

# YEMEN'S CHLORINE PROBLEM

Qualitative study of factors affecting demand  
and use of chlorine for household water



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# ACRONYMS

<b>BDM</b>	Behaviour Drivers Model
<b>C4D</b>	Communication for Development
<b>FGD</b>	Focus Group Discussion
<b>HWT</b>	Household Water Treatment
<b>IDI</b>	Individual In-Depth Interview
<b>KII</b>	Key Informant Interview
<b>SBC</b>	Social and Behaviour Change
<b>SBCC</b>	Social and Behaviour Change Communications
<b>WASH</b>	Water, Sanitation and Hygiene

# EXECUTIVE SUMMARY



Ahmed, 8 years, is getting water from the tank located at the camp in which he lives with his family. The generators of the water networks in this governorate are supported with fuel by UNICEF and funded by the World Bank.

Credit: Soliman Ahmed (11-10-2021)

In the face of the ongoing emergency and humanitarian crisis in Yemen, millions of people lack access to water, sanitation, and hygiene (WASH) infrastructure. Many are exposed to dangerous water related diseases like cholera, a disease which has already had a devastating impact on the country's population with over 2.5 million suspected cases between 2016 and 2020<sup>1</sup>. In this context, breaking the transmission routes through safe WASH practices in households and within communities is a priority. Household water treatment (HWT), and chlorination in particular, have been shown to improve the microbiological quality of stored water and reduce the burden of water related diseases. However, acceptance of water chlorination in Yemen is low.

Overcoming the environmental and structural factors is the most vital step in ensuring Yemenis have access to clean drinking water. Without a stable water source and access to chlorine it is, of course, impossible to encourage chlorination.

However, the research highlighted that overcoming these environmental factors would not necessarily lead immediately to an uptake in chlorination. Chlorine still has a fundamental 'image problem' in Yemen, where too many non-users see it as either unnecessary, unpleasant, or even dangerous. These perceptions could be challenged through awareness raising and training in how to use chlorine effectively, but there may also be creative ways of repositioning or even 'rebranding' chlorine to break these negative associations.

The positive news is that there already exists a network of trusted information sources and health practitioners, both locals and internationals, who are already convinced of the benefits of chlorination and prepared to advocate for its use. Implementing any future communications or outreach campaigns through these networks will be vital for their success.

## **Methods and Approach**

This study was conducted between February and September 2021. MAGENTA explored the drivers and barriers of the demand for and use of chlorine as a HWT technique, relying on a mixed-methods qualitative approach, using focus group discussions (FGDs), in-depth interviews (IDIs), key informant interviews (KIIs), and observations. We were able to identify and capture a wide range of drivers utilising UNICEF's Behavioural Drivers Model which categorises behavioural drivers in three categories (Environmental, Sociological and Psychological), each of which are comprised of a variety of subfactors. The research was conducted nationwide across Yemen, with a focus on the six governorates with the highest rates of cholera, namely Sana'a, Al Hudaydah, Amanat Al-Asimah, Dhamar, Amran and Hajjah.

## **Psychological Factors**

In terms of psychological factors, fatalist and religious beliefs - the perception that exposure to disease or contamination is entirely in the hands of God - were found to be an important barrier to water chlorination, as they have a direct influence on one's perceived capability to take steps to protect one's health.

A vast majority of respondents rely on the look, smell, and taste of water to ascertain its safety, which is an ineffective way of preventing waterborne disease. Most respondents understand that water sources can be unsafe – especially stagnant water – however some sources like the government supplied water, bottled water, and some wells are generally perceived as safe.

In this context, the taste of chlorine is a significant barrier to uptake. Many respondents report not using chlorine because it tastes unpleasant and some even believe the unpleasant taste is symptomatic of chlorinated water being unclean or dangerous.

Most people demonstrate high level of understanding of the risks associated with drinking unsafe water. Respondents report using HWT measures such as boiling, using a water distiller, or using cloth to strain the water. However, using chlorine is far from common practice.

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1. WHO, Cholera situation in Yemen, December 2020 <https://reliefweb.int/report/yemen/cholera-situation-yemen-december-2020>

While chlorine users were likely to be knowledgeable about its direct health benefits, many non-users still had limited awareness of what chlorine was and how it could be used as a HWT technique. Indeed, many non-users perceive chlorine to be a dangerous substance or a cleaning product.

Increased self-efficacy, which is an individual's perceived capacity to take actions that they believe will benefit them, is an important driver of chlorine uptake. Most chlorine users seem to have been taught how to treat their water with chlorine tablets during the latest cholera outbreak, whereas non-user demonstrated low awareness of the correct dosage of chlorine for treating the water appropriately. Overdosing water with chlorine contributes to it tasting unpleasant, which helps perpetuate myths around chlorine's efficacy and safety.

### **Sociological Factors**

Sociological drivers are the influence a person's network of peers has on their behaviour. One of these drivers is descriptive norms, or how people think other people behave. During the cholera outbreak, many people said they adopted water chlorination because they understood that people around them did so. The perception that people no longer chlorinate their water because cholera has gone is likely a significant factor in discouraging non-users and ex-users to adopt or maintain the behaviour.

Respondents describe an intense feeling of 'shame' when it comes to symptoms of bad personal hygiene such as diarrhoea and vomiting. Rather than this shame encouraging people to treat their water, there is instead a suspicion that those who use chlorine do so because they are unwell. Chlorine use is therefore, to some extent, seen as a symptom of poor hygiene and sickness.

Many respondents believe in certain myths and misconceptions surrounding the use of chlorine tablets including the theory that chlorine causes kidney disease or infertility, and the suggestion that international organisations influenced by Yemen's enemies are seeking to spread chlorine tablets as a means of harming the Yemeni population. However, despite these rumours, information, and recommendations from organisations like NGOs were predominantly deemed credible.

Gender roles and responsibilities in water management and safety play an important role. It was observed that women are more likely to use chlorine and have more awareness about it than their male counterparts. One reason is that while men are usually responsible for obtaining household water, managing, and ensuring the safety of water is a responsibility that falls largely on the shoulders of women.

### **Environmental Factors**

In a context like Yemen, environmental factors – including infrastructure, the communications environment and government policy – are naturally key determinants in any behaviour.

Access to daily necessities, including water is a key concern for many Yemenis. The urban municipal water supply is unreliable because of diesel shortages and power cuts, so many Yemenis rely on untreated water sources (such as wells or even puddles) or costly water supply options such as water trucks, which are often perceived as unclean, or expensive purified bottled water. There is confusion and misconceptions about which water sources are clean, which contributes to the sense that chlorination is not necessarily required. For example, majority of the respondents trust the water supplied through piped networks by the government that is lifted directly from the ground and perceive it as clean even without treatment. Whereas the source of water supplied through water trucks is unclear, and sometimes despite the water being chlorinated, it is deemed as contaminated and polluted primarily because of the taste of chlorine and uncertainty about its provenance (e.g. suspicion that it is drawn from sources near open sewage).

The search for necessities like water not only absorbs Yemenis' limited financial resources, it also exhausts their emotional and mental wellbeing, so that issues like chlorination are not considered priorities.

For those who do wish to chlorinate their water, accessing chlorine tablets can be very challenging. Participants across the governorates and localities stated that, while chlorine was widely available during the last cholera

outbreak, it is now generally unavailable.

Most participants see in the Ministry of Health, health workers, NGOs and INGOs as trust-worthy (both as chlorine suppliers and information providers). Many participants started to use chlorine, mostly during the cholera outbreak, on the recommendations of doctors and campaign information from the Ministry of Health.

Moreover, exposure to factual and scientific information was found to be a key driver for chlorine acceptance. Most of users credit their high level of awareness of the use and benefits of chlorine to awareness campaigns run by the government and non-government organisations which provided them with credible and useful information.

Finally, grievances against authorities were also identified as a barrier to water chlorination. Not seeing ensuring access to clean water as a personal responsibility, but rather a responsibility that lies with the public authorities, was associated to being a non-user. Placing the responsibility outside individuals acts as a demotivating factor for chlorination.

# INTRODUCTION



Ahmed Nagy Ahmed, a humanitarian Rapid Response worker (RRT) for Cholera, pouring the chlorine pills into water tank, in Taiz City.

Khaled Albana'a (15-08-2021)



## CONTEXT

Yemen is considered the world's worst humanitarian crisis, and the number of people in need in 2021 is expected to remain close to 20.7 million, almost 66% of the population. Close to half of all families are in acute need.

In 2020, Yemen experienced six outbreaks of infectious disease; and conditions are not expected to improve in the coming years. Those outbreaks have been driven by years of conflict. Lack of access to proper healthcare and to clean WASH services leaves Yemeni's vulnerable to communicable disease. And as the conflict wanes on, the intense economic crisis has caused many more people go hungry, and malnourished children, women and men are much more susceptible to illness. The trajectory of the main epidemics and health risks affecting Yemen is expected to continue, with a severe impact on the physical and mental well-being of people across the country.

Between January 2017 and July 2019, Yemen suffered a catastrophic outbreak of Acute Watery Diarrhoea/Cholera with more than 1.9 million suspected cases. According to the WHO, children under five represented 26.1% of the total suspected cases during 2019. The outbreak has affected 22 of the 23 governorates and 313 of the 333 districts of Yemen. Many diarrheal diseases like cholera, spread through unsafe water and sanitation. UNICEF's Communication for Development Section investigated key WASH behaviours to better understand reasons behind the Cholera epidemic as part of their Behaviour Indicator Monitoring studies. The findings highlighted that:

- While 95% of households reported that they wash their hands, only 67% of them wash their hands with water and soap.
- 80% wash hands after using the toilet, but only 66% wash hands before eating and 46% before handling food.
- Overall, only 9% of households reported that they chlorinate their water, 8% use filtration and 5% boil their water.
- Generally, people perceived water as being "already safe".

In this context, use of chlorine for household water treatment has been effective in reducing the risk of diarrhoea and cholera illnesses. Research highlights that "successful chlorination programmes depend not only on the technical and product aspects [...], but also on user acceptability, ease-of-use, taste, smell, and appearance are important in determining if users will accept chlorinated water." It is also noted that "lessons learned for USAID programs on communication related to safe water programmes in other humanitarian and development context highlighted the following barriers in relation to the use of Chlorine: (1) the preference in some target populations for boiling drinking water, (2) the perception of unpleasant taste or smell of chlorine in drinking water, and (3) the perception that chlorine treatment might endanger the health of the family, especially children."

The Yemen WASH Cluster assessment carried out by REACH also provides relevant data. It is noted that this assessment prioritised districts with high level of Cholera, which are likely to have been the target of hygiene and sanitation promotion programmes, and therefore may impact the data. To the question "Do you use any methods to treat your drinking water for better quality?", 73% of males and 81.5% of females reported not using any methods to treat their drinking water. When asking for the reason for not treating their water, the main reason provided was absence of knowledge (39% for female, 44% for men), followed by lack of supplies (41% for females, 36% for males) and finally absence of perceived need (20% for females and 19% for males).<sup>2</sup>

Similar results were shown in a recent study of 2021 conducted in Salh & Al Mudhaffar districts. 28% key informants in Salh district and 25% in Al Mudhaffar district reported that people in their community do not treat their drinking water. In Salh, the main reasons were the belief that it was not needed (44%) and the lack of

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2. REACH, Yemen WASH Cluster Assessment <https://reach-info.org/yem/>

knowledge (28%).<sup>3</sup> In Al Mudhaffar, people reported a lack of materials (63%) and lack of knowledge (38%).<sup>4</sup>

In addition, literature indicates a lack of knowledge around the relationship between water and cholera amongst the population, both as a cause and preventive measure. In a survey conducted in 2017 in Aden, polluted food (65.5%) was the most frequently mentioned cholera causes. Similarly, adequate food safety (79.5%) was the most frequently mentioned preventive method. However, only 15.2% mentioned using safe water as a prevention method.<sup>5</sup> A lesson learnt about social dimensions of past and recent cholera epidemics indicated that a focus on food contamination and its role can be misleading and may eclipse the fact that the main culprit of contamination is water.<sup>6</sup>

The lack of complete understanding and implementation of correct chlorine dosage leads to adverse events and an undesirable water drinking experience, thus perpetuating misconceptions around chlorination, and limiting acceptance. Excess of use of chlorine often leads to important taste alteration of water. At worst, it can lead to severe illness. Underdosing, on the contrary, is insufficient to disinfect the water. A 2017 study revealed discrepancies related to the outbreak preventive and control measures. Examples include a higher number of respondents who received chlorine (48.8%) compared with those who were educated about it (22.3%) or those who used it (18.4%). At the same time, out of 30.4% of people who received a brochure, only 2.4% of the respondents considered it as educative.<sup>7</sup>

Since the cholera outbreak, UNICEF and other key actors have been organising WASH interventions to try break cholera transmission routes, including the distribution of chlorine tablets and the disinfection of water containers at household levels. As part of the WASH response, UNICEF continued to support water trucking, chlorination of trucked water, and monitoring of water quality at all water distribution points.<sup>8</sup> Finally, additional hygiene promotion and community engagement for cholera prevention activities were carried out by other partners and donors, as reported to the WASH Cluster.<sup>9</sup>

Despite such extensive efforts, the acceptance and use of chlorine in households is still very low. As mentioned above, only 9% of households reported that they chlorinate their water in Yemen (2018-2019).<sup>10</sup>

## RESEARCH OBJECTIVES

In the light of the challenges outlined above, UNICEF Yemen commissioned a research study to explore the factors that drive demand for -and acceptance of- the use of chlorine as a HWT technique in Yemeni households. The main objectives of the research are:

1. To capture the level of knowledge of the benefits of chlorination as a water safety/treatment measure, knowledge of the appropriate use of chlorine tablets at home, and adherence to the recommended practices of treating household water on a regular basis.
2. To explore communities' perceptions of water safety, chlorine, and chlorination and to seek to understand the barriers hindering the demand for -and use of- chlorine and the levers which could enhance chlorine acceptance.

