

## Prevalence of scabies and head lice among children in a welfare home in Pulau Pinang, Malaysia

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**Abstract.** This is a survey of 120 children for scabies and head lice infestations in a welfare home in Pulau Pinang. Children from this welfare home (Rumah Kanak-Kanak Taman Bakti, Kepala Batas, Pulau Pinang) were randomly selected. Majority of them were Malays (72.5%) and the rest were Indians. The infestation rates were highest in the 10-12 years age group with 46% and 70% for scabies and head lice respectively. Head lice was more commonly seen in girls (65%) than boys (29%). Scabies was more commonly seen in boys (50%) than girls (16%). Overall prevalence rate for scabies was 31% and for head lice infestation was 49%.

### INTRODUCTION

Scabies is an infestation caused by human itch mite, *Sarcoptes scabiei*, which infests some 300 million persons each year and is one of the most common causes of itching dermatoses throughout the world. Gravid female mite measuring 0.3 to 0.4 mm in length, burrows superficially beneath the stratum corneum for a month, depositing two or three eggs a day. Nymphs that hatch from these eggs mature in about 2 weeks through a series of molts and then emerge as adults to the surface of the skin, where they mate and subsequently reinvade the skin of the same or another host. Transfer of newly fertilized female mites from person to person occurs by intimate personal contact and is facilitated by crowding, uncleanliness and sexual promiscuity. Outbreaks commonly occur in nursing homes, mental institutions and hospitals (Maguire & Spielman, 1998).

Kaur & Nadeswary (1980) did a prevalence study on scabies in the Jengka Triangle in Pahang and they found that scabies was the commonest skin lesion

among the 5590 people examined. Its prevalence was 11.6%, both sexes were equally affected. Prevalence was high among children and teenagers, the worst affected being the 5-9 years old (24%). The problem of scabies in Jengka could be due to inadequate and irregular water supply, plus lack of mothers' supervision of the personal hygiene of their children aged > 2 years. Normaznah *et al.* in 1996 reported that out of 312 Orang Asli tested, 24.7% was positive for polyvalent anti-*Sarcoptes* antibodies. Norhayati *et al.* in 1998 did a study of health status of Orang Asli population (based on physical examination findings) in 4 villages in Pos Piah, Sungai Siput Perak, Malaysia. In all 356 individuals between 4 months-72 years old (178 males and 178 females) who participated in this study, the commonest skin infection was scabies.

Head lice is another common ectoparasite which feed at least once a day on human blood and are transmitted directly from person to person and occasionally by shared headgear and grooming implements. Female lice cement

their eggs (nits) firmly to hair. A suspected diagnosis of pediculosis is confirmed by the finding of nits or adult lice on hairs. The prevalence is highest among school-aged girls who keep long hair (Maguire & Spielman, 1998).

Sinniah *et al.* in 1981 did a survey of 308,101 primary school children in peninsular Malaysia and reported that 10.7% of children were infested with head lice, *Pediculus humanus capitis*. The prevalence rate was higher in the economically less advanced states of Terengganu (34%), Kelantan (23%), and Perlis (21%) compared to the other states (4-13%). Of 14,233 school children examined in the state of Melaka, 26% of Indians, 18.7% of Malays, 6.1% of Europeans, and 0.7% of Chinese had pediculosis. The prevalence rate, which has remained unchanged over several years, does not appear to vary with age but is higher in children with long hair and those from the lower socioeconomic groups. Boys have a lower infestation rate than do girls. The higher incidence in Indians and Malays correlates well with their lower socioeconomic status in the community, and their cultural habit of maintaining longer hair than do the Chinese. The difference become less apparent in the higher socioeconomic groups (Sinniah *et al.*, 1981). Sinniah *et al.*, (1983) did another survey of 4,112 primary school children living in and around Kuala Lumpur, Malaysia and reported that 12.9% of the children were infested with *P. humanus capitis*. Indians (28.3%) and Malays (18.9%) had a higher prevalence than Chinese (4.6%). The prevalence rate was found to be related to socio-economic status, length of hair, family size, age, crowding and personal hygiene. The prevalence of head lice among school children in England was 2.4% (Donaldson, 1976).

Bachok *et al.* (2006) did a cross-sectional study to determine the prevalence and associated factors of head lice infestation among primary schoolchildren in Kelantan, Malaysia. A total of 463 eleven-year-old pupils were screened by visual scalp examination and

fine-toothed combing. The prevalence of head lice infestation was 35% with 11.9% inactive (presence of hatched eggs and the absence of adult or nymph lice), 23.1% active (presence of live adult or nymph lice or viable eggs), 18.2% light (10 or less egg present) and 16.8% heavy infestations (more than 10 eggs present). The associated factors were girls; family income of RM247 or less; head lice infestation of family members and having four or more siblings. The high prevalence of head lice infestation in this study indicated the need for regular school health programme that emphasises on the eradication of head lice.

Sinniah & Sinniah (1982) evaluated the effectiveness of 1%, 2% and 5% DDT in coconut oil in 374 cases and revealed cure rates of 3.5%, 15.8% and 51.3%, respectively, suggesting that the head louse has probably developed resistance to this insecticide in Malaysia. Treatment with 0.2% and 0.5% malathion in coconut oil gave cure rates of 93% and 100% respectively. Treatment with gammexane and actellic at 0.5% concentration gave a cure rate of 100% against adults and nymphs of *P. humanus capitis* (Sinniah & Sinniah, 1982).

Failure to treat all family members at the time the initial case is detected leads to almost 100% infestation rates among other family members (Nitzkin, 1977).

