can be transient, chronic, recurrent, or recalcitrant. A school health survey on infectious dermatoses helps in determining the prevalence and factors for the dominance of certain diseases in the selected areas. It may sometimes be helpful in***early detection*** of chronic infectious conditions like leprosy and cutaneous tuberculosis.

The following survey is conducted in the schools of Andhra Pradesh in three different areas (urban, rural and tribal) with a tertiary health care center.

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AIMS AND OBJECTIVES

To study the clinical pattern of infectious dermatoses among school children and to promote health education.

MATERIALS AND METHODS

This is a multicenter cross-sectional study conducted at government schools and aided residential schools in the sphere of a selected tertiary health care center in three different districts of Andhra Pradesh from March 2023 to March 2024.

After obtaining approval from the Institutional Ethics Committee, the children of 5-15 years of age studying in the above schools were included, with the consent of the concerned authorities and parents. After interviewing for any specific skin complaints, a detailed history was taken and a complete dermatological examination was done. A prestructured questionnaire was given to parents/ guardiansof each child to establish theirsocioeconomic status and health awareness.[3,4]Only those parents and children, who were willing to participate in the questionnaire and physical examination wereincluded in the study.

Based on clinical presentation and a few appropriate investigations, the diagnosis was made and some cases were referred to DVL OPD in the nearest tertiary health care center for further management. Digital photographs of the lesions were taken after obtaining consent from the parents. The recorded clinical and demographic data were statistically analyzed and represented in the form of frequencies, percentages and mean.

RESULTS AND OBSERVATIONS

Of the 2264 students included in the study, 1211 were male and 1053 were female. A total of **868**children showed skin changes categorized into infectious, non-infectious and nutritional dermatoses of which infectious dermatoses constituted 395 cases (45.5%). Mean age of presentation is 10.7 years and based on the modified Kuppuswamy scale[4], majority of the cases (59)% belonged to the lower middle class. Based on locality, schools in the urban areas constituted the majority of cases followed by rural and tribal (see figure 1).

Of theinfectious dermatoses, the majority were parasitic infestations (32.6%) followed by bacterial (29.6%), fungal (27.5%), and viral (10.3%). Among parasitic infestations, most common was scabies followed by pediculosis capitis(see Table 1). Scabies was more common among boys in residential institutions especially genital scabies and infected scabies presenting as secondary pyoderma(see Table 2).Also,secondary pyoderma was more common than primary pyoderma among residential institutions.

In urban and rural areas, the most common infectious dermatoses were parasitic infestationsclosely followed by pyodermaand dermatophytosis in almost equal proportionsbut in tribal area the major portion of dermatosis was contributed by parasitic infestations alone.

Majority of the pyoderma and dermatophytosis were recorded in the late summer and early monsoon (June – August) and viral exanthems were noted majorly from May to August. Parasiticinfestations were recorded throughout the year without much variation concerning seasons but secondary pyoderma associated with infestations and periporitis were noted in the mid to late summer. Some of these variations can be attributed to increased sweating in the warm and humid climate predisposing them to certain infections and complications.

Impetigo was the most common primary pyoderma followed by folliculitis whereas infected scabies was the most common secondary pyoderma followed by infected dermatophytosis(see figure 2).

Table 1 – Distribution of infectious dermatoses among males and females

Infection	Type	Males	Females	Total frequency
Bacterial	Pyoderma – primary	29(7.3%)	22(5.5%)	51 (12.9%)
	secondary	30(7.5%)	25(6.3%)	55 (13.9%)
	Acute paronychia	2(0.5%)	1(0.2%)	3 (0.7%)
	Blistering distal dactylitis	1(0.2%)	1(0.2%)	2 (0.5%)
	Hansen's disease	1(0.2%)	1(0.2%)	2 (0.5%)
	Lupus vulgaris	1(0.2%)	0	1 (0.2%)
	Vulvovaginitis	0	2(0.5%)	2 (0.5%)
	Erysipelas	1(0.2%)	0	1 (0.2%)
Fungal	Tinea corporis	39(9.8%)	32(8.1%)	71 (17.9%)
	Tinea capitis	12(3.03%)	4(1.01%)	16 (4.05%)
	Pityriasis versicolor	10(2.5%)	4(1.01%)	14 (3.5%)
	Candidiasis	1(0.2%)	1(0.2%)	2 (0.5%)
	Secondary onychomycosis	2(0.5%)	1(0.2%)	3 (0.7%)
Viral	Molloscum contagiosum	10(2.5%)	4(1.01%)	14 (3.5%)
	Verucca vulgaris	12(3.03%)	5(1.2%)	17 (4.3%)
	Varicella	2(0.5%)	1(0.2%)	3 (0.7%)

