

RISK FACTOR IDENTIFICATION, DISEASE SURVEILLANCE AND ONE HEALTH APPLICATION FOR INTESTINAL AMOEBIASIS PREVENTION AND CONTROL IN ENDEMIC AREAS

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Intestinal amoebiasis is a neglected global public health issue causing 100,000 deaths annually. It is prevalent in low socio-economic tropical regions, especially among immigrant and refugee communities. In 2005, the prevalence of dysentery cases in Thailand was of 33.69/100.000 population, with 9.34% being amoebic dysentery. The Song Yang district located at Thai-Myanmar border, Tak province has one of the highest prevalence of amoebic dysentery; however data of prevalence and risk factors contributing to intestinal amoebiasis, as well as the presence of its causal agent in domestic animals and environment in villages of Tha Song Yang district are scanty. Hence, this study estimated the prevalence of intestinal parasites and assessed possible contributing risk factors to enable target-specific and sustainable plans involving multi-sectors to be formulated. This study was approved by the Ethics Committee of the Faculty of Tropical Medicine, Mahidol University (FTM ECF-013-05, MUTM 2016-096-01).

In order to determine the prevalence of intestinal parasites and possible zoonotic transmission, human and domestic animal fecal samples during rainy and dry seasons. During the rainy season (August 2017), fecal samples were obtained from 203 individuals (151 villages and 52 hospitals) and 24 domestic animals (one sub-district); and during the dry season (February 2017), from 513 individuals (503 villages and 10 hospitals) and 30 domestic animals (six sub-districts). To assess possible water-borne transmission, 26 water samples were collected from up-, middle- and down-stream sources. Disease-associated knowledge and attitude towards risk factors and prevention were evaluated using questionnaires. Collaboration with the Ministry of Interior (MOI) and Ministry of

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Public Health (MOPH) allowed multi-sectoral 'brainstorming' among villagers, health volunteers, sub-district administrative officers, health care providers, and public health authorities on ways to explore perceptions of important disease-associated risks and solutions.

During the rainy season, microscopic examination of human fecal samples showed *Blastocystis hominis* has the highest prevalence (18%), followed by *Entamoeba histolytica* (12%). Helminth species accounted for 5%. Screening of domestic animal fecal samples revealed the highest prevalence was helminthes species (46%), while amoeba trophozoites ranked fourth (17%). During the dry season, human fecal samples contained *Endolimax nana* (17%), highest prevalence, followed by *E. coli* (12%), *B. hominis* (11%), and *E. histolytica* (4%). Helminth species accounted for 10%. Interestingly, 90% of domestic animal fecal samples contained infective forms of intestinal parasites similar to those of humans. However, correlation of these parasites in human and animal was still inconclusive. From replies to the questionnaire, 71% of the respondents have inadequate knowledge and 38% incorrect perception of disease-associated risk factors and prevention. Multi-sectoral brainstorming resulted in identification of water-related problems as the most prevailing risk, followed by improper waste management, unclean food, and poor personal hygiene.

Target-specific solutions focused on the necessity of obtaining assistance from local authorities to improve water quality and waste management. These suggestions, combined with technical findings, constituted a policy brief and submitted to MOI/MOPH for incorporation into a strategic plan to reduce disease burden. Multidisciplinary and multi-sectoral collaboration and cooperation from academic, public and private sectors are essential elements for successful disease surveillance. Brainstorming proved effective in exploring perceptions of stakeholders regarding disease-related risk factors, thereby aiding the formulation of strategic target-specific control programs. Further studies ought to include species-specific molecular confirmation and subtyping of zoonotic pathogens and their relationship to human and animal one health.