Water, sanitation and hygiene (WASH) Promotion: A qualitative analysis of experiences of stakeholders in rural KwaZulu-Natal

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Abstract

Background: Water, sanitation and hygiene are a critical component for eradicating all neglected tropical diseases. However, currently the WASH component is receiving little attention. This study was conducted in rural KwaZulu-Natal province; one of the provinces in South Africa affected by low water and sanitation coverage. The objective of the study was to explore how different stakeholders could promote the use of safe water sources, sanitation and hygiene.

Methods: In-depth interviews and focus group discussions were conducted with 40 participants who included, household heads, community caregivers, nurses, pre-school teachers and village headmen. Data was analyzed using the six steps of thematic analysis.

Results: We found that members of the community were using unsafe water sources for all activities and could not afford water treatment products. Furthermore, this increased their risk of contracting WASH related diseases such as diarrhea and schistosomiasis. Members of the community also had poor knowledge of disease transmission routes. Although government provided toilets, there are instances where toilets are not used. Some members of the community still practiced open defecation.

Conclusion: Limited use of safe water sources was mainly because of limited safe water sources. Limited access to water also compromised handwashing practices in the community. Because of limited access to safe water sources community members were put at risk of contracting diarrhea and schistosomiasis at unsafe water sources. There is need to promote the use of toilets in the community.
Background

Sub-Saharan Africa is afflicted by a plethora of water borne diseases including diarrheal and neglected tropical diseases (NTD), commonly referred to as diseases of the poor [1]. Diarrheal outbreaks are common in poor countries that do not have access to adequate water supplies of portable water. The outbreaks are usually severe resulting in high morbidity and mortality [2]. Sub-Saharan Africa has been severely affected by infection of at least five NTDs simultaneously with individuals living in these communities being affected by at least two pathogens concurrently [3].

Water sanitation and hygiene are a critical component in eradicating all neglected tropical diseases. However, to this date the WASH component is receiving little attention. The link between WASH and prevention and control of neglected tropical diseases has not been adequately explored [4]. Water, sanitation and hygiene interventions have also been demonstrated to reduce diarrhea. In the review conducted by Fewtrell and colleagues, [5] point-of-use water treatment interventions were found to be effective in reducing diarrhea.

Furthermore, provision of adequate toilets and getting people to use the toilets also contributes to greater public health [6]. Moreover, research informs us that motivation of households to use the toilet stems from comfort, convenience, privacy and dignity [7] rather than health benefits. Consequently, for effective adoption of toilets in the community, WASH interventions need to take into account socio-cultural factors [8].

Several factors contribute to water safety in the community. These include, the type of water source, water storage as well as water handling by members of the
households [9]. Contamination of water can take place at any of these points [10]. Hence, it is recommended that drinking water should be treated at the point of use to reduce microbial contamination.

Currently in South Africa 19% of the rural population do not have access to reliable water supply and 33% do not have access to basic sanitation[11]. Thus this study explored how safe water, sanitation and hygiene practices can be promoted to reduce the community risk of contracting WASH related diseases such as diarrhea and schistosomiasis. The study was done in Madeya Village; a rural community in KwaZulu-Natal province where water and sanitation coverage is very low. The findings will be used for developing an intervention framework that is sensitive to the socio cultural practices in the study area.

methods

Study design and area

A qualitative descriptive study [12] was conducted in Madeya Village located in uMkhanyakude district in Northern KwaZulu-Natal province. The area is arid and experiences water scarcity. It has limited infrastructure and experiences challenges with service delivery such as access to water. IsiZulu is the language spoken in the area. Majority of the households are of a low socioeconomic status [13]. The study was part of lager project, TIBA (Tackling Infections to Benefit Africa) that is taking place in ward 16 and 17 of uMkhanyakude district [14, 15]. The study sought to gain a deep understanding of experiences of WASH promotion from different stakeholders.

Study participants and selection of participants of the study

Five categories of participants were conveniently selected to participate in the
study; all households in the study with children below the age of five were invited to participate in the focus group discussions and 32 households heads participated in the FDGs. The clinic that services the community has five nurses and we purposively selected two nurses who were familiar with the study area and had worked at the clinic for more than 10 years. Two community caregivers who work in the community were included in the study. There are only two crèches in the community and therefore we included in the study one teacher from each crèche. Lastly, two village headmen responsible for the wellbeing of the study community were included in the study. In total, we conducted four focus group discussions; two for males and another two for females. We conducted eight in-depth interviews with individuals from different institutions; the clinic (nurses), home-based care (CCGs), Village headmen, teachers and members of the community. All interviews were recorded using an audio recorder and were transcribed verbatim.

