Research Article

Cuestiones de Fisioterapia

Dermatology

PREVALENCE AND RISK FACTORS OF SCABIES AMONG SCHOOLCHILDREN: A COMMUNITY-BASED STUDY

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Abstract

Background: Scabies is a common, contagious ectoparasitic infestation and a neglected skin disease that spreads readily among children in overcrowded, resource-poor settings. School-based data on its prevalence and modifiable risk factors guide control. Objectives: To estimate the prevalence of scabies among schoolchildren and to identify its socio-environmental and behavioural risk factors. Methods: A community-based, cross-sectional study screened 600 schoolchildren across ten school clusters. Scabies was diagnosed clinically from itchy lesions, nocturnal pruritus and typical lesion distribution. Household, hygiene and contact variables were recorded. Associations were tested with the chi-square test and expressed as odds ratios (OR); continuous variables used the independent *t* test. Results: Among 600 children (mean age 9.5 ± 2.2 years; 53.3% male), scabies prevalence was 16.8% (101/600); secondary bacterial infection occurred in 16.8% of cases. Strong risk factors were a family member with scabies in the past four weeks (OR 4.78), contact with an itchy person (OR 3.69), bed-sharing (OR 2.91), overcrowding (OR 2.86) and clothes-sharing (OR 2.28); daily water access was protective (OR 0.36) (all $p < 0.001$). Prevalence rose across worsening hygiene categories (7.0%, 22.0%, 26.4%). Among cases, itchy lesions (97.0%), nocturnal pruritus (89.1%) and typical distribution (94.1%) were near-universal. Conclusion: Scabies affected about one in six schoolchildren and was strongly associated with household contact, overcrowding, sharing of beds and clothes and poor hygiene, with daily water access protective. These modifiable determinants support contact-based, hygiene- and water-focused school and community control measures.

Keywords: scabies; schoolchildren; prevalence; risk factors; overcrowding; neglected tropical disease

Introduction

Scabies is a contagious ectoparasitic infestation caused by *Sarcoptes scabiei* var. *hominis*, characterised by intense, typically nocturnal pruritus and a characteristic distribution of lesions arising from a delayed-type hypersensitivity response to the mite, its eggs and faeces [1]. It is a ubiquitous, neglected skin disease with epidemics driven by war, famine and overcrowding, affecting an estimated hundreds of millions of people worldwide at any time, with the greatest burden in resource-poor tropical settings [1]. In children, scabies is especially common, spreads readily through close skin-to-skin contact, and differs from adult disease in presentation and management [2]. The public-health importance of scabies extends well beyond the itch. Secondary bacterial infection—impetigo and pyoderma, frequently due to *Staphylococcus aureus* and *Streptococcus pyogenes*—is a common complication, and scabies is a recognised predisposing factor for skin and soft-tissue infection, including community-associated methicillin-resistant *S. aureus*, in tropical

regions [3,5]. Downstream sequelae of streptococcal skin infection, including post-streptococcal glomerulonephritis and rheumatic heart disease, give scabies a systemic significance that justifies its designation as a neglected disease of major consequence [3]. Across South Asian and African community and school surveys, scabies repeatedly emerges as one of the most prevalent infectious dermatoses, particularly among children and in overcrowded, low-income households [6,7,8,9]. The determinants of scabies are strongly social and environmental. Poverty, overcrowded living conditions, sharing of beds and clothing, inadequate water supply and low parental education recur as risk factors across studies, and close household or personal contact with an affected individual is the dominant route of transmission [6,7,9,10]. Because these determinants are modifiable, they define the levers for control: contact tracing and household treatment, improvement of personal and community hygiene, and adequate water access [3,5,10]. School settings, where children are in close and prolonged contact, are both high-risk environments and efficient platforms for screening and intervention [9]. Despite the recognised burden, up-to-date school-based data linking scabies prevalence to its specific modifiable risk factors in South Indian settings remain limited. The present study estimated the prevalence of scabies among schoolchildren and identified its socio-environmental and behavioural risk factors. The objectives were to determine overall prevalence and severity, to quantify the association of scabies with household contact, overcrowding, sharing behaviours, hygiene and water access, and to describe the clinical features distinguishing cases.