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	Herpes simplex labialis	1(0.2%)	1(0.2%)	2 (0.5%)
	Herpes zoster	1(0.2%)	1(0.2%)	2 (0.5%)
	Hand Foot mouth disease	3(0.7%)	2(0.5%)	5 (1.2%)
Parasitic	Scabies	47(11.8%)	32(8.1%)	79 (20%)
	Pediculosis capitis	5(1.2%)	42(10.6%)	47 (11.8%)
	Cutaneous larva migrans	2(0.5%)	1(0.2%)	3 (0.7%)
Total		212(53.6%)	183(46.3%)	395

Table 2 – Distribution and predominance of cases among particular groups

Age	**5-10 years (primary school)**	**11- 15 years (high school)**
	Scabies Pediculosis capitis Pyoderma (1>2) Viral exanthem Molluscum contagiosum Tinea capitis	Tinea corporis Scabies Pyoderma (2>1) Pediculosis capitis
Locality	**Urban**	**Rural & Tribal**
	Scabies Dermatophytosis Pyoderma (1=2) Pediculosis capitis	Scabies Pediculosis capitis Pyoderma
Schools	**Day schools**	**Residential**
	Pyoderma (1=2) Scabies Dermatophytosis	Infected Scabies Genital scabies Pediculosis capitis with secondary pyoderma Pyoderma (2>1)

Note: 1 – primary 2- secondary pyoderma

Figure 1 – Distribution of affected children among urban, rural and tribal areas

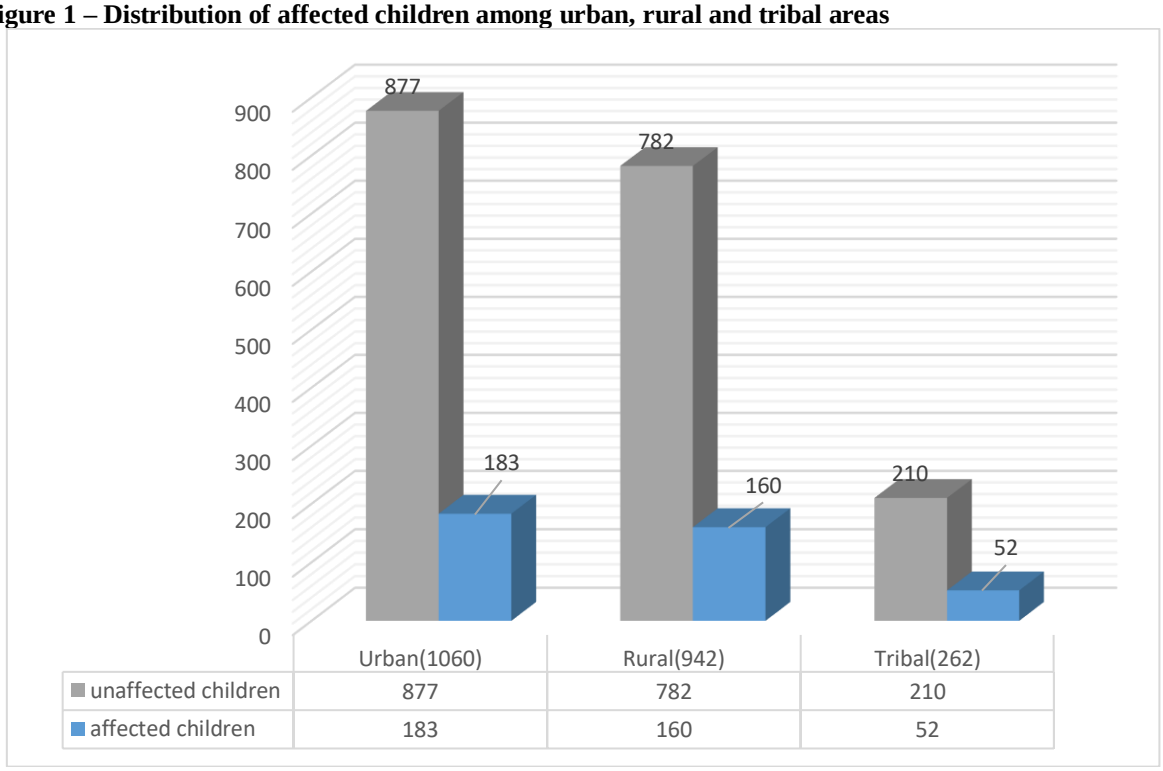

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Figure 2 – Distribution of primary and secondary pyoderma

