Consumer Preferences in POU Water Disinfection: An Example from Nepal

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POU Intervention Criteria

- Efficacy of Products
  *(it works in the “lab”)*

- Commercial/ Market Feasibility

- Consumer Acceptability
Formative Research Objectives

• Understand consumer perception of “clean” and “dirty” water; current disinfection practices
• Explore concept and value of water disinfection
• Determine perceived benefits, costs, and challenges of various disinfection techniques
• Assess value/ willingness to pay
• Invite modifications to make methods easier
• Measure actual effectiveness
Product Trials – Nepal

Examine Categories of POU:

- Filtration (CS Filter)
- Chlorination (Blinded WaterGuard)
- Boiling
- Solar Disinfection (SODIS)
- Biosand Filter
Methodology

• 3 home visits during 30 day trial period
  – Day 1
  – Day 3
  – Day 30 (ish)

• Women with kids under 5 from 4 districts

• Total 80 participants
  – 20 tried each method
  – 5 each per district
Objectives of Household Visits

• **Visit One**
  – Demonstration/Assignment of method
  – Test of water quality

• **Visit 2 / 3**
  – Initial reactions to use
  – Problem-solve, if needed
  – Test of water quality

• **Visit 3**
  – Reactions to use of a method for longer time
  – Assessment of water by “critical factors”
  – Request for continuation
  – Demonstrate and compare other POU methods
Contextual Challenges

• Fit into existing baseline study design
• Time of trial too short to assess
  …how people will maintain certain products
  …whether people will sustain use over time
• Enough comparison between methods?
• Is testing close to real life decisions?
  e.g. no one paid!
• “Security situation”!
Acceptability of different water treatment methods

- Taste, smell, appearance, color, temperature
- Effort, convenience, maintenance
- Perceived effectiveness
- Acceptability to family members
- Willingness to pay
Results

Confirmed larger study findings about water considered “fit to drink”:

– Crystal clear “sanglo pani”
– Free of turbidity, visible dirt and/or sand
– Absence of (objectionable) smell
– Cool water was a highly desired attribute
Perception of Risk

- Low perception of risk - few felt their water was contaminated
- “Unfit” referred to turbidity and physical attributes
- When researchers explained it, participants appeared to grasp the concept of “contamination by germs”
- All recruits willing to try a method of disinfection, needed little convincing
- Learned steps quite easily, correctly
- Valued the benefit of making the water “healthier & germ-free” for their family
- Repeated this benefit throughout the interviews
Overall acceptability, \textit{without considering cost}

- CS Filter the favorite
- Chlorination “second”
- SODIS and boiling both acceptable, but considered lesser options
- BioSand preferred by those using it
Water temperature

• Methods making water warm
  – Boiling
  – SODIS
  – Chlorination
  – CS Filter
Unpleasant Smell or Taste

- Chlorination
- Plastic taste
Receptacles

- People LIKED having “extra” bottles from SODIS

- CS Filter came with “dispenser”
- Kettles provided but not normally available
- BIG issue of having “extra” receptacle for separating out drinking water for disinfection
Waiting Time

- People have good access overall to water
- Most can get water within 15 minutes
- If you haven’t “planned ahead”, disinfected water won’t be “ready”

- Methods take time
  - SODIS: 6 hours to 2 days
  - CS filter: 2.4 to 5.6 litres/hour
  - BioSand: 2 to 4 hours
  - Chlorination: ½ hour minimum
Cost

• Costs considered within reach for all methods EXCEPT CS filters
  – SODIS and boiling viewed as the “budget alternative”, especially for poor villagers
  – Most all felt cost of chlorination within reach when considering disinfection of DRINKING water
  – Most underestimated cost of CS filter. Most felt you’d NEED a financing scheme to buy a filter
Product Effectiveness

- Households were overall successful in using the various techniques to disinfect water
- Exception to this was the CS filter
- Assumed but not proven that water still testing positive due to secondary contamination
Challenge of Marketing
POU Disinfection
and Safe Water Storage

• Complex behavior to promote, given existing practices
  – Separate out drinking (and cooking) water
  – Not current practice and lack of “spare” vessels
  – Choose method/obtain
  – Disinfect regularly
  – Protect
  – Use always at home and school
Key Considerations

• No method will be acceptable if it doesn’t address turbidity
• Temperature is a factor
• Time for disinfection
• Availability of spare receptacle
• PET/PVC bottles not readily available
• Effectiveness and cost of popular CS filter
On the bright side…

- People quite willing to try the new technique
- Grasped the mechanics and concepts
- Maintained behavior over time, though not exclusively
- While products didn’t meet all characteristics of good, fit water, none of “negative” product attributes outweighed perceived benefits