Methods

Participants and setting

Six hundred children from ten school clusters were screened. Children spanned the primary and middle-school grades in urban and rural schools.

Assessment

A structured proforma captured age, sex, grade, residence, socioeconomic status, parental education, household size, number of sleeping rooms and persons per sleeping room, overcrowding, daily water access, baths per week, bed- and clothes-sharing, contact with an itchy person, family scabies in the past four weeks, and prior scabies in the past twelve months. A composite hygiene category (good, moderate, poor) was derived. Clinical examination recorded itchy lesions, nocturnal pruritus and typical lesion distribution; a scabies case was diagnosed clinically on standard criteria, with severity graded and secondary bacterial infection noted.

Statistical analysis

Continuous variables are summarised as mean ± SD and categorical variables as counts and percentages. Associations between candidate risk factors and scabies case status were tested with the chi-square test and summarised as odds ratios with 95% confidence intervals; continuous exposures (persons per sleeping room, baths per week) were compared between cases and non-cases with the independent-samples *t* test. Two-sided $p < 0.05$ was significant. Analyses used Python (pandas, SciPy).

Results

Participant characteristics

The 600 children had a mean age of 9.5 ± 2.2 years; 320 (53.3%) were male and 360 (60.0%) were rural residents. Mean household size was 5.5 ± 1.6, mean persons per sleeping room 3.0 ± 1.1 and mean baths per week 4.5 ± 1.5 (Table 1).

Prevalence and severity

Scabies was diagnosed in 101 of 600 children, a prevalence of 16.8% (Table 2). Among cases, severity was mild in 48, moderate in 39 and severe in 14, and secondary bacterial infection was present in 16.8%—a clinically important complication rate consistent with the recognised link between scabies and secondary pyoderma [3,5].

Risk factors

Several socio-environmental and behavioural factors were strongly associated with scabies (Figure 1; Table 3). The strongest was a family member with scabies in the preceding four weeks (case rate 44.7% vs 14.5%; OR 4.78, $p < 0.001$), followed by contact with an itchy person (37.3% vs 13.9%; OR 3.69), bed-sharing (28.7% vs 12.1%; OR 2.91), overcrowding (23.5% vs 9.7%; OR 2.86) and clothes-sharing (27.1% vs 14.0%; OR 2.28) (all $p \leq 0.001$). Daily water access was protective (12.0% vs 27.7%; OR 0.36, $p < 0.001$). Cases had more persons per sleeping room (3.43 vs 2.93; $p < 0.001$) and fewer baths per week (4.01 vs 4.57; $p < 0.001$) than non-cases. Prior scabies in the past twelve months was not significantly associated (OR 1.30, $p = 0.48$). These associations reproduce the contact-driven, overcrowding- and hygiene-related epidemiology repeatedly documented for scabies [6,7,9,10].

Hygiene gradient and clinical features

Scabies prevalence rose monotonically across worsening hygiene categories—7.0% in the good, 22.0% in the moderate and 26.4% in the poor category (Figure 2A; Table 4). Among cases, the cardinal clinical features were near-universal: itchy lesions in 97.0%, nocturnal pruritus in 89.1% and typical lesion distribution in 94.1%, compared with 10.2%, 2.6% and 1.6% respectively in non-cases (Figure 2B). This clear separation supports the validity of a clinical, criteria-based diagnosis of scabies in field settings [2].

Table 1: Participant characteristics (N=600).

Characteristic	Value
Age, years (mean ± SD)	9.5 ± 2.2
Male sex, n (%)	320 (53.3)
Residence: rural / urban	360 / 240
Household size	5.5 ± 1.6
Persons per sleeping room	3.0 ± 1.1
Baths per week	4.5 ± 1.5

Table 2: Prevalence and severity of scabies (N=600).