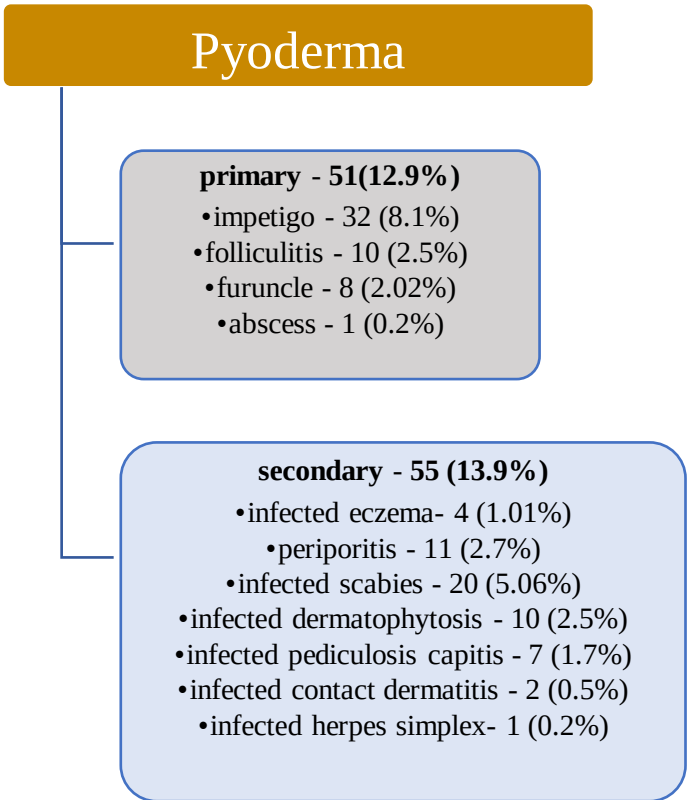

Figure 3 – clinical images of some of the infectious dermatoses included in our study
A- genital scabies with secondary infection, B – infected eczema,C – Tinea capitis: kerion type,D – Tinea capitis: grey patch type, E and F –extensive dermatophytosis in an 8 years male child with topical steroid abuse, G – lupus vulgaris over the left knee

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Figure 4 – Photographs of camps showing enrollment into study and health awareness sessionsto adolescent children regarding infectious dermatoses

DISCUSSION

In developing countries like India, a significant proportion of dermatoses in school children are caused by infections due to various socioeconomic, environmental and nutritional factors.School surveys help to identify the prevalence of infectious skin diseases in particular areas and help to *counsel and treat* children in large numbers at a single visit so that the spread of disease can be controlled.

Majority of Indian school health surveys show a significant proportion of infectious dermatoses among children ranging from 9.3% to 50.7% of the total dermatoses documented in those studies[3]. This study is comparable to Dogra and Kumar study [5]and Kumar et al study[6] in terms of the prevalence of dermatoses among school children. The proportion of infectious dermatoses in this study can be comparable to Jose et al study.[2]

As reported by many studies, parasitic infestations are still prevalent in significant proportions among school children. [6,7]In this study, Pediculosis capitis is noted majorly in the female population due to long hair and infrequent hair washing, also substantiated by other studies.[2,8]Infected scabies and pediculosis capitis were major contributors to secondary pyoderma.Detailedquestioning of children with parasitic infestations revealed the use of multiple topical preparations with a *lack of knowledge* regarding the correct method of application and general measures to be followed post-application.

There is a growing prevalence of dermatophytosis among school-based studies[3,9,10]which is comparable to this study. Theclimate is warm and humid mainly in the urban and rural areas of this study contributing to the increased number of dermatophytosis.

Overcrowding,poor diet, poor hygiene and sanitation are important factors for the predominanceof infectious dermatoses like scabies and the flourishing of dermatophytosis. Also,*fomite transmission*plays an important role in the prevalence and recalcitrance of parasitic infestations and dermatophytosisespecially in residential institutions. The use of over-the-counter (OTC) oral and topical preparations led to a significant increase in recalcitrant dermatophytosis, also modifying the clinical presentation and increasing treatment duration.

These concerns can be addressed more accurately to a large number of people including parents, teachers, guardians and wardens during school health surveys. It also helps to increase health awareness among adolescent children and *discourage OTC medication.*

CONCLUSION

There is variation in the pattern of infectious dermatoses presenting to DVL OPD which are more acute in presentation when compared to the school surveys and health camps where more benignand neglected cases are documented.

Based on the pattern and prevalence of infectious dermatoses in this study and other existing studies, majority of them can be controlled by improving awareness regarding the spread of diseasesand encouraging them to follow general measures including personal hygiene and sanitation. Also, educating the parents and teachers regarding the course of treatment, and befitting use of topical and oral medication among the children and their contacts is essential.

Schools should uptake regular health examination at least once weekly to decrease the prevalence of communicable skin disorders. Educating the parents, teachersand wardens regarding fomite transmission, methods of decontamination and awareness about exanthems helps in early isolation and control of transmission. Also,*discouraging OTC medication* and promoting direct consultation with medical

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practitioners preferably Dermatologists help in counteracting drug resistance and recalcitrance. The number of sick days, stigma and loss of confidence associated with chronic skin diseasescan be decreased by *counseling*the children and *creating health awareness* using school health camps.

Conflicts of interest

There are no conflicts of interest.

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Nil

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