Original Research Article

Prevalence and risk factors of scabies among school adolescents in urban Lucknow, India

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Received: 10-11-2021 / Revised: 19-12-2021 / Accepted: 15-01-2022

Abstract

Background: Scabies is found worldwide and affects folks of all races and social categories. Itching unfolds speedily beneath packed conditions wherever the shut body and skin contact is frequent. Establishments like nursing homes, schools, extended-care facilities, prisons, child-care facilities are standard sites of itch infestations and scabies outbreaks. The study objective was to seek out the prevalence and associated risk factors for Scabies among the adolescent school children in urban Lucknow**. Methods:** This cross-sectional study was conducted among adolescent school children between 1st January to 31st March 2020 in urban Lucknow. Information was collected using a pretested semi structured questionnaire. A trained medical examiner made the identification and clinical diagnosis of infection. Collected information was entered in Microsoft excel and analysed by using SPSS software version 23.0. **Results:** Prevalence of Scabies infection was found to be 23.33%. Age of the student, overcrowding and the type of house was found to be statistically related to the infection. **Conclusions:** Health education regarding personal hygiene practises is strongly recommended among school going children. Modification of environmental risk factors like overcrowding and improper dwellings, will aid in reducing the spread of scabies.

Keywords: Infection, Prevalence, Risk factors, Overcrowding, Style of house

Introduction

Scabies is a skin infection caused by the Sarcoptes scabiei var. hominis mite and is transmitted via skin-to-skin contact. It is one of the communal human skin diseases. Scabies is transmitted mainly through the direct way by continued contact with infected skin and indirectly through usage of contaminated personal objects. Every year more than a predictable 300 million cases of scabies occur, worldwide[1]. The prevalence rates of scabies vary from 0.3 to 46% from country to country[2]. Scabies is manifested by intense itchings (pruritus), especially at night, and a pimple-like (papular) itchy rash. This affects much of the body or is limited to the wrist, elbow, armpit, and webbing between the fingers, nipple, penis, waist, belt-line, and buttocks. The rash may include tiny blisters (vesicles) and scales. Scratching the rash can cause skin sores; sometimes infected by bacteria. Tiny burrows sometimes are seen on the skin; the female scabies mite tunnelling causes these just beneath the surface of the skin. These burrows appear as tiny raised and crooked (serpiginous) greyish-white or skin-coloured lines on the skin surface. They are found most often in the webbing between the fingers, in the skin folds on the wrist, elbow, or knee, and on the penis, breast, or shoulder blades.

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The head, face, neck, palms, and soles often are involved in infants and very young children, but usually not adults and older children. Persons with crusted scabies may not show the usual signs and symptoms of scabies such as the characteristic rash or itching (pruritus)[3].Itching is the most ordinarily presenting symptom and the disease causes significant health illness either directly by infestation or indirectly through secondary bacterial infection. It can also lead to reduced work productivity, disruption of school attendance, sleep disturbance, and psychological repercussions[4,5]. In 2017, WHO added scabies to the list of neglected tropical diseases [6]. This report also stated that certain steps like mapping the disease prevalence needs to be carried out before large-scale activities associated with scabies prevention and control can be begun [7]. Hence the study was conducted to find out the prevalence of scabies and the risk factors associated with the occurrence of scabies among the adolescent school children in Lucknow.

Methods

This cross-sectional study was conducted to find out the prevalence of scabies among adolescent school children in government and private schools of urban Lucknow. Ethical approval was obtained from Institutional ethics committee IIMS& R, Lucknow.The study was carried out for a period of 3 months from 1st January to 31st March 2020. There were 30 schools in urban Lucknow, out of which one government school and one private school were selected conveniently. Permission for conducting the study was obtained from the school principal. All the students in the age group of 11 to 14 years were included as study participants. Written and oral informed consent was obtained from the parents and study participants

respectively. Data was collected using a semi structured questionnaire which was pretested and modified accordingly. The questionnaire included socio-demographic variables. Information on socio-economic status and housing conditions were collected from the parents using a separate questionnaire. Socio-economic status was assessed using modified Kuppusamy's classification. The grade of overcrowding was expressed as the number of persons per room. Overcrowding was present if there were two or more occupants per rooms[8,9]. Anthropometric measurements included height in meters; measured to the nearest 0.5 cm using a measuring tape and weight in kg; measured to the nearest 0.5 kg using a bathroom scale.