Measure	Value
Scabies prevalence, n (%)	101 (16.8)
Severity: mild / moderate / severe	48 / 39 / 14
Secondary bacterial infection among cases, %	16.8

Table 3: Risk factors for scabies.

Factor	Case rate exposed vs unexposed (%)	OR	*p* value
Family scabies (past 4 weeks)	44.7 vs 14.5	4.78	<0.001
Contact with itchy person	37.3 vs 13.9	3.69	<0.001
Bed-sharing	28.7 vs 12.1	2.91	<0.001
Overcrowding	23.5 vs 9.7	2.86	<0.001
Clothes-sharing	27.1 vs 14.0	2.28	<0.001
Daily water access (protective)	12.0 vs 27.7	0.36	<0.001
Prior scabies (past 12 months)	20.3 vs 16.3	1.30	0.48 (NS)

Table 4: Scabies prevalence by hygiene category and clinical features by case status

Measure	Value

Prevalence — good hygiene, %	7.0
Prevalence — moderate hygiene, %	22.0
Prevalence — poor hygiene, %	26.4
Itchy lesions: cases / non-cases, %	97.0 / 10.2
Nocturnal pruritus: cases / non-cases, %	89.1 / 2.6
Typical distribution: cases / non-cases, %	94.1 / 1.6

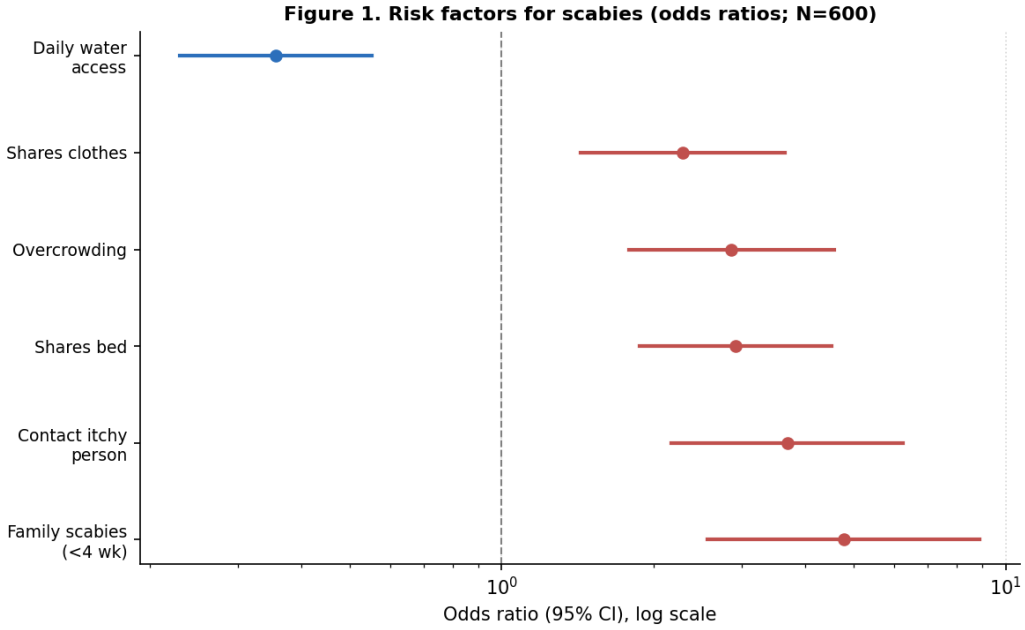

Figure 1. Odds ratios (95% CI, log scale) for risk factors associated with scabies (N=600); red = risk-increasing, blue = protective.

