Ethno-etiologies of Water-borne Disease: Global Divergences and Convergences

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ABSTRACT

Using interviews conducted with 468 adults in 9 different global locations, we tested for commonalities in how people culturally understand water-borne disease. Based on consensus study findings of evidence of shared cultural ideas about the causes and solutions to water-borne disease both within and across locations. Causes of water-related illness with the highest salience were comparable across locations. Outcomes of water-related illness varied significantly across communities. Cultural settings appear to play a role in affecting health and disease prevention. The role that infrastructure and individual behaviors have in disease prevention might be important in guiding water-related disease prevention efforts.

INTRODUCTION

• Some of the most pressing global public health issues can be attributed, both indirectly and directly, to water.
• Issues with water quality (both chemical contamination and presence of pathogens), scarcity, inadequate sanitation and personal hygiene habits are leading to a heavy disease burden worldwide.
• With the assumption that standardized public health/biomedical prevention models differ somewhat from ethnotheories (or "lay cultural models"), this research study examines cultural conceptualizations of the connections between water and disease and cultural understanding of the role that infrastructure and individual behaviors have in disease prevention.
• By examining divergence and convergence between ethnotheories of disease, and comparing them to public health/biomedical models, we gain a better understanding of which disease prevention strategies are likely to succeed in cross-cultural settings.
• Moreover, so as to ensure more meaningful (that is effective and inclusive) health care delivery and health education it is important to find the right balance between ethnotheories and public health/biomedical models.

METHODS

A. Approach
• Cultural consensus analysis was used to measure the internal consistency in how people respond to cultural statements in ways that can be compared across different cultures to assess convergence and divergence in world view. The most common responses comprise the shared "cultural model" of the study group.

B. The Cultural Survey Tool
• The final protocol was narrowed to 75 cultural statements about water and disease, derived from statements made by lay people (emic, or "insider", knowledge) and public health experts (etnic, or "outsider", knowledge).
• The statements chosen were applicable to the individual, the natural world, the social world, and the supernatural world (see Figures 1, 2).

C. Data Collection and Sampling
• Interviews were conducted with 468 participants in nine countries, across a range of rural and urban, as well as water-scarce and water-scarce settings (see Table 1).
• Each interview was comprised of (1) demographic questions, (2) open-ended questions, (3) a free-list section, and (4) the 75 item cultural statement survey.

D. Analyses
• UCINET 6 was used to identify the most culturally "correct" answers for each cultural statement and to assess whether individual knowledge is only shared within a country or across countries.
• ANTHROPAC was used to identify how shared ideas correlate with public health models of water-related disease causation, disease progression, and treatment.

RESULTS

• The free-list data revealed that people identify common causes of both infectious and non-infectious contamination of water consistent with public health understandings (see Table 2).
• There is consistent concern with both environmental and infectious contaminants of water as a cause of disease (see Table 3).
• Using consensus analysis of the cultural survey statements, local samples demonstrated a shared understanding (shared cultural models) of the water disease relationship.
• The Tanzanian sample had the highest average within-group competency score (.67), while Fiji had the lowest (.49) (see Table 4). Overall, there was poorer correspondence between the global model and research sites, with the study sites and the U.S. model having the lowest correspondence and the Fijian model having the highest.
• Combining all 468 participants in a "global" sample also reflected a shared cultural water-disease model, with agreement averaging over 50%.

SUMMARY AND CONCLUSION

• Overall, there is strong evidence of cohesive local, shared cultural models of how people classify and understand waterborne disease in each country, as well as agreement across study sites. There was strong overlap between global shared knowledge and public health knowledge regarding waterborne disease cause and prevention. In particular there was strong emphasis on the personal and environmental conditions.
• Where there are disagreements between biomedical and lay theories and between biomedical and public health models, research suggests that more straightforward and cohesive, than culturally-specific, public health campaigns may be the most effective.
• While education and age had an affect on individual knowledge level, personal socioeconomic and ecological factors did not. Thus, the "us" and "them" approach to global water-disease education is not recommended.

REFERENCES


Table 1: Study Site Characteristics and Sample Sizes

Table 2: Respondent relative concern over bacterial versus pollutant contaminants in water by country (percent of respondents in that country sample)

Table 3: Respondent relative concern over bacterial versus pollutant contaminants in water by country (percent of respondents in that country sample)

Table 4: Results of the cultural consensus analysis by country and for the combined ("global") sample. BIC scores are consistent with public health understandings.

Figure 1: Elicitation Statements, Culturally Correct Answers as Assessed by Consensus Analysis. Analysis, and Comparison to "Correct" Public Health Statements

Figure 2: Main domains used to identify and classify cultural statements

Figure 3: Mean proportion of public health items (correct/incorrect) for each cultural statement for each country sample. The middle line in the box indicates the median, and the ends of the box indicate the mean.