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GEOGRAPHIC INFORMATION SYSTEM (GIS) AND PREDICTIVE RISK MAP SOIL-TRANSMITTED HELMINTHIASIS IN PENINSULAR MALAYSIA

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INTRODUCTION

In Malaysia, soil-transmitted helminth (STH) infections are considered largely controlled with significant reduction of infection rates particularly among urban populations (Aaron et al, 2011). However, this reduction trend remains significantly unchanged with high prevalence rates and significant morbidity among communities in rural and remote areas (Lim et al, 2009; Aaron et al, 2011). Lim et al. (2009) summarized studies that have been conducted since colonial era in Malaysia demonstrated that foci for high endemicity remain largely unchanged with alarming high prevalent rates, in some cases up to 100% in these rural dwellers. Although Malaysia is still known to have high prevalence of STH infections particularly in rural dwellers (Lim et al, 2009), this disease is recognized as not notifiable by the local public health authorities. Moreover, a precise estimate of the total disease burden has not been fully described as collation of systematic information on STH infections in the country is not currently available. Most of the information or record on the prevalence of STH infections is scattered across the literature and not catalogued systematically. These data are seldom available in an accessible format for policy makers or public health authorities.

In recent years, the geographical information system (GIS) and remote sensing (RS) has been widely used for effective storage, mapping, analysis and development of STH atlas (Brooker & Michael, 2000). Such approach also made data integration and mapping more accessible and reliable. It also offers us the ability for modeling the spatial distribution of STH infections in relation to their ecological factors which are derived from remote sensed (RS) satellite data that are known to influence the distribution pattern, thus deepening our knowledge and understanding in the biology and epidemiology of the infections (Hay, 2000; Brooker et al, 2006). Likewise, it also allows us to predict the spatial distribution of infection and identify endemic areas, thus providing more precise estimates of populations at risk (Brooker & Michael, 2000). By extending such approach to Malaysia, a reliable and accessible GIS database consists of prevalence map and information of environmental and social information...