

Removing Barriers To Point-of-use Water Treatment Products Through Social Marketing And Entrepreneurship

A case study in Western Kenya

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Context

- Behavior change is a critical element in the successful implementation of point-of-use water quality interventions
- Understanding barriers to behavior change is an important and sometimes overlooked step in the adoption of technology

Background

- Safe Water System (SWS)
 - Point-of-use disinfection with sodium hypochlorite solution
 - Safe storage with narrow mouth, tap and lid
 - Behavior change
- CARE – Implemented the SWS in Southern Nyanza Province in 1999
 - Hypochlorite brand name: Klorin
 - Clay pots modified with narrow mouth, lid, and tap
- PSI – began SWS social marketing campaign in 2003
 - Brand name: WaterGuard



Background

- 2003: SWS evaluation in Kenya (*Bratton, 2003*)
 - Survey of Klorin adoption
 - Six project sites: CARE and non-CARE
 - Bondo District had highest adoption rate (14%)
 - Served by the Society for Women and AIDS in Kenya (SWAK)

SWAK

- Provides:
 - Trainings to CBOs
 - Health topics
 - Care of PLWA and orphans
 - SWS
 - Income generating activities
 - Klorin: initiated in 2002
 - PuR: initiated in September 2003
 - Other health products
 - Enhance self-esteem through empowerment and community service



Evaluation Objectives

- Determine adoption of hypochlorite solution in an area served by SWAK
- Identify socio-economic and behavioral barriers to awareness and adoption

Methods

- Population
 - Convenience sample of 8 SWAK groups
 - Actively involved in income generation
 - 1 to 4 villages served per group
- Cross sectional survey
 - Demographic characteristics
 - Household assets
 - Water sources and water, hygiene and sanitation practices
- Water testing: chlorine residual in stored water

Principal Component Analysis

- Developed by World Bank
- Values assigned to household assets
- Asset values summed
- Households grouped by asset score into quintiles standardized for Kenya from 1998 DHS
- For analysis, households grouped into quintiles of equal size

Results

- Number of respondents: 485
- Median age: 32 (range of medians 22-42)
- Females: 90%
- Literacy: 79%
- Secondary education: 24%
- Socioeconomic status (WB quintiles standardized for Kenya)
 - Poorest quintile – 62%
 - Wealthiest quintile – 28%



Results

- Water sources (dry season):
 - Surface water: 58% (range 5-92%)
 - Community piped or protected source: 33% (range 0-94%)
 - Rainwater catchment: 9% (range 0-24%)
- Store water in home: 98%
 - Narrow-mouthed (safe) vessel: 10%
- Soap observed in home: 96%
- Latrine observed: 74%

