

**Knowledge, attitude, belief and behavior of the Bagmati River users  
in Kathmandu Valley, Nepal**

**Soumi Roy Chowdhury**  
University of New Mexico

**Alok K. Bohara**  
University of New Mexico

**Hari Katuwal**  
University of New Mexico

**Jose Pagan**  
University of New Mexico

**Jennifer Thatcher**  
University of New Mexico

**Introduction:** Millennium Development Goals (MDG) called for “halving the population without a proper access to safe and adequate water supply by 2015.” This raised expectations of better health outcomes for the population especially in the developing countries, where approximately 88 percent of diarrheal diseases are attributed to unsafe water supply, and inadequate sanitation and hygiene (WHO, 2004). A genuine addition to this goal was made in the Johannesburg Summit on Sustainable Development to even reduce the population by half who do not have a basic sanitation facility by 2015. The focus on improving the quality of water supply and on having better sanitation facilities and hygiene comes from the deep concern that water borne diseases are the leading causes of morbidity in developing countries (WHO/UNICEF, 2000). Several steps have been undertaken by international agencies to reduce the incidence of those epidemiological diseases. Through the Joint Monitoring Programme of Water Supply and Sanitation of the WHO and UNICEF, the global progress towards water supply and sanitation are tracked. According to the 2008 report, open defecation is decreasing. More than 10,000 villages were declared free from open defecation in 2007 in South Asia and more than 15 million latrines were built to support sanitary practices. There has also been a marked improvement in water

supply coverage between 1990 and 2006. Yet, diarrhea continued to be the reason for 9 percent global death of children in 2012, with 15 developing countries accounting for 75 percent of diarrhea deaths (Pneumonia and Diarrhea Progress Report 2013). All this raises an obvious concern that why such interventions have not been successful?

To add to the existing state of knowledge, the present paper will list out the existence of other unidentified factors that may have a bearing on health outcomes. The relatively new branch of KABB (knowledge, attitude, belief and behavioral) studies tries to locate any differences, if they exist, in the awareness of the population about better health and behavioral practices. This paper seeks to understand the potential role being played by cultural and religious practices in explaining the inconsistency in individual's knowledge and behavior.

**Study Area:** Bagmati River runs through the heart of Kathmandu, the capital city of Nepal. Its water quality is extremely poor and has been continuously getting worse and polluted for the last several years. The water is black, emits a foul odor, and contains raw sewage and dead animals. The bank of the river is also highly polluted due to different kinds of waste. Any contact with water could be dangerous to human health. Having said that, the water of Bagmati River is widely used for bathing purposes, washing clothes, cleaning dishes, and for recreational, religious and cultural practices. Millions of Hindus in Nepal and India worship Bagmati River as holy. They conduct daily rituals and bathe in Bagmati with the belief of washing off physical, moral, and spiritual impurities. The proposed study will analyze the usage of Bagmati River and its potential implication on health.

**Hypotheses:** This paper aims to understand the behavioral practices of individuals and implications on their observed health outcomes. The four hypotheses have been proposed for the study:

Hypothesis 1: Personal hygiene habits don't influence health.

Hypothesis 2: Sanitation facilities don't influence health.

Hypothesis 3: Educational level doesn't affect the health.

Hypothesis 4: Cultural habits don't have any influence on health.

**Results:** As a motivation behind my econometric model, a series of descriptive statistics will define the significance of the above hypotheses. Analysis shows that 43 percent of the people in the sample always wash their hands before eating and 92 percent do clean their hands after using toilet. Modern sanitation (flush drainage) has not been accessible to most

of the population surveyed. Forty six percent of the surveyed households have a flush drainage, whereas 45 percent have simple drainage facilities. Eight percent reported to have no drainage facilities at all.

Education plays an important role in maintaining the personal hygiene habits. There are two opposing forces that are working behind Bagmati River's usage. One is the knowledge that the river water is polluted, and the other is their religious belief on holiness of the river water. About 21 percent of the sample have taken bath in Bagmati River as opposed to 79 percent who have not. Fifteen percent took bath in the river due to religious beliefs and cultural practices.

For the individuals who bathed in the river, it is important to know whether they re-bathed later in clean water. Re-bathing with clean water can prevent transmission of any disease or infections caused due to bathing in polluted water. Forty three percent of the total sample that took bath in Bagmati River re-bathed with clean water.

Through a series of Probit regression analyses, it is seen that cleaning of hands after using toilet continues to have a significant impact on health outcomes, reducing the probability of being sick by 8 to 9 percent. The present paper also finds a significant and negative relationship between sanitation and illness. Contrary to our general understanding, education of male or female individuals doesn't have significant impact on their health status. The knowledge of water quality didn't deter educated males from using the Bagmati River and, in turn, didn't minimize their probability of falling sick even though they were educated. More importantly, knowledge of water borne diseases has no significant and desired impact on their health outcomes. Having a bath in Bagmati River increases the likelihood of getting diarrhea, worm and fever by 11 percentage points; this impact is highly significant.

**Summary:** Personal unhygienic habits and inadequate sanitation facilities proved detrimental for health. In fact, cultural and religious practices of bathing in the Bagmati River have positive and significant effect on in being affected by diarrhea, worm and fever. Thus, the paper has successfully identified factors that have not been dealt in the literature before to explain health outcomes.

## **References**

Pneumonia and Diarrhea Progress Report. 2013. International Vaccine Access Center (IVAC) and Johns Hopkins Bloomberg School of

Public Health.

<http://www.jhsph.edu/research/centers-and-institutes/ivac/resources/IVAC-2013-Pneumonia-diarrhea-diarrhea-Progress-Report.pdf>

[accessed on 30th April 2014]

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. (2000). Global water supply and sanitation assessment 2000 report. WHO, Geneva.

[http://www.who.int/water\\_sanitation\\_health/monitoring/jmp2000.pdf](http://www.who.int/water_sanitation_health/monitoring/jmp2000.pdf)

[accessed 15<sup>th</sup> March 2014].

WHO 2004. Water Sanitation and Hygiene, Facts and Figures (updated March 2004). WHO, Geneva.

[http://www.who.int/water\\_sanitation\\_health/en/factsfigures04.pdf](http://www.who.int/water_sanitation_health/en/factsfigures04.pdf)

[accessed on 15th March 2014]