

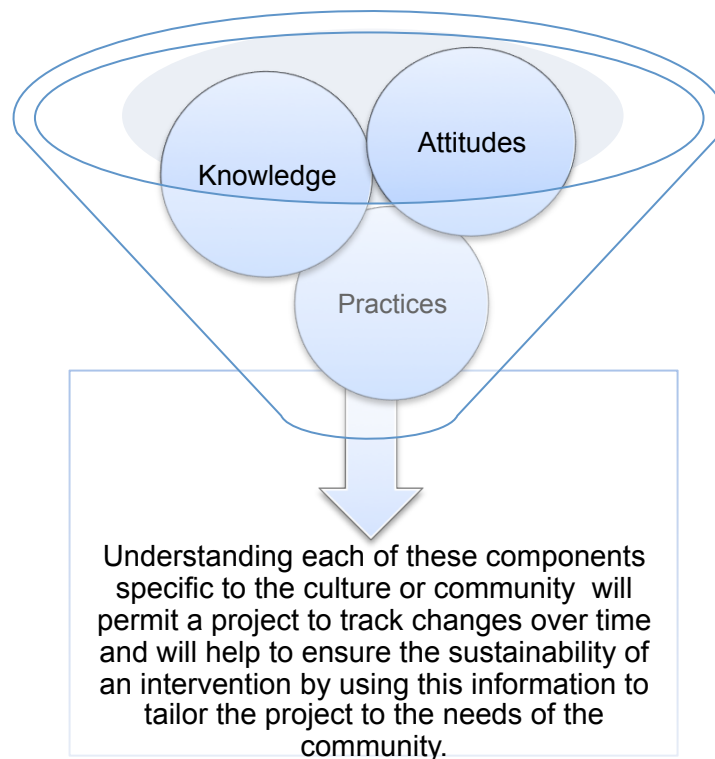
## Development and Implementation of Sanitation Survey Using a Knowledge Attitudes Practices (KAP) Model

By: *Andrea Naylor, MPH*

**After reading this you should know/be able to:**

- Understand the purpose and importance of a Sanitation Survey
- Develop a Sanitation Survey using the KAP Model
- Successfully implement a Sanitation Survey in a developed world setting
- Understand how to incorporate data from Sanitation Surveys with various programs related to water and sanitation in a developed world setting

The primary purpose of implementing a sanitation survey is to facilitate improvements in the health and overall quality of life among a specific community or population. Health improvements can be structural, such as latrines or bore holes, or educational, such as programs focused on health issues related to sanitation. Both can lead to improvements in health and are easily executed with the right funding and materials. However, without knowledge of what your target community perceives as a health priority or without the use of a culturally appropriate education component with your health intervention, these “improvements”, structural or educational, will not be sustainable. One method to determine your community’s priorities, beliefs, and cultural practices, is to use a Sanitation Survey that focuses on determining the knowledge, attitudes, and practices of a community as they relate to sanitation. Implementation of a Sanitation Survey (SS) using the Knowledge, Attitudes, and Practices (KAP) Model to collect information on matters related to sanitation, will bring about lasting behavior changes as well as programs and projects that are evidence-based (WHO, 2008).



## Fundamentals

KAP-based studies have been used extensively worldwide for over 40 years by the World Bank, United Nations agencies, and by both government and non-governmental agencies in areas of family development, education, public health, and water supply and sanitation (Eckman et. al., 2008). Because of the nature of these highly focused assessments, KAP surveys are most commonly designed for a particular region or culture and topic. KAP studies enlighten us on how individuals or groups feel about specific things, what they know, and how they act. They often gauge changes in what know of a particular topic, as well as their attitudes and practices in reaction to a particular intervention such as education programs or introduction of new technologies. KAP studies concentrate on knowledge, attitudes and practices of a particular topic and are carried out twice, before and after the intervention, in order to evaluate the appropriateness and effectiveness of the intervention.

## Introduction

It was estimated in 2005, that almost 20% of the population or 1.1 billion people globally lack access to safe drinking water and over 40% or 2.6 billion people lack access to basic sanitation (WHO/UNICEF, 2005: 40). Globally, 1.6 million deaths are a direct cause of lack of access to and/or poor water and sanitation and poor hygiene practices (Pru" sset al. 2002; World Health Organization 2003). The health problems that are linked to these water and sanitation issues account for 4000-6000 children deaths each day (WSSCC, 2004). It is well known that lack of access to water and sanitation has a large impact on the overall health of an individual from birth. Unfortunately, developing nations are disproportionately affected by this global burden of disease and only 59% of this population was shown by WHO and UNICEF to have sanitation available in their household in 2004 (WHO and UNICEF, 2006). Although worldwide there have been thousands of projects to address water and sanitation issues as they relate to public health with continued improvements since the 1980's, research has shown that due to lack of evaluation surveys on the effectiveness and success of these interventions, many are not sustainable ( Moe et.al., 2006 ).

