



Handwashing Knowledge, Attitudes, and Practices in Korogocho (Nairobi) and Bondo (Nyanza)

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The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health's flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria, nutrition, and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening.

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Overview

Effective interventions can be instrumental in decreasing neonatal mortality caused by preventable infections, which contribute up to half of all neonatal deaths. Therefore, reducing childhood mortality in resource-poor regions depends on effective interventions to decrease neonatal mortality resulting from severe infections.

This assessment evaluates the knowledge, attitudes, and practices of mothers of infants under 28 days of age and of health care providers in two disparate, but resource-poor settings in Kenya: a rural area in Bondo (Nyanza) and Korogocho slums (Nairobi).

The findings showed that new mothers in urban slums and rural areas do not have sufficient knowledge or do not practice correct handwashing habits that would reduce the burden of neonatal infections. Implementation of simple interventions, such as handwashing with soap, would likely reduce the incidence of preventable neonatal infections. These simple and effective infection prevention and control measures should be adopted by caregivers of neonates and health service providers as standard practices.

Background

Over 95% of neonatal deaths occur in developing countries with about half of them occurring at home. In Africa, diarrheal disease is the single largest cause of death among children under-five and a major cause of childhood illness. Some of the risk factors for death from diarrhea in children in sub-Saharan Africa are poor nutrition, early introduction of complementary foods and poor hygiene at the household level. Little is known about the relative contributions of different diarrhea-causing pathogens to diarrheal deaths.^{1,2,3} Unfortunately, there is a paucity of information on the impact of handwashing practices by birth attendants or caretakers on neonatal mortality.

Prevention of neonatal deaths has mainly been centered on maternal health programs such as antenatal care, hygienic care during childbirth and the postnatal period, and early and exclusive breastfeeding. Basic infection prevention measures are based on knowledge of the chain of transmission and the application of routine practices in all settings at all times.^{4,5,6,7,8}

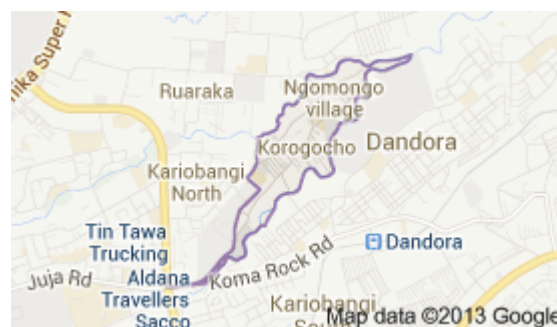
In Kenya, a Public-Private Partnership for Handwashing forum exists and it's led by a National Steering Committee, chaired by the Ministry of Public Health and Sanitation. The Handwashing Initiative involves organizing workshops and communication campaigns to raise awareness about the importance of handwashing with soap (HWWS) to prevent the spread of disease.

There is a clear need for handwashing promotion campaigns in Kenya. According to the Kenya Demographic and Health Survey (KDHS 2008–09),⁹ 44.6% of Kenyan households use appropriate methods of water treatment, with a majority of them boiling water; however, only 5% of caregivers report HWWS at all critical times. In the recent past, through Kenya's Handwashing Initiative, a series of promotional materials were designed and developed specifically targeted at internally displaced persons living in the country. Fundraising efforts have also been initiated for the implementation of a national program to make HWWS an ingrained habit among the population. The push for better handwashing has been the initiative of the Ministry of Public Health and Sanitation, Ministry of Education, Ministry of Water and Irrigation, Soap and Sanitary Hardware Manufacturers, civil society organizations, UNICEF, the World Health Organization (WHO) and the Water and Sanitation Program. There is a need for the application of routine practices in all settings at all times.

Study Areas and Objectives

KOROGOCHO

Korogocho is one of the largest slum neighborhoods of Nairobi, Kenya. Home to 150,000–200,000 people living in an area of 1.5 square kilometers, located northeast of the center of the city.¹⁰ Korogocho was founded as a shanty town in what was then the outskirts of the city. In 2009, it was estimated to be the fourth largest slum in Nairobi, after Kibera, Mathare Valley and Mukuru kwa Njenga.



The name Korogocho is a Swahili term meaning “crowded shoulder to shoulder.”¹¹ Located 11 kilometers from Nairobi’s center, Korogocho’s land was originally owned by the government. It was vacant until it was occupied by rural migrants in the 1960s. Korogocho borders Dandora,⁵ one of Nairobi’s main garbage dumps. The slum is a formal subdivision of Kasarani division, Nairobi Province, and is divided into the following seven “villages”: Highridge, Grogan, Ngomongo, Ngunyumu, Githaturu, Kisumu Ndogo/Nyayo and Korogocho.

As the Korogocho slum expanded, it extended onto private land, and almost half of the land is now privately owned. The slum is currently populated mostly by people from the Kikuyu, Luo and Luhya communities (some of Kenya’s most populous communities). Most of the residents work as casual laborers in the surrounding industrial area or at construction sites. Residents live in structures built primarily from recycled materials and yet they have to pay rent to landlords. There is no central sewer system and no street lighting, which makes the area insecure, with endemic crime.