Findings from the research and related recommendations will inform future UNICEF programming and the WASH sector aiming at increasing chlorine acceptance in Yemen.

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3. Yemen WASH Needs Tracking System (WANTS) Salh District, Ta'iz Governorate June 2021

4. Yemen WASH Needs Tracking System (WANTS) Al Mudhaffar District, Ta'iz Governorate June 2021

5. Al-Sakkaf K, Bahattab A, Basaleem H. Cholera knowledge, socioeconomic and WaSH characteristics in Aden -Yemen, 2017: a community-based comparative survey. *J Prev Med Hyg.* 2020;61(3):E392-E400. Published 2020 Oct 6. doi:10.15167/2421-4248/jpmh2020.61.3.1529

6. "Social Science Lessons Learned from Cholera Epidemics" *Social Science in Humanitarian Action, issue 1, December 2018.*

7. Al-Sakkaf K, Bahattab A, Basaleem H. *ibid.*

8. UNICEF Humanitarian Situation Report, Yemen Country Office, May 2021

9. Yemen – WASH Cluster Partners Presence (4W Matrix) January – July 2021.

10. Behaviour Indicator Monitoring for Cholera – July 2018 and February 2019

# METHODOLOGY



The humanitarian Rapid Response worker (RRT) for Cholera, pouring the chlorine pills into water tank, in Taiz City.

Khaled Albana'a (15-08-2021)

## ANALYTICAL FRAMEWORK

This research was guided by UNICEF’s Behavioural Drivers Model (BDM), a model that builds on myriad of decision-making and behavioural theories and models and serves as common conceptual framework for the study and practice of Social and Behavioural Change (SBC). The BDM provides a nuanced framework for how psychological, sociological, and environmental factors collectively contribute to human behaviours. Indeed, understanding the drivers behind certain behaviours can be a complex undertaking and traditional approaches often focused on a simplistic understanding behavioural change. It provides a more complex and accurate alternative to linear logical models that rely on rational choice theories which present individuals and communities as rational entities who make decisions by weighing the benefits against the risks associated with a behaviour.

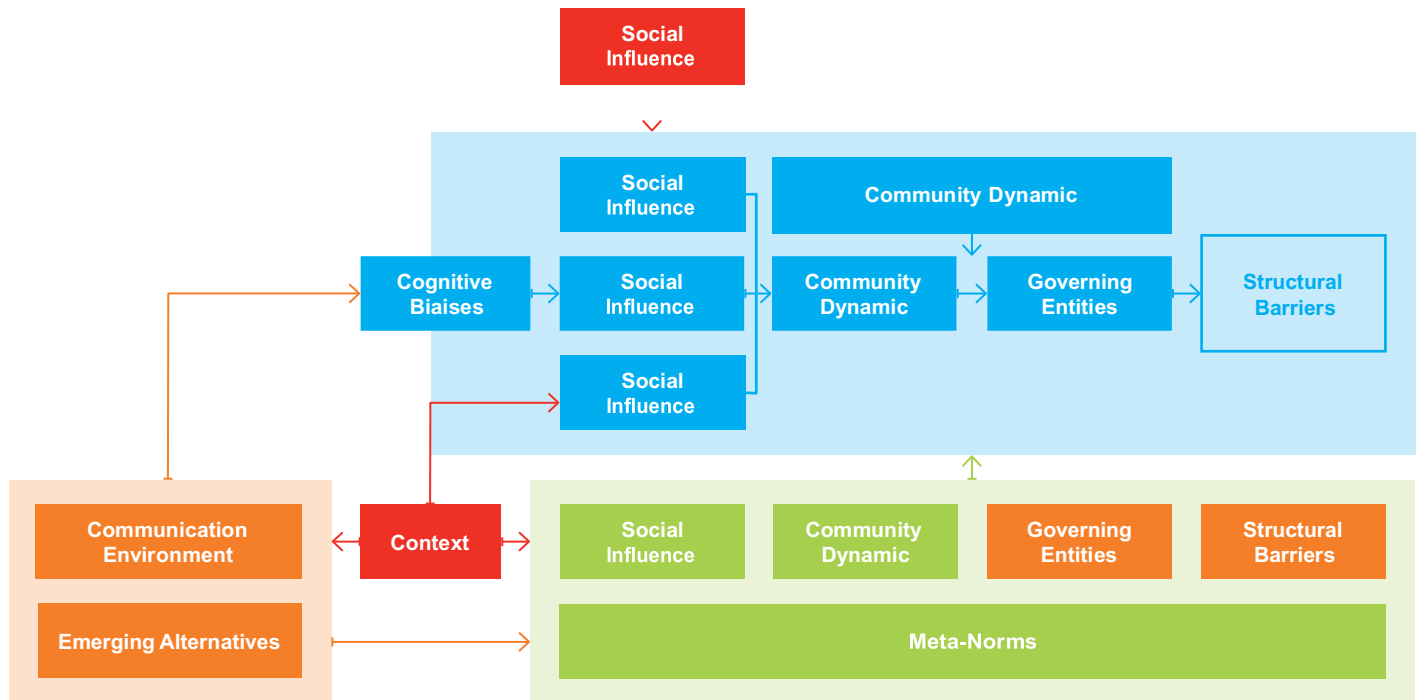


Figure 2 UNICEF MENARO Behavioural Drivers Model (BDM)

The map above is a simplified model which aims to capture the complexity of change of behaviour. It can be understood as a map that explains how individuals think and, consequently, decide on performing a certain behaviour or not. It outlines the three lenses against which drivers and barriers will be assessed in this study: (1) psychological, (2) sociological, and (3) environmental. These categories can be defined as follow:

- **Psychological**, which are the internal factors that persuade or dissuade specific behaviours at the individual level. It includes attitudes, values, interests, beliefs, self-efficacy, intents, and cognitive biases.
- **Sociological** factors relate to how an individual interacts with members of his or her peer group and broader community. It covers social influence, community dynamics and meta-norms.
- **Environmental**, which are the factors related to an individual’s structural environment, including the attitudes of governing and state bodies, economic pressures or incentives, national policies, and the communication environment.

It is important to note that these factors do not operate in a bubble and can influence behaviour simultaneously. While not all the components are relevant in each context, understanding the areas that hold the most influence or are considered crucial within any context can help guide the design, and analysis of SBC-oriented research as well as inform the design of interventions this research would inform.

This model was utilised as the starting point to develop the tools to collect the data and analysis plan of this study.

## RESEARCH FRAMEWORK

This research study seeks to answer the following lines of inquiry:

Lines of inquiry	BDM Factors categories (psychological, sociological, environmental)
Determine knowledge at household and community of water hygiene and water safety practices.	Knowledge (Psychological)
Determine community norms on safe water and practices for ensuring water safety.	Community Norms (Sociological)
Assess the attitudes and beliefs towards water “cleanliness”, understand social normative expectations regarding water safety (“what is my community expecting me to do regarding the water I consume?”, “what do I believe my neighbours believe should be done regarding water safety?”).	Attitudes and beliefs (Psychological)
Assess household perceptions of safe water and how water safety is ensured at household level.	Perceptions of water safety (Psychological)
Determine household and community perceptions of chlorine, chlorine use and supply of chlorinated water.	Community perceptions (Sociological)
Assess and understand the drivers of rumours and misconceptions regarding chlorine and chlorine use and factors in the community that enhance spread of these.	Rumours and misconceptions (Sociological)
Determine the social networks and reference groups of key stakeholders that could be engaged to enhance acceptance of chlorine and chlorination.	Social networks and reference groups (Sociological)
Assess the socio-economic barriers and levers for the use of chlorine as a water treatment/safety measure.	Socio-economic barriers (Environmental)
Assess the ease of use, strengths, and weakness of local chlorine product supply chain at households and in public facilities.	Supply (Environmental)

## APPROACH

This study is a barrier analysis with a focus on six governorates in Yemen suggested by UNICEF as areas that are most vulnerable to cholera outbreaks and other waterborne diseases. The usual barrier analysis methodology utilises quantitative survey tools, however this research adopts a strictly qualitative approach as specified by UNICEF. The research methodology relies on comparing “doers” to “non-doers” of the ideal behaviour to understand the differences between these two groups and point to potential barriers.

### Investigated behaviour:

The demand for and use of chlorination as a water safety and treatment measure at the household level



## Methods

The study utilised a mixed-methods qualitative approach, including the following research methods:

- **Desk Review, including a review of existing literature and stakeholder consultations with subject-matter experts.** Lists of consulted sources and stakeholder consultations are provided in the annex (see Desk Review Documents and Stakeholder Consultations List).
- **Focus Group Discussions (FGDs) with relevant community members (mothers, fathers, boys, and girls)**
- **Individual In-Depth Interviews (IDIs) with relevant community members, similar to participants in the FGDs.**
- **Key Informant Interviews (KIIs) with relevant professionals and community leaders and influencers.**
- **Observations of chlorination at the household and at water vendor points.**

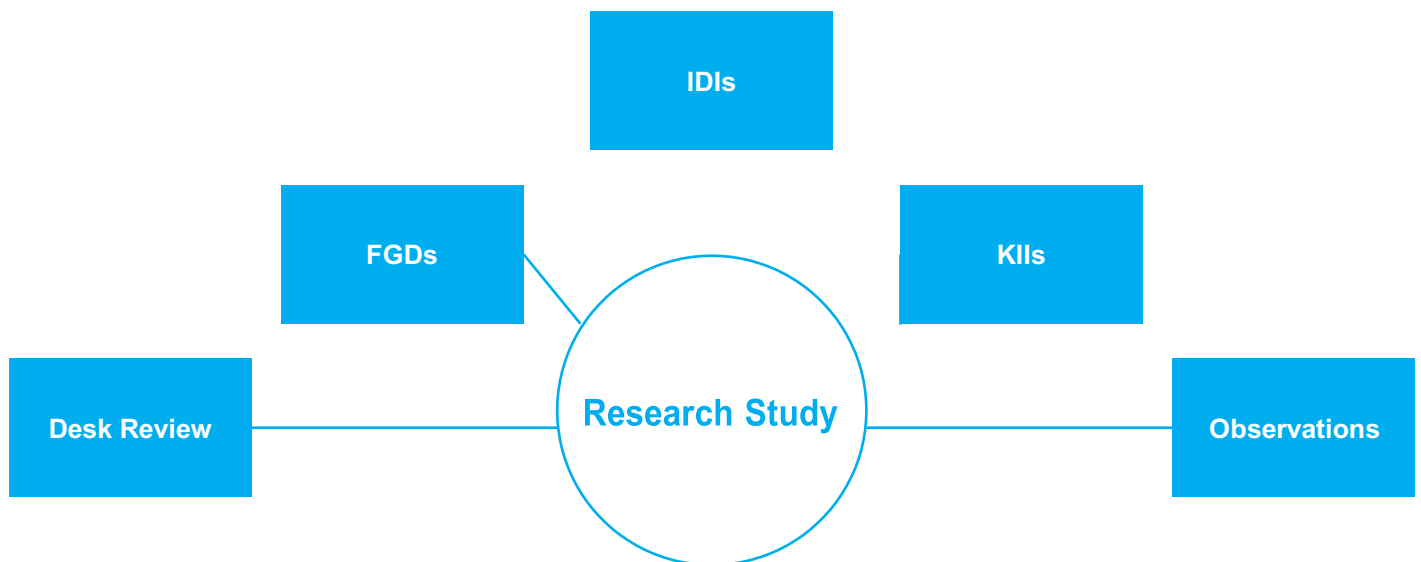


Figure 3 Research Approach

## Sample

The study targets 10 districts from 6 different governorates, including Amanat Al-Asimah, Sana'a, Al- Hodaydah, Amran, Dhamar, and Hajjah. A total of 40 FGDs, 40 IDIs, 40 KIIs and 50 observations were conducted. The selected districts and governorates were targeted due to the highest rates of cholera, and eventually low rates of demand and use of chlorine. Table 1 below provides an overview of the sample per location and research method.

Governorate	District	Urban/ Rural	FGDs	IDIs	KIIs	Observation
Sana'a	Jihanah	Rural	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
	Hamdan	Rural	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
Hajjah	Hajjah City	Urban	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
Amran	Amran	Rural	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
Al Hudaydah	Al Hali	Urban	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
	Al Hawak	Urban	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations

Governorate	District	Urban/ Rural	FGDs	IDIs	KIIs	Observation
Amanat Al Asimah	Az'zal	Urban	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
	Bani Al Harith	Rural	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
Dhamar	Dhamar City	Urban	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	4 KIIs	3 households, 2 water distribution/ vender point – observations
	Jahran > (Almostah sub-district)	Rural	1 w/ mothers 1 w/ fathers 1 w/ boys 1 w/girls	1 x Mother 1 x Father 1 x Boy 1 x girl	4 KIIs	3 households, 2 water distribution/ vender point – observations
			40 FGDs	40 IIs	40 KIIs	50 observations

Table 1 Overall Sampling

## FIELDWORK

### Recruitment

The research team designed a screening tool for the recruitment phase. The tool included specifications such as the age, sex, educational level, marital status, role, family income, and occupation, in addition to asking about whether they chlorinate their water or not. One of the main objectives of the recruitment was to ensure that 70% of the FGDs and IDIs were conducted with non-users of chlorine and 30% of groups with users, to enable a comparative analysis of behavioural determinants of the target behaviour. For each district, interviewers visited areas with the highest population density to conduct the recruitment. Each interviewer identified at least 9 respondents to participate in the FGDs and the IDIs. For the KIIs, interviewers conducted screening interviews to identify participants for at least 10 interviews with health and water officials, community leaders and local professionals.