Water Treatment

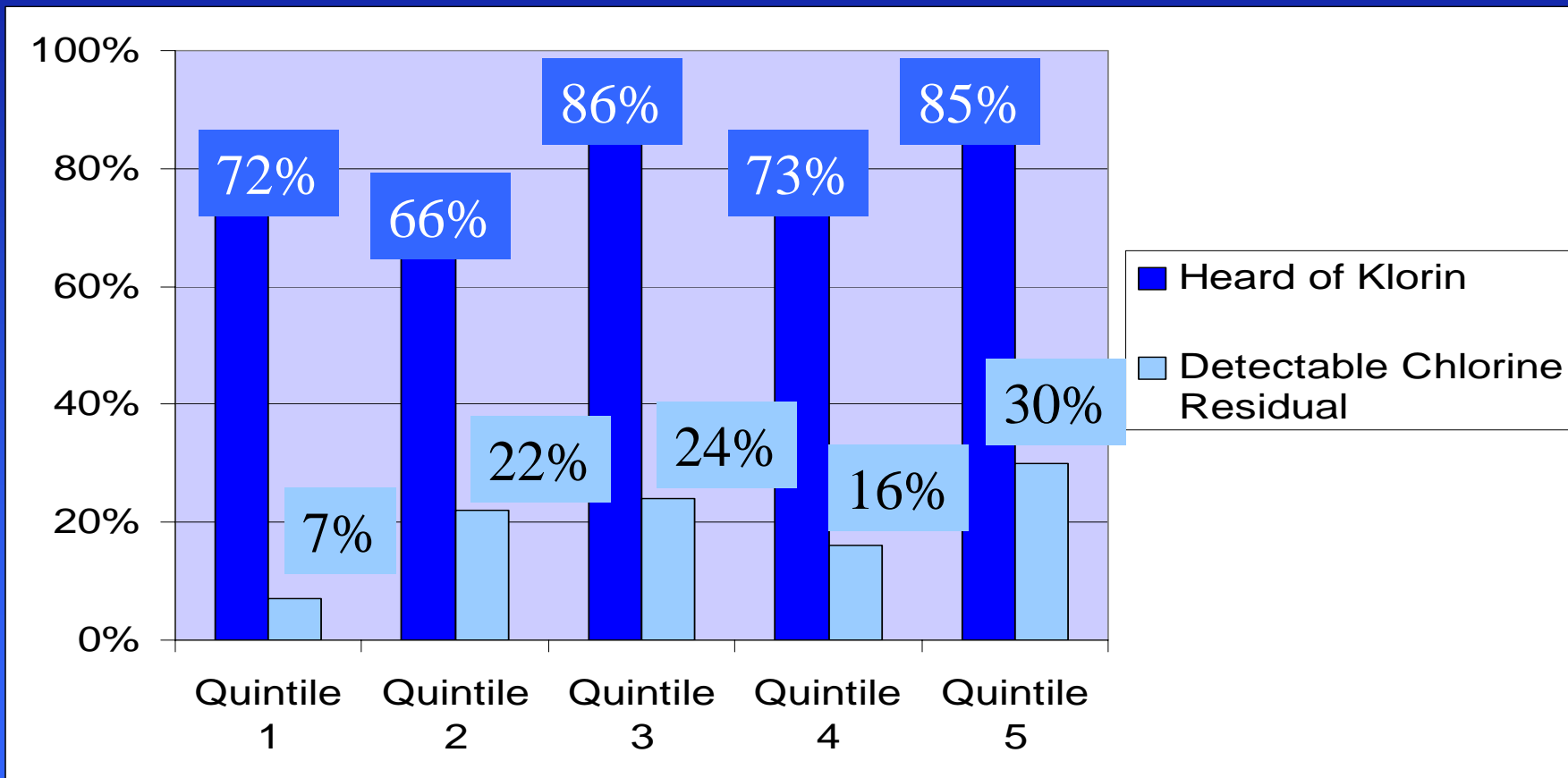
- Heard of Klorin: 77%
 - Ever treated: 33%
- Heard of WaterGuard: 56%
 - Ever treated: 15%
 - Not sold by SWAK
- Heard of PUR: 25%
 - Ever treated: 10%
- Detectable Chlorine residual: 20%
 - Klorin: 17%
 - WaterGuard: 2%
 - PUR: 1%



Behavioral Barriers

- The water source is considered safe: 50%
 - It looks clean: 35%
 - Have used it for generations: 15%
 - Free from germs: 14%
- Why have you never tried Klorin?
 - Expensive: 16%
 - Don't know where to buy it: 14%
 - Bad taste/smell: 10%
 - Don't need it: 7%
- What do you not like about Klorin/WaterGuard?
 - Bad smell: 20%/Bad taste: 11%
 - Expensive: 12%

Percentage Of Respondents With Awareness and Use Of Klorin By Wealth Quintile



Klorin Use by Literacy, Education and SES

Klorin use (detectable Chlorine residual) (N=485)

	Yes (n=99)	No (n=386)	RR	95% CI
Literacy	91 (92%)	293 (76%)	3.00	1.50-5.96
>2 education	41 (41%)	79 (21%)	1.28	1.11-1.46
Q1			1.00	
Q2	23 (77%)	74 (45%)	1.22	1.07-1.38
Q3	23 (77%)	74 (45%)	1.22	1.07-1.38
Q4	16 (70%)	81 (47%)	1.11	1.00-1.23
Q5	30 (81%)	67 (43%)	1.34	1.16-1.55

Multivariate Analysis

Variable	Heard of Klorin (N=485)		Detectable CI Residual (N=485)	
	OR	95% confidence interval	OR	95% confidence interval
At least some secondary education	2.32	1.22-4.42	2.22	1.37-3.62
Literate	2.47	1.51-4.04	2.69	1.23-5.89

- Statistically Significant predictors of Klorin awareness and use were included in the full model
- SES quintiles dropped out of model

Conclusions

- Klorin utilization similar across SES quintiles 2-5
 - SWAK intervention may have helped lower economic barriers to use
- Lower Klorin utilization in:
 - Poorest quintile
 - Persons with lower educational levels
- Additional barriers included:
 - Lack of knowledge of risk from water
 - Taste/smell of chlorine
 - Expense
 - Unaware of where to buy