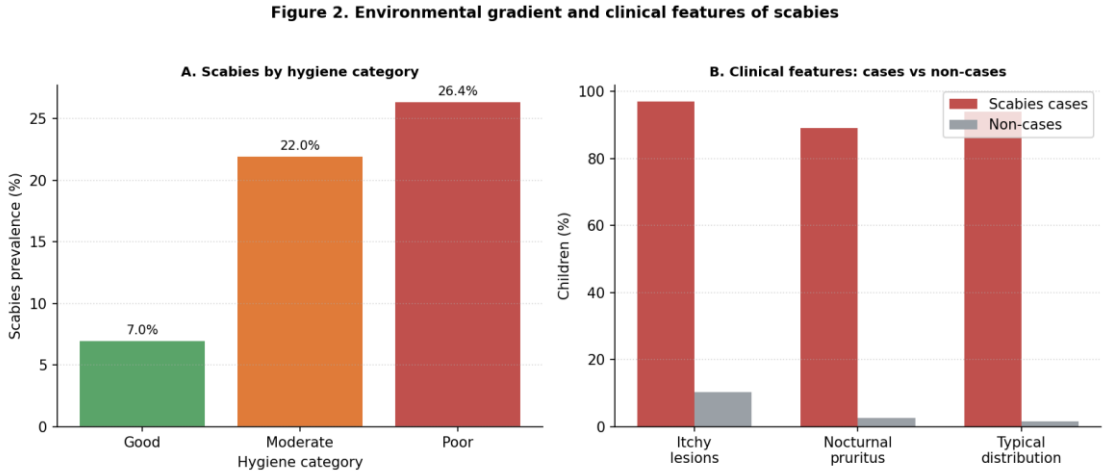

Figure 2. (A) Scabies prevalence by hygiene category; (B) cardinal clinical features in cases versus non-cases.

Discussion

In this community-based study of 600 schoolchildren, scabies affected about one in six (16.8%) and was strongly associated with a small set of modifiable, contact- and environment-related factors: a household member with scabies, contact with an itchy person, bed- and clothes-sharing, overcrowding and poor hygiene, with daily water access protective. Secondary bacterial infection complicated one in six cases.

These findings reproduce, in a South Indian school setting, the well-established epidemiology of scabies as a contact-driven, overcrowding- and poverty-related neglected disease [1,3,6,9].

The risk-factor pattern is coherent and actionable. The dominant association with a recent family case and with contact with an itchy person reflects the fundamental transmission route of scabies—prolonged skin-to-skin contact—and underlies the central control principle that treatment must extend to household and close contacts, not the index case alone [1,10]. The associations with bed- and clothes-sharing and with overcrowding, together with the continuous gradient of prevalence across worsening hygiene and the higher persons-per-room among cases, map directly onto the socio-environmental determinants documented in Egyptian, Pakistani and Indian community and school surveys [6,7,9]. The protective effect of daily water access, and the lower bathing frequency among cases, reinforce the role of water availability and personal hygiene, and align with observations linking inadequate water supply to scabies and secondary skin infection [3,5]. That prior scabies in the past year was not associated is consistent with the fact that current transmission dynamics, rather than remote past infestation, drive present risk. The clinical findings support pragmatic, criteria-based diagnosis. The near-universal presence of itchy lesions, nocturnal pruritus and typical lesion distribution among cases, with very low frequencies in non-cases, demonstrates that a clinical diagnosis anchored on these cardinal features performs well in the field—important in resource-poor settings where confirmatory microscopy is often unavailable [2]. The one-in-six rate of secondary bacterial infection is a reminder that scabies is not merely a nuisance: impetiginised scabies is a gateway to invasive staphylococcal and streptococcal disease and their systemic sequelae, giving added urgency to timely treatment [3,5]. The public-health implications are clear. School-based screening offers an efficient platform to detect scabies among children who share close contact, and effective control requires a package rather than a single measure: treatment of cases and their household contacts, health education on avoiding bed- and clothes-sharing, promotion of regular bathing, and improvement of water access and reduction of overcrowding where feasible [3,9,10]. Because the identified determinants are modifiable and social, sustained reduction depends on combining case management with hygiene and environmental interventions delivered at school and community level.

Conclusion

In school cohort, scabies affected about one in six children and was strongly associated with household and personal contact, bed- and clothes-sharing, overcrowding and poor hygiene, with daily water access protective; secondary bacterial infection was common. These modifiable, contact- and environment-related determinants support integrated, contact-based control combining treatment of cases and contacts with hygiene promotion and improved water access in school and community settings.

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