

WASTEWATER REUSE AND THE BURDEN OF PARASITIC DISEASES IN NIGERIA

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INTRODUCTION AND OBJECTIVES

- Most rural farmers in eastern Nigeria villages practice some form of irrigation for their crops.
- Thus, water from broken drains, run-off from open defecation sites and night soil dumps are carried in channels through the farmlands causing potential risk of infection with parasitic helminthes.
- The infective stages attach to the surfaces of the vegetables.
- In addition, the soil and water bodies are seeded with parasite eggs and larvae thereby exposing the farmers to multiple infection.
- Irrigation of farmlands in developing countries including Nigeria is done using untreated wastewater and raw manure of domestic animal origins as fertilizer.
- Mitigation measures are needed

METHODOLOGY APPROACH

- ❑ Soil-transmitted helminthiasis has remained a common health problem of rural farmers in southeast Nigeria.
- ❑ The study was conducted by investigating the life cycle stages of the parasite in irrigation water sources using sedimentation, centrifugation methods and microscopic examination respectively.
- ❑ Ten rural farming communities in southeast Nigeria were selected for the study.
- ❑ The study revealed that life cycle stages of helminthes are present in irrigation water bodies in both wet and dry seasons between February, 2013 to January, 2016.
- ❑ The analysis of variance showed that there is a statistical significant difference between water sources in having life cycle stages of the parasite.

ANALYSIS AND RESULTS

- ❑ The study revealed that eggs, cercaria and metacercaria stages of *F. gigantica* and the infective stages of *Ascaris lumbricoides*, hookworms and *Strngyloides stercoralis* parasites implicated in irrigation water.
- ❑ Therefore, the recurrent transmission of helminthiasis among rural farmers in these areas may be as a result of regular contact with infested water sources used for the cultivation of vegetables and other crops.
- ❑ This situation is worsened by ignorance. The seasonal distribution of the parasitic stages of *Fasciola gigantica* and other parasites as recorded in the present study showed that rainy season favours the presence of these parasites.
- ❑ This agrees with earlier documented works showing that infective forms are more abundant during the wet seasons.

ANALYSIS AND RESULTS cont'd

- ❑ The highest prevalence of these parasites was recorded in rainy season (99.9). This is characterized with abundant rain, high moisture contents and low temperature suitable for optimum development of the parasite life cycle stages.
- ❑ It was also established that metacercaria of *Fasciola* species may survive for more than one year on pastures depending on moisture and temperature.
- ❑ This is supported by Weldesilassie (2010) on the examination of vegetable collected from commercial markets which showed that the vegetables were contaminated with many types of parasite eggs and cysts.

CONCLUSIONS AND RECOMMENDATION

- ❑ The transition from a rain-fed to irrigation agriculture favours the development and propagation of water-borne infections to both humans and livestock.
- ❑ The present study identified parasitic contaminants of irrigation water, organic manure and sewage for vegetable production; suggesting that the parasites identified may pose occupational risks to the farming communities and consumers.
- ❑ The practice of using wastewater for irrigation offers many opportunities, but poses human health risks which is associated with consumption of contaminated vegetables irrigated with wastewater.
- ❑ Safe and adequate drinking water should be provided in order to reduce the use of contaminated water which is highly incriminated with parasitic helminthes.