Data analysis

All the narrative data was collected within pre-determined broad categories: water sources and use, sanitation practice and hygiene. Transcripts were analyzed using the six steps of thematic analysis described by Braun and Clarke [16]. The first step was familiarization of the data through reading and re-reading the transcripts. Second step involved systematically coding of interesting features of the data. Thirdly, the initial codes were collated to develop themes. The fourth step involved reviewing the themes by checking if they related to the coded extracts and the entire data set. Furthermore, themes were defined and named and lastly a report
was produced.

results

The following four broad themes emerged from the data; promotion of safe water practices, health education and hygiene promotion, WASH related diseases in the community, basic sanitation practices in the community. Narratives are presented to explain the broad themes and also direct quotes from the participants are used to highlight the different views. The table below (Table 1) provides a summary of main themes and sub-themes that emerged from the data.

Table 1: Summary of themes and sub-themes

| Broad themes                                | Sub-themes                                      | Issues                                                                 |
|---------------------------------------------|------------------------------------------------|------------------------------------------------------------------------|
| Promotion of safe water practices           | - Handwashing practices                         | Members of the community were using unsafe water sources              |
| Health education and hygiene promotion      | - Access to primary health care                 | Members of the community cannot afford water treatment products to improve the quality of the water that they collect from unsafe sources. Poor handwashing practices Poor knowledge on transmission routes of WASH related diseases |
| WASH related diseases in the community      | - Knowledge on Schistosomiasis                  | Some members of the community practice open defecation                 |
| Basic sanitation practices in the community |                                                |                                                                        |

Promotion of safe water practices

Community members cannot easily access safe water because most of the safe water sources are not operational. Some of the safe water sources are working but
can go for several months without discharging water. Consequently, in the months when water cannot be accessed at the safe water points, members of the community use alternative water sources that may not be safe. Such sources include unprotected dug wells and the river. Members of the community dig wells in the riverbed when the river is dry as well as in areas close to the river. Another source of water that was common in the community is spring water. The two springs we observed community members collecting water were unprotected- “The clean water from the tap can go for 3 to 4 months without being available, that’s why we have to dig at the river”-Village headman, Male 55 years.

When asked if they treated the water, members of the community said they do not treat their water. Furthermore, since the water sources are not protected, livestock drink from the same water sources. Hence, the water sources are often contaminated. The community said their children got sick because of consuming water from sources shared with animals-“the water which is available to us for consumption is often shared with other animals and our children get sick from drinking this water”-unemployed, male 45yrs. Furthermore, members of the community believe that the water that they collect from dug wells is safer and better than the water collected directly from the river. Hence, they dig wells next to the river and that is where they collect their drinking water.

The only possible way of getting safe water is when members of the community hire a van to transport water from the nearby areas that have clean and safe water. However, this is costly for most members of the community because majority of them are unemployed. The water is collected in 25L containers and is stored for a
period of 1-2 weeks.

**Health education and hygiene promotion**

Health education on treatment of water for drinking is conducted by nurses and trained community caregivers. The nurses highlighted the different methods for treating water that they teach community members. The methods include simply adding a cleaning detergent commonly known as JIK to the water or simply boiling the water. However, community members said they could not afford JIK and they did not bother to boil the water implying that they use drink unsafe water -“*we don’t add anything to the water, we don’t boil it, we drink it as it is*”- Unemployed, female, 37yrs. Other members of the community indicated that they did not know JIK was and they had never seen it before.

**Handwashing practices**

We found that there were no designated handwashing facilities in the community. However, members of the community improvised temporary handwashing stations. For example, during break time at a crèche, the teacher placed a basin with water (occasionally soapy water was used) in a designated place where children washed their hands after using the toilet. During classes, the basin was taken away. Similarly, at household level, household members washed their hands in a basin. The basin was only made available on demand-“*no there isn’t a special place to wash your hands, you just take water and put it in a basin and wash your hands*” - unemployed, male, 42 yrs. In addition, people also washed their hands at a jojo tank (rainwater harvesting and water storage tank) whenever water was available in the
tank. Availability of water at the *jojo* tank was dependent on rainfall. Consequently, people were only able to wash their hands at the *jojo* tank during periods of rainfall - *I use the jojo tank after it rains and that’s how I wash my hands*”- unemployed, woman, 37 yrs.

Although children were taught about handwashing in school, handwashing at school was reported to be low. Since, the study area was in a rural setting all the children at the crèche were on a feeding scheme. Some teachers reported that children ate food without washing their hands - “Yes, they can get taught at school as well but because of the water shortage they sometimes will give the children food without making them wash their hands, and then you find children getting sick because of these unhygienic circumstances- teacher”.