### Knowledge

- What a community is aware of translates into their understanding of the topic

### Attitude

- A community's opinion on an issue will also give insight to any preconceived notions they possess on the topic

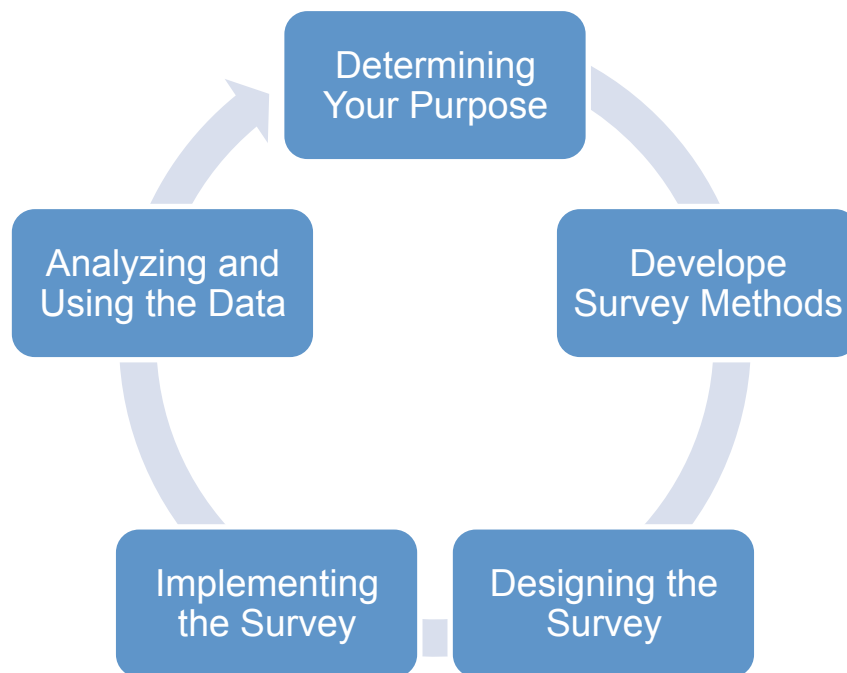
### Practice

- The community's overall knowledge and attitudes are displayed through their behavioral habits

**Below are examples of information a KAP would capture:**

- ✓ What the community determines to be priority health issues  
*Example: Malaria versus guinea worm. If we give community Malaria nets and they use these nets for guinea worm filters, we should be aware of how our agenda or priority got in the way of what the true health issue is according to them.*
  
- ✓ The community's current knowledge of how the current health issues to relate to sanitation  
*Example: I cannot see any parasites so there must not be any in this water. Implementation of educational program on importance of washing hands with soap: Just because you can't see parasites in your water or on your hands does not mean they are not there.*
  
- ✓ The general attitude as it relates to the sanitation issue  
*Example: Community prefers the taste of river water to rainwater. Rainwater catchment projects may not be immediately sustainable for this community.*
  
- ✓ The behavioral or cultural practices the community current implements for protection from disease or ailment  
*Example: Implementation of V.I.P. latrines to encourage sanitary excreta disposal among communities with high incidence of diarrheal disease and death in infants. Because traditionally in this community women do not believe that exclusive breastfeeding for 6 months is important, an exclusive breastfeeding education campaign would be a more appropriate successful intervention to combat diarrheal disease and death among infants.*

**A. Objectives of a KAP Survey Model**



## 1. Determine your Purpose

Each of the following are possible objectives for a sanitation survey:

- To pinpoint breaks in knowledge on topics of water and sanitation practices as they relate to health outcomes
- To describe the cultural profile, education, socio-economic status of those in the community
- To determine the incidence of infectious diseases due to poor water and sanitation practices
- To contrast this data with the baseline data to identify appropriateness and effectiveness of the program that was implemented

