Assessing the Health Impacts of Drinking Water Quality
Evidence from Rural Ethiopia

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Assessing the Health Impacts of Drinking Water Quality: Evidence from Rural Ethiopia

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Introduction

- Today, more than 700 million people most living in developing countries are without access to improved and adequate water (WHO/UNICEF 2014).
- Every year, more than 1.5 million children—under the age of five, die of diarrheal diseases (WHO/UNICEF, 2009).
- Unsafe drinking water is one of the major causes of diarrheal diseases.
- Increasing the provision of improved drinking water plays an important role in the fight against diarrheal diseases for young children in developing countries.

Objectives

Due to limited availability of safe drinking water, most rural Ethiopian household relies on unimproved water sources, such as rivers, ponds, streams, unprotected springs and wells which are easily polluted by human and animal feces. Therefore, it is important
- To assess the microbial quality of stored household drinking water, and
- To examine the impact of contaminated drinking water on child health outcomes.

Study Areas

Data and Methods

A household survey has been conducted from February to June 2014. In addition:
- 62 drinking water samples from community sources, and
- 454 drinking water samples from household drinking water storage has been collected and tested for the presence of Escherichia coli (E.coli) bacteria (cfu/100 ml).

- Child diarrhea: A self-reported prevalence of diarrheal symptoms by the Primary caretaker of the child in the last 14 days before the survey.

Results and Discussion

- Only 49% of our sample households have access to improved drinking water source
- More than 58% of the water samples from household’s drinking water storage is contaminated with E.coli (i.e at least one E.coli per 100 ml)
- The prevalence of diarrheal disease for under 5 years of children in the last 14 days is 16%.

Empirical Strategy

<table>
<thead>
<tr>
<th>Health effects of drinking water quality</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>diarrhoea * Sys</td>
<td>0.1861***</td>
<td>0.3201***</td>
<td>0.3823***</td>
<td>0.3473***</td>
</tr>
<tr>
<td>(yes=contaminated)</td>
<td>(0.0225)</td>
<td>(0.4772)</td>
<td>(0.1330)</td>
<td>(0.2535)</td>
</tr>
<tr>
<td>Child age in months</td>
<td>0.0039***</td>
<td>0.9782***</td>
<td>0.0039***</td>
<td>0.003</td>
</tr>
<tr>
<td>(0.0008)</td>
<td>(0.0009)</td>
<td>(0.0106)</td>
<td>(0.0106)</td>
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<tr>
<td>Exclusive breastfeeding</td>
<td>0.0999***</td>
<td>0.5977***</td>
<td>0.1003***</td>
<td>0.0007</td>
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<tr>
<td>(0.0287)</td>
<td>(0.0818)</td>
<td>(0.0266)</td>
<td>(0.1648)</td>
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<tr>
<td>Mother use soap</td>
<td>0.0290</td>
<td>0.8846</td>
<td>0.0143</td>
<td>0.0156</td>
</tr>
<tr>
<td>(0.0332)</td>
<td>(0.1466)</td>
<td>(0.0350)</td>
<td>(0.2252)</td>
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<tr>
<td>MH have pit latrine</td>
<td>0.0256</td>
<td>1.8140</td>
<td>0.0535</td>
<td>0.0691*</td>
</tr>
<tr>
<td>(0.0366)</td>
<td>(0.2283)</td>
<td>(0.0446)</td>
<td>(0.1546)</td>
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<tr>
<td>Observations</td>
<td>558</td>
<td>558</td>
<td>558</td>
<td>558</td>
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<tr>
<td>Model R test</td>
<td>0.1277</td>
<td>137.24</td>
<td>820.58</td>
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<tr>
<td>Model Chi2</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<tr>
<td>Model p-value</td>
<td>0.4011</td>
<td>0.2265</td>
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<tr>
<td>Robust standard errors in parentheses</td>
<td>*** p&lt;0.01, ** p&lt;0.05, * p&lt;0.1</td>
<td></td>
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<tr>
<td>Probit and BP in average marginal effect</td>
<td>0.5</td>
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</tr>
</tbody>
</table>

Source: Authors' compilation based on survey data.

Conclusions

- Water quality influences the diarrheal diseases especially young children between 6 to 24 months of age
- Household’s stored drinking water quality is highly correlated with types of water sources
- Availability of simple pit latrine and hygienic practices does not automatically translate into improved child health outcome

References


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