RISK FACTORS FOR HELMINTH INFECTIONS AND EFFECTS OF PARTICIPATORY HYGIENE AND SANITATION TRANSFORMATION ON INTESTINAL HELMINTHS IN CHILDREN UNDER FIVE IN LUWEERO DISTRICT, UGANDA

BY

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DECLARATION

I, **Robinah Dumba**, do hereby declare that, this thesis is my original work and has never been presented to any University or Institution of higher learning for an academic award.

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This thesis has been submitted with our approval as the University supervisors.

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DEDICATION

Dedicated to my sister, **Miss Phoebe Kisakye Baddu**, for her vision, patience, constant advice and support given prior and all through the study period.

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ABSTRACT

Luweero district health records reveal high cases of intestinal worm infections that take third or fourth position among the top 10 diseases in the out-patient diagnoses. Helminthiasis has caused morbidity ranging from 5.0% to 9% in recent years 1997 to 2004 in the under fives in the district. Despite this position, neither the cause of the high prevalence nor the impact of any intervention had been investigated. A three-phased study to assess the effect of Participatory Hygiene and Sanitation Transformation methodology (PHAST) on intestinal helminths in children less than five years was therefore carried out in 19 villages of Luweero district in Uganda, for 3 years ending April 2003. Phase 1 was a cross-sectional descriptive baseline survey that investigated the prevailing helminth status and risk factors that promote helminth transmission. Stools from 727 children were examined for presence of helminth ova using Kato/Katz technique and questionnaires administered to all respondents. Phase 2 investigated the viability of PHAST intervention in controlling helminthiasis: PHAST training was conducted thrice in the experimental villages while all the subjects in the study were de-wormed with a single oral dose of 400-mg albendazole depending on age. Phase 3 was a follow up on the effect of the intervention.

Overall, there was a prevalent rate of 27.6% (201/727) of children infected with helminth ova; with an arithmetic mean of 965.0 eggs per gram of faeces (epg). Out of 201 children, 82.0% were infected with *Ancylostoma duodenale* and/or *Necator americanus*, 18.9% with *Ascaris lumbricoides*, 7.0% with *Trichuris trichiura*, 1.0% with *Enterobius vermicularis*, and 0.5% with *Hymenolepis nana*. Risk factors strongly associated with

helminth infections included methods of anal cleaning, methods of hand washing after latrine visits; maintenance of compounds and latrines, rearing of pigs as well as age of the subjects.

Comparison of pre-intervention($_{pr}$) and post-intervention($_{po}$) multivariate results indicate that the likelihood of children getting infected with helminth ova reduced after the intervention in all the variables except three. The most significant reduction was noted in three variables which indicated significant association between helminth infection pre-intervention and none post-intervention. These are; respondents' hand washing after handling children's faeces, (OR_{pr} = 1.79; 95% CI = 1.03 - 3.11Vs OR_{po} = 0.87; 95% CI = 0.46 - 1.63); keeping of pigs, OR_{pr} = 1.73; 95% CI = 1.17 - 2.58 Vs OR_{po} = 0.82; 95% CI = 0.48 - 1.39); and maintenance of latrines, OR_{pr} = 1.90; 95% CI = 1.17 - 3.10 Vs OR_{po} = 0.74; 95% CI = 0.30 - 1.80. Conversely, the risk of children getting infected with ova, for those who slid on the ground after visiting the latrine, increased four times after intervention compared to those who used leaves or anal washing (OR_{pr} = 0.46; 95% CI = 0.30 - 0.70 Vs OR_{po} = 1.85; 95% CI = 1.05 - 3.26).

The findings reveal that there was a reduction in the risk of children acquiring worm infections after PHAST intervention and that de-worming alone was not adequate. The district health team and community leaders should be trained in PHAST to be able to guide the community to internalize the importance of personal and environmental hygiene. They should also do frequent follow up using appropriate monitoring tools. There is also need to try PHAST for a longer period in order to prove its effectiveness in all aspects.