Awareness to Mitigation: The Impact of Public Awareness Initiatives on Water Filter Adoption

By: DeShawn Vaughan, Andrew McCants, and Wenhui Lee

Abstract

Our study considers the water filter adoption behavior of households from two districts in Nepal with documented arsenic water contamination: Nawalparasi and Rupandehi. We examine the presence of socioeconomic factors such as wealth and caste along with other notable factors including positive arsenic water tests and public arsenic awareness initiatives. The primary goal was to identify the sign and significance of these recent initiatives and extrapolate whether they had an effect on a household’s decision to adopt a modern water filter (“modern” being defined as the following: Kanchan, Sono, Ceramic see Figure: A): Thanks to the data collected by the Nepal Study Center in coordination with Yale University, we created a robust logistic regression which indicates households who received knowledge about arsenic through media outlets such as radio and television were 11% more likely to adopt a modern filter (significant at the 1% level). In addition, positive results from arsenic testing (i.e. arsenic being found) and wealth were also significant factors (at the 1% and 5% levels).

Introduction

The problem presented in our research involves villagers’ knowledge of arsenic and its effect on owning a modern water filter. Our models were constructed from a data set collected from two districts of Nepal: Rupandehi and Nawalparasi. Recent tests have shown areas of both districts to have considerably high levels of recorded arsenic in their drinking water. Past research focused on regions of India, and Bangladesh (two bordering regions of Nepal) demonstrate that villages of such respect areas face similar issues of arsenic contamination to those in our sampled population. Through these studies it has become evident that consuming high levels of arsenic can cause various health issues. Short-term issues include: vomiting, abdominal pain, and diarrhoea, While long-term exposure to arsenic poisoning can result in more severe health problems including forms of cancer. The aforementioned studies have both: (a) developed a link between higher arsenic concentrations and prevailing health outcomes and (b) provided explanations as to why certain populations have been more affected than others.

Our study aims to focus on the effect public awareness initiatives have on arsenic mitigation, particularly on household’s propensity to own modern water filters.

Literature Review

George, Litvak, Khan et al. provided rigorous analysis on the intervention-outcomes of an educational arsenic awareness program. Their findings show educational programs were highly significant in improving arsenic knowledge and identification. Our own model built on scenario of educating villagers on arsenic through various media outlets. Several control variables were used in our model including arsenic found, wealth, Madhesi caste, and awareness of arsenicosis illness. This data was collected from the Nepal Demographic and Health Survey, 2011.

Methodology

The decision to adopt a modern water filter in our model was recorded as a response of either “yes” the household adopted the filter or “no” they did not. Our models were constructed from a data set collected from two districts of Nepal: Rupandehi and Nawalparasi. Our model was recorded as a binary variable “yes” or “no” and was used to build a robust logistic regression. This data was collected from the Nepal Demographic and Health Survey, 2011.

Hypothesis

Existing literature has demonstrated the positive impact of knowledge intervention programs on both arsenic levels and water treatment behavior from populations that share geographic similarities to population our data was collected from. In our work we would like to demonstrate the positive significance of public media awareness campaigns on increasing the likelihood of adopting modern water filters in the villages of Rupandehi and Nawalparasi.

Effect of Media Intervention on Arsenic Awareness

Table A: Descriptive Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Filter</td>
<td>Reported yes to owning a modern water filter (Sono, Kanchan, Ceramic)</td>
<td>0.1256</td>
<td>0.3322</td>
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<tr>
<td>Wealth</td>
<td>Wealth index based on owned assets</td>
<td>4.9246</td>
<td>1.6481</td>
</tr>
<tr>
<td>Arsenic Found</td>
<td>Positive arsenic testing results</td>
<td>0.2964</td>
<td>0.4578</td>
</tr>
<tr>
<td>Arsenic Media Knowledge</td>
<td>Households reported gaining arsenic knowledge through media outlets (radio, TV etc.)</td>
<td>0.3968</td>
<td>0.4905</td>
</tr>
</tbody>
</table>

Bibliography


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