Clinical examination was done by the investigator who was satisfactorily trained for diagnosing scabies. Scabies was operationally defined as the presence of persistent pruritic rash with itching increasing at night which was notified at least at two specific body sites (on the wrist, sides and web spaces of the fingers, the axillae, areola, per umbilical, genitalia area, abdomen, and buttock areas) with or without history of pruritus in the close entourage.[10] Study participants with scabies were given necessary treatment and referral if needed. Health education was given to all the study members.Statistical analysis carried out by assembling data were entered in Microsoft excel. Chi square test was used as the test of significance to compare the differences in proportions with the significance level set at $p \leq 0.05$.

Results

Total numbers of students included in the study were 300. Among 300 students (34%) had completed 12 years, followed by (27.33%) were 11 years old and (21%) were 13 years old. (61.6%) were males. A higher proportion (55.6%) studied in government school and (44.4%) studied in private school. 33.67% belonged to upper lower and (31.33%) belonged to lower middle socio-economic status according to modified Kuppusamy's scale of classification (Table 1).

Table 1: Socio demographic details of the study subjects (n=300).

Socio-demographic variables	Number (N)	Percentage (%)
Age (years)		
11	82	27.33
12	102	34.00
13	63	21.00
14	51	17.00
Sex		
Male	185	61.6
Female	115	38.4
Type of school		
Government	167	55.6
Private	133	44.4
Socio-economic status (modified Kuppusamy classification)		
Upper and upper middle	39	13.00
Lower middle	94	31.33
Upper lower	101	33.67
Lower	66	22.00

Table 2 shows personal hygiene characteristics of the study participants. Most (81%) of the students reported that they took bath regularly. Nearly 22.7% participants reported that they were not washing their clothes frequently. Nearly one fifth did not use soap for bathing, footwear and did not dry their inner wears and bathing towels under sunlight.

Table 2: Distribution of variables related to personal hygiene of the study participants (n=300).

Personal hygiene variables	Number (N)	Percentage (%)
Bath daily		
Yes	243	81
No	57	19
Soap used during bathing		
With water and soap	246	82
With water only	54	18
Washing the clothes regularly		
Yes	232	77.3
No	68	22.7
Using footwear		
Yes	239	79.6
No	61	20.4
Drying the towel and inner wears under direct sunlight		
Yes	243	81
No	57	19

Table 3 shows the housing style of the study participants. Among 300 students, 81.6% resided in pucca and semi pucca house and 18.4% students residing in huts. Overcrowding was found in 31.3% of the study participants.

Table 3: Variables related to housing style of the study participants (n=300).

Housing style variables	Frequency	Percentage (%)
Type of house		
Pucca and semi pucca	245	81.6
Hut	55	18.4
Cross ventilation		
Present	226	68.6
Absent	74	24.7
Family size		
≤4	102	34

5	117	39
>5	81	27
No. of rooms		
1	58	19.4
2	187	62.3
≥3	55	18.3
No. of accompanying people while sleeping		
≤2	179	59.6
3	67	22.4
4	54	18.
Over crowding		
Present	97	31.3
Absent	203	67.7

Table 4 shows the association between prevalence of scabies and select socio-demographic and personal hygienic variables. A significant association exists between age & socio-economic status and prevalence of scabies. We observed that scabies was more prevalent in those aged 11 years. Gender and type of school was not significantly associated with the prevalence of scabies.