## Data collection

Data collection started on 26<sup>th</sup> of June 2021 and was completed on 10<sup>th</sup> of August 2021. Data was collected by a team consisting of 15 interviewers and 15 note-takers. All interviews were conducted in Arabic. One interviewer and one note-taker were present in all interviews, one person asked the questions while the other acted as a scribe, documenting by hand the key elements of the participant's answer.

Data collection ensured a 70:30 non-doer/doer ratio and a 50:50 gender divide for the IDIs and FGDs with community members. For KIIs with professionals and community leaders, no gender was specified as respondents spoke from their position of being key experts in different sectors or being key influencers in their community having unique knowledge related to peoples' behaviour with respect to the use of chlorination and access to safe drinking water.



Respondents were selected using a 'purposive' or 'convenience' sampling for the FGDs and IDIs, meaning

FGD with fathers in Sana'a Governorate, Hamdan District

selecting members of the community who can best provide information on the topic at hand. 'Boy' and 'girl' respondents in FGDs and IDIs are people between 18-25 years old that are not married nor have children, whereas 'mothers' and 'fathers' actually refers to respondents that are 24+ and are married, including people who already have children and some who do not. Wherever possible, participants from different background and contexts were included in the research. Many characteristics were considered during recruitment to ensure a diversity of points of view and experience, including education background, socio-economic status, age, in addition to location, gender, family size and marital status. Male and female FGDs were held separately.

Similarly, for KIIs a 'purposive' and 'snowball' sampling technique was adopted to select our Key Informants in different sectors in the six governorates. Key informants include representatives from the public and private sectors, associations, community leaders, religious leaders, and district officials among others.

## QUALITY ASSURANCE

Quality assurance measures were implemented throughout the preparation, data collection, and analysis process. These include:

- **Questionnaire translation:** The team translated and back translated all the discussion guides for quality control purposes, and to ensure that all the translations are accurate.
- **Audio recordings:** High-quality audio recordings of the full FGDs, KIIs and IIIs were provided.
- The team ensures that all the interviews are audio recorded, as well as a note-taker focused on capturing the details of the conversations. Both audio recordings and notes were provided along with the translated transcripts of the interviews.
- **Interview duration:** During the initial phase of data collection, the expected duration of the surveys were observed. Based on the average duration of the initial interviews, relevant changes were made to the discussion guides, and sections more relevant to the use of chlorine were focused upon.
- **Photos:** At least two photos from each FGD and photos from some KIIs were shared by the data collection team.

## ANALYSIS

Audio recordings were transcribed verbatim in Arabic then translated to English. The transcription was done in a word-for-word verbatim manner to make sure every relevant idea, quote, and theme is captured in the analysis. Interviews were coded in English by the study team using a priori codes, drawing from the Behaviour Drivers Model. Data were analysed using an iterative process of identifying key themes and ascertaining categories through continuous team discussions throughout this process to help validate interpretation and limit human bias in the interpretation.

## CHALLENGES AND LIMITATIONS

UNICEF, MAGENTA and New Pathfinders (who conducted data collection) all contributed to the design and implementation of this research study, with the aim of making it as comprehensive as possible. However, as with any research project, there were some limitations:

- **Qualitative research limitations:** the findings and results presented in this report should not be interpreted as completely generalisable in the same way quantitative research results are. This research, however, present a significant step towards fully understanding the dynamics governing chlorine acceptance in Yemen.
- **Identifying doers of the investigated behaviour:** Many participants who categorised themselves as “users of chlorine” during recruitment reported not using chlorine at the present time during the interviews. Those participants who reported using chlorine regularly during the 2016 cholera outbreak now claim that chlorine tablets are barely available anymore. Therefore, identifying participants who use chlorine at the present time was a challenge.
- **Locating chlorine tablets distribution points for observations:** The initial research methodology included observations at chlorine tablets distribution points. However, the data collection team from New Pathfinders reported during the recruitment that no chlorine tablets distribution points were available except for a few pharmacies in urban areas. To compensate, MAGENTA increased the number of household observations.
- **Security and access challenges doing research in Yemen:** The data collection team reported security and access challenges in the governorate of Sana’a, especially in Jihanah district, which forced the team to suspend the data collection in the area for a few days until safe visits were guaranteed. Those access challenges were overcome thanks to coordination with community figures.
- **Facilitation of FGDs:** In certain FGDs, some participants did not provide explanatory answers to all the questions; the participants would simply agree on one opinion which was shared by other members of the group. This was particularly the case in FGDs with mothers, which may indicate that they are not used to discussing topics like this in a group. In these cases, enumerators encouraged the participants to discuss and speak openly to the extent possible.
- **Respondent fatigue:** the field research team reported seeing some respondent fatigue during the fieldwork, especially during FGDs, due to the length of the discussion guide, which was likely to affect the quality of responses towards the end. It was therefore decided to remove the section 3 on cholera during FGDs (see FGD Discussion Guide) when over 50% of data was collected – through a thorough review of the transcripts, the research team concluded that enough findings on cholera were gathered during the first half of data collection. It was decided to remove section 3 specifically because cholera was usually a topic of interest throughout the rest of each discussion.

# KEY FINDINGS



Abdo Ali's family, while receiving the hygiene kits, water chlorine pills and educational materials by the Rapid Response team (RRT) for Cholera. Abdo is 45, lives in Al-Dairi, in the Khalid Bin Al-Waleed area, Al-Mudhaffar District, Taiz governorate.

Credit: Khaled Albana'a (15-08-2021)

# PSYCHOLOGICAL DRIVERS AND BARRIERS OF CHLORINE ACCEPTANCE



There are numerous psychological drivers and barriers that influence the demand for and use of chlorine as a HWT technique. These drivers and barriers are related to perceptions of health challenges, water safety and chlorine itself and include specific behavioural determinants like awareness and knowledge, self-efficacy, and beliefs among others.

## Perceptions of Health Challenges

### Awareness and knowledge

Respondents across all governorates highlighted the myriad of health challenges that their communities face every day. There were recurrent reports of epidemics of water-related diseases, such as cholera, dengue fever, malaria, or bilharzia, suggesting high levels of awareness around present health challenges in Yemen. Many also demonstrated knowledge of the causes behind the spread of these diseases. They predominantly mentioned the lack of effective solid waste and sewage management systems in their community as the main cause. A community leader in Al Hawak, al Hudaydah said:

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*“What bothers them [people] the most is the lack of hygiene. People talk about streets being unclean and the presence of stagnant water. The Yemeni community is conservative; there is no house that is not clean, even the poorest. Thus, the main reason for the hygiene challenge is the streets. If any house or neighbourhood has sewage overflowing nearby, diseases will be transmitted into the house. The Yemeni community maintains hygiene inside the house and on the personal level as well, this has been the case for a long time. It is impossible to find a house that is not clean. There is no hygiene in the streets or the city itself and that is what bothers them the most. - Community Leader, Al Hudaydah, Al Hawak*

In fact, a majority of respondents, if not all, expressed serious concerns about the accumulation of garbage in the streets and frequent overflows of wastewater, which in turn result in the proliferation of mosquito breeding sites and the contamination of sources of drinking water. Another regularly reported cause of disease proliferation is the limited knowledge on disease prevention and adoption of good hygiene practices.

### Emotional wellbeing

Respondents cited a broad range of problems affecting their everyday lives, from the scarcity of water to health challenges, to financial and employment issues, to the rise of prices in basic products like gas, to the impact of the ongoing war. In this context, it is perhaps not surprising that treating water is not a priority. Furthermore, the harsh day to day reality is also likely to affect people's emotional wellbeing. Emotional wellbeing is an important psychological driver. High levels of stress can impair one's ability to make the best choices for oneself and can paralyse change and adoption of positive practices like water chlorination.

### Fatalist and religious beliefs

Fatalist beliefs refer to people feeling that issues such as health are beyond an individual's personal control. In our sample, fatalist beliefs were often expressed in the context of religion, and that exposure to disease or contamination was entirely in the hands God (or Allah). This belief was mostly observed in the governorate of Sana'a, Amanat Al Asimah, and Dhamar:

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*“No one can hide from God’s destiny because the disease is from God” Boy, Sana’a, Jihana.*

Such beliefs highlight people’s limited sense of control over their ability to prevent themselves from getting sick and cure diseases. This attitude has a direct influence on one’s perceived capability to take steps to protect one’s health. The stronger those beliefs are, the less people will be willing to change and adopt protective behaviours like water chlorination.

#### **Views on cholera**

There is a consensus that cholera is a dangerous disease that causes death. A majority of respondents demonstrated moderate or high awareness and knowledge of the causes, symptoms, and severity of the disease. They are aware of precautionary measures; of the ways they should treat symptoms and what happens if symptoms go untreated. Notably, they understand that poor hygiene and drinking unsafe water increases chances of contracting cholera. This level of understanding was encapsulated by this mother in Dhamar City:

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*“It [cholera] is a water-borne disease and its symptoms include acute diarrhoea and vomiting. If water is contaminated, it is likely to cause cholera.” - Mother, Dhamar City*

Increased awareness and knowledge around cholera, however, did not turn to be a significant driver for chlorine acceptance. Though it was frequently brought up as a health challenge, cholera does not appear to concern many respondents, especially non-users, as much as it used to. If the outbreak of cholera in 2016 infected a staggering million people, but nowadays people tend to describe it as something that belongs to the past, and as an easily “curable” and not fatal disease:

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*“We were listening a lot about cholera few years ago but now it’s not a big problem anymore. We go to the pharmacist and take IV fluids and we get well” - Father, Sana’a*

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*““Cholera is over” - Sheikh, Amran*

No longer seeing cholera as a threat was found to be an important psychological barrier to the use of chlorine tablets among the non-users and ex-users. There was a strong tendency for respondents to associate chlorine with times where cholera was raging, and when chlorine was widely available. It is possible that Yemenis see chlorine as a short-term coping strategy to protect them from immediate risks of cholera contamination, rather than a credible and effective HWT technique which could be used in the long run. This way, chlorination did not turn into a habit for those who once adopted it and did not become part of their daily life.

## **Perceptions of Water Safety**

#### **Views on water quality**

Yemen has suffered from a broad range of issues related to water over the past year. In addition to recurring complaints about water scarcity, an overwhelming majority of respondents also expressed their dissatisfaction with the quality of their water, reporting that it is contaminated and that it has deteriorated throughout the years. This seems to be a systematic problem across most governorates, regardless of the source of the local

water supply, although some urban respondents are somewhat happier with the quality of the water in their neighbourhood. In the urban centres of Al Hudaydah, Hajjah and Dhamar, people who rely on piped water supplied by the Local Water and Sanitation Corporations (LWSCs) through the “Water Project”, describe it more positively:

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***“Drinking water is from the water supply project [...] The water is clean and good. There is nothing wrong with it.” – Mother, Hajjah City***

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***“I am forced to be satisfied with it as there is no other alternative [...] The quality of the water is good given the situation” – Father, Al Hudaydah, Al Hawak.***

Respondents in these urban areas see the water from the “Project” as clean and fresh, though some also report it often gets contaminated by sewage when raw sewage overflow occurs. In fact, people’s biggest concern in these areas is water scarcity. Water from the project is not supplied daily, but rather every two or three days, due to frequent electricity cuts. Since the municipal water supply is intermittent, water has to be stored for significant periods in the home. Respondents described using various types of containers, such as “Dibab” (plastic containers), depending on the use:

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***“We use water buckets for daily washing, ablution, and showers. While we keep water barrels closed, we also use them to wash utensils, equipment, and cooking. Finally, there are big water bottles that are used specifically for drinking” – Boy, Al Hudaydah, Al Hawak***

Water can become contaminated, not only at the source, but also due to unsafe consumer storage and handling practices at the household level. Factors contributing to this problem can range from inadequate protection, the use of unhygienic methods to dispense water from containers, or lack of protection against contamination introduced by vectors and inadequate cleaning of storage tanks.<sup>11</sup>

Storing water is also very common in rural areas, where respondents often do not have access to the ‘project’ and therefore rely on other water sources, including traditional wells. But the drought in Yemen has had a devastating effect on the availability of water from these sources. Respondents claim a great number of wells have dried up due to the lack of rain. Other say wells in their village are heavily contaminated and people often need to fetch water from wells in neighbouring villages which they perceive as clean and fresh. This was a common practice in the districts of Jihanah and Hamdan in Sana’a governorate.

Another common solution for getting water in both urban and rural areas is buying water from private water trucks when financial resources allow it. People arrange appointments with the owners of the trucks, who then bring water to fill their tanks. The quality of this water is often questionable. Many respondents mention that the owners of the truck are uninterested in the quality of the water they bring, that they do not take good care of tankers carrying water, that they suspect the truck owners use the same truck to carry sewage and drinking water, and that truck owners usually offer rather blithe reassurances that the water is clean. Respondents’ scepticism here suggests a high awareness of risks associated with drinking truck water.