The health status of Korogocho residents is poor in part due to poor infrastructure, limited resources, overcrowding, and proximity to the garbage dump. Several organizations provide free health care services in the slum,¹¹ and others organize HIV/AIDS prevention work. The area has been targeted for this intervention because of rampant illegal drug and alcohol abuse. Furthermore, the population’s HIV infection prevalence in 2008 was estimated at 14%.⁹ An education center, known as the “Caretakers Orphans Education Centre” (CEOC), has been established in Korogocho. It is funded by charitable donations from the UK to help children orphaned by AIDS have access to an education, food, and basic medical attention. The government has come up with the Korogocho Slum Upgrading Project, which seeks to upgrade the living standards of the people in the area.

Other organizations, especially nongovernmental ones, are operating health facilities in the area. There are also some privately owned health facilities in and around the area that provide health care services.

BONDO

Bondo, an administrative district in Nyanza, has a population of more than 238,000, with 58% under the age of 19. It is one of 11 districts in what was known as Nyanza Province. The headquarters of the district is Bondo town. There are approximately 57,000 households, which makes for a high population density of about 230 people/km². Bondo is divided into five wards—Ajigo, Bar Kowino, East and West, and Nyawita—all of which border Lake Victoria.¹²

BONDO DISTRICT MAP

A map of Bondo District, Kenya, showing its various divisions. The map is color-coded: yellow for Uisgu and light blue for Bondo. A legend in the bottom left corner identifies symbols for health facilities: a blue square with a white cross for GOK Hospital, a blue circle with a white cross for GOK Health Center, a blue diamond with a white cross for GOK Dispensary, a red square with a white cross for Private Hospital, a red diamond with a white cross for Private Dispensary, a red triangle with a white cross for Private Clinics, and a red diamond with a white cross and a small red square for Private nursing/maternity Home. A small white square with a black border represents a Sub Location. The map also includes a scale bar (0 to 24 km) and a north arrow.

Legend

- GOK Hospital
- GOK Health Center
- GOK Dispensary
- Private Hospital
- Private Dispensary
- Private Clinics
- Private nursing/maternity Home
- Sub Location

Division

- BONDO
- UISGU

Bondo has some of the worst health indicators in Kenya, including high maternal, neonatal, and child morbidity and mortality from HIV/AIDS, tuberculosis (TB), malaria, and other communicable diseases; poor sanitation with low latrine coverage; and poor nutrition. The burden of disease, coupled with rampant poverty and underdevelopment, has led to the declining health status of its populace. A recent survey revealed that the prevalence of diarrhea among young children is very significant, with the highest percentage at the age of two (24.6%), decreasing only at the age of four when it drops below 10%. Evidently this can be related directly to the poor provision of clean water and poor sanitation.

The primary aim of the assessment was to evaluate the knowledge, attitudes, perceptions, and practices of women (mothers of infants under 28 days of age) and service providers toward HWWS.

- Handwashing Knowledge, Attitudes, and Practices in Korogocho (Nairobi) and Bondo (Nyanza)

Methodology

A mixed methods approach was utilized whereby qualitative and semi-quantitative data were collected from urban and rural locations. The study setting was designed to include two disparate, but resource-poor settings in Kenya: a rural area in Bondo (Nyanza) and Korogocho slums, Nairobi.

ASSESSMENT STRATEGY

The assessment was designed to gather data from mothers of infants under 28 days old and service providers, including both skilled and traditional birth attendants. Open-ended, semi-structured qualitative questions and focus group discussions (FGDs) were used to help understand the knowledge and attitudes related to existing MNCH-related HWWS practices by birth attendants and midwives. In addition, the assessment sought to examine contributory/explanatory factors such as:

- Socioeconomic status
- Water availability
- Handwashing advice provided to caregivers
- Antenatal clinic (ANC) attendance and counseling

In Korogocho, FGDs were conducted with women and female TBAs from within the community, mainly from the area in and around the Kariobangi Health Centre. The survey also included in-depth interviews and key informant interviews with women and service providers from health centers and households in the villages of Korogocho, including Korogocho A, Korogocho B, Kisumu Ndogo, Grogon A, Grogon B, Nyayo, Ngomongo, and Highridge.

The FGD participants at Bondo District Hospital were randomly recruited by community health workers (CHWs) from various locations surrounding the hospital, while the key informant interviews and the in-depth interviews involved people who fit the given criteria and who were willing to participate in the study. Additional key informant interviews and in-depth interviews were also conducted at other sites, including Uyawu, Got Matar, Gobei, and Mawere health facilities.

Results

A total of 60 people participated in the study through FGDs, key informant interviews or in-depth interview as shown in table 1. A summary of the findings of the qualitative data collected is presented for each group in this section.

The age of the mothers participating in the assessment in Korogocho ranged from 17 to 38 years; the majority had attained secondary school level of education. In Bondo, the age of the mothers was similar, ranging from 19 to 32 years. Of the mothers in Bondo, the highest level of education completed for the majority was primary school—they were either housewives or unemployed. The few who had reached high school were either self-employed or worked part time.

