Identifying Factors Promoting the Use of Jalkalp in Nuh and Bihar

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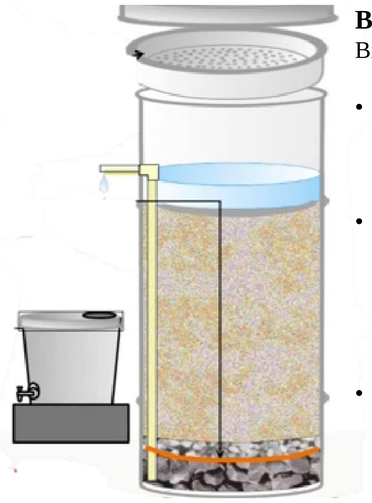
PURPOSE:

The objective of the study is to determine what aspects of the biosand filter (BSF) is incentivizing people to use this purification technology. This study also delves into determining what aspect of the BSF causes issues that has resulted in the discontinued use of such technology. The benefits from the reduction in pathological illness, viruses, exposure to harmful substances like arsenic and iron, turbidity and economic advantages are all factors that are at the focus of this study.

Woman using Sehgal's Jalkalp biosand filter to make tea.

Filtration Process:

1. Water is poured through metal filter
2. Gravity pulls water through layers of sand then a layer of gravel
3. A bio-layer develops that increased biological filtration from the unit
4. A tap empties water into a bucket
5. Maintenance must be done to ensure proper filtration



BACKGROUND:

Biosand Filter

- First Developed Concrete Model by Dr. David Manz, Canada
- Jalkalp is a stainless steel model developed by the Seghal Foundation, first installed in Jan. 2015
- Removes 97% of bacteria, 77-99% viruses, 99.9% iron and arsenic

METHOD:

Because of the exploratory nature of this study, the researcher chose a case study approach with two case studies, a qualitative analysis of the BSF use in Nuh and a quantitative analysis of the BSF in Bihar.

NUH: Qualitative Interviews
- 17 Households, 5 Focus Groups (single gender and mixed)
- Users: 15 Households
- Non-Users: 2 Households and 5 Focus Groups
- Groundwater is saline, did not satisfy the quantity needed for household
- BSF Project started in 2005-06, cement filters

BIHAR: Quantitative Questionnaire
- Users: 100 Households
- Continued Users: 89 Households
- Discontinued Users: 11 Households
- Non-Users: 50 Households
- Groundwater is high in arsenic, iron, and biological contaminates
- BSF Project started in April 2017

CONCLUSION:

Increased purification methods are needing to combat the inadequate quality of water available in these villages. The Jalkalp model BSF is a viable solution to combat biological, iron, and arsenic contamination of water. The stainless-steel shell provides the durability needed for regular use without the risk of breakage. Participants in both areas of this study showed better understanding of the importance of water quality after using a BSF. The biosand filter is a scientifically proven successful water purifier in control environments, but in order to ensure the effectiveness, scalability and sustainability there must be a reinforcement of education discussing the health implication of consumption of poor-quality water, the proper maintenance of such a system, and how to fix damages

FINDINGS NUH:

User Group
- Shortest time of use is 3 months
- Longest time of use is 4 years
- Reported issues include breakage, lack of a tap, insufficient filtered water quantity

Non-User Group
- No filtration is regularly practiced
- Reported health issues: Skin rashes, Stomach aliments, tooth decay, illness of newborns

Coping Mechanisms of Respondents
- Chlorine tablets distributed through ICDS centers; discontinued use due to smell
- People who can afford purchase RO water
- Hand pumps designated for drinking only
- Boil water only when ill
- Village protest against factory practices

RECOMMENDATIONS AND NOTES:

DESIGN
- Mobility
- Controlled Water Flow (Tap)
- Temperature Control

SCALABILITY
- Awareness sessions on health impacts caused due impure water
- Reduction of cost, payment options