Table 4: Association between prevalence of scabies and selected socio-demographic and personal hygienic variables

Variables		Scabies				Chi-square value	P value
		Present		Absent			
		N	(%)	N	(%)		
Age (years)	11	38	54.29	46	20.00	32.29	0.000
	12	12	17.14	90	39.13		
	13	11	15.71	52	22.61		
	14	9	12.86	42	18.26		
Gender	Male	49	70.0	136	59.13	2.6823.	0.101
	Female	21	30.0	94	40.87		
Type of school	Govt	37	52.86	130	56.52	0.292.	0.588
	Private	33	47.14	100	43.48		
Socio-economic status	Upper and upper middle	2	2.86	37	16.09	47.00	0.000
	Lower middle	11	15.71	83	36.09		
	Upper lower	22	31.43	79	34.35		
	Lower	35	50	31	13.48		
Washing the clothes regularly	Yes	22	31.43	210	91.30	109.76	0.000
	No	48	68.57	20	8.70		

Table 5 shows the association between the prevalence of scabies and housing conditions. Significant associations were found with the type of house, cross ventilation, overcrowding and family size.

Table 5: Association between prevalence of scabies and housing conditions (n=300).

Variables		Scabies				Chi-square value	P value
		Present		Absent			
		N	(%)	N	(%)		
Type of house	Pucca and Semi pucca	22	31.43	223	96.96	153.91	0.000
	Hut	48	68.57	7	3.04		
Cross ventilation	Present	20	28.57	206	294.29	107.44.	0.000
	Absent	50	71.43	24	34.29		
Over crowding	Present	10	14.29	87	37.83	13.59	0.000
	Absent	60	85.71	143	62.17		
Family size	≤4	11	15.71	91	39.57	19.10	0 .000
	5	28	40.00	89	38.70		
	>5	31	44.29	50	21.74		

Discussion

The present study showed that the prevalence of scabies was 23.33%. Lower prevalence was reported by a study conducted at Wardha district, India (18%)[11] and a study done by Dange et al among school children in northwest Ethiopia (9.3%)[3]. This is also comparable to the national prevalence of scabies reported in Fiji (18.5%)[12]. A higher prevalence of scabies was reported by a study done at West Bengal, India (42%)[13] and Pakistan (47.6%)[14]. Similar higher prevalence were also reported by Osti et al from Solomon islands schools[15]. This difference might be due to the difference in socio- economic characteristics between the study areas. The current study found that 52.86% of government school going children and 47.14% of private school going children had scabies. These findings are similar to a study conducted by Mir et al who reported that the prevalence among government and private school going children were 53.47 and 46.52% respectively[16].Regarding personal hygiene, findings from this study revealed that infrequent washing of clothes was positively associated with scabies. Similar findings were reported from a study among school children of Chidambaram, India[17]. A person who is washing clothes infrequently was reported to have 3 times increased risk of getting scabies than a person who is washing clothes frequently in an Ethiopian study[18]. This shows that scabies mites can survive in clothing for a longer period. Similar observations were also reported by Jose and Dagne et al[3,4]. A student accompanied by more than 2 persons while sleeping were found to be at increased risk of getting scabies in this study. These findings are comparable to those reported by Tunje et al[10]. A person living in kutcha house was at 10 times increased risk of getting scabies infection than a person living in either pucca or a semi pucca house in this study. This findings were in accordance with the findings of Yasmin and Sindayo et al[6,2]. Scabies can affect the quality of life in the form of work affection, sleep disturbances and psychosocial problems in patients as well as their family members[19]. Health education regarding personal hygiene practises and treatment is strongly recommended among such patients as well as the general public.

Limitations

The study used convenient sampling; therefore there may be an inability to generalise the findings. Also there are chances of improper representation of the problem as we diagnosed the disease clinically. Larger studies at the community level among adolescents should be undertaken using adequate sampling and laboratory confirmation.

Conclusion

The present study showed that the prevalence of scabies was found to be high among school going adolescents. Modification of environmental risk factors like overcrowding and improper dwellings, will aid in reducing the spread of scabies. Encouraging the personal hygienic behaviour of school going adolescents is strongly recommended.

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Conflict of Interest: Nil Source of support: Nil