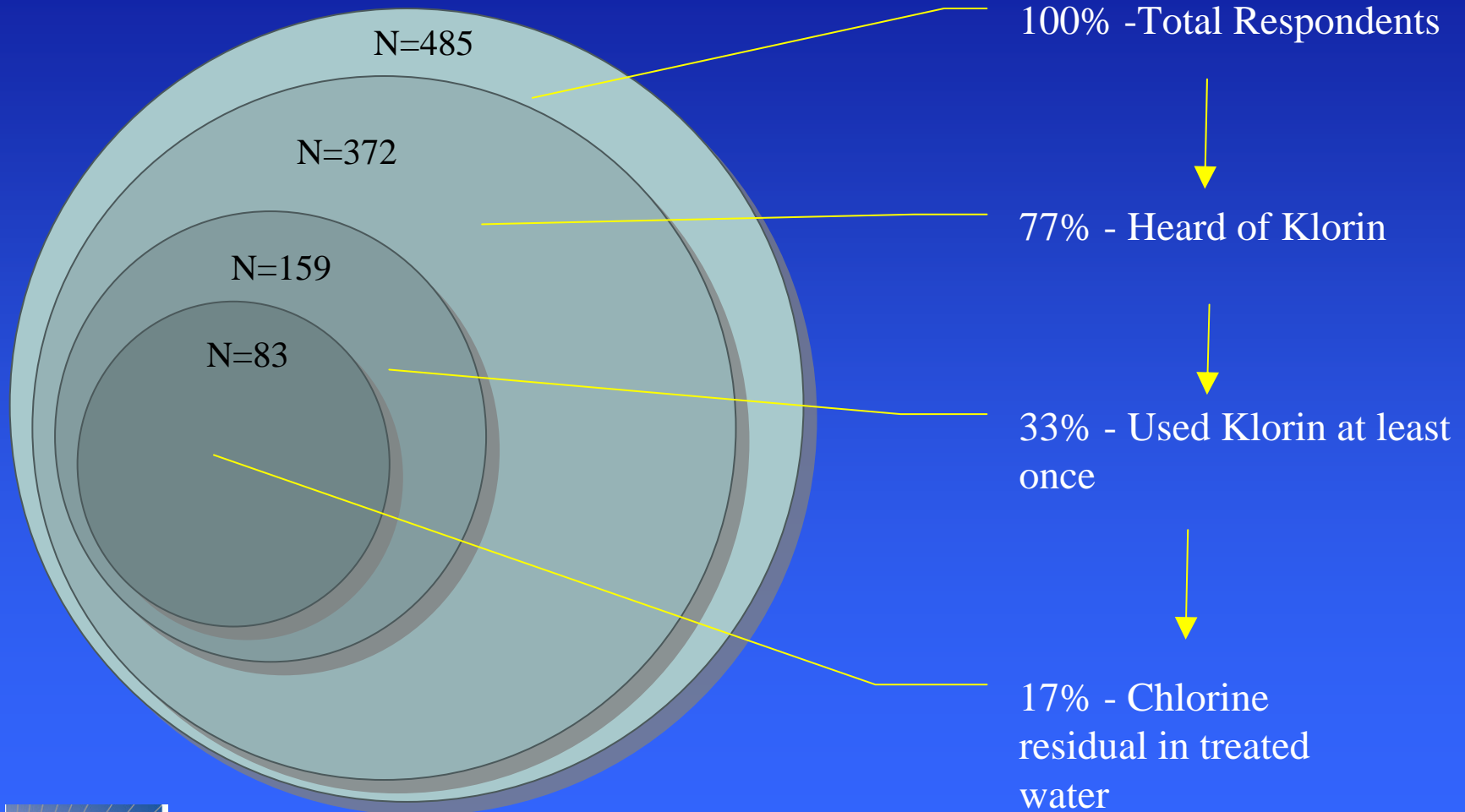
Recommendations

- Target interventions to individuals with lower education and SES levels
 - Alternative pricing schemes
 - Promotional materials appropriate to educational level
- Assess the effectiveness of educational messages from SWAK trainers to members to the communities
 - About risks of unsafe water to health
 - About chlorine smell as cue for water safety
 - About other factors that motivate use of POU products

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Knowledge and Use of Klorin



Klorin awareness

Klorin awareness (N=485)

	Yes (n=372)	No (n=113)	RR	95% CI
Literacy	313 (84%)	71 (63%)	1.40	1.18-1.66
>2 education	107 (29%)	13 (12%)	2.51	1.46-4.31
Q1			1.00	
Q2	65 (48%)	32 (54%)	0.84	0.55-1.29
Q3	82 (54%)	15 (36%)	1.80	1.02-3.17
Q4	71 (51%)	25 (48%)	1.08	0.68-1.72
Q5	83 (54%)	14 (34%)	1.92	1.08-3.45