

# Water Treatment Assessment: How Age and Level of Education Affects Perception of Risk from Water-Borne Diseases

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## Abstract

The purpose of this research is to see if a house hold is willing to adapt a water treatment process if they are made aware of the harmful effects. Social constraints are a big issue when it comes to implementing a water treatment process, but if it becomes a number one priority, the cost may not be an issue.

## Literature Review

The implementation of water filtration in Nepal is something every house hold can use but it is hard to do so due to socioeconomic constraints. Rainey and Dr. Harding conducted a survey that asked the public if they were aware of the harmful local drinking water and if they were willing to adapt a solar disinfecting system. The study concluded that 9% of 34 households adapted the new system.

## Hypothesis

In rural Nepal, it is hypothesized that if a house hold has a thorough education of the harmful effects will drinking contaminated water, they will adapt a filtration system regardless of the cost.

Table 1: Variables

Variables	Definition	N	Mean	SD	Max	Min
TreatWater	From <i>TypeTreatment</i> : Dummy variable=1 if respondent boils, add Piyush chlorine, uses a water filter, uses euro guard, or uses solar disinfection. =0 if otherwise	748	0.30	0.46	0	1
Some To Serious Risk	From <i>WaterPerceptionOwn</i> : Dummy Variable=1 if some and serious risk. =0 if no and little risk	748	0.18	0.38	0	1
Income Quintile	Dividing the sample into 5 quintiles based on the amount of assets owned	748	3.00	1.41	1	5
Number of children 5-8	Number of children living in the house hold aged from 5 years old to 18 years old	748	1.66	1.74	0	15
Scientific Knowledge	Composite index of scientific knowledge about fertilizers, water born diseases, and Ecoli	748	.58	.22	0	1

## Methods and Models

The three models in this research are logistic regressions with *TreatingWater* as the dichotomous dependent variable. The independent variables include two dichotomous variables and two categorical variables (definitions Table 1). The first model has the variables *IncomeQuintile* and *SomeToSeriousRisk* show that a house hold is willing to treat their drinking water when there is risk of contamination but income is taken into consideration. The second model shows when adding children 5 – 18 years of age, a household maybe less likely to treat their water due to budget constraints. The third model shows that a house hold has been educated on the harmful effects with drinking contaminated water showing that they may treat their water regardless of the cost.

## Logistic Regression

VARIABLES	(1) Multivariate Model 1	(2) Multivariate Model 2	(3) Multivariate Model 3
SomeToSerious Risk	3.90*** (0.781)	3.85*** (0.7742)	3.894*** (0.7894)
IncomeQuintile	1.144** (0.06708)	1.13** (0.6682)	1.101* (.06610)
Number of children 5 – 18		0.882** (0.0470)	.8883** (0.0476)
Scientific Knowledge			2.876*** (1.116)
Constant	.2205*** (0.0452)	.2792*** (0.06330)	.16038*** (0.04944)
Observations	748	748	748
Pseudo R <sup>2</sup>	.0570	0.0635	.0718

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

## Results

### Model 1

The first model shows that when there is some to serious risk, the house hold is 3.9 times more likely to treat their water. It also shows that someone is 1.1 times more likely to filter water when income goes up one quintal. This model tells us that a house hold is willing to treat their water when there is risk but income is in the consideration.

### Model 2

The second model shows that a house hold is still willing to treat their water when there is some to serious risk, income is still a significant consideration, but now children in the household have been included. A house hold is .88 times less likely to treat their water when there are kids living in the house. This is probably due to a constrained budget which leaves the heads of house hold paying for food rather than water filters.

### Model 3

Scientific knowledge is added to the third model and it's results are quite interesting. Even though a house hold is still less likely to treat there water when kids live in the house, when scientific knowledge is added to the model, income becomes an insignificant variable. This means that when a house hold is made aware of the danger of drinking untreated water, income is not a consideration when filtering water.

## Conclusion/Discussion

Model three has shown the importance of scientific knowledge and how it can influence a house holds decision to treat their water regardless of the cost. A good set of hard facts and even pictures should be put together to show the dangers of drinking untreated water so that people can make an informed decision.

## References

Rochelle C. Rainey & Associate Professor Anna K. Harding PhD (2005) Acceptability of solar disinfection of drinking water treatment in Kathmandu Valley, Nepal, *International Journal of Environmental Health Research*. 15:5, 361-372, DOI: 10.1080/09603120500289168

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