In urban areas, people also mention buying “Kawthar water”, the common term for bottled water. Bottled water is expensive, and many respondents said that they could not afford it. Those who could, usually tended only to

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11. Nath KJ, Bloomfield SF, Jones M (2006). Household water storage, handling and point-of-use treatment. A review commissioned by IFH; published on <http://www.ifh-homehygiene.org>

buy Kawthar water when the project supply was interrupted. Many respondents across all governorates also reported getting their water from Sabils, the philanthropic and public water supply. There are differences in perceptions around the quality of Sabil water: some see it as safe, but a majority believe Sabil water is not safe to drink and would rather use it for other domestic purposes like cleaning or washing clothes. Sabil points are not widely available, and observations showed that very often the queue on the Sabil can be quite long. This may demotivate people from attempting to visit Sabil points.

Regularly obtaining clean water from safe sources is a privilege that most respondents don't have. They often have no other choice but to drink water from the nearest available source. Respondents often noted that this was a last resort option, but their attitude towards their water supply was often accompanied by the aforementioned fatalist and religious beliefs that are known to be important psychological barriers to behaviour change.

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*“Honestly, there is carelessness, and the situation made them not care. They all say, “What can we do? We drink what is available. There is nothing in our hands to do. We live by God’s grace and mercy”” – Aqil<sup>12</sup>, Sana’a, Hamdan.*

### **Assessing water safety**

Adopting safe water behaviours such as treating water is conditional to one’s ability to assess whether water is safe to drink. A vast majority of respondents said they rely on the look of the water, its odour and taste to ascertain its safety. Respondents mentioned the colour change that occurs when water was left to go stagnant, suggesting they believe unsafe water will turn yellow over time. Many see salinity as an indication of bad quality as well – indeed, salinity seems to be one of the main factors in discouraging people from drinking. Respondents also cited concerns over sediment or particles floating in the water. Many mentioned relying on water colour and taste change when they prepare tea or coffee:

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*“If you want to check the purity of water, you can fix some tea. If the tea looks purely red, the water is clean. If not, the quality of water is not good.” – Mother, Dhamar City*

These sentiments are common across the different governorates and urban/rural areas surveyed but are unreliable indicators of the safety of water. Clearly there is a risk in categorising unsafe water as being safe, but we also observed the opposite phenomenon as well, where people felt that chlorinated water was unsafe because of its unusual taste/aroma. This is particularly relevant in those districts where water is chlorinated at the source in urban areas like Al Hudaydah and Hajjah City. There, a few respondents said they were dissatisfied with their water and chose not to drink the water precisely because its chlorinated:

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*“Most of the time the water from the water supply project is extra chlorinated, so we try not to drink from it; because the smell of chlorine in it is strong, or the colour is different; not clear [transparent].” – Girl, Al Hudaydah, Al Hali*

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*“Normal water that has been treated with chlorine, and that was used for the water project in the past. We are not satisfied with it, because it is treated water, and we are exposed to illnesses like kidney stones, because of the chlorine or its taste. Too much of it leads to*

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12. An Aqil is a dignitary residing in the local area, often democratically elected, and who often has a responsibility for security

Some also feel that chlorination of water is a sign of impurity. If chlorine is used, it suggests that there was something wrong with the water itself. “Sometimes you’d smell the chlorine because it was mixed with sewage” a young man in Al Hawak commented.

Bottled water, or Kawthar water, is perceived as safe by most respondents who report drinking it when resources are available. Kawthar water is regularly described as “sterilised water”, “potable water” or “purified water”, except in the capital Sana’a and in Amanat Al Asimah governorate. This could be because, in 2015, they were reports of contaminated bottled water in Amanat Al Asimah that caused diarrhoea, typhoid, and other illnesses.<sup>13</sup>

Perception of water safety is a key determinant of whether people will treat their water with chlorine. If they believe their water is already safe then, naturally, they will not take any additional measures to protect themselves. It is therefore important that consumers have a better understanding of how safe their water actually is so that they can make informed decisions.

### Household water treatment measures

Many respondents report drinking water from sources that they know are not safe, usually because of the scarcity of ‘safe’ water. When water is diagnosed as unsafe (through water safety self-assessments as outlined above), respondents report using household water treatment measures. Perhaps unsurprisingly, those who treat their water are more likely to be users of chlorine, but many use alternative purification methods. The methods which were frequently mentioned across all governorates are:

- Boiling the water is the most reported practice across all governorates. It is believed that by boiling one can effectively clean it and eliminate dirt and bacteria.
- Using a water distiller at home. Many respondents say they own a water distiller at home. A water distiller is perceived to be one of the most effective methods of water treatment to remove contaminants.
- Straining water through a cloth. In this case, people report putting a cloth on a top of a jar in which they pour water to use for drinking water, making tea etc. The perception here is that the cloth keeps away the residues or the dirt. Straining alone is not a sufficient form of treatment.

This is inconsistent with findings from the desk review which suggest that a vast majority of Yemenis in districts affected by cholera (81.5% of women and 73% of men) do not treat their water at all.<sup>14</sup> This points out to a potential participant bias.

A majority, if not all, of respondents across all districts demonstrated high level of understanding of the risks associated with drinking unsafe water. Those who understood the risk of contracting diseases were significantly more likely to be users of chlorine, but the vast majority of non-users also have very high awareness of the health consequences of unsafe water. We can therefore conclude that a gap in awareness and knowledge does not represent a significant psychological barrier to safe water behaviours such as treating water.

## Perceptions of Water Chlorination

### Awareness and knowledge around chlorination

We found awareness of the use of chlorine in treating water among users, ex-users, and non-users, however a significant number of respondents had never heard of chlorination before, which of course presents a significant psychological barrier to chlorine uptake. There was no particular gender or age bias among those who were or were not aware of chlorination, however respondents who claimed not to have any knowledge of chlorination

13. “Yemen’s contaminated bottled water”, *Arab Reporters for Investigative Journalism*, 26 July 2015, <https://en.arij.net/investigation/yemens-contaminated-bottled-water/>

14. REACH, Yemen WASH Cluster Assessment, <https://reach-info.org/yem/>



were more likely to come from Amanat Al Asimah (both urban and rural districts), as well as other rural districts like Amran and Jahran, Jihana and Hamdan.

As mentioned above, awareness of the risks related to water that appeared turbid or dirty was widespread amongst users and non-users alike. The basic understanding that water treatment could help to avoid diseases like diarrhoea did not appear to depend on a high educational level, economic standing, gender, or geographic location.

Perhaps predictably, chlorine users were more likely to understand the direct health benefits of chlorine, acknowledging its effectiveness in killing bacteria and sterilising water to make it safe for drinking. A few non-users also demonstrated understanding of the relationship between chlorination and health, especially in urban districts, like this student in Al Hudaydah:

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***“Germs are destroyed once the chlorine tablet is added. So if there are any germs or bacteria it would neutralise them. Germs and bacteria are the main causes of diseases and their infection, so people must use chlorine to kill bacteria inside water.” – Boy, Al Hudaydah, Al Hawak***

However, most non-users demonstrated very limited understanding of the benefits of chlorination. Not only does this lack of knowledge hinder uptake of chlorine tablets, in some cases gaps in knowledge also leave room for great suspicion. Many non-users reported that chlorine is a dangerous substance that can cause sickness, including kidney problems and sterility. One contributing factor could be that there was a strong tendency to associate chlorine with cleaning purposes: “chlorine is for cleaning purposes only, not for drinking” Father, Sana’a, Hamdan.

### **Self-efficacy around chlorine tablet use**

Respondents suggested that use of chlorine is conditional on skills and understanding acquired through experience or training (demonstration, awareness raising). All users and ex-users seem to have been taught how to treat their water using chlorine tablets during the latest cholera outbreak, often through home visits conducted by health workers and NGOs. The knowledge that one tablet should be used for every 20L of water seem to be widespread among these two groups of respondents. Indeed, a majority of observations at households of chlorine users showed that most users dissolve one tablet for every 20L, as recommended.

Non-users, however, consistently cited confusion around the correct dosage of chlorine for treating their water appropriately, indicating low self-efficacy, (self-efficacy is a person’s conviction that they can successfully perform a specific behaviour and achieve certain goals). Interviews suggest that many non-users are not sufficiently trained on how to use it. Sometimes, even the trusted figures in the community, on whom people would usually rely for similar matters, demonstrated low self-efficacy regarding the use of chlorine tablets:

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***“They asked me, but I could not answer, or tell them how much to put in, because too much chlorine is harmful. It is not available, and I do not have any information to give them. Even if it was available, and someone came to ask me about it, I would not be able to help them. Using too much of it is harmful, at least that is what we heard about it. [...] One of the residents, their friend got some from the village, because teams conducted visits and distributed it. He came and asked me how to use it, how to put it in the water tank, and how much to put in. I told him that I do not know anything about it.” Aqil, Hajjah City***

Our research suggests self-efficacy is the most important predictor of chlorine acceptance. Therefore, giving

demonstrations of how to apply chlorine and providing information on where to buy it are vital steps in triggering changes in behaviour.

### Power of sensorial experiences

Perceived health outcomes are often not sufficient to trigger change in behaviours. Positive outcome expectancies, like sensorial experiences, including taste, odour and visual appearance seem to affect respondents' propensity to adopt water chlorination more than these health outcomes. Respondents who complained about the taste were more likely to be non-users or ex-users of chlorine tablets. In fact, these respondents described the unpleasant taste and smell of chlorinated water and related grievances from household members as the most significant barrier to adopting the practice:

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*“The water did not taste good when we used to put chlorine in the drinking water when we were told to do so to prevent contracting cholera. However, it was not as good as when you pour the water in a container that was cleaned with chlorine, the water tastes good when chlorine is used like that. The water does not taste good when you put chlorine in the water itself.” - Mother, Sana’a, Hamdan*

*People who have used tablets in the past were not satisfied with the taste it gives to the water and it was one of the reasons they ceased to use it. A typical rationale is that chlorine is used for cleaning surfaces and not for drinking so any alterations on the taste of the water are judged negatively. This is linked to issues around self-efficacy, as non-users' lack of knowledge around the correct dosage of chlorine often results in using too much chlorine so that water becomes unpleasant to drink.*

## SOCIOLOGICAL DRIVERS AND BARRIERS OF CHLORINE ACCEPTANCE

The BDM framework recognises that individual behaviours are ultimately influenced by social factors. The sociological drivers and barriers to water chlorination relate to social influence, gender norms and the spread of myths and misconceptions around chlorine at the community level.



### Social Influence

#### Descriptive norms

Descriptive norms are rules of behaviours that people engage in, or don't engage in, because they believe people in their community do the same. In general, respondents who reported dissatisfaction with the quality of their water also reported that people in their community expressed similar concerns and complains. The degree to which community members think a problem is important is likely to influence individuals' behaviours. If water quality is perceived as bad by a majority in the community, an individual is more likely to develop similar concerns and potentially take steps to address the issue, such as utilising water treatment measures.

Behaviours are learnt by observing and imitating the actions of others. In the case of chlorination, an interesting finding was that the practice almost acts like a trend. When cholera was raging, many sought to 'fit in' because they saw that people around them were using chlorine, highlighting the influence of descriptive norms:

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*“At that time [cholera outbreak], I noticed that a lot of people used chlorine, even those who*

*did not have chlorine tablets, would add drops of liquid Clorox [bleach] to their water as a measure to disinfect the water. Moreover, sometimes, people would add limes to the water as a measure to disinfect it and kill microbes that cause cholera disease.” - Girl, Al Hudaydah, Al Hali*

In contrast, the perception that people no longer chlorinate their water is likely to discourage people from adopting or maintaining the behaviour.

### **Social stigma**

There are a few social prejudices against the use of tablets in Yemen. An important one is that a household that uses them indicates that someone from the family has cholera. Interviews suggest that diseases like cholera still carry significant stigma, as described by a health worker in Al Hawak district:

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*“In the beginning, yes, they had a look of shame. Some houses, especially high-end houses, would be ashamed at first, like if a girl, daughter or wife was infected, they’d try not to bring her to the cholera center and instead try to treat her at home.” - Cholera Center Nursing Supervisor at Al Thawra Hospital, Al Hudaydah, Al Hawak*

Many reasons for this stigma were proposed by participants, such as the fact that (1) fear of cholera meant that friends and family forced patients to go into isolation, (2) patients themselves were concerned about transmitting disease to others and therefore chose to self-isolate, and (3) infected persons are perceived as being careless about their personal hygiene.

Respondents describe an intense feeling of ‘social shame’ when it comes to symptoms of bad personal hygiene such as diarrhoea and vomiting. This feeling of shame was particularly prevalent among female participants, especially mothers, who seem particularly vulnerable to stigmatisation and criticism both from the family and the community in general.

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*“Diarrhea and dehydration somewhat cause shame because people see lack of hygiene is the cause of them. They say, if you clean well and your food is covered well, you won’t get sick. Sometimes, even if you are careful, you get sick. But society sees it as a reason for lack of hygiene. Maybe even the husband would criticize you if someone got sick that you didn’t clean or care well. Because he feels there is negligence, also the society. They think of you in this way.” - Mother, Amanat Al Asimah, Bani Al Harith*

In addition, respondents suggested that the social stigma associated with the perception that diseases are caused by negligence of one’s hygiene is rooted in religious beliefs around hygiene. Some of the religious leaders we interviewed mentioned that cleanliness and good hygiene are signs of someone’s respect towards God.