Table 1: Distribution of Participants by Group and Data Collection Method

GROUP/CATEGORY OF RESPONDENTS	FOCUS GROUP DISCUSSION (URBAN AND RURAL AREAS)	KEY INFORMANT INTERVIEWS (NUMBER OF RESPONDENTS)	IN-DEPTH INTERVIEWS (NUMBER OF RESPONDENTS)
Women with infants under 28 days old (caregivers)	1 group per area of 8 women	6	12
Health Care Workers	1 group per area of 8 skilled service providers	4	6
Traditional Birth Attendants	1 group per area of 8 TBAs	2	6
Total Respondents/ Participants	6 groups (24 participants)	12	24

CAREGIVER KNOWLEDGE, ATTITUDES, AND PRACTICES

Socioeconomic factors

The majority of the women participating in the assessment live with their spouses and their spouse's family. Most of those in Korogocho live only with their spouses, while others live on their own with their children (single mothers).

Sources of income varied for both rural and urban mothers. The women in both groups were married and contributed to the household income. Some mothers in the rural areas received financial or material assistance from their parents-in-law. The women in both urban and rural settings are also involved in “merry-go-rounds,” which provide a way of saving a little money for their family's needs. A “merry-go-round” is a system where a group puts a designated amount of money together collected from each member usually on monthly basis. Each member takes a turn as the recipient of the entire amount of money collected to either engage in a project of their choice or buy designated items as agreed upon by the group members.

Responsibilities of women before and after delivery

Before childbirth, the women in both communities are reported to be very busy taking care of their households. Responsibilities mentioned included cooking, cleaning, laundry, and taking care of the other children in the home. They also engaged in small businesses, which mainly included selling foodstuff. In addition, the women in rural settings are also taking care of their kitchen gardens, where they grow vegetables and other foodstuffs mainly for consumption by the family, and caring for cattle and any domestic animals (goats and sheep) that the family may possess.

It was apparent that following childbirth, instead of a mother's workload decreasing, caring for the newborn was added to the list of things that she was required to do. After a few days of rest after childbirth, mothers in Bondo are expected to take up the normal duties of wife and mother, catering to her family's needs as well as taking care of the newborn. In some instances, especially for those in Korogocho, the mother did not even have a few days to rest after childbirth since there was no one to assist with the other chores. She would therefore be expected to take up her duties as a caregiver in the home almost immediately after childbirth. For some, this happened as soon as two days after delivery. Respondents felt that in the past other relatives would come to help, giving the mother more time to rest, but this is no longer the case.

One religious sect in Bondo known as *Nomia* requires that a mother should be completely secluded for two months after childbirth to ensure that both mother and baby have no contact with the outside world. Some respondents thought that this was a way to ensure that the child does not get any infections. However, this seclusion meant that the child could not be immunized during this time. Mothers and CHWs were of the opinion that most mothers would prefer to deliver in health facilities. This was mainly because the providers at the facilities would be able to take care of the mother in case of any complications. However, they stated that an equal number of mothers delivered at home and at health facilities because of lack of money to pay for expenses associated with health facility deliveries. The respondents however were aware that the TBAs have no way to determine if a mother is HIV-positive. In the cases of health facility deliveries, HIV infection would have been detected and appropriate measures taken to prevent transmission of the infection to the baby.

Handwashing habits

Both urban and rural mothers reported almost similar handwashing habits in their homes. Most respondents said that they washed their hands before handling the newborn, before and after eating, and before breastfeeding. Access to water made it easier for both the mothers in Bondo and in Korogocho to wash their hands at the expected, appropriate times during the day.

However, this was not the case at night since water was mainly accessed from outside the house. Handwashing practices at night were therefore very different from those during the day. During the night, the mothers did not wash their hands before breastfeeding. This was mainly because there were no handwashing facilities available at night in their sleeping. Overall, mothers appeared to be more meticulous about handwashing habits than their husbands and their children.

"... When you ask men to wash their hands they say most dirt is in the stomach ... " ~ Mother, Korogocho

"Men in this community only wash their hands before and after eating ... as for children, we mothers have to remind them." ~ Mother, Korogocho

"The service providers wear gloves so they do not wash their hands." ~ Mother, Korogocho

"Like my husband, I have to stand there like 'serikali' and order him to wash his hands after visiting the toilet." ~ Mother, Bondo

"Children do not wash their hands They only wash after eating and even then only at home. If they are out there they do not wash their hands." ~ Mother, Bondo

The men were reported not to be as keen about handwashing as the women. Most of the respondents said that the men mainly washed their hands before and after meals, and rarely on any other occasions. In some cases the women stated that they had to insist that their spouses or partners wash their hands before meals. If the meal was placed before them and handwashing water was not provided quickly enough, the men sometimes ate their food without washing their hands. The respondents said that the men felt that they were busier and therefore had less time to wash their hands. Other reasons for poor handwashing tendencies among the men included ignorance of the value of handwashing and in some cases lack of water.

Children were reportedly unable to comply with routine handwashing voluntarily in the absence of constant reminders about the family's handwashing rules. The mothers and other females in the household had to constantly remind the children to wash their hands when they came home from school, and before and after meals. Children therefore usually only washed their hands when reminded by their mothers. However, if they happened to visit a home where handwashing was not a common practice, it was observed by the mothers that the children did not wash their hands at all.

The women reported that they did not see the service providers in health care facilities wash their hands as frequently as required due to the perceived lack of running water in most facilities. Instead, handwashing was replaced by the wearing of gloves by the service providers.