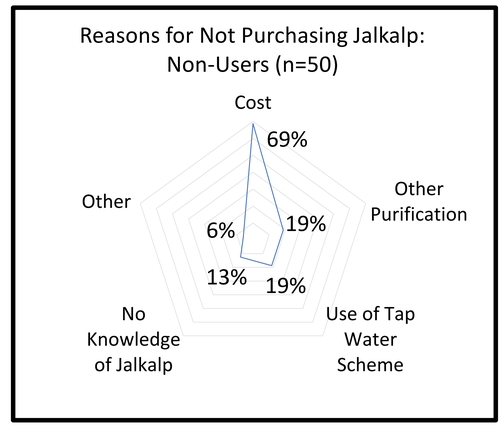
SUSTAINABILITY
- Follow up (Toll Free Number)
- Maintenance Capacity Building
- BSF Damage Solutions (Handbook)

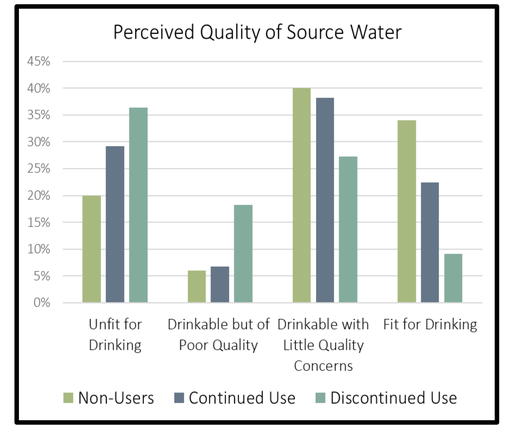
FINDINGS BIHAR:

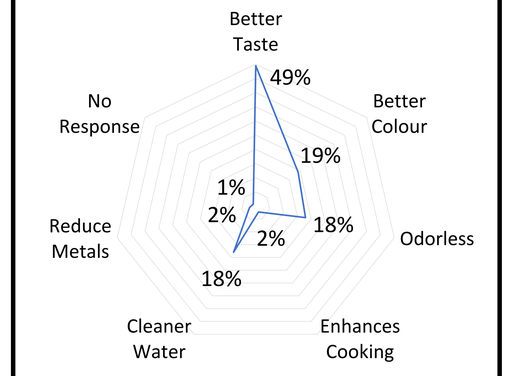
Income as a Factor of Adoption

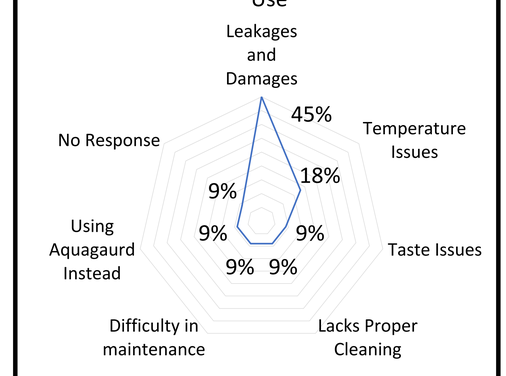
Users: Per capita INR 23,535; Mode 20,000 (14%)
Primary Source of Income: 82% Agriculture, 6% Labor

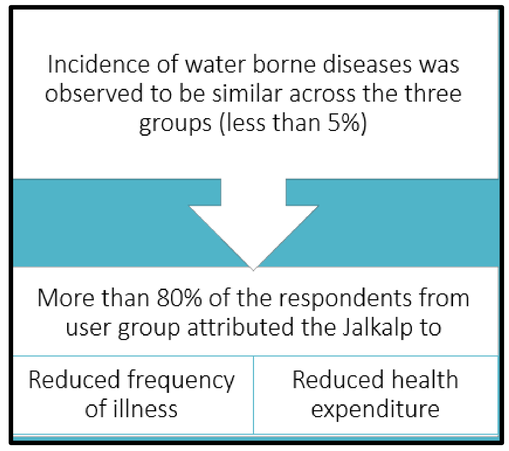
Non-Users: Per capita INR 18,878; Mode 20,000 (18%)
Primary Source of Income: 36% Agriculture, 36% Labor











- A common demotivating factor was damage to the BSF system that made it unusable.
- Common motivating factors included better taste, color and reduction of smell of the water.
- Those without Jalkalp are unaware of issues in water quality and see no need for filtration.
- Those with discontinued use have awareness of poor quality of water after Jalkalp.

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