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*“Cleanliness is next to Godliness and if there was cleanliness, diseases would not exist” - Notable Religious Figure (Quran and Islamic Studies Teacher), Amran*

As mentioned previously, chlorine seems to have a strong association with cholera in Yemen. Though it was not reported directly by participants, it is possible that the stigma around cholera is so sufficiently strong that the fear of being seen to be ill is a deterrent to being seen to chlorinate one's water.

### Reference network's attitudes and behaviours

People tend to imitate the behaviours of their reference network: those whose opinion people value the most, who they consult regarding certain issues, and whose perception matters. In fact, interviews suggest that attitudes and behaviours of reference networks are another significant driver of chlorine acceptance and use. A great number of users claim to have started chlorinating their water on the recommendation of their friends and extended family members:

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*“For example, my friends, a close friend would tell me about their experience of water chlorination. They would say it is good, as I have told you in the previous question, and they would instruct me on how to chlorinate water. They would advise me to use it because it protects my health and the health of all family members from getting infected by cholera, and it keeps water clean. They would encourage me to use it as a preventative measure to protect myself and my family members.” - Mother, Al Hodaydah, Al Hawak*

Conversely, some have decided not to use chlorine, not because they have had bad experiences themselves, but rather because it was discussed negatively by their peers:

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*“We have not used it because we hear from people in other villages who have used it that it gives the water a strange smell.” - Boy, Sana'a, Jihana*

Reference networks therefore provide a powerful opportunity for promoting water preventive behaviours.

## Myths and Misconceptions around Water Chlorination

Many respondents believe in myths and misconceptions surrounding the use of chlorine tablets. Myths and misconceptions are defined here as specific and widespread beliefs about the effects or purpose of water chlorination that are false or unsupported by the best available evidence. Those entrenched and pernicious myths and misconceptions discourage many people from beginning or continuing to use chlorination. The following sections detail the most common misconceptions identified during interviews and discussions.

### Conspiracy theories

Conspiracy theories are built on the notion that a powerful group is acting in secret, thus building on, and potentially also creating, suspicion toward the powerholders such as the international organisations. People's inclination to use chlorine is likely to be affected for those who believe in a conspiracy theory since trusting is closely related to agreement with the trustee's arguments. In the research sample, though information and recommendations from organisations like INGOs were mostly deemed credible, a few respondents showed mistrust in foreign organisations and in the motives of their work. Some even suggested international organisations were actively looking to cause harm to the people of Yemen by introducing the tablets. Since tablets were mostly distributed from INGOs during the last cholera outbreak, those who suspect INGOs have nefarious intentions are naturally resistant to taking the tablets they provide. The fact that these tablets change the taste of the water also supports this mistrust. Those narratives echo the words of this religious leader affiliated to Houthis in Amanat Al-Asimah:

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*“The biggest crime is that they do not sympathise with believers. How is it possible for this substance to treat water, which God created as an essential element for every creature? [...] It is entirely negative. It is poisonous and makes people sick. Those who are not killed by the aggression are wanted to be killed by a disease [...] America seeks to control Arab peoples. Therefore, it turned to occupy people with diseases and distribute this product through [aid] organisations. We have to instruct people and alert them to gravity of this situation, as well as to fight it” – Religious Leader, Amanat Al-Asimah, Bani Al Harith*

Such rumours are dangerous because they feed the climate of mistrust exacerbated by years of conflict. They appear to stem from multiple sources but seem primarily to serve those who cultivate resentment towards the international community, which they view as being controlled by their enemies, primarily Saudi Arabia, the USA, and Israel.

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*“Some people say that it came from Jews... This is a fact in the community. They think that it was provided by Jews with the intention of spoiling water. Therefore, they do not trust the product. There is distrust due to lack of awareness.” – Boys, Dhamar, Dhamar City*

### **Chlorine causes infertility and other diseases**

Another common misconception reported by participants is the belief that chlorine reduces fertility for both men and women. Fear of infertility is common in contexts where childlessness is stigmatised and associated with severe consequences, especially for women.

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*“They think that it is harmful or contain toxic substances. They feel that its harm exceeds the benefit and that it changes the taste of water. They also think that it causes infertility.” – Father, Amanat Al-Asimah, Bani Ali Harith*

However, this belief was often brought up by respondents as a misconception held by members of their community, which were generally described as being less-educated, rather than a belief they hold themselves.

Many non-users across all segments also reported not chlorinating their water out of fear of diseases such as kidney failure and kidney stones. The misconception that drinking chlorinated water causes diseases seem to be rooted in misinformation and lack of understanding about the correct dosage of chlorine for treating water properly.

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*“When the chlorine levels are too high, this leads to kidney failure. We heard about this on the media. After that, it leads to death. This is why people avoid using it, because they are afraid for their health and well-being.” - Father, Hajjah City, Hajjah.*

## **Gender Roles and Responsibilities in Water Management and Safety**

Both male and female respondents predominantly reported that men are usually responsible for obtaining water in the domestic environment, especially when it involves interactions with service providers.

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*“We women do not dare to call the water trucks; it is Ayb [dishonourable/shame] that we do. Men must be the ones who call” – Mother, Amran*

When water is brought home, however, women and girls are most often the primary users and managers of water in their households as they are seen as the guardians of household hygiene. In general, it was observed that “mothers” are more likely to use chlorine and have more awareness about treatment with chlorine than their male counterparts. In general, they are more likely to be responsible for treating water at home, no matter what the technique is, perhaps because they are responsible for other household chores. This was also evident during household observations, where an overwhelming majority of observed processes of treating water with chlorine were conducted by mothers.

## ENVIRONMENTAL DRIVERS AND BARRIERS OF CHLORINE ACCEPTANCE

As per the BDM framework, the environmental drivers and barriers to water chlorination relate to structural barriers, the communication environment, governing entities, and other alternatives to chlorine being used. This includes issues like the state of infrastructure and living conditions of the households, support mechanisms from the government and non-government organisations, trust in the services providers and the supplier of chlorine, use of different forms of media and information, policies and regulations, the role of religious entities and individuals, and other positive deviants or opportunities around the use of chlorine.



### Structural Barriers

#### State of infrastructure and living conditions of the households

The poor state of infrastructure and living conditions was evident from interviews and observations across the governorates and demographic groups. Respondents cited a range of infrastructure, sanitation, and water supply issues, as well as a multitude of problems related to primary health, education and other daily necessities. In this context, water treatment or chlorination has become an issue of secondary importance, especially as one of the primary issues facing Yemenis is access to regular and affordable water itself.

Participants across the governorates mentioned lack of access to continuous water supply and relying on costly options to access water such as ordering water trucks. Moreover, respondents reported getting water from distant areas and having to wait for hours in long queues to be able to get it. The cost of water (and other daily necessities) means respondents are less likely to be able to afford chlorine tablets or other water treatment choices, further increasing the likelihood that households rely on traditional treatment options or using non-treated water despite the understanding that it is not ideal for use. Access to clean water is, to some extent, seen as a preserve of the rich.

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*“Those who are financially comfortable do not drink anything but kawthar [purified mineral water], because they are worried about their families getting ill” - Mother, Amran*

Moreover, improper waste management and sanitation systems dissuade households from adopting water treatment behaviour as they believe that no matter what precautionary measures they take, household members, particularly children, will bring disease from outside to the house. Therefore, the state of living conditions also plays a key role in determining water treatment behaviours.

## Availability of chlorine and distribution points

Another important structural barrier identified during the research process is the lack of availability and supply of chlorine in the targeted areas. The consensus among all respondent groups was that chlorine was available in abundance during the cholera outbreak but that chlorine tablets are no longer readily available since the cholera threat waned.

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*“The problem is where would we get chlorine? It is only provided to two entities: the Public Health and Population Office, the Rural Water Authority, and to the water sector.” - Technical Manager of Sanitation and Improvement Fund, Hajjah City, Hajjah*

Participants across the governorates and localities stated that chlorine is generally not available these days, although some urban respondents reported being able to buy chlorine at pharmacies. During the cholera outbreak, people had access to chlorine distributed freely by the government and other aid organisations. The present unavailability of chlorine therefore contributes to the sense that it is a ‘cure’ for cholera, rather than a preventative measure to be used all the time against a multitude of waterborne diseases. Instead, people cite the importance of maintaining good hygiene and improving water sanitation and sewage systems to avoid a cholera outbreak in the future.

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*“Some of them do not have the capacity to get chlorine tablets, and they do not have it with them. How would they treat their water if they do not have them [chlorine tablets]? Some of them say that they cannot afford buying it.” - Social Figure, Sana’a, Jihanah*

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*“We have not chlorinated water for four years. It is COVID-19 time.” Aqil, Sana’a, Hamdan*

## Trust in service providers (water suppliers and chlorine tablets suppliers)

Most respondents trust the safety of government-supplied water through a piped network. Respondents believe that this water is fresh and does not require any treatment as it is lifted directly from the ground and supplied to the households, and/or that it has already been treated. The lack of awareness regarding the actual source of water supplied through government-run piped networks is a significant barrier to using chlorine or other methods for water treatment, as they assume the water is already being treated at the source by the government authorities. This trust serves as a deterrent to the use of chlorine or other water treatment methods. This was primarily observed in the urban areas.

Similarly, some households in the rural areas who get their water from wells consider the water to be safe and fresh so that does not require any treatment. This was particularly the case for older respondents, who been using water from the same source for many years and have not experienced any health problems and therefore do not feel the need to chlorinate water, particularly as it changes the taste. The younger generation repeat the behaviours of their elders and also fail to chlorinate water.

Because of the unreliability of piped water, the main source of water for most households across governorates and localities is water trucks. Overall, there is a significant mistrust of the quality of water supplied in water trucks. The majority of respondents are sceptical of the sources the water is drawn from and complain about the water salinity. It was reported that water truck suppliers claim to treat water at source and some of them explicitly say they chlorinate water, but most households distrust these claims and rely on more traditional water treatment methods or get their drinking water from other sources such as Kawther water. The salinity of the truck water

supply, coupled with the truck owners' claims that they chlorinate water, deters households from using chlorine as they feel it is a source of water contamination rather than a water steriliser.

This mistrust and distaste for chlorination are to a degree mitigated by trustworthy chlorine suppliers. These suppliers include health and medical experts and workers, the Ministry of Health, pharmacies, different NGOs and INGOs. Information from these organisations was predominantly deemed credible by the participants that encouraged people to treat their water using chlorine tablets. Water treatment is looked at primarily as a health issue, therefore information coming from the sources or organisations related to health and verified by the Ministry of Health is most trusted by the public. These organisations are considered competent, respectful, and most relevant to the issue, and they successfully encouraged many households to use chlorine or other methods for water treatment during the cholera outbreak.

It is, however, also important to mark a distinction between the local and international sources of information. As mentioned previously, some people distrust international sources or even consider them a threat to Yemenis due to regional and international political concerns. This is a particular issue in areas where people tend to be more religious and conservative.

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*“Some people are concerned that chlorine is provided by a foreign organisation, which is supported by America [U.S.]. They are worried that America intends to cause harm to them such as making them infertile through these capsules.” – Mother, Dhamar City*

## Communication Environment

### Factual/Scientific information

As mentioned previously, there is a high level of awareness amongst users regarding the purpose and use of chlorine. Most users confidently stated that chlorine is used to sterilise water and kill germs and bacteria that cause cholera and other diseases. Many of them credit their high level of awareness regarding the use of chlorine to awareness campaigns run by the government and non-government organisations. The respondents acknowledge the availability, accessibility, and dissemination of information from a range of organisations and through different communication channels. Much of the information about chlorine that these respondents recite is unbiased and scientific and therefore contributed positively towards acceptance of water chlorination during the cholera outbreak.

However, the majority of non-users demonstrated a low level of awareness regarding the practical application of chlorine tablets to the water. Most of the time, as key informants stated, people add significantly more chlorine than the recommended amount, which makes it at best unpleasant to drink and at worst harmful. Some add a significantly lower amount than the recommended dose, which is not effective, and contributes to the sense that chlorine is either ineffective or actively harmful.

Respondents across all segments acknowledged a number of entities that ran campaigns and provided useful and credible information regarding water treatment. These include:

- Ministry of Health
- National and International Non-Government Organisations (UNICEF, WHO, Save the Children)
- Doctors and physicians, and other health workers

### Trustworthy entities

Trust is closely linked to an organisation's profile. If perceived to be experts in a relevant field (health and medical experts) or nationally and internationally recognised (Ministry of Health, UNICEF), people are more likely to trust



sources of information. The use of chlorine is perceived as a medical and health issue, therefore the entity that people trust the most for chlorine related information is the Ministry of Health and other doctors and medical workers in the area. Many participants started to use chlorine, mostly during the cholera outbreak, on the recommendations of doctors and campaign information from the Ministry of Health.

Other prominent entities and influencers people trust include educators, educated and literate individuals in the neighbourhoods and family relatives.

### **Reliable modes of information**

Respondents acknowledge receiving information regarding cholera, water treatment and other health and hygiene issues from a range of sources that include traditional electronic media (TV and radio), social media (Facebook, WhatsApp), print media (Newspapers, magazine, poster ads and billboards), door to door awareness campaign conducted by different organisations, and mosques.

Older respondents mentioned traditional electronic media (TV and radio) more frequently as a reliable source of information, whereas relatively younger participants mentioned both traditional and social media as their primary sources of information.