There are as yet no comprehensive data on scabies and head lice infestation throughout peninsular Malaysia, but individual reports from the above study suggest a high prevalence. This study is to determine the prevalence of scabies and head lice among children in a welfare home in Pulau Pinang, Malaysia.

## MATERIALS AND METHODS

A total of 120 out of 160 children from a welfare home in Pulau Pinang (Rumah Kanak-Kanak Taman Bakti, Kepala Batas, Pulau Pinang) were randomly selected. Majority of them were Malays (72.5%) and the rest were Indians. Sociodemographic data was taken from each child and the

child was thoroughly examined for scabies and head lice. Clinical examination was done to look for types of skin lesions and itching rash suggestive of scabies. For head lice, the screening was done by examination of the scalp looking for lice and nits on the hair with the aid of fine toothed comb, and a child would be considered as positive if there was evidence of head lice or nymphs and presence of live or dead nits.

group. More males were affected by scabies. The overall prevalence rate for scabies was 31%.

Table 2 shows the prevalence of lice infestation among children in a welfare home in Pulau Pinang. Children aged 10-12 years showed the highest prevalence followed by 7-9 years age group, 13-15 years age group and lastly the 4-6 years age group. More females were affected by head lice. The overall prevalence rate for lice infestation was 49%.

## RESULTS

Table 1 shows the prevalence of scabies among children in a welfare home in Pulau Pinang. Children aged 10-12 years showed the highest prevalence followed by 7-9 years age group and lastly the 4-6 years age

## DISCUSSION

This study showed that the prevalence of scabies was high among children in a welfare home in Pulau Pinang. Overall prevalence rate was higher (31%)

Table 1. Prevalence of scabies among children, both sexes, by age in a welfare home in Pulau Pinang

Age Group (Years)	*Male		Female		Total (%)
	No. examined	No. positive	No. examined	No. positive	No. positive
4-6	14	6 (43%)	11	0	6 (24%)
7-9	18	7 (39%)	14	7 (50%)	14 (44%)
10-12	20	13 (65%)	17	4 (23%)	17 (46%)
13-15	-	-	23	0	0
16-18	-	-	3	0	0
Total	52	26 (50%)	68	11 (16%)	37 (31%)

\* Males above 12 years old were transferred to another welfare home

Table 2. Prevalence of head lice among children, both sexes, by age in a welfare home in Pulau Pinang

Age Group (Years)	*Male		Female		Total (%)
	No. examined	No. positive	No. examined	No. positive	No. positive
4-6	14	2 (14%)	11	3 (27%)	5 (20%)
7-9	18	4 (22%)	14	14 (100%)	18 (56%)
10-12	20	9 (45%)	17	17 (100%)	26 (70%)
13-15	-	-	23	10 (43%)	10 (43%)
16-18	-	-	3	0	0
Total	52	15 (29%)	68	44 (65%)	59 (49%)

\*Males above 12 years old were transferred to another welfare home

compared to the prevalence rate in children in welfare homes in Kuala Lumpur (25%) (Jamaiah *et al.*, 2000). Crowded living condition, intimate personal contact and lack of personal hygiene predisposed these children to scabies. The other factors that contributed to the increasing prevalence of scabies in the welfare home were host behavior patterns and sharing of infected clothes and bed linens. This study showed that the highest prevalence was found among children in the age group 10-12 years old and predominantly in males. In a serologic survey among the Orang Asli in Malaysia, no significant difference was found between the positive rates in males and females (Normaznah *et al.*, 1996). Jamaiah *et al.* (2000) reported that majority (45.5%) of scabies from welfare homes in Kuala Lumpur was between 13-15 years age group and both males and females were equally affected. In Malawi and Egypt, the highest rate was found among children 0-9 years (Landwehr *et al.*, 1998; Hegazy *et al.*, 1999).

This study also showed that head lice infestation was a common health problem among children in a welfare home in Pulau Pinang. Overall prevalence rate was 49% compared to the study reported in children in welfare homes in Kuala Lumpur which was 54% (Jamaiah *et al.*, 2000). Intimate person-person contact, improper personal hygiene and continuous sharing of personal items predisposed these children to this infestation and reinfestation.

In this study, the lice infestation was more common in girls who had longer hair than boys. By nature, head lice move towards shadow or dark coloured objects in their vicinity (Keh, 1979). Thus, long and thick hair provides favoured vicinity and promotes the occurrence of head lice.

Some of the children reported that they were free from head lice before they came to the home and acquired the infection at the welfare home. It is important to ensure that all the children in the welfare home received treatment for both head lice and scabies, so that transmission can be prevented. For head lice, the preferred

treatment is 1% permethrin cream rinse which kills both lice and eggs. There are several ways to control scabies, such as increase awareness and better case finding, education of the staff at the welfare home, improve hygienic measures and massive treatment campaigns using effective drugs such as topical permethrin and oral ivermectin (Hegazy *et al.*, 1999). Application of 5% permethrin cream for a single overnight is effective. Other treatments include topical crotamiton cream or benzyl benzoate applied topically. It is also important to educate the children to practice personal cleanliness (Maguire & Spielman, 1998).

Prevalence of scabies and head lice in welfare home are still high. Therefore screening and treatment for scabies and head lice among children in welfare homes need to be carried out regularly to reduce the infestation rates. The children and the care givers should be given health education regarding the modes of transmission and prevention of head lice and scabies. Avoiding the sharing of personal belongings such as combs to prevent head lice infestation and avoiding sharing of infected clothes and bed linens to prevent scabies should be strongly emphasized.

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