2018 LIBERTY UNIVERSITY RESEARCH WEEK PROPOSAL

Title: Risk Factors for Diarrhea Disease in East Africa and West Africa

Program of Study: Master of Public Health

Presentation Type: PowerPoint Presentation

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Category: Applied

Abstract

Though preventable, diarrhea is a leading cause of morbidity and mortality among children under five years, accounting for up to 18% of deaths in this age group and nearly one million deaths annually. About 75% of diarrhea-related deaths worldwide occur in 15 countries, 10 of which are in sub-Saharan Africa. Four countries in West Africa (Burkina Faso, Mali, Niger, and Nigeria) account for 52% of all diarrhea-related child mortality worldwide. Similarly, four others in East Africa (Kenya, Ethiopia, Uganda, and Tanzania) contribute significantly to the global burden of disease due to diarrhea. Low socio-economic status, poor housing conditions, lack of access to safe water, lack of proper sanitation facilities, maternal age, and maternal educational status, have been identified by multiple studies as risk factors for diarrheal

disease worldwide. The purpose of the current study is to evaluate the extent to which known risk factors for diarrhea determine diarrhea incidence in East Africa and West Africa.

Demographic and Health Survey (DHS) program child data for countries in East and West Africa was requested and obtained. The data from the countries in each region were merged into single files to represent the region. Using IBM SPSS version 23, we performed bivariate analyses by Chi-square test of independence and multivariate analyses by multiple logistic regression. Season of the year, type of water source (improved/unimproved), time to water source, type of sanitation facility (improved/unimproved), mother's age, mother's educational level, and household wealth index were analyzed as predictor variables, while the outcome variable was diarrhea incidence in the last two weeks. The level of significance (α) was selected as 0.05.

Chi square results indicated ($p<0.0001$) that diarrhea incidence in East Africa varied by each of season of the year, type of water source, time to water source, type of sanitation facility, mother's age, and mother's educational level; but there was no statistically significant evidence that diarrhea incidence varied by household wealth index ($p=0.078$). For West Africa, there was statistically significant evidence that diarrhea incidence varied by season of the year ($p=0.022$) and by each of type of water source, time to water source, mother's age, mother's educational level, and household wealth index ($p<0.0001$); however, there was no statistically significant evidence that diarrhea incidence varied by type of sanitation facility ($p=0.339$).

Logistic regression determined that diarrhea incidence in East Africa was increased during the rainy season, with use of an unimproved water source, and with use of an unimproved sanitation facility, but not by other variables. For West Africa, diarrhea incidence also increased during the rainy season and with use of an unimproved sanitation facility, but not with use of an

unimproved water source. Contrary to findings from other studies, the logistic regression model suggested a decrease in diarrhea incidence when time to water source was more than 30 minutes, mothers were aged 18 years or less, primary education was the highest educational level of mothers, and when the wealth index was middle income or less.