Availability of water

Almost all of the mothers indicated that they had access to a water supply within a 30-minute walk from where they lived. The respondents from Bondo reported that water sources included wells, boreholes, rivers, and rain water collected on the roof, all of which are typical of rural settings. Their water sources included Lake Victoria, streams, and rivers in the vicinity of the households. Most of the water sources were 10 to 15 minutes by foot from their residences. In cases where rain water was collected, especially during the rainy season, it was readily available, but most of the women reported that they lacked proper and adequate storage facilities. Water in the homes was stored in plastic containers, which were usually empty by evening and therefore not convenient for handwashing at night.

The women in Korogocho, on the other hand, mainly accessed water from taps that were regulated either by the city council or water vendors. Availability of water was highly dependent on when the city council let the water flow into the pipes or when the people manning the water points were available to sell the water to the mothers.

New mothers' knowledge of risks faced by infants and prevalent illnesses

The respondents in Korogocho indicated that they mainly received advice on infant feeding from service providers and limited information on illnesses affecting the infants. Measles, the common cold or flu, diarrhea and skin diseases, and irritation due to prolonged exposure to urine and stomachaches were reported as some of the illnesses and conditions that affected newborns. When asked how to mitigate against these risks to infants' health, the respondents mentioned that one should maintain body and environmental cleanliness as well as ensure that a child is taken to a health facility when unwell. They stated that they were advised to take the children for all immunizations and adhere to the doctor's advice.

The women in Bondo were aware that it is possible to reduce child health-related risks by washing hands, practicing exclusive breastfeeding, and observing optimal health care-seeking behavior. The mothers mentioned poor personal hygiene, living in a dirty environment, failure to wash hands, and failure to breastfeed the infant as possible causes of illnesses in children. These women also indicated that among the measures that could be taken to reduce these risks were following proper handwashing, practicing exclusive breastfeeding, taking children for immunization, and keeping all clinic appointments. The women stated that they were given some advice on handwashing and breastfeeding during ANC visits.

Women's attitudes, knowledge, and practices in accessing ANC and handwashing advice

Most of the mothers in the two areas had their first ANC visit during the third trimester or late in the second trimester of their pregnancies. This indicated that most mothers attended only one or two ANC visits in the course of each pregnancy.

Those who did not attend ANC were assisted during childbirth by TBAs, CHWs, and female relatives such as mothers-in-law, grandmothers, and older female siblings. However, all respondents in Korogocho and Bondo knew of mothers who did not receive advice from anyone, given that they did not seek ANC services from the facilities and did not have close female relatives or friends to provide the appropriate advice related to pregnancy and newborn care.

The new mothers indicated that pregnant women in both Korogocho and Bondo sought the assistance of a doctor for most health care issues. The reasons given included the availability of medical vouchers for MNCH care in Korogocho, which entitle the pregnant woman to treatment as long as she has updated her monthly contribution to the voucher program. In both areas, women expressed confidence in the comprehensiveness of tests and checkups carried out at the facilities. They also perceived the doctor as skilled and capable of handling any complications that may arise during delivery.

The women in Bondo expressed preference for doctors during the antenatal period, citing that TBAs “only massage the pregnant women.” They also felt that the quality of health advice given to them by medical providers was better than that given by other community members. None of the women in Bondo mentioned TBAs, indicating that they did not receive any interventions from TBAs during the antenatal period. It also emerged that hygiene and handwashing were discussed during ANC visits to health service providers. However, there was no specific mention of HWWS. It also emerged that the women in the area delivered at home or in the hospital. This finding indicated that some of them still received attention from the TBAs. Those women who delivered at home reportedly cited lack of money (*to pay hospital fees*) as the main reason for home deliveries. The women explained that they were advised on exclusive breastfeeding during the delivery period by both the TBAs and the midwives at the health facilities.

Other advice given to mothers during ANC visits included topics such as practicing exclusive breastfeeding, eating a balanced diet, keeping the baby warm, washing their hands regularly, and keeping their babies clean. In addition, tests and checkups were done, which included weight measurements and blood tests. There was also mention of non-specific health care advice being offered.

Preferred or trusted media sources

Of the women respondents in both Korogocho and Bondo, the majority of new mothers mentioned radio and television as the most preferred media source because they were affordable and interactive. They also indicated that these media forms were able to provide easy-to-understand advice on how to care for infants.

“... when we see something new we can try it out.” ~ Mother, Korogocho

“... the media gives us advice on how to care for infants.” ~ Mother, Bondo

On a smaller scale, a few women also mentioned newspapers and chief's *barazas* as trusted sources of information.

HANDWASHING PRACTICE AND ADVICE OF HEALTH CARE WORKERS

Health care workers' perceptions of women's daily activities in the Korogocho community were similar to those described by new mothers, including having to perform the usual household chores in addition to caring for the newborn after delivery.

"... women trust [the] hospital more than the TBAs because the TBAs all they want is money and a patient can lose their lives or their babies." ~ Service Provider, Korogocho

"... the turnout of women for ANC is low. I think women are using family planning and this is a positive to us." ~ Service Provider, Korogocho

Health education provided to women during both ANC and postnatal care did not seem to include hygiene practices. There was little or no mention of neonatal deaths from infection caused by the transfer of dangerous microbes through lack of proper handwashing. When the health care workers highlighted their individual perceptions of the role of a birth attendant, the majority of responses

centered on the prevention of mother-to-child transmission of HIV and not general health care and hygiene to ensure care and safety of the newborn.

