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 socio-economic 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, 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% levels). In addition, positive results from arsenic testing (i.e. arsenic being found) and wealth were also significant factors (at the 1% and 5% levels).

Empirical Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Filter</td>
<td>0.1256</td>
<td>0.3322</td>
</tr>
<tr>
<td>Wealth</td>
<td>4.9246</td>
<td>1.6481</td>
</tr>
<tr>
<td>Arsenic Found</td>
<td>0.2964</td>
<td>0.4578</td>
</tr>
<tr>
<td>Caste Madhesi</td>
<td>0.88442</td>
<td>0.32052</td>
</tr>
<tr>
<td>Arsenic Media Knowledge</td>
<td>0.3968</td>
<td>0.4905</td>
</tr>
</tbody>
</table>

Data and Variables

The data was collected from Rupandehi and Nawalparasi, two villages in India, using proportional random sampling. The outcome variable was the adoption of a modern filter while the impact variable was knowledge of arsenic through various media outlets. Several control variables were used in the model including arsenic found, wealth, Madhesi caste, and awareness of arsenicosis illness. This data was collected from the Nepal Demographic and Health Survey, 2011.

Model and Methods

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, and due to the binary nature of this response we used a robust logistic regression. This enabled us to gauge statistical significance of certain factors and estimate the probability of adopting a modern water filter based on a set of qualitative independent variables. The equation below represents the framework of the logistic regression we used to test our hypothesis.

Model = β0 + β1AMKn + β2AFn + β3Wn + β4CMn + β5KAn + Un (1)

The model displays modern filters of homes n can take on the ordinal values between 0 and 1, stating whether a filter is owned or not. MFn is explained by (AMKn) arsenic media knowledge, arsenic found (AFn), and wealth (Wn), along with a couple other control variables. β1 is the parameter to be estimated as the error term follows a normal multivariate distribution.

Conclusion

Our result showed that the knowledge of arsenic through media outlets is significant on the adoption of the modern filter. Those who were aware through media were 11% more likely to adopt a modern filter for their home. In conclusion awareness campaigns can have a positive effect in adopting a modern filter.

Bibliography