## 2. Developing Sanitation Survey Methods

When developing your Sanitation Survey, you want to be sure you have a control village or community that is similar in education, socio-economic status, and cultural practices. You also need to develop a systematic way to deliver the survey as well as do a pilot testing of the survey. Whether one person or 10 people are administering the survey within a community, there needs to be consistency with each survey given. Coding of the survey will help to ensure uniformity throughout the survey methodology as well and will make analyzing the survey much quicker. Training is necessary when a team of surveyors are involved to ensure consistency in asking questions, probing, and methods of delivery. The following questions should be considered before you begin survey distribution:

- ✓ Do you always interview the first person you meet when entering a household? –Often this is an issue in a culture where the head of the household is considered a male and is usually the first to greet you.
- ✓ Do you want the surveys to be completely random? – If you want the survey distribution method to be random, you may have an unbalanced number of one gender or one age range answering the surveys as some cultures may insist that only the male head of the house answers your questions.
- ✓ Do you want to alternate between males and females to ensure gender is not an issue? –Alternating between males and females will allow you to capture for example an unhealthy hygiene trend within a certain gender.
- ✓ Is there an age limit on who the survey is given to? –Sometimes it is not appropriate for those who are too young or too old as they are not involved in the daily household activities related to water or sanitation practices.

## 3. Designing the Sanitation Survey

When designing the Sanitation Survey using the KAP model, each of the following items should be included in the survey: Country, Region, Village, Household number, Age, Gender, Socio-economic status and Education level. The interviewer's name should be included, and the above specific information for the person who is being interviewed, as well as for each person currently living in the household. See Appendix A for Pre- and Post-intervention Survey examples. Additional water and sanitation topics that play a large role in the health of a community include:

- ❖ Personal hygiene practices (hand washing using soap, bathing practices, etc.)
- ❖ Drinking water habits (boiling, filtering, source of drinking water, etc.)
- ❖ Waste sanitation practices
- ❖ Water-shed management (including rainwater drainage, agricultural runoff, etc.)
- ❖ Operation of water sources
- ❖ Food Hygiene Practices (Storage of food, how food is prepared etc.)
- ❖ Sanitary excreta disposal practices
- ❖ Waste Management
- ❖ Infant Feeding Practices (exclusive breastfeeding, other family members who feed the child, etc.)
- ❖ Diarrhea (incidence, prevalence, morbidity, mortality due to, etc.)
- ❖ Management of Diarrhea (ORS therapy, water given , etc

## 4. Implementing the Sanitation Survey

There are several ways to implement the survey including: household interviews, individual interviews or both. Although the KAP survey method is labeled a survey, all questions should be asked aloud. Many times in a developed world setting, the interviewees are unable to read or write at the level the survey is developed and this may prohibit participation in the survey altogether. KAP sanitation surveys are meant to be asked aloud, and if possible with ease, similar to a conversation on a topic. You should be sure to have only one person answer the questions “for the household”. It may be necessary to interview several members of one household in order to get a good idea of the general KAP as they relate to gender, age, education, and economic status. Depending on the health and or water and sanitation topic you would like to explore, the KAP of each topic should be assessed in the survey through a series of questions. Probing questions should be used when necessary. It is important to never use leading questions when delivering a KAP survey as this will skew the answers given. For example: When assessing whether or not an individual or household boils their water for clean drinking water, a leading question would sound like: You boil your water, right?; A more appropriate question to gain an honest response would be: Do you boil your water? It is important to then lead into more probing questions to find out if they boil their water, why they boil it, how they boil it, and what they think that boiling water does to the water. This will give you a good indication of the knowledge, attitudes, and practices associated with boiling water.

### **Potential Challenges with Implementation of Sanitation Surveys:**

- Location of houses – You may need a guide to help with location of houses/compounds
- Translators – may be necessary if working with community where language is rare or not extensive
- Asking questions on sensitive topics such as diarrhea- from personal experience some people are reluctant to discuss this topic
- Acceptance or willingness of community to participate in surveys- It is important to observe and integrate into the community or use locally respected community members to implement surveys; You may need to offer incentive to insure cooperation
- All interviewers may not follow same methods of survey delivery- Determine if you will have to supervise them early on
- Allow for large amount of time to conduct survey- This does not work well if you have time constraints- for developing survey or integrating into community
- Gender roles-men may answer as head of household- do they know the true cooking or child feeding practices? Be sure to take gender roles into account. It may be necessary to hold a focus group in order to hear from the women on a topic.
- Cultural Challenges- Determine if it is culturally acceptable for a female to ask men questions or visa- versa as this will affect who is on your interviewing team