During delivery, the service providers in Bondo indicated that most women sought the services of skilled service providers. They were able to enumerate several occasions when they carried out thorough handwashing. These included before and after every clinical procedure, after visiting the toilet, before and after eating, and when they got home, as well as before handling infants. They also listed a variety of handwashing agents used, including soap, antiseptic solutions, and detergents. The latter two were only used in clinical settings. Some of the providers stated that they used hand sanitizer in clinical settings because they found the sanitizer to be more convenient, given that water was not always available in their facilities.

The service providers indicated that the health care advice that they provide was well-received and had a positive impact on mothers with regard to hygiene, nutrition, immunization, and family planning. Health care workers also mentioned that the advice/information provided reduced the incidences of reported malnutrition and diarrhea, improved health and hygiene, and increased adherence to breastfeeding guidelines.

The service providers were asked where they obtained their training, as well as their opinions on where new mothers obtained health information. They indicated that they received training on advising new mothers during their college education and had not received any training since. They were of the opinion that other sources such as radio and posters and banners provided similar information on caring for newborns. The health care workers were of the opinion that new mothers rarely listened to the advice of TBAs. When asked why there was low turnout for ANC services, the providers reputed that this was because of the "acceptance of family planning" although there was no evidence to support this claim.

"... diarrhea is common for both adult[s] and children, we might get 10 children with diarrhea in a day and get one in an adult." ~ Service Provider, Bondo

"I would say hygiene contributes to this diseases since most people live in the slums." ~ Provider, Korogocho

"We advise women to wash their hands before handling the baby but majority do not follow." ~ Provider, Korogocho

Most of the health workers believed that the mothers usually washed their hands with soap. A few also stated that some kind of disinfectant; either Dettol or Jik, is also added to the washing process. The trained health care workers had similar views about community handwashing practices as those expressed by the women during FGDs and key informant interviews.

Service providers' perception of men and children on handwashing was that men rarely washed their hands and children washed their hands only when told to do so. The women in both

Korogocho and Bondo washed their hands regularly, including after changing the child and before breastfeeding. When asked what reasons can prevent a person from washing his or her hands during a typical day, they felt that laziness, ignorance, and the cost of water were contributory factors.

The health care workers reported that although they educate new mothers on the dangers/risks of poor hygiene to the newborn, most of the mothers and caregivers failed to follow advice on proper hygiene practices. They also mentioned that they advised women to use running water and soap.

The majority of health care providers believed that a qualified nurse or midwife assisted in most deliveries. Interestingly, while some of the providers stated that most women delivered at a health facility, most of the women were of the opinion that the skilled attendant deliveries and non-skilled deliveries were almost half and half in both communities.

Most of the service providers said that they washed their hands before putting on gloves. They thought that it was possible that the mothers did not see them wash their hands, given that they usually did this in between patients, which would explain the mothers' perceptions that the providers did not wash their hands. However, they did state that they did not usually change gloves in between each client.

Steps 1 and 2 of the handwashing technique in the Maternal and Child Health Integrated Program (MCHIP) job aid (Appendix 5) were correctly demonstrated by all the providers. All other steps were either not demonstrated or incorrectly demonstrated.

TBA TRAINING, HEALTH CARE AND HANDWASHING ADVICE GIVEN TO NEW MOTHERS

Training of TBAs and perceptions of a mother's responsibilities

The view of TBAs on women's usual activities after childbirth was similar to those expressed by the new mothers and service providers. They stated that a new mother was expected to do her usual chores as well as take care of the newborn. The TBAs indicated that their job objectives were to earn a living and to help women deliver safely. Among their successes, TBAs mentioned conducting successful deliveries and setting up support groups, where they advised pregnant women on ANC attendance and health education. The TBAs also mentioned that they had received training from a variety of sources including:

- A professional doctor sponsored by United Nations
- World Vision
- Their mothers who were midwives before them
- Observation while working as a casual in a hospital

The TBAs mentioned exclusive breastfeeding and the importance of eating a balanced diet as advice that they gave to new mothers.

TBAs' knowledge and practice of community handwashing habits

The TBAs indicated that men washed their hands before meals and after visiting the toilet. On giving HWWS advice, the TBAs indicated that they demonstrated this technique to new mothers because they believed that handwashing was effective in removing germs. The TBAs correctly demonstrated steps 1, 2, and 3 of the handwashing technique in the MCHIP job aid (Appendix 5). The TBAs also mentioned handwashing, naming some agents routinely used to

ensure better cleanliness, including soap, methylated spirit, and disinfectants. Although the new mothers indicated that service providers did not wash their hands, the TBAs mentioned that handwashing among the service providers took place before and after delivery and before putting on gloves.

Discussion

The assessment focused on new mothers and key informants in Korogocho and Bondo. Given that the goal was to learn about HWWS in the context of prevention of infections that lead to neonatal deaths, the information obtained on knowledge, attitudes, and practices from new mothers and service providers (health care workers and TBAs) was found to be very important in our understanding of information flow and barriers to proper handwashing practices.

MOTHERS OF INFANTS UNDER 28 DAYS OF AGE (CAREGIVERS)

Only a small fraction of new mothers interviewed in both Korogocho and Bondo practiced proper HWWS and proper washing of hands when handling an infant. These women reported factors such as poor availability of water, not having been shown how to wash hands, and their busy schedules among other reasons for this lapse.

