Protective and Harmful Factors Influencing Diarrheal Illnesses in Rural Honduras

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Abstract

Diarrheal illnesses are one of the leading causes of death in the pediatric population in rural villages located in Honduras. Factors such as clean water, the lack of latrine usage, and poor water filtration contribute to the high incidence of diarrheal illness. This research study explores diarrheal-causing factors, improvements in sanitation infrastructure, and the consumption of different types of water in hopes of curating an effective and culturally sensitive intervention to reduce the mortality of pediatric diarrheal illness.

Introduction

- Diarrheal diseases are one of the major causes of death in children worldwide, with more than 2.2 million children dying from related illnesses each year.
- It is estimated that 13.56% of the Honduran population does not have access to a basic latrine, which indicates that many rural communities cannot dispose of human waste properly.
- Efforts to improve sanitation and hygiene practices have caused a significant reduction in the prevalence of diarrheal diseases in children. A program is known as WASH (Water, Sanitation, and Hygiene). The program has implemented interventions that have led to a 10.1% reduction in disease in four years.{5} Understanding the population's patterns of diarrheal illness and the state of the education on hand washing and water purification reduce leads to a reduction in the high prevalence of diarrheal-related mortality among the pediatric population in Honduras. This study was performed to identify risk factors for diarrheal illnesses to hopefully reduce the morbidity and mortality of the pediatric population in the community of Gracias a Dios in Honduras.

Methods

- Studies were included in our search registry if they met any of the following criteria: conducted in a rural setting or rural area of Central or South America and examined the relationship between water sanitation and GI illnesses.
- Additionally, studies were reviewed and compared people under 15 years of age who have experienced diarrheal symptoms within the last 6 months versus people 15 or older.
- Finally, if studies demonstrated the effectiveness of hygiene or sanitation interventions and their correlation to GI illnesses, they would be included
- Descriptive statistics were utilized to demonstrate study participant characteristics.
- A logistic regression model was used to analyze the relationship between the incidence of diarrhea as relates to using a restroom or dam
- P-values were obtained using Fisher or Chi-square tests.
- Studies were excluded if they didn't apply to rural areas, were from a developed nation, used supplies unavailable in Gracias a Dios, Honduras, or included hygiene practices in developing countries with more resources.

Results

Characteristics	Total (Mean %)	Diarrhea (Mean %)	No Diarrhea (mean %)	P value
Diarrhea prevention or water sanitation education				
Yes	32 (32.3)	15.6	84.4	0.146 *
No	67 (67.7)	29.9	70.1	
Using a Latrine regularly				
Yes	72 (72.7)	18.1	52.82	0.007
No	27 (27.3)	44.4	20.18	
Main sources of water for drinking or washing				
Dam	64 (64.6)	32.8	67.2	0.028
Other	35 (35.4)	11.4	88.6	
Doing water safer at home- methods				
Boil or bleach tablet	28 (28.3)	10.7	25	0.041*
Other or none	71 (71.7)	31	49	

Table 1: Comparison By Diarrhea Prevalence During the Last 6 Months. Participants who use regularly a latrine (p=0.007) or use a method (boil or bleach tablet; p=0.041) have lower diarrhea prevalence. By contrast, those who have a dam as the source for drinking or washing (p=0.028) have greater diarrhea prevalence.
‡ Other water sources surveyed included: streams, rainwater, storage tanks/cistern, private faucet, and public faucets. † Other water sanitation methods surveyed included: strain through cloth, bleach/chlorine liquid, stand and settle. ⌘ Other opinions on methods to prevent diarrhea included: nutrition, vaccines, medications, proper disposal of human waste, breastfeeding

Diarrhea Prevalence by Age (%)

Ages 40+ (32%) | Ages 18-39 (21%) | Ages <18 (25%)

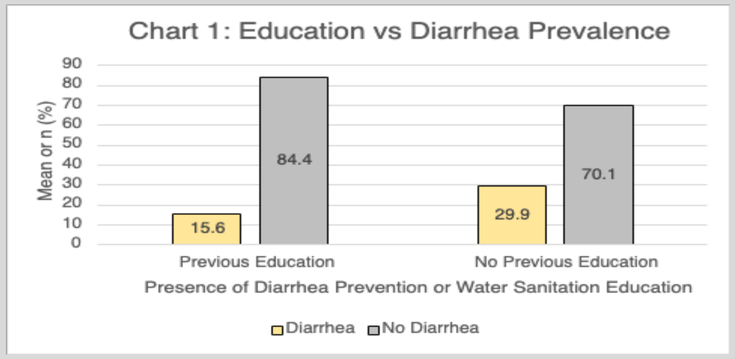

Chart 1. There was no significant relationship found between previous diarrhea/ water sanitation education and diarrhea prevalence.

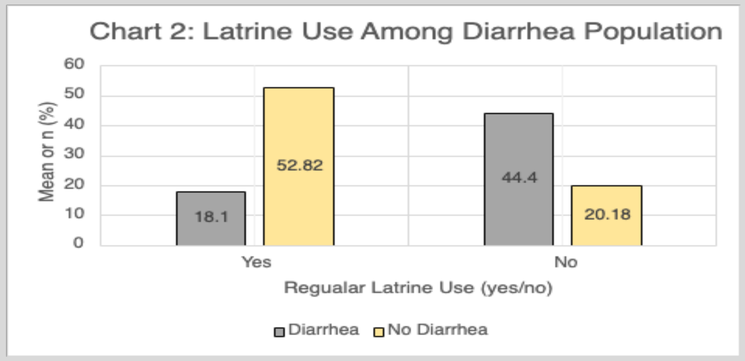

Chart 2. Individuals who use a latrine regularly are less likely to experience diarrhea (Table 1, P-value= 0.007)

Future Directions

- This survey was created to elaborate on the prevalence of diarrheal illnesses and the factors that can contribute to it; this includes protective and nonprotective factors. Additionally, this study allowed us to understand what interventions we need to utilize to address the perceived barriers and disease facilitators.
- Future studies will provide a good understanding of the different occurrences in this rural community compared to what is happening in the nearby rural areas. In surrounding communities, if the results are similar to our study, how many of these interventions have been utilized? Furthermore, what needs to be done if the results are different?
- This study was a baseline data to enhance our future studies with the goal of determining an effective and culturally sensitive intervention to reduce the incidence of diarrheal illnesses and the mortality associated with the disease. The provided data could be further examined by increasing the sample size as an increase in the sample size may lead to superiority and a smaller margin of error.

References

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