## **Additional Research Methods to collect additional data:**

Additional qualitative methods may be necessary in order to gain insight on knowledge, attitudes, and practices of a particular sanitation topic. These methods include but are not limited to: focus groups, observations, in-depth interviews, key-informant interviews, and social mapping projects using community members. The importance of using additional methods for example is that a focus group with women may give us additional qualitative data that the surveys may miss due to majority of men answering as head of house which is frequently seen in some cultures. Use of GIS may be necessary if working in a remote area. This will allow you to return to the exact spot if necessary to collect additional data. Taking a photograph of the house and possibly the household members that you are surveying, will allow the interviewer to recall more details later on.

## **5. Analyzing and Using the Data**

When you have finished your survey distribution it is necessary to analyze the data to determine trends related to knowledge, attitudes, and practices that are connected to a particular water or sanitation topic. Again, we are looking for trends to determine if there are gaps in the knowledge levels or if there are behavioral changes that need to be addressed. KAP trends tend to differ by region and by culture. Examples of ways KAP surveys have had an impact on global initiatives include:

- Breastfeeding campaign targeting grandmothers in Niamey, Niger on exclusive breastfeeding practices in newborns. Our KAP hospital survey showed us that grandmothers are the primary caretakers of the newborns within the first 40 days and have the biggest influence on the mother's behavior as it relates to breastfeeding. Exclusive breastfeeding will reduce the infant's exposure to diarrheal diseases and possibly death by significantly reducing the infant's exposure to water-borne diseases.
- Education program on proper hand-washing technique among women before cooking or handling food.
- Propose a National Health Strategy for an area or region using evidence-based data from KAP survey to improve access to water and sanitation (Green, 1982).

## **Cost**

The cost of development and implementation surveys is relatively inexpensive as the process, if done correctly, is simple. There is no expert training needed as most often host country nationals offer the best expertise on their own cultural KAP. Cost of survey materials, training a survey team in consistent methods, and analyzing the data are the main costs accrued using KAP model for sanitation survey methods. When compared to other survey methods that look at a wide variety of social ideas and behaviors, the KAP survey model is the most lucrative as it conserves resources and is more narrow and tightly focused than other social and behavioral methods (Eckman, 2008).

## **Global Barriers to Progress in Access to Water and Sanitation:**

Many obstacles to improving access to water and sanitation in developing countries are specific to a region or culture. Research has shown that there are worldwide obstacles including:

- 1) Insufficient investment in water and sanitation infrastructures (Moe et. al., 2006)
- 2) Lack of political will to tackle tough problems in this area (2006)
- 3) Tendency to avoid new technology or implement approaches and apply conventional water and sanitation interventions, without community involvement, over and over again even when they are inappropriate for the specific community (2006)
- 4) Failure to conduct evaluations of water and sanitation interventions to determine whether they are successful and sustainable (2006)

## References and Further Reading

(list a few refs or such, use APA method of citing references)

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## Disclaimer

Statement of how this brief was prepared as part of class (I will provide this language)

## Contact

This document was prepared for one of the following two classes at the University of South Florida (Tampa): CGN6933 “Sustainable Development Engineering: Water, Sanitation, Indoor Air, Health” and PHC6301 “Water Pollution and Treatment”. Please contact the instructor, James R. Mihelcic (Department of Civil & Environmental Engineering) for further information (jm41(at)eng.usf.edu. (learn more about our mission and development education and research programs at: [www.cee.usf.edu/peacecorps](http://www.cee.usf.edu/peacecorps)).

**Appendix A:  
Examples of Brief Pre- and Post- Intervention Survey developed for Drinking water  
improvement Project in Dominican Republic**

Water Filter Project (Intervention includes education and distribution of water filters)

DATE:

**Baseline Survey (Pre-intervention/education)**

House Number:

A. Person who obtained consent		B. Interviewer		
C. Date		D. Time		
E. Country/Region/Village		F. Latitude/Longitude		
G. Gender	1 Male	0 Female		
H. Age				
I. Level of Education	1 Primary	2 Junior High	3 High School	4 Other (higher)
J. Years of School				
K. Number living in household				
L. List Age and Gender	Age	Gender	Sick or Ill? Diarrhea?	With what?
	1.		1 Yes 2 No	
	2.		1 Yes 2 No	
	3.		1 Yes 2 No	
	4.		1 Yes 2 No	
	5.		1 Yes 2 No	
	6.		1 Yes 2 No	
	7.		1 Yes 2 No	

NOTES:

BQ 1. What is your primary source of water?