### **Traditional Media**

Traditional media such as TV, radio and newspaper are considered to be the most reliable sources as per the participants. Respondents mention that anything that appears on the traditional media is verified and approved by the Government and the Ministry of Health. Most of the users of chlorine claim to have started using chlorine after watching health experts from the Ministry of Health explaining the use and advantages of treating water with chlorine. Respondents also feel that the television is somehow 'unifying', bringing families together in a shared experience. They therefore feel it is an appropriate medium for information on health issues.

### **Word of Mouth**

Word of mouth in the communities and neighbourhoods is another significant driver of chlorine acceptance and use. A large number of users claim to have started using chlorine on the recommendation of their peers and other people in the area. These people are either highly educated individuals, or they are relatives or friends of the people who influence the perceptions and behaviours of individuals.

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*“People in the neighborhood would chlorinate their water if someone could convince them that if they did not chlorinate the water, they would get diseases. Just like during the outbreak of cholera, when awareness raising campaigns educated people about the importance of chlorinating their water to prevent cholera infection. At that time, I noticed that a lot of people used chlorine, even those who did not have chlorine tablets, would add suggest other traditional methods as measures to disinfect water” - Girl, Al Hali, Al Hudaydah*

### **Social Media**

Social Media, mainly Facebook and WhatsApp, are also popular sources of information regarding health issues and the use of chlorine. Users of chlorine mentioned viewing content relevant to the use of chlorine by experts on Facebook, and links to the various content shared with them on WhatsApp. Hence, WhatsApp plays a significant role in word of mouth where the relevant content is shared by users' friends and family.

While these social media platforms play a role in promoting the use of chlorine to an extent, these platforms also tend to generate a lot of opinions and misinformation that serve as a significant barrier towards the acceptance of chlorine. Some non-users who believe in different myths and misconceptions mention social media as their

primary source of (mis)information.

## Governing Entities


### Grievances against the authorities

Many respondents criticise the state's capacity or willingness to supply safe water. Non-chlorine users, in particular, feel that it is the state's responsibility to clean their water, for example by chlorinating water at source. This sense that it is not the individual's role to provide clean water, or clean existing water sources, naturally acts as a demotivating factor for chlorination.

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***“The most important issue we have is the negligence of the state” - Father, Sana'a, Hamdan***

# CONCLUSION



The director of Alsabeen district, Abdul Khalek Al-Jabri, takes samples of water at the distribution points to make sure that there is no pollution. Alsabeen district, Sana'a.

Credit: Ahmed Haleem (20-03-2019)

The barriers to chlorine adoption are multifaceted and complex, encompassing psychological, sociological, and environmental factors.

There is no one prevailing factor that influences people across governorates, generations, or social backgrounds to adopt, or refuse to adopt, chlorination. Many current users of chlorine have similar attitudes and levels of awareness to ex-users or non-users.

In a country like Yemen which has suffered terribly from myriad crises over the past decade and more, it is perhaps unsurprising that environmental factors play a significant role in chlorine adoption. Most people's lives involve a struggle to afford daily necessities including water, living in housing that is blighted by rubbish, and facing the ongoing physical threat caused by the civil war. Addressing issues such as reliability of water supply and availability of chlorine tablets would be a significant step forward in changing people's attitudes. Below we have outlined a number of more specific recommendations that UNICEF and its partners could take forward.

# RECOMMENDATIONS



UNICEF team visit to the community college camp in Marib Governorate

Nabeel Al Awzari (2-10-2021)

The behavioural barriers and drivers are the key insight in building a Social and Behaviour Change strategy. Positive WASH behaviours, like water chlorination, can be encouraged by highlighting drivers and reducing barriers. The below recommendations take important determinants and suggest how they can be utilised to form an SBCC strategy:

Driver/Barrier	Recommendation	Rationale
Social stigma around cholera	Leveraging on the stigma associated with cholera and diarrhoea to highlight the health benefits of chlorinating water and its capacity to prevent dangerous diseases.	Despite the myriad issues facing Yemenis, awareness of water-borne diseases and of the importance of sterilising water remains high. Cholera, while treatable, is still considered a dangerous disease and there is a significant stigma associated with cholera and diarrhoea. This could be leveraged to highlight the health benefits of chlorinating water and its capacity to help people avoid dangerous (and embarrassing) diseases (although not cholera exclusively since it is no longer seen as a present threat). In highlighting chlorine's health benefits, it would also be possible to address some of the misconceptions around chlorine, including that it contributes to illnesses like kidney disease or sterility, and that it is part of a conspiracy to harm the Yemeni people.
Lack of self-efficacy around chlorine tablet use	Building capacity on how to chlorinate water through communication activities, including practical face to face demonstrations.	Self-efficacy is a key barrier to adopting chlorination. Those who do not know how much chlorine to add to their water are more likely to fear potential side effects and are more likely to overdose their water meaning it tastes unpleasant. Communication activities should therefore focus on building capacity at the household level through practical, face-to-face demonstrations of how to chlorinate water, and even demonstrations of how safe chlorinated water is to drink. Teaching prominent individuals how to chlorinate water safely would create a virtuous cycle, where they go on to influence other households in their neighbourhoods. Households should also be given regular reminders/refreshers to ensure a stable context for habit formation. Moreover, chlorine provision and promotion should be coupled with the provision of durable containers with lids to eliminate confusion regarding water volume and dosage and to ensure people are storing purified water safely.
Taste	Providing free flavourings for water or even offering 'flavoured' chlorine tablets as an alternative to the usual tablets.	A difficult, but important challenge to address is the taste of chlorine. This can be addressed in part through training as outlined above, but organisations might also consider other ways of alleviating the problem such as providing free flavourings for water (e.g. squash) or even offering 'flavoured' chlorine tablets as an alternative to the usual tablets.
Myths and misconceptions around chlorine	Rebranding' chlorine in some way so that it is seen as a health product.	In this vein, it may be worth considering 'rebranding' chlorine in some way. We saw that many households associate chlorine with cleaning products (indeed some use chlorine tablets to clean tiles in bathrooms and kitchens) and it is natural that people therefore do not want to ingest it. Rebranding or renaming chlorine so that it is seen as a health product would help break this link with cleaning fluids and may even help address the taste issue as people will no longer think the water tastes like bleach, but rather like treated water. By shifting people's perception, turning perceptions of a previously an unpleasant and toxic product into an auspicious and healthy one, this would motivate household to actually use the product <sup>15</sup> .
Religious norms	Chlorinating water in mosques and using Imams as advocates to build positive associations between chlorine and cleanliness.	Religious notions of hygiene may also be a way of reconfiguring how people see chlorine. Some respondents, for example, said they used purified water to wash before praying. Chlorinating water in mosques and using Imams as advocates might help build positive associations between chlorine and cleanliness. Imams can play a very significant role in addressing common misconceptions and myths around the use of chlorine, in addition to addressing the issues related to negative fatalism observed in the discussions.

15. A similar strategy was used in Cambodia to increase acceptance of iron supplements to fight anaemia, see the Luck Iron Fish Project

Driver/Barrier	Recommendation	Rationale
Trusted channels and figures	Utilising trusted figures like doctors and pharmacists to motivate households to initiate and sustain water chlorination through different communication activities, including at a local level.	There is an opportunity to use trusted channels and figures to mainstream the use of chlorine. The health sector is seen as being trustworthy. Trusted figures like doctors and pharmacists may be used to motivate households to initiate and sustain water chlorination through different communication activities, including at a local level. Putting chlorine on the counters of pharmacies or medical centres would, for example, immediately raise awareness of it as a water treatment measure and implicitly associate chlorine with trusted medical practitioners.
Alternatives to chlorination	Using communications activities to discourage or highlight the limitations of existing water purification methods	Communications activities might also discourage or highlight the limitations of existing water purification methods (such as straining). If people feel their traditional methods are sufficient, they are naturally unlikely to adopt new methods, particularly those that cost money or have unpleasant side effects (taste) like chlorine. It is therefore important to undermine people's attachment to these methods, without inadvertently encouraging them not take any measures to purify water at all.

# ANNEXES

Children are getting water form Charity water distribution points in 22 May district, Sana'a.

Ahmed Haleem (21-03-2019 )



## DESK REVIEW DOCUMENTS

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- *REACH, Yemen WASH Cluster Assessment*
- *UNICEF Humanitarian Situation Report, Yemen Country Office, May 2021*
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- Yemen WASH Needs Tracking System (WANTS) Salh District, Ta’iz Governorate June 2021

## STAKEHOLDER CONSULTATIONS LIST

Consultations with subject matter experts and key stakeholders were conducted during the research inception phase in March and April 2021, with the objective to garner contextual knowledge and identify priority areas for the research. Key stakeholders included:

- **Adnan Abdulfatah**, Emergency Specialist, UNICEF
- **Nana Garbrah-Aidoo**, Chief of C4D, UNICEF
- **Fatima Al Agil**, C4D Specialist, UNICEF
- **Abdullah Alshehari**, C4D Officer, UNICEF
- **Hussein Halwaday**, C4D Officer, UNICEF
- **Arwa Baidar**, MCH Specialist, UNICEF
- **Ahlam Al Mutawakel**, WASH Specialist, UNICEF
- **Adane Bekele**, WASH Manager, UNICEF
- **Noortje Gerritsma**, Health Assessment Officer Yemen, REACH Initiative
- **Ali Ayman**, WASH Specialist, Save the Children

# RESEARCH TOOLS

## FGD Discussion Guide

### Introduction (5 min)

#### Introduction of the Research Team and Explanation of the Purpose of the Research

*Script for enumerators to read*

“Hello everybody, my name is X (name of facilitator) and this is Y (name of note-taker). We work at New Pathfinders. Thanks for agreeing to take part in this research. We are here today to hear from you about the health and hygiene challenges you and your community face. We are conducting such discussions in different groups throughout Yemen, and the results will be written in the form of a report. We think your views are very important and should inform future programs to improve the lives of communities in Yemen.”

#### Informed Consent Procedure

**Note to facilitator:** ensure that each participant has signed the consent form found in the protocol for the project prior to the start of the FGD.

*Script for enumerators to read*

“The document I have provided you has all the details I will explain to you right now. As I mentioned, we are carrying out multiple discussions such as this one to hear from community members such as yourself what you think about health and hygiene issues. Of course, there is no right or wrong answer. Please feel comfortable enough to express yourselves freely during the discussion, as all that we talk about here today will stay within this group. When we write the report, we will not mention any names or personal information. Your participation is voluntary, and so you have the right to not answer questions and to leave at any time you wish. There are no direct benefits to your participation, however, your views and opinions are very important as we are working to improve lives of people in your community.

If you do not mind, we would also like to record the discussion simply because we are around six people who will discuss together and Y (name of note-taker) will surely not be able to write all your thoughts, and your thoughts are very important to us. Do we have your permission to record the discussion? No one else will have access to the recording except the researchers. During the discussion if you change your minds, we will make sure to stop recording. As you were informed, the discussion will last around one hour to one and a half hours. If you agree to participate, I will sign on two copies of the same document, one copy will stay with me and the other will be given to you.”

#### Ground Rules

*Script for enumerators to read*

“Before we start our discussion, I wanted to make sure we set some ground rules

1. **WE WANT YOU TO DO THE TALKING.** We would like everyone to participate. We would highly encourage everyone to share their views.
2. **THERE ARE NO RIGHT OR WRONG ANSWERS.** Every person’s experiences and opinions are important. Speak up whether you agree or disagree. We want to hear from all of you.
3. **WHAT IS SAID ON THIS PLATFORM STAYS HERE.** We want everyone to feel comfortable sharing their opinion regarding any issues that come up.
4. **WE WILL NOT TALK AT THE SAME TIME.** We want to take turns to talk, so we can all hear your opinions

and experiences.

Would you like to add any additional rules?

Is everything clear about the course of the discussion?" (If everyone says things are clear, proceed with the discussion. If not, make sure to answer all inquiries and questions before starting the discussion).

### Warm Up Questions (10 Min)

1. Please introduce yourself, the name you will like to be called by in this discussion. It doesn't have to be your real name.
2. How would you describe life in your district nowadays? Is it any different from the life of Yemenis in other districts/rest part of the country? How and why?

Script for enumerators to read

"Thank you very much for introducing yourselves. At this point I'd like us to talk about the most important health and hygiene challenges you face apart from COVID. We know COVID is a serious issue now, but we would like to see over it for the objectives of this discussion."

### Section 1. Perceived Health and Hygiene Challenges (Apart from COVID) (10 Min)

The objective here is to understand if people consider Cholera to be an important disease on an unprompted level, which are the ones they consider important and why (Moderator/Facilitator do not read out)

#### Psychological

1. Which do you think are the most important health and hygiene challenges people in your area face this period apart from COVID? (Check to see if Cholera is spontaneously mentioned)
2. Please tell me why you think each of these challenges is crucial. What makes it important? (For example, is it the side effects, the mortality rate or/and the fact that people do not know how to treat it and take care of themselves)

#### Sociological

1. Do you think any of these health issues carry a stigma for the person or their family? Which ones and why? (Facilitators to take notes of the issues and then discuss relevant issues mentioned by the participants)
2. How would you deal with the stigma if you were facing a relevant health issue? Probe Response: Why would you do this?

#### Environmental

1. From which sources do you get information about the seriousness of these health issues or how you can protect yourself from them? (Try to understand which sources have the strongest impact and relevance and why)
2. Who do you trust the most to get you informed about health issues and why? Can you tell us about a situation you or someone you know faced recently around getting informed about health issues and how to treat the health issues.