New mothers indicated a reluctance or inability of women to access ANC services when pregnant. The motivating factor for attending ANC was mainly related to access to MNCH vouchers. In both Korogocho and Bondo, the new mothers did not attend the prescribed four ANC visits during pregnancy, which contributed to their limited knowledge about handwashing, breastfeeding, and hygiene standards required to protect the infant from infections. It is possible that they missed the talk on handwashing, given that they did not always attend the recommended four ANC visits and sometimes only had one visit before delivery.

The women in these areas do not attend ANC as prescribed and, as a result, do not reap the full benefits intended by the provision of ANC services. Other factors influenced whether pregnant women access ANC services, including distance to the facilities, especially in the rural areas; presence or absence of a supportive environment provided by the health care workers; and cost. In this assessment, the health care workers mentioned “work overload” as one of the challenges affecting their work environment. Although the MNCH vouchers are motivation for women to access ANC, the number of visits does not allow for all the required counseling services to be effectively delivered.

The new mothers indicated that during the ANC visit at the facility, the majority of women were not shown how to wash their hands before handling an infant. The illnesses the participants mentioned, which included diarrhea, sepsis, and related infections, are closely related to poor handwashing practices. This suggests that knowledge was limited to breastfeeding knowledge, which they may have acquired during delivery at a facility attended by skilled health workers.

Despite knowing of the potential of illnesses because of lack of infection prevention practices, particularly in Bondo, some women still delivered with the assistance of TBAs or relatives and neighbors. There was mention of the inability to afford the costs of hospital delivery and this could be linked to poor ANC attendance. If the mothers had attended the ANC clinic, they would have learned about the MNCH voucher program, which would have resulted in an increase in the numbers of hospital deliveries as well as deliveries in small health care facilities that may not have a designated maternity ward.

Some mothers also learned about the voucher system through word of mouth from other mothers and community members. Perceived and reported non-receptive treatment of the mothers by service providers (who are underpaid and overworked) was mentioned in most of the facilities, which may have hindered health facility deliveries even when the women were aware of the voucher system. Some mothers may also have felt that they would be treated better by the traditional midwives than the service providers at the clinic or hospital.

The new mothers also indicated that other members of the household rarely washed their hands, particularly the men. Among the reasons given were laziness and lack of water even though access to water within a short distance of the household was established. It is important therefore to ensure that mass media messages about the importance of handwashing also target men as well as women. Mass media, preferably radio or television, is a useful tool for reaching various sections of the population. The assessment established that women in both Korogocho and Bondo preferred and trusted the radio or television even though very few women read the newspapers.

SKILLED SERVICE PROVIDERS

Although breastfeeding advice was highlighted by skilled service providers as important and they had knowledge of infection prevention practices, these topics were rarely discussed. The health care workers' ANC talks focused more on HIV and breastfeeding, with little or no mention made of handwashing and infection prevention practices.

Standard breastfeeding information was communicated to new mothers as evidenced by their responses. However, health care workers did not communicate information on the need for handwashing and HWWS, including information about other handwashing agents, indicating their lack of knowledge about the need for handwashing when handling a newborn. In both Bondo and Korogocho, it appeared that not all health care workers communicated handwashing information to women or indeed practiced it themselves despite being aware of correct handwashing procedures. This was apparent in the handwashing demonstrations, during which only three steps of the Ministry of Health's handwashing job aid were shown. The health care workers were also aware that pregnant women typically attend the second and third trimester ANC visits, and that the women are often assisted during childbirth by untrained individuals such as TBAs, neighbors, or family members. This was a matter of concern to them, given that delivery by untrained personnel may not involve observing standard precautions. In Bondo, health care workers voiced concerns about conditions that they felt would affect service delivery for newborns. This was due to perceived heavy workloads and limited facilities such as nurseries.

The facilities are inadequately staffed and the few health care workers available do not have all the necessary training in MNCH. The insufficient staff and lack of training are likely to pose challenges to the available staff, potentially resulting in unintended negative consequences regarding women's choices for advice and delivery, such as seeking the services of TBAs for delivery assistance. This is evidenced by the fact that a majority of women in Korogocho access care at the neighboring Kariobangi facilities. Current ANC visit data are not available for Kariobangi, which would provide more definitive answers.

TRADITIONAL BIRTH ATTENDANTS

It is important to note that TBAs in Bondo reported that their job objective was to earn a living and to help women deliver safely. They did not indicate that they had received any formal medical education, but had nonetheless established support groups and health education programs for pregnant women. The TBAs also observed that men typically washed their hands before meals and after visiting the toilet. The TBAs in Korogocho reported that they demonstrated HWWS to new mothers and counseled new mothers on exclusive breastfeeding and the importance of attending ANC; however, there was no evidence to support these claims among the mothers. The TBAs' own handwashing practices included washing their hands before putting on and after removing gloves. The handwashing agents used by TBAs in Korogocho included soap, disinfectant, and methylated spirit.

The health care workers and TBAs are aware of the need for HWWS before handling or breastfeeding an infant, but the practice is not commonplace in the community or at household

level. These providers do not always communicate the information to their clients either when they seek ANC care and at delivery points.

