

Acceptance and Impact of Point-of-use Water Filters in Rural Guatemala

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Background

- Two million deaths/yr occur due to diarrheal disease related to contaminated water in Guatemala.
- Table-top carbon-activated water filtration systems are practical and sustainable in developing countries
- **Barriers to behavior change may impact use**
- In 2014, water filters were distributed to 71 Maya families through a community-university partnership
- Training was provided on the consequences of unsafe drinking water and care & use of the water filters.

Collaborative Team Members

- Kim Larson, PhD, RN
 - Principal Investigator
- Corrie Hansen, BSN
- Michala Ritz, MPH
- Diego Carreño, student
- Julio Gonzales, host leader
- Ivan Peralta, village leader



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AIM Statement

To evaluate the acceptance and impact of table-top water filter systems on family health in a rural Maya community **one year post-intervention**.

- 85% water filters in use
- 85% perceive benefits of water filters
- <30% families reporting diarrheal disease

How Will We Know This Change Is An Improvement?

- Review of the literature on water filters in developing countries contributed to survey design
- A bilingual research team, accompanied by a village leader, conducted surveys with heads-of-households (HOH) during May-June 2015.
- Families received a food package of beans, rice, oatmeal, and cooking oil for participation.

Baseline Data

- In 2014, the majority of families in VG had no source of potable water



Characteristics of 56 Households

Outcome Data	Date 09/25/15
Working water filters	71.4%
Broken water filters	28.6%
Households with concrete/wood flooring	60.7%
Households with dirt flooring	39.2%
Families with a reported case of diarrhea	19.6%
Filtered water use practices:	
Drinking	98.2%
Cooking	57.1%

Outcomes: Outreach Clinic Data

Dx/Sym	2014		2015	
	%	(n)	%	(n)
Intestinal illness	53.57	(15)	32	(8)
Resp. illness	21.4	(6)	44	(11)
Other	25	(7)	2.4	(6)
		(28)		(25)

Improvement Strategies Employed

- The low-cost water filters were more fragile than expected.
- Some homes lacked a stable surface for use and storage of water filters.
- Housing conditions, especially dirt floors, may contribute to intestinal infections.
- Reaching all 71 families was difficult due to weather conditions and study timeline.

Challenges Encountered in QI Process

- The health literacy of HOHs was not assessed.
- Geographic distance prohibited 3-month or 6-month evaluation.
- One year between intervention and follow-up.



Lessons Learned Through QI Efforts

- Sustainability of low-tech interventions that ensure access to clean drinking water is possible.
- Table-top water filters were believed to be acceptable and beneficial.
- Long-term partnerships can impact the health of rural Guatemalan communities.

Next Steps

- Community-university engaged research is necessary for future programming.
- On-going training will include community empowerment for problem-solving.
- Future partnership projects will target infrastructure projects, such as housing.