Sometimes water for handwashing was not available if the person responsible for providing the water could not do so. When asked if children ask for water to wash their hands when it is not provided, the response was that they do not because it is something that they are not used to doing. - “children do not us ask for water to wash their us when the water is not provided because its not something they practice even when they are at home”- preschool teacher, female, 40yrs. The teachers reported that most children washed their hands under supervision, so if there is no adult to tell them to wash their hands some of them would not do so- “There are times when I’m not around so sometimes they don’t wash they hands because I’m not here to tell them what to do”- preschool teacher, female 45yrs.

The scarcity of water in the crèche resulted in children engaging in poor handwashing practices where all the children wash their hands in one basin and sometime children ate meals at school without washing their hands - “sometimes the children eat their lunch without washing their hands” - preschool teacher, female
Furthermore a teacher highlighted that handwashing is something that should be taught at home. The teachers expressed indicated that parents should be responsible for teaching the children about handwashing. We noted that children from households with no parents were less knowledgeable about the importance of washing hands before eating and after using the toilet.

**WASH related diseases in the community**

Malaria, diarrhea, skin infection and schistosomiasis were the WASH related diseases that the participants said were common in the study area. Members of the community were able to link some of these diseases with water but could not clearly explain the transmission routes of the diseases - *“we suspect that we get these diseases from water, especially schistosomiasis, it’s definitely the water”*- unemployed, male, 52yrs. Some of them had the misconception (in the case of schistosomiasis) that they contracted diarrhea and schistosomiasis because they drank dirty water - *“diarrhea and schistosomiasis is caused by the dirty water that we drink”* - unemployed, female, 23yrs. They felt that they had no control over malaria because they believed malaria is caused by rainfall which to them is a natural process that they cannot influence.

Schistosomiasis was reported to be prevalent in both girls and boys however with the later being affected more because they more often swam in the river than the girls did. During the focus group discussion, it was reported that boys usually swim in the river when they accompany other members of the households that go to the river to collect water. - *“The children swim in the river because they go there to fetch water”*- unemployed, male, 34yrs. Members of the community also indicated that adults were also suffering from schistosomiasis but to a lesser extent compared
to children.

**Access to primary health care**

A clinic located 8km away serviced the community. According to the community members, access to the facility was limited because of the long distance and hence they preferred to use a mobile clinic set up in the village once a week. Members of the community that stay further away from the mobile clinic station felt disadvantaged and said the it did not make a difference to them —“*the mobile clinic does not get close enough to us, we can conclude that we do not have a clinic*”- unemployed, Male, 43yrs. However, mothers reported that they take children to the clinic when they notice symptoms of diarrhea or observe rash on the skin—“*we are struggling a lot in this area but when my child had a rash, I took him to the clinic for treatment*”- community caregiver, Female, 35yrs.

**Knowledge on Schistosomiasis**

Members of the community had poor knowledge on Schistosomiasis transmission. They associated schistosomiasis with drinking dirty water —“*I know that if a child drinks contaminated water it is likely for them to get Bilharzia*”- preschool teacher, female, 40yrs. The knowledge on the symptoms of schistosomiasis was generally poor although some parents were able to identify symptoms such as the presence of blood in the urine —“*they usually have blood in the urine when they urinate and that’s how we know that the child is infected with schistosomiasis*”- Village headman, Female, 65yrs.

The teachers seemed to know very little about schistosomiasis claiming that no one
had ever taught them about the disease. In contrast, they were very much aware of diarrhea. When asked what preventative measures they take to prevent schistosomiasis they said they do not do anything because they had little knowledge about the diseases- "We don’t know much about Bilharzia but we are more educated about Diarrhoea she further added to this by saying –" We don’t really do anything to prevent the disease because we are not really taught about it"- preschool teacher, 45yrs.

An immunization and deworming program for schools, has been operational for two years. It involves nurses going into the schools immunizing and deworming the children. The nurses indicated that when they get into the schools or the crèche they focus on immunization and deworming. They do not screen for schistosomiasis or educate the children about schistosomiasis. It was also noted by the village headman that since the inception of our research project through which children are screened for schistosomiasis many people are becoming aware of the disease - TIBA (research project) has come and taught us how to prevent schistosomiasis, so we now have an understanding on how people get schistosomiasis-Village headman, Male 55yrs.