1 Surface water	2 Rainwater	3 Piped water	4 Closed Well	5 Open well	6 Other
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BQ 2. Who is the primary person who collects drinking water?

1 Mother	2 Father	3 Young girl	4 Young boy	5 Other
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BQ 3. How many times a day do you collect water?

BQ 4. How long does it take you to travel to your drinking water source, collect water, and return?

1- 30 min	2- 30-60 min	3- >60 min	4- DK
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BQ 5. Approximately how much water do you use per day for:

Drinking:	Cooking:	Cleaning:	Washing:	Bathing:	Farming:
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BQ 6. What do you think are the biggest health problems currently facing your family (or village)?

BQ 7. Do you think your current water is safe to drink?

1 yes	2 No	3 DK
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BQ 8. How do you know your water is safe to drink?

1 water is clear	2 water comes from tap	3 no bacteria	4 water is cold/warm	4 Other:
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BQ 9. How do you know your water is not safe to drink?

1 water is dirty	2 from bad source	3 has bacteria	4 water is cold/warm	5 Other:
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BQ 10. What are the different methods for treating water at household level? Have you used any of the following before and if yes, how often?

Type	Knew	Used			
Boiling	1	1 Never	2 Rarely	3 weekly	4 Daily
Chlorine	2	1 Never	2 Rarely	3 weekly	4 Daily
Filter	3	1 Never	2 Rarely	3 weekly	4 Daily
Other	4	1 Never	2 Rarely	3 weekly	4 Daily
Other	5	1 Never	2 Rarely	3 weekly	4 Daily
Other	6	1 Never	2 Rarely	3 weekly	4 Daily

May I see your current drinking

1 Yes      2 No      water?

What source is this water from?	Source of Primary drinking water?	How many liters?	What container do you store it in?	Do you cover it?	Is the water treated?	What is it treated with?	How long ago was it treated? (hrs)
1 Surface water	1 Surface water			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
2 Piped	2 Piped			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
3 Rainwater	3 Rainwater			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
4 Closed well	4 Closed well			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
5 Open well	5 Open well			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
6 Tap	6 Tap			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
7 Other	7 Other			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	

What do you use the treated water for?

1 drinking	2 cooking	3 washing fruits/veggies	4 washing hands	5 bathing	6 washing dishes	7 washing clothes	8 other
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Who drinks the treated water?

1 Everyone	2 Only elders	3 Only children	4 Only sick people	5 No one	6 Other
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Can you give me some of the treated water?

1 yes (collect)	2 No	99 Don't have
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Can you give me some of the water you use for drinking now?

1 yes (collect)	2 No	99 Don't have
-----------------	------	---------------

Can you give me some of the untreated water from the same source you have stored in the house?

1 yes (collect)	2 No
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Can you collect water from the drinking water source now?

1 yes (collect)	2 No
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Observations:

### Example of Post- Intervention Survey developed for Drinking water improvement Project in Dominican Republic

Water Filter Project (Intervention includes education and distribution of water filters)

DATE: \_\_\_\_\_

**END-line Survey (Post-intervention/education)**

House Number: 

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A. Person who obtained consent		B. Interviewer			
C. Date		D. Time			
E. Country/Region/Village		F. Latitude/Longitude			
G. Gender	1 Male	0 Female			
H. Age					
I. Level of Education	1 Primary	2 Junior High	3 High School	4 Other (higher)	
J. Years of School					
K. Number living in household					
L. List Age and Gender	Age	Gender	Sick or Ill? Diarrhea?	With what?	
	1.		1 Yes 2 No		
	2.		1 Yes 2 No		
	3.		1 Yes 2 No		
	4.		1 Yes 2 No		
	5.		1 Yes 2 No		
	6.		1 Yes 2 No		
	7.		1 Yes 2 No		

NOTES:

BQ 1. What is your primary source of water?

1 Surface water	2 Rainwater	3 Piped water	4 Closed Well	5 Open well	6 Other
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BQ 2. Who is the primary person who collects drinking water?

1 Mother	2 Father	3 Young girl	4 Young boy	5 Other
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BQ 3. How many times a day do you collect water?

BQ 4. How long does it take you to travel to your drinking water source, collect water, and return?