Finally, one limitation of the assessment was the use of CHWs to locate the respondents, which may potentially have influenced the responses of participants. However, the triangulation of information from the three groups indicates that the responses were reliable. Therefore, sufficient information was gathered to provide insights into the knowledge and attitudes of new mothers and birth attendants in Korogocho and Bondo. The assessment findings indicate that new mothers in urban slums and rural areas do not have sufficient knowledge or do not practice correct handwashing habits that would reduce the burden of neonatal infections.

Recommendations

Community Level:

- Mobilize stakeholders in the communities, including CHWs, service providers, health care workers, and TBAs, to include HWWS in their counseling practices.
- Sensitize communities, in particular the women, on the importance of HWWS and the need for other family members to adopt the recommended hygiene practices in households with infants.
- Raise community awareness of the dangers of poor handwashing habits to ensure that all community members, both male and female, will encourage correct handwashing in their homes and reduce incidences of diarrhea and vomiting, which can easily be passed on to the infant in the home.

Service Providers:

- Train service providers (other than doctors) on the handwashing communication methods and proper counseling of mothers during ANC and delivery.
- Train service providers (other than doctors) on the handwashing communication methods and proper counseling of mothers during ANC and at delivery.
- Train TBAs on handwashing and communication of hygiene practices.
- Raise awareness of any programs that may lead to increased ANC attendance, such as the MNCH voucher program, which increases contact time between providers and mothers to be.
- Address shortages in staffing in both Korogocho and Bondo. Both sites have established community units, which can be appropriated and staffed with CHWs and service providers who are trained to provide handwashing advice and counseling.

Programmatic Level/Approaches:

- Design strategies to increase the involvement of TBAs in the messaging and training on best practices for infection control during and after delivery, include counseling of new mothers after delivery.
- Increase current behavior change communication activities to address low ANC attendance rate, HWWS, and community hygiene knowledge and practice. Opportunities to carry this out were noted in this assessment, given that all households reported having access to a radio or television. Others get their information from the chief's *barazas* and village elders. Involvement of these community gatekeepers would increase dissemination of hygiene practices.
- Develop monitoring and evaluation and reporting capacity of the existing health facilities for ANC reporting and monitoring, and handwashing counseling activities.
- Establish linkages between the community units and facilities to capture handwashing counseling and coverage of the catchment area.
- Ensure that all mothers to be are trained on correct times and methods for handwashing. It is possible that this knowledge will be passed on to other mothers in the community.

References

1. O'Reilly CE et al. 2012. Risk Factors for death among children less than 5 years old hospitalized with diarrhea in rural western Kenya, 2005–2007: A cohort study. *PLoS Med* 9 (7): e1001256.
2. UNICEF/WHO. 2009. Diarrhea: Why children are still dying and what can be done. Geneva: The United Nations Children's Fund/World Health Organization. 1–58.
3. Bryce J, Boschi-Pinto C, Shibuya K, Black RE. 2005. WHO estimates of the causes of death in children. *Lancet* 365: 1147–52.
4. Black RE et al. 2010. Global, regional, and national causes of child mortality in 2008: A systematic analysis. *Lancet* 375: 1969–87.
5. Boschi-Pinto C, Bahl R, Martines J. 2009. Limited progress in increasing coverage of neonatal and child-health interventions in Africa and Asia. *J Health Popul Nutr* 27(6): 755–62.
6. World Health Organization Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. 2000. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: A pooled analysis. *Lancet* 355:451–5.
7. Brandtzaeg P. 2003. Mucosal immunity: integration between the mother and the breast-fed infant. *Vaccine* 21:3382–6.
8. Goldman AS. 2000. Modulation of the gastrointestinal tract of infants by human milk. Interfaces and interactions. An evolutionary perspective. *J Nutr* 130(suppl); 426S–31S.
9. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland: KNBS and ICF Macro.
10. Kenya National Bureau of Statistics. 2010. *Population and Housing Statistics, Population Projections by Province, 1999–2010*. Nairobi, Kenya: Kenya National Bureau of Statistics.
11. Korogocho socioeconomic survey report –KIDDP 2010. Accessed online on February 1, 2014 at: <http://www.kiddp.net/download/Publications/Korogocho%20Socio-Economic%20Survey%20Report.pdf>.
12. National Coordinating Agency for Population and Development. 2014. *Bondo – District Strategic Plan 2005–2010*. Accessed online on February 1, 2014 at: www.ncapd-ke.org.

Appendix 1: Sampling of the Different Target Groups

TARGET GROUP	FOCUS GROUP DISCUSSION	KEY INFORMANT INTERVIEWS (NUMBER OF RESPONDENTS)	IN-DEPTH INTERVIEWS (NUMBER OF RESPONDENTS)
Women with infants under 28 days old	1 group per area of 8 women	6	12
Health care workers	1 group per area of 8 skilled service providers	4	6
TBAs	1 group per area of 8 TBAs	2	6
Total Respondents/ Participants	6 groups (24 participants)	12	24