**Basic sanitation practices in the community**

For many years, the community did not have toilets until recently when the government constructed ventilated improved pit-latrines (VIP). For many years, they practiced open defecation and used unimproved pit-latrines. The structures of the old toilets still exist side by side with VIP toilets provided by the government. It was reported that some members of the community still preferred going to the bush
to defecate because they have been doing this for too long and that is what they are used to — sometimes we go out there in the bush to do our business (defecate) especially when we are out there in the fields, because it’s something that we are used to— unemployed, male, 28yrs.

Members of the community also said that snakes found their way into the toilet structures hence they avoid using the toilets in some instances for fear that there could be snakes in the toilet. Hence, they encourage children not to go to the toilets but to defecate in the yard and the adults would clean up. However, a teacher reported that sometimes a child would defecate on the premises and not inform them. In such cases, feces remained exposed in the environment. There is no garbage collection system in the community, hence some members of the community disposed diapers in the river, “there are people who also throw their diapers in the river this is a huge problem”— village headman, male, 55yrs.

discussion
This qualitative study explored experiences of different stakeholders on the promotion of WASH. The stakeholders included general members of the community, community caregivers, nurses, preschool teachers and village headmen. We found that the community did not have access to reliable safe water sources because for prolonged periods, safe water sources were not functional. This resulted in them collecting water from unprotected water sources. Furthermore, members of the community shared water sources with livestock thus increasing the likelihood using contaminated water. Majority of the participants could not afford water
treatment products hence they drank untreated water from the river or unprotected dug wells. Previous studies have shown that covered water sources and treatment of water before consumption reduces the likelihood diarrheal diseases [2, 17-19]. Although participants were able to link drinking untreated water and diseases, they had poor knowledge on transmission routes of schistosomiasis. Majority of the individuals interviewed believed that one can get infected with diarrhea and schistosomiasis by drinking contaminated water. While this may be accurate for diarrhea it is not so for schistosomiasis. Our findings are similar to those of a study conducted on knowledge on WASH related disease conducted in rural south Africa which reported good knowledge of WASH related diseases but poor knowledge on the transmission routes of these diseases [20]. While the current study found that the majority of the participants associated, drinking dirty water with diarrhea, Banda and colleagues [21] found that only 12% of the participants linked the two.

Members of the community expressed that their access to primary health care was constrained by long travel distance (8 km) to the clinic. Although toilets were provided in the community, some members of the community still practiced open defecation. Banda and colleagues [21] found that 30% of the participants that had toilets were still practicing open defecation. A study by Coffey and colleagues conducted in India also reported a preference of open defecation among some community members[22]. The sanitation program through which the municipality built toilets for communities did not have a health education component. Sara and Graham [23] found that education may have an important factor in the defecation practices other studies have also indicated that households that keep livestock tend to practice OD because they travel long distances while tending to herds and may find themselves in places with no access to sanitation facilities [24]. Others
studies [8, 23, 25] found that households that still practiced OD even when they had a toilet were dissatisfied with their toilet. However, in the current study majority of the participants indicated that they were happy with the toilets provided and that they were using them.

**conclusion**

Members of the Madeya community do not have a reliable safe water sources and hence rely on unsafe water sources such as the river and unprotected dug wells and unprotected springs. Members of the community are aware that there is a link between using unsafe water sources and having WASH related diseases such as diarrhea, skin disease and schistosomiasis. However, they do not seem to understand the transmission routes of these diseases. They understand the transmission mode of diarrhea but have poor knowledge on how schistosomiasis is transmitted. Even though the government has provided VIP, toilets at homesteads not everyone is using them because for some open defecation has been the norm for many years. There is need to need for educating the community on the importance of using a toilet.

**Abbreviations**

- WASH: Water sanitation and hygiene
- VIP: Ventilated improved toilet
- CCG: Card for Granting
Community care givers
OP
Open defecation
NDTs
Neglected tropical diseases
FDGs
Focus group discussions
HH
Households

Declarations

*Ethical approval and consent to participate:* Ethical approval was obtained from the Humanities and Social Science Research Ethics Committee at the University of KwaZulu-Natal. Protocol reference number: HSS/0396/018D All participants gave informed consent to participate in the study

*Consent for publication:* Consent was granted for publication of any personal information for the purpose of this study it was voice recordings.

*Availability of Data and materials:* The data set used for the current study is available upon request from the corresponding author.

*Competing interest:* We have no conflicts of interest to disclose

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Author contributions: Chanelle Mulopo conceived and designed the analysis, took part in the data collection process, developed the data collection tool, performed the analysis and wrote the first draft of the paper. Prof. Moses Chimbari, supervised the project and extensively reviewed several drafts of the manuscript.

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