5- 30 min	6- 30-60 min	7- >60 min	8- DK
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BQ 5. Approximately how much water do you use per day for:

Drinking:	Cooking:	Cleaning:	Washing:	Bathing:	Farming:
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BQ 7. What do you think are the biggest health problems currently facing your family (or village)?

BQ 8. Do you think your current water is safe to drink?

1 yes	2 No	6 DK
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BQ 9. How do you know your water is safe to drink?

1 water is clear	2 water comes from tap	3 no bacteria	4 water is cold/warm	7 Other:
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BQ 10. How do you know your water is not safe to drink?

1 water is dirty	2 from bad source	3 has bacteria	4 water is cold/warm	8 Other:
------------------	-------------------	----------------	----------------------	----------

BQ 11. What are the different methods for treating water at household level? Have you used any of the following before and if yes, how often?

Type	Knew	Used			
Boiling	1	1 Never	2 Rarely	3 weekly	4 Daily
Chlorine	2	1 Never	2 Rarely	3 weekly	4 Daily
Filter	3	1 Never	2 Rarely	3 weekly	4 Daily
Other	4	1 Never	2 Rarely	3 weekly	4 Daily
Other	5	1 Never	2 Rarely	3 weekly	4 Daily
Other	6	1 Never	2 Rarely	3 weekly	4 Daily

May I see your current drinking

1 Yes	2 No
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water?

What source is this water from?	Source of Primary drinking water?	How many liters?	What container do you store it in?	Do you cover it?	Is the water treated?	What is it treated with?	How long ago was it treated? (hrs)
1 Surface water	1 Surface water			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
2 Piped	2 Piped			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
3 Rainwater	3 Rainwater			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
4 Closed well	4 Closed well			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
5 Open well	5 Open well			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
6 Tap	6 Tap			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	
7 Other	7 Other			1 Yes 2 No	1 Yes 2 No	1 Chlorine 2 filter 3 Other	

What do you use the treated water for?

1 drinking	2 cooking	3 washing fruits/veggies	4 washing hands	5 bathing	6 washing dishes	7 washing clothes	8 other
------------	-----------	--------------------------	-----------------	-----------	------------------	-------------------	---------

Who drinks the treated water?

1 Everyone	2 Only elders	3 Only children	4 Only sick people	5 No one	6 Other
------------	---------------	-----------------	--------------------	----------	---------

Can you give me some of the treated water?

1 yes (collect)	2 No	99 Don't have
1 yes (collect)	2 No	99 Don't have

Can you give me some of the water you use for drinking now?

Can you give me some of the untreated water from the same source you have stored in the house?

1 yes (collect)	2 No
-----------------	------

Can you collect water from the drinking water source now?

1 yes (collect)	2 No
-----------------	------

### Filters:

Did you receive a filter?

1 Yes	2 No
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Can you describe how to use your filter?

Can you show me how to use your filter?

Can you describe to me how to clean your filter?

Can you show me how you clean your filter?

Can you show me the materials you use to clean your filter?

How often do you clean your filter?

Observe filter: Ask if they think they need to clean their filter now?

What training did you receive on the filters, how often, and by whom?

Type	Received	Number of times	By whom?
Handout or written material	1		
Household visit	2		
Group Training	3		
Other:	4		

Are you filtering your drinking water now?

1 Yes	2 No	3 DK
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Why?

1 cleans water	2 prevents disease	3 water is warm/cold	4 other
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Why not?

1 water is clean	2 too hard to do	3 takes too long	4 water is warm/cold	5 Other
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How often do you use your filter for drinking water?

1					
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Please tell what you prefer with each of the following:

Tell if you agree strongly, agree, disagree, or strongly disagree	DK	Agree Strongly	Agree	Disagree	Disagree Strongly
I like the taste of filtered water	99	3	2	1	0
I like the smell of filtered water	99	3	2	1	0
Filtered water tastes better than untreated water	99	3	2	1	0
The filter trainings were useful	99	3	2	1	0
Filtering takes too much time	99	3	2	1	0
Filtering is easy to do	99	3	2	1	0
I could never afford a water filter	99	3	2	1	0
I would purchase a water filter	99	3	2	1	0
I would prefer another filter	99	3	2	1	0
Other water treatments are easier than filtering	99	3	2	1	0
Filtering is better water treatment than others	99	3	2	1	0

Do you think you received enough training on how to use your filter?

1 yes	2 No
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*Observations:*