Appendix 2: Health Facilities and Staffing Levels in Korogocho

	VILLAGE AND COMMUNITY UNITS	HEALTH FACILITIES	STAFF AVAILABLE
1	Nyayo	1 CU	1 CHEW
2	Kisumu Ndogo	1 CU	1 CHEW
3	Korogocho A	1 CU	1 CHEW
4	Korogocho B	1 CU	1 CHEW
5	Grogan A	1 CU	1 CHEW
6	Grogan B	1CU	2 KRCHNs; 2 COs
7	Highridge	Tumaini	8 KRCHN; 3 COs
		Crescent Medical Aid	*ND
		Vision People- Marura Branch	*ND
8	Gitathuru	1 CU	Not staffed
9	Ngomongo	1 CU	Not staffed
Service Delivery: Facilities outside the Korogocho environs where women in Korogocho receive services.		Jamii (Kariobangi)	3 KRCHNs; 3 Enrolled Nurses; 2 COs
		Marura(Kariobangi Light Industries)	2 Registered Nurses; 1 CO
*Numbers not determined; KRCHN – Kenya Registered Community Health Nurse; CO – Clinical Officer; CU – Community Unit; CHEW – Community Health Extension Worker			

Appendix 3: Staffing in Bondo Health Facilities

HEALTH FACILITY	COMMUNITY UNIT		DOCTORS	CLINICAL OFFICERS	NURSES	CHEWS	CHWS
Mawere Dispensary	Abom		0	0	2	1	10
Gobei Dispensary	Ajigo	Barchando	0	1	3	1	27
Uyawi Dispensary	Uyawi		0	2	3	1	18
Serawongo Dispensary	Nyangoma A	Nyangoma B	0	1	1	0	11
Kambajo Dispensary	Maranda	Usire	0	1	2	1	20
Bondo District Hospital	Barkowino	Nyawita	3	4	32	1	35
Nyaguda Dispensary	Nyaguda		0	1	1	1	25
Anyuongi Dispensary	East Miguena		0	0	2	0	10
Ouya Dispensary	Got Abiero		0	1	1	1	11
Mabinju Dispensary	West Miguena		0	0	2	0	12
Kapiyo Dispensary	Kapiyo		0	1	1	1	10
Radier Dispensary	Got Ramogi		0	1	1	1	10
Usigu Dispensary	Usigu		0	1	6	1	12
Ulungo Dispensary	Barkanyango		0	1	1	1	10
Ogam Dispensary	Nyamonye		0	1	2	0	16
Othach Dispensary	Othach		0	1	1	0	12
Got Matar Dispensary	Pala		0	1	2	1	10
Got Agulu Sub-District Hospital	Got Agulu		1	5	10	0	20
Usenge Dispensary	Usenge		0	1	2	1	10
Mageta	Mutundu (Island)		0	1	2	0	10
Mageta Dispensary	Mahanga (Island)		0	0	1	0	12
Ndeda Dispensary	Ndeda (Island)		0	1	1	1	5

Appendix 4: Linked Health Facilities and Community Units in Bondo District

	LINK HEALTH FACILITY	COMMUNITY UNITS	
1	Mawere Dispensary	Abom	
2	Gobei Dispensary	Ajigo	Barchando
3	Uyawi Dispensary	Uyawi	
4	Serawongo Dispensary	Nyangoma A	Nyangoma B
5	Kambajo Dispensary	Maranda	Usire
6	Bondo District Hospital	Barkowino	Nyawita
7	Nyaguda Dispensary	Nyaguda	
8	Anyuongi Dispensary	East Miguena	
9	Ouya Dispensary	Got Abiero	
10	Mabinju Dispensary	West Miguena	
11	Kapiyo Dispensary	Kapiyo	
12	Radier Dispensary	Got Ramogi	
13	Usigu Dispensary	Usigu	
14	Ulungo Dispensary	Barkanyango	
15	Ogam Dispensary	Nyamonye	
16	Othach Dispensary	Othach	
17	Got Matar Dispensary	Pala	
18	Got Agulu Sub-District Hospital	Got Agulu	
19	Usenge Dispensary	Usenge	
20	Mageta	Mutundu	
21	Mageta Dispensary	Mahanga	
22	Ndeda Dispensary	Ndeda	

Appendix 5: Participant Recruitment Coverage Area, Bondo and Korogocho

ASSESSMENT SITE A	NAME OF DIVISION	NAME OF VILLAGE	ASSESSMENT SITE B	NAME OF VILLAGE
Bondo	Maranda	Nyawita	Korogocho	Nyayo
	Maranda	Ajigo		
	Maranda	Usire		Korogocho A
	Maranda	Kapiyo		Ngomongo
	Maranda	Onyata		Kisumu Ndogo
	Maranda	Kodero		Korogocho B
	Maranda	Mawera		Mathare North
	Uyawi	Nyagoma		
	Nyangoma	Sinapanga		
	Rabango			
	Usigu	Magaeta Island		
	Usigu	Oseno		
	Usigu	Got Wambasa		
	Usigu	Pala		
	Usigu	Ndiwo		

Appendix 6: Age and Education Level Demographics of the Respondents in Korogocho and Bondo

WOMEN		AGE (MEAN)	RANGE	EDUCATION
FGD	Korogocho	25.5	17–38	Primary/Secondary
	Bondo	24.25	19–32	Primary/Secondary
Key Informant Interview	Korogocho	24	18–30	Primary/Secondary
	Bondo	26	19–37	Primary–University
In-Depth Interview	Korogocho	23.85	15–34	Primary/Secondary
	Bondo	26	19–37	None/Primary

Appendix 7: Handwashing Job Aid



