

## Prevalence of *Entamoeba* spp. among Aboriginal School Children in Kuala Kubu Bharu, Selangor

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### ABSTRACT

Amoebiasis among aboriginal and rural communities in Malaysia has been documented. However, its epidemiology is poorly understood. Prevalence data in children is limited prompting us to survey an aboriginal primary school in the state of Selangor. A total of 158 primary school children from Sekolah Kebangsaan Tun Abdul Razak (SKTAR), Kuala Kubu Bharu participated in this study. The faecal specimens were collected and microscopically examined for *Entamoeba* spp. cysts or trophozoites using direct faecal smear and formalin-ether concentration techniques. The overall prevalence of *Entamoeba* spp. was 5.06% (8/158). From the positive samples, only 2 were male pupils (2.9%) while the rest were female pupils (6.7%). Generally, those below 10 years of age (87.5%) seemed more susceptible compared to those older (12.5%). From this study, it was found that the infection rate of intestinal parasitic protozoan among school children was low. This survey also did not distinguish between the three main species of *E. histolytica*, *E. dispar* and *E. moshkovskii* which required molecular identification. However, more surveys involving more schools are needed in order to better understand its overall prevalence picture.

**Keywords:** Amoebiasis, *Entamoeba* spp., aboriginal school children

### INTRODUCTION

Amoebiasis is an important public health problem especially in the developing world with substandard living conditions. In Malaysia, sporadic prevalence data mostly from aboriginal and rural communities provide poor understanding of its epidemiology. Children are most vulnerable to intestinal infections. Surveys focusing on children are limited. Surveys of rural aboriginal school children from the state of Pahang ranged from 14.1% (Al Delaimy et al. 2014) to 15.0% (Al Harazi et al. 2013) in Pahang to 32.4% (Hartini et al. 2013) in Kelantan. A survey from aboriginal communities from Perak found 9.4% (Hakim et al. 2007) prevalence. A survey from a mixed suburban community which comprised largely of children of Indonesian immigrant families as well as aboriginal and Malay communities in Selangor recorded 9.9% (Rajeswari et al. 1994) prevalence. We report a survey from a primary school in a suburban community in Kuala Kubu Bharu, Selangor.

### MATERIALS AND METHODS

#### Subjects and study area

A cross-sectional parasitological survey was carried out at Sekolah Tun Abdul Razak, Kuala Kubu Bharu, located about 50 km from Kuala Lumpur. The aboriginal school children were all from the Temuan tribe. A total of 158 pupils were recruited after obtaining consent. The children were between 7-12 years old of which 69 were boys and 89 girls.

#### Stool examination

Faecal samples were prepared for direct smear using normal saline and iodine. Samples were fixed with 10% formalin and examined later using formalin-ether concentration technique at the Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia.

### RESULTS

The overall prevalence of *Entamoeba* spp. was 5.1% (8/158). Two out of eight from those found positive were male pupils while the rest were female pupils. The age of those infected were 7 years (n=2), 8 years (n=3), 9 years (n=2) and 12 years (n=1).

TABLE 1. Prevalence of *Entamoeba* spp. infections among aboriginal school children in Kuala Kubu Bharu, Selangor according to age

Participants age (years)	Number of examined samples	Number of positive samples	Prevalence(%)
7	44	2	4.5
8	26	3	11.5
9	19	2	10.5
10	25	0	0
11	21	0	0
12	23	1	4.3

TABLE 2. Prevalence of *Entamoeba* spp. Infection of aboriginal school children in Kuala Kubu Bharu, Selangor according to gender

Gender	Number of examined samples	Number of positive samples	prevalence(%)
Males	69	2	2.9
Females	89	6	6.7

## DISCUSSION

The prevalence rate of *Entamoeba* spp. among aboriginal school children in Kuala Kubu Bharu, Selangor was low at 5.1%, mostly affecting those below 10 years of age 87.5% (7/8). The prevalence also seems to be more predominant among the female students (6.7%) though this could be attributed to the small number of positive cases. The school is located about 50km away from Kuala Lumpur and within close proximity to Kuala Kubu Bharu town which is a suburban township with reasonable amenities and business activity. A comparable data from Gombak district (which is just few kilometers from Kuala Lumpur city centre) in Selangor was about twice higher at 9.9% (Rajeswari et al. 1994). However, it is to note that the data were collected not exclusively from aboriginal school children but also included children from Indonesian immigrant families and the Malay community. Comparatively, higher prevalence (14.1%-15.0%) were recorded from surveys in rural areas from east coast states of Pahang (Al Delaimy et al. 2014; Al Harazi et al. 2013) and Kelantan (32.4%) (Hartini et al. 2013). Data from west coast state of Perak (Cameron

Highlands) was 9.4% (Hakim et al. 2007). Factors affecting infection have been attributed to poor hygiene and contaminated water supply. However, it must be noted that the current survey did not distinguish between the three main species of *Entamoeba* where *E. dispar* is not pathogenic, *E. moshkovskii* mildly pathogenic and *E. histolytica* is most pathological which would have required molecular identification.

## CONCLUSION

The infection rate of *Entamoeba* spp. among aboriginal school children in Kuala Kubu Bharu, Selangor was low. However, this survey did not distinguish between the three main species of *Entamoeba*. More surveys utilising molecular identification involving more schools are needed in order to better understand its epidemiology.

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