Script for Moderators/Facilitators to read

"Let's talk now about the quality of the water you drink; how satisfied you are with it, if this issue concerns you at all or any solutions you'd suggest."

## Section 2. Water Safety, Awareness and Attitudes (20 min)

Here we want to explore what people recognise as contaminated, 'bad' water, if they take any measures to make water safe and how strong the connect cholera with it

### Psychological

1. Where do you usually get your water from?
2. Who is responsible for getting the water? Why this person?
3. Are you satisfied with the access you have to water? Is it enough for you and your family?
4. What are the barriers you have in access to water? How do you overcome them?
5. Please describe your daily usage of water: different usages within the day and any specific habits you have on water usage (eg. reusing it)
6. How would you describe the quality of water? Probe: taste, smell, colour, quantity. Are you satisfied with the quality of your water? On which occasions are you not satisfied and why? Please give examples.
7. How do you know if your water is safe to use? What are the 'signs' you follow?
8. Which is your source of drinking water? And water for other uses? If the water you use for drinking is different from the water you use in other occasions/uses, can you tell us about this? How? Please give examples
9. What do you do to 'clean' your water if you feel it's not safe? When do you do this? Please give examples (Understand when people feel their water needs cleaning and what they do about it)
10. Who is responsible for the 'cleaning' or treatment of water? Why this person?
11. Is there anything wrong or bad that could happen if you drink "unclean" water? Please explain (Pay attention to see if people mention cholera)
12. In which cases is water is more likely to be unclean? Contaminated? (Check to see if people mention wells, or any other sources of water or anything else)

### Sociological

1. Do you think people in your area generally worry about the quality of the water they use? Probe: If Yes, why and if no why not?
2. Are there people who are more worried than others when it comes to the quality of the water? If so, who are they and why are they more worried?

### Environmental

1. Do you know of any organisations or any programmes that take care of the quality of the water? Which ones and what do they do about it?
2. Is there something specific you would like to see happening as a means of improving the quality of the water you consume? What is this and why do you say so?

Script for Moderators/Facilitators to read

"Thank you very much. We'd like us to talk a bit more now about Cholera. It doesn't matter if you do not know much about it. I'm very interested in understanding your current thoughts and feelings about it."

## Section 3. Awareness and Perception Around Cholera and acute watery diarrhea (10 Min)

Here we want to capture attitudes around cholera. We want to check if the reason people do not chlorinate the water relates to their views around the disease

### Psychological

1. Have you ever heard about cholera or AWD? Please tell us what you know about it and how you have

gained this knowledge (Take note of all the different sources and the importance people appear to show on each one)

2. Do you consider cholera or AWD to be a serious health issue? Why or why not? Please explain (Pay attention on the rationale of the participants)
3. How can someone contract cholera or AWD? (Pay attention to understand level of knowledge, also if water consumption is mentioned)
4. Do you know what are the signs of cholera?
5. Do you know if and how it can be treated? Probe: How do you know that?
6. Do you know if and how you can protect yourself and your family from cholera or AWD? (Pay attention on unaided mentions of chlorinating water)
7. They say that consuming contaminated water is one of the main causes of cholera. Have you ever heard that before? If yes from whom?

**Note to Moderator/Facilitator:** For all the above questions make sure people do not feel as if we are judging them. Help them share any (mis)conceptions they have, no matter how unimportant they might sound to them.

### Sociological

1. What do you think people in your district know and think about cholera?
2. Do you think there's a group of people who might know more about cholera than you do? Why's that?
3. Do you think there's a specific group of people which should worry more about cholera than others? Why?
4. Is there a stigma around cholera patients? Which is that and why do you think it exists? Please give examples

### Environmental

1. Are you aware of any organisations who inform people about cholera? Which ones?
2. Have you ever come across any informational/educational material about cholera? Do you remember any material which you find interesting and useful?
3. Who would you trust more to learn about cholera from? Why this person?
4. Who do you think is mostly responsible for informing and educating people about cholera?

Script for M/F to read

“Let's talk now about water chlorination. Again, do not worry if you have never heard of this before.”

## Section 4. Water Chlorination, Awareness and Barriers (30 min)

### Psychological

1. Have you ever heard about water chlorination? If yes from whom, which information sources?
2. Can someone explain to the whole group what water chlorination is and how it works? (Pay attention to the language people use and the feelings they express)
3. What do you see as positives in chlorinating water? Why?
4. What do you see as negatives? Why? (Pay attention to how people view the use of tablets, the taste of the water, the perceived effectiveness)
5. If you have ever chlorinated your water, can you please describe in detail how you did it and what was the result.
6. If you've never done it, why do you think this is?
7. In your view can chlorinating your water protect you from cholera or other waterborne diseases? Why or why not?
8. Why do you think some people might not chlorinate their water? (Check if the main reasons are around not really worrying about cholera or because they are not informed about how to do it or because of the taste)

## Sociological

1. What do people in your community generally think about chlorinating water for themselves and their family? Please give us examples and the reasons why for each one (Pay attention to the cultural norms that might stop people from chlorinating the water)
2. Are there any local cultures and traditions that would stop people from chlorinating their water? What would that be and why?
3. Is there someone who you would 'follow' if they chlorinated the water? That you would use as an example/role model? Whom and why?

## Environmental

1. Is there anyone you would trust to talk to you about water chlorination? Whom and why? Is there anyone else? Probe: a person, an authority, an organisation.
2. How would you like to be informed about water chlorination? What would be the most effective way for you?
3. What would be the ideal way for you to get your water chlorinated?
4. Is there anything else that could be done to help people chlorinate their water more often to protect themselves from cholera and other waterborne diseases? Probe: Why? Who should do this?
5. Is there anything else the community could do to protect people from cholera?

## Closing (15 Min)

Ask this question to all participants: If your mission was to make the people of your community start chlorinating their water, which steps would you follow to achieve this? From where would you start and why? (Try to help them express their ideas, and probe to understand their rationale, why they believe their suggestions will be effective)

Ask respondents if there is anything else anyone would like to add. If yes, please take notes.

If not, thank all the participants for coming and being part of the discussion and giving us their time.

Pay attention to understand if the whole discussion has made people more interested in the idea of chlorinating water. What is their feeling and attitude when closing the discussion?

After closing the discussion:

- Thank participants for their time.
- Tell participants where they can get more information about the research later.
- Ask if they have any feedback on how the discussion was conducted – what could improve it for the next group?

## IDI Discussion Guide

### Introduction (5 min)

#### Introduction of the Research Team and Explanation of the Purpose of the Research

*Script for enumerators to read*

“Hello everybody, my name is X (name of facilitator) and this is Y (name of note-taker). We work at New Pathfinders. Thanks for agreeing to take part in this research. We are here today to hear from you about the health and hygiene challenges you and your community face. We are conducting such discussions with different people throughout Yemen, and the results will be written in the form of a report. We think your views are very important and should inform future programs to improve the lives of communities in Yemen.”

### **Informed Consent Procedure**

**Note to facilitator:** ensure that each participant has signed the consent form found in the protocol for the project prior to the start of the IDI.

*Script for enumerators to read*

“The document I have provided you has all the details I will explain to you right now. As I mentioned, we are carrying out multiple discussions such as this one to hear from community members such as yourself what you think about health and hygiene issues. Of course, there is no right or wrong answer. Please feel comfortable enough to express yourselves freely during the discussion, as all that we talk about here today will stay within this group. When we write the report, we will not mention any names or personal information. Your participation is voluntary, and so you have the right to not answer questions and to leave at any time you wish. There are no direct benefits to your participation, however, your views and opinions are very important as we are working to improve lives of people in your community.

If you do not mind, we would also like to record the discussion simply because we are around five people who will discuss together and Y (name of note-taker) will surely not be able to write all your thoughts, and your thoughts are very important to us. However, if you refuse to be recorded, we will respect your wishes. Also, if you accept to be recorded and during the discussion change your mind, we will make sure to stop recording. And as you were informed, the discussion will last around 45 minutes to an hour. If you agree to participate, I will sign on two copies of the same document, one copy will stay with me and the other will be given to you.”

### **Ground Rules**

*Script for enumerators to read*

“Before we start our discussion, I wanted to make sure we set some ground rules

1. **THERE ARE NO RIGHT OR WRONG ANSWERS.** We want you to feel free to express your views, we will not judge you.
3. **WHAT IS SAID ON THIS PLATFORM STAYS HERE.** We want you to feel comfortable sharing your opinion regarding any issues that come up.

Would you like to add any additional rules?

Is everything clear about the course of the discussion?” *(If interviewee says things are clear, proceed with the discussion. If not, make sure to answer all inquiries and questions before starting the discussion).*

### **Warm Up Questions (5 Min)**

1. Please introduce yourself, the name you will like to be called by in this discussion. It doesn't have to be your real name.
2. How would you describe life in your district nowadays? Is it any different from the life of Yemenis in other districts/rest part of the country? How and why?

*Script for enumerators to read*

*“Thank you very much for introducing yourselves. At this point I’d like us to talk about the most important health and hygiene challenges you face apart from COVID. We know COVID is a serious issue now, but we would like to see over it for the objectives of this discussion.”*

## **Section 1. Perceived Health and Hygiene Challenges (Apart from COVID) (5 Min)**

The objective here is to understand if people consider Cholera to be an important disease on an unprompted level, which are the ones they consider important and why? (Moderator/Facilitator do not read out)

### **Psychological**

1. Which do you think are the most important health and hygiene challenges people in your area face this period apart from COVID? (Check to see if Cholera is spontaneously mentioned)
2. Please tell me why you think each of these challenges is crucial. What makes it important? (For example, is it the side effects, the mortality rate or/and the fact that people do not know how to treat it and take care of themselves)

### **Sociological**

1. Do you think any of these health issues carry a stigma for the person or their family? Which ones and why? (Facilitators to take notes of the issues and then discuss relevant issues mentioned by the participants)
2. How would you deal with the stigma if you were facing a relevant health issue? Probe Response: Why would you do this?

### **Environmental**

1. From which sources do you get information about the seriousness of these health issues or how you can protect yourself from them? (Try to understand which sources have the strongest impact and relevance and why)
2. Who do you trust the most to get you informed about health issues and why? Can you tell us about a situation you or someone you know faced recently around getting informed about health issues and how to treat the health issues.

*Script for Moderators/Facilitators to read*

*“Let’s talk now about the quality of the water you drink; how satisfied you are with it, if this issue concerns you at all or any solutions you’d suggest.”*

## **Section 2. Water Safety, Awareness and Attitudes (10 min)**

Here we want to explore what people recognise as contaminated, ‘bad’ water, if they take any measures to make water safe and how strong the connect cholera with it.

### **Psychological**

1. Where do you usually get your water from?
2. Who is responsible for getting the water? Why this person?
3. Are you satisfied with the access you have to water? Is it enough for you and your family?
4. What are the barriers you have in access to water? How do you overcome them?
5. Please describe your daily usage of water: different usages within the day and any specific habits you have on water usage (eg. reusing it)
6. How would you describe the quality of water? Probe: taste, smell, colour, quantity. Are you satisfied with the quality of your water? On which occasions are you not satisfied and why? Please give examples.



7. How do you know if your water is safe to use? What are the 'signs' you follow?
8. Which is your source of drinking water? And water for other uses? If the water you use for drinking is different from the water you use in other occasions/uses, can you tell us about this? How? Please give examples
9. What do you do to 'clean' your water if you feel it's not safe? When do you do this? Please give examples (Understand when people feel their water needs cleaning and what they do about it)
10. Who is responsible for the 'cleaning' or treatment of water? Why this person?
11. Is there anything wrong or bad that could happen if you drink "unclean" water? Please explain (Pay attention to see if people mention cholera)
12. In which cases is water is more likely to be unclean? Contaminated? (Check to see if people mention wells, or any other sources of water or anything else)

### **Sociological**

1. Do you think people in your area generally worry about the quality of the water they use? Probe: If Yes, why and if no why not?
2. Are there people who are more worried than others when it comes to the quality of the water? If so, who are they and why are they more worried?

### **Environmental**

1. Do you know of any organisations or any programmes that take care of the quality of the water? Which ones and what do they do about it?
2. Is there something specific you would like to see happening as a means of improving the quality of the water you consume? What is this and why do you say so?

Script for Moderators/Facilitators to read

"Thank you very much. We'd like us to talk a bit more now about Cholera. It doesn't matter if you do not know much about it. I'm very interested in understanding your current thoughts and feelings about it."

## **Section 3. Water Chlorination, Awareness and Barriers (15 min)**

### **Psychological**

1. Have you ever heard about water chlorination? If yes from whom, which information sources?
2. How do you think water chlorination works? (Pay attention to the language people use and the feelings they express)
3. What do you see as positives in chlorinating water? Why?
4. What do you see as negatives? Why? (Pay attention to how people view the use of tablets, the taste of the water, the perceived effectiveness)
5. If you have ever chlorinated your water, can you please describe in detail how you did it and what was the result.
6. If you've never done it, why do you think this is?
7. In your view can chlorinating your water protect you from cholera or other waterborne diseases? Why or why not?
8. Why do you think some people might not chlorinate their water? (Check if the main reasons are around not really worrying about cholera or because they are not informed about how to do it or because of the taste)

### **Sociological**

1. What do people in your community generally think about chlorinating water for themselves and their family? Please give us examples and the reasons why for each one (Pay attention to the cultural norms)

that might stop people from chlorinating the water)

2. Are there any local cultures and traditions that would stop people from chlorinating their water? What would that be and why?
3. Is there someone who you would 'follow' if they chlorinated the water? That you would use as an example/role model? Whom and why?

## Environmental

1. Is there anyone you would trust to talk to you about water chlorination? Whom and why? Is there anyone else? Probe: a person, an authority, an organisation.
2. How would you like to be informed about water chlorination? What would be the most effective way for you?
3. What would be the ideal way for you to get your water chlorinated?
4. Is there anything else that could be done to help people chlorinate their water more often to protect themselves from cholera and other waterborne diseases? Probe: Why? Who should do this?
5. Is there anything else the community could do to protect people from cholera?

## Closing (10 Min)

If your mission was to make the people of your community start chlorinating their water, which steps would you follow to achieve this? From where would you start and why? (Try to help them express their ideas, and probe to understand their rationale, why they believe their suggestions will be effective)

Ask respondents if there is anything else anyone would like to add. If yes, please take notes.

If not, thank all the participants for coming and being part of the discussion and giving us their time.

Pay attention to understand if the whole discussion has made people more interested in the idea of chlorinating water. What is their feeling and attitude when closing the discussion?

After closing the discussion:

- Thank participants for their time.
- Tell participants where they can get more information about the research later.
- Ask if they have any feedback on how the discussion was conducted.

## KII Discussion Guide (Professionals)

### Introduction (5 Min)

Script for enumerators to read

"Hello/Salaam, my name is X (name of facilitator) and this is Y (name of note-taker). We work at New Pathfinders, which is working with MAGENTA and UNICEF on a research study. Thanks for agreeing to take part in this research we are conducting. The study will help to understand people's behaviours in safe water practices and to investigate the obstacles to these practices and how we could invite people to change their behaviours and start treating water, including chlorinating their water in order to protect themselves and their family from waterborne diseases such as AWD/cholera. We have invited you to talk with you because your professional experience will help us gain more knowledge on community's stance against cholera and water chlorination"

## Informed Consent Procedure

Note to facilitator: ensure that each participant has signed the consent form found in the protocol for the project prior to the start of the discussion

“The document I have provided you has all the details I will explain to you right now. As I mentioned, we are carrying out multiple discussions such as this one to hear from professionals such as yourself. Of course, there is no right or wrong answer. Please feel comfortable enough to express yourselves freely during the discussion, as all that we talk about here today will stay within this group. When we write the report, we will not mention any names or personal information. Your participation is voluntary, and so you have the right to not answer questions and to leave at any time you wish. There are no direct benefits to your participation, however, your views and opinions are very important as UNICEF is working to improve lives of people in your community.

If you do not mind, we would also like to record the discussion simply because we are around five people who will discuss together and Y (name of note-taker) will surely not be able to write all your thoughts, and your thoughts are very important to us. However, you refuse to be recorded, we will respect your wishes. Also, if you all accept to be recorded and during the discussion change your minds, we will make sure to stop recording. And as you were informed, the discussion will last around one hour and a half. If you agree to participate, I will sign on two copies of the same document, one copy will stay with me and the other will be given to you.”

### Step 1. interviewee's back-ground and experience (10 min)

We'd like to start the discussion with a short introduction from your side. Please tell us:

1. What is your professional role today? What are your responsibilities?
2. What's the profile of the company/organisation you're working for? What are its objectives?
3. What's the environment you're working? E.g. which communities, what profile of people etc
4. Which would you say are the most enjoyable parts of your work?
5. Are there any parts of it you do not really enjoy?
6. What is your general professional background?

### Step 2. Views on Cholera (10 MIN)

Let's talk now about the topic of cholera and how people in Yemen view it.

1. How do you think people in Yemen view cholera?
2. Do you think there are any misconceptions around cholera? How were these misconceptions developed?
3. Do you think views around cholera have changed through the years? How?
4. Who do you think affects people's perceptions the most on this issue? Is it the local community, media, community or religious leaders, someone/something else?
5. From your daily working experience what else have you learned or observed around peoples' views and stance against cholera? Please give us examples

*(Based on the specific work duties and experience of each interviewee make sure to probe accordingly)*

### Step 3. Views on Water Chlorination (20 Min)

The next topic we'd like to cover is water chlorination

1. How would you describe water chlorination in Yemen? **Probe:** is it a common practice in Yemen? Why/ why not?
2. Do you see any obstacles to chlorination of water?

3. What is the source of these obstacles in your opinion ?
4. How well do you think people are aware of water chlorination and its benefits? Do they know how to do it?
5. Do you think there are any misconceptions around chlorination? Which ones and how do they affect people? How do you think these misconceptions were developed?
6. Who do you think are the people who are more willing to chlorinate their water? What might separate them from other people?
7. Do you have any first-hand knowledge from your work on water chlorination? Please give us details and examples.
8. What are the main reasons that might make people reluctant of chlorination?

*(If you discuss with someone at a tablet distribution point, probe extensively to understand the procedures, the problems that might arise, the way they deal with them)*

#### Step 4. Steps for Changing Behaviours (16 Min)

Closing our discussion, I'd like us to talk about future steps and initiatives that could encourage more people to chlorinate the water.

1. From your experience what needs to change first so that more people will start chlorinating their water? Please give us examples
2. In your view, what hasn't been very effective in how people are informed and educated about chlorination and what you would do differently?
3. Are there any people/organisations etc. who would be more effective in communicating with people about chlorination? Who are they and why would they be effective?
4. Is there anything else you would suggest as a step towards changing behaviours?

## Closing

- Thank participants for their time.
- Tell participants where they can get more information about the research later.
- Ask if they have any feedback on how the discussion was conducted – what could improve it for the next group?

## KII Discussion Guide (Community and Religious Leaders)

### Introduction (5 Min)

Script for enumerators to read

“Hello/Salaam, my name is X (name of facilitator) and this is Y (name of note-taker). We work at New Pathfinders on a research study. Thanks for agreeing to take part in this research. We are conducting a study to understand the challenges the community faces, especially the ones around health and hygiene. We chose to invite you and talk with you because your role in the community will help us gain important knowledge around community's views and beliefs.”

### Informed Consent Procedure

Note to facilitator: ensure that each participant has signed the consent form found in the protocol for the project prior to the start of the discussion

“The document I have provided you has all the details I will explain to you right now. As I mentioned, we are

carrying out multiple discussions such as this one to hear from community members such as yourself what you think about health and hygiene issues. Of course, there is no right or wrong answer. Please feel comfortable enough to express yourselves freely during the discussion, as all that we talk about here today will stay within this group. When we write the report, we will not mention any names or personal information. Your participation is voluntary, and so you have the right to not answer questions and to leave at any time you wish. There are no direct benefits to your participation, however, your views and opinions are very important we are working to improve lives of people in your community.

If you do not mind, we would also like to record the discussion simply because we are around five people who will discuss together and Y (name of note-taker) will surely not be able to write all your thoughts, and your thoughts are very important to us. However, you refuse to be recorded, we will respect your wishes. Also, if you all accept to be recorded and during the discussion change your minds, we will make sure to stop recording. And as you were informed, the discussion will last around one hour and a half. If you agree to participate, I will sign on two copies of the same document, one copy will stay with me and the other will be given to you.”

### Step 1. Interviewee's Role in the Community (10 min)

We'd like to start the discussion with a short introduction from your side. Please tell us:

1. What is your role in the community?
2. What is the relationship you have with it? How would you describe it?
3. How long have you been having this role?
4. What do you see as your obligations or duties?
5. What are the biggest challenges you face through your role? How do you deal with them?

### Step 2. Health Challenges Facing the Community (10 Min)

I'd like us to discuss about the challenges and problems the community faces when it comes to health and hygiene

1. Which do you think are the biggest health challenges for your community nowadays apart from COVID of course?
2. How do these challenges manifest themselves? Please give us examples (Pay attention to unaided mentions of cholera)
3. How people in your community deal with these?
4. From your role in the community do you have any responsibilities when it comes to health and hygiene issues? For example do you inform people and how?
5. Do people come to you to discuss health and hygiene challenges? What do they typically discuss, what bothers them the most?
6. How do you deal with these issues yourself from your role? What do you say to the people or what else do you do?

### Step 3. Views on Cholera (15 Min)

I'd like us to focus on cholera now

1. How your community feels about cholera? Is it seen as a serious threat nowadays or not? Why?
2. How aware people are of the disease? Where do people get informed about cholera and how reliable and relevant you find these sources?
3. Do they know which are its signs?
4. Do they know how one can contract it? If they don't please help us understand why
5. How about measures of protection. Is there anything people typically do to protect themselves and their

- family from contracting cholera? (Pay attention to unaided mentions of water chlorination)
6. Do you think there are any misconceptions around cholera? How were these misconceptions developed?
  7. From your own role in the community, have you played any part in informing people about cholera? If so, how?
  8. What are your personal views around cholera? How's serious threat you believe it is?
  9. Does your community do anything to educate people about it? Please give us examples or if not please tell us why
  10. Does it do anything to protect itself against it? What? If not, why? (Pay attention on unaided mentions of chlorination)

(Based on the specific role and profile of each interviewee make sure to probe accordingly)

#### Step 4. Views on Water Chlorination (20 Min)

The next topic we'd like to cover is water chlorination

1. What are your personal views around water chlorination?
2. Do you see any positives about it?
3. Do you see any negatives?
4. What people in your community feel and believe about water chlorination?
5. Does your community apply it or not? Why or why not?
6. Do you see any obstacles around the application of chlorination?
7. Do people ever ask you about chlorination? Do they have any questions about it? How do you deal with them? Please give us examples
8. Does your community do anything to inform people about chlorination? What?
9. Do you agree with the position that water chlorination is the most effective way to protect oneself from cholera? Why or why not?
10. Do you think there's a more effective measure against cholera? Which one?

#### Step 5. Steps for Changing Behaviours (10 Min)

**IMPORTANT: Ask this section if the interviewee supports water chlorination**

Closing our discussion, I'd like us to discuss about future steps and initiatives that could invite people to chlorinate the water.

1. From your experience what needs to change first so that more people will start chlorinating the water? Please give us examples
2. What do you think hasn't been very effective in how people are informed and educated about chlorination and what you would do differently?
3. What else could you do from your role to invite people to chlorinate the water? Please give us examples

**IMPORTANT: Ask this section if the interviewee doesn't support water chlorination**

1. Is there anything your community could do to help people protect themselves from cholera in the near future? What?
2. Is there anything you could personally do to help people on the above direction?

#### Closing

- Thank participants for their time.
- Tell participants where they can get more information about the research later.

- Ask if they have any feedback on how the discussion was conducted – what could improve it for the next group?

## Observation Checklists

### Water Points

Observation	Checklist	Notes
What is the source of water observed?	Water vendor	
	Surface Water	
	Well	
	Protected spring	
	Bore hole	
	Water tank	
	Other (specify)	
How is the water distributed?	Any views on alternative options to add here?	
How is it collected?	Any views on alternative options to add here?	
Does the distribution procedure appear organised? (if it's a vendor)	Yes No (Please add some details to explain)	
Does the spot appear clean?	Yes No	
What is the main profile of the people in the spot?	Males Females Kids (Please add some notes about their age and anything else you think is important)	
How would you describe the sentiment of the people in the spot?	Calm Indifferent Agitated/Nervous Angry (Please add some details if possible)	
Is there anyone giving directions around the whole procedure?	Yes No (If possible, please mention what's the role of this person and how you would describe their behaviour)	

Is there any informational material available?	Yes No (If Yes please note what type of material: medium and content. And if people pay attention to it)	
Do people ask for any information or any guidance from anyone?	Yes No (If Yes please note what type of information they are looking for, if they get it and from whom)	
Do people express any worries about the quality of the water? Either verbally or through their body language	Yes No (If Yes please give some details about the nature of these concerns and how they are expressed)	
Do people come on their own or for example with kids/spouse?	(Note...)	

### Using Chlorine tablets

If possible, ask some of the people from the tablet distribution point to visit them to their place and see how they use the tablets. Introduce yourself and the objectives of the project (similar to the Focus Group discussion guide instructions)

Observation	Checklist	Notes
Who is the person who got the tablets?	Mother Father Other (note)	
Where do they place/keep the tablets? What else is in this place?	(Note)	
Where do they apply the tablet?	(Note)	
Who is responsible for chlorinating the water?	Mother Father Other (note)	



Observation	Checklist	Notes
How many tablets they use for each occasion?	(Note)	
Do they appear to know how to use it? E.g. how much quantity?	Yes No (Please add some details to explain)	
Do they appear to have any concerns about the whole procedure?	Yes No (Please add some details to explain)	
What do they do with the water after they chlorinate it?	Drink Wash Cook Other (note)	
Do other members of the family take part in the chlorination? If so, how?	(Note)	
Do other members of the family express any views during the chlorination relevant to it?	(Note)	

Ask the following questions to the people met at tablet distribution points and who have agreed to be visited in their homes:

1. How often do you get tablets for chlorinating your water?
2. Why do you buy tablets? (Probe: what's their motivation and the need they want to cover?)
3. How do you use them? How have you learned to use them this way?
4. How effective do you believe the tablets are?
5. Do you see any negatives in using chlorination tablets?
6. Do you always have tablets when you need them? If not, do you do anything else to clean your water? Is it equally effective?
7. Why do you think other people in your community do not chlorinate their water? Published by the United Nations Children's Fund, Yemen Country Office Department of Communication for Development.

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