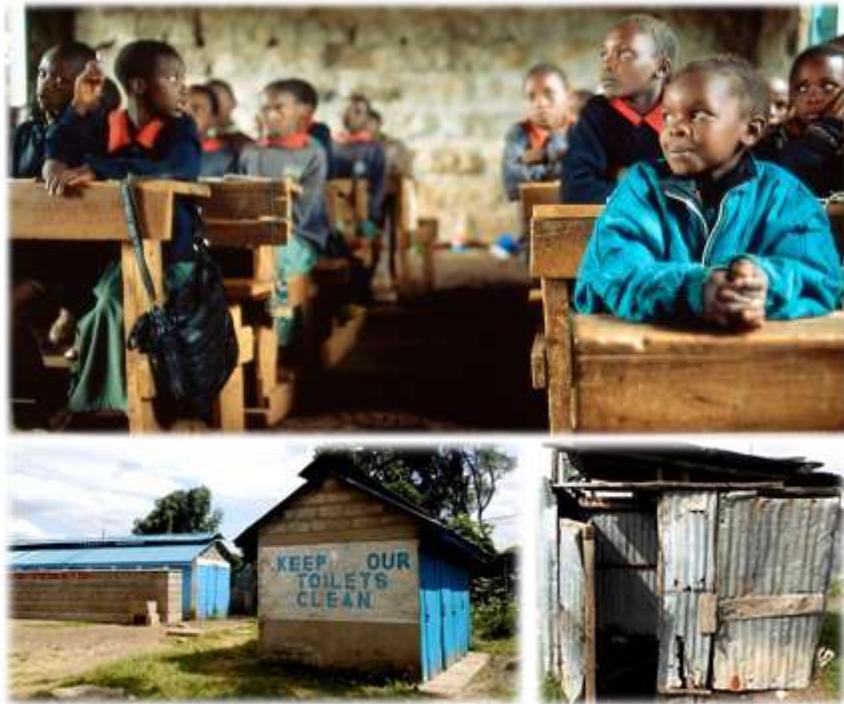


Nani atasikia kilio chetu?

Who will hear our cries?

*Girls' experiences with primary school sanitation facilities
in Nairobi's Mukuru slum*



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I. ABSTRACT

Mwanamke ni muhogo, popote unapotupwa unaota.

A woman is like a cassava plant which grows wherever it is thrown.

- Swahili Proverb

The purpose of this study is to investigate and understand the experiences of early-pubescent girls in Nairobi's Mukuru slum related to the use of their school's sanitation facilities. As one of East Africa's largest urban slums, Mukuru faces a number of infrastructure challenges, resulting in overall poor security and services. While a great deal of literature covers the challenges of poor sanitation in the slums related to adult women in their homes, little research has been carried out relating to girls and sanitation for schools. Yet, girls spend much of their time in the school setting. This study intends to fill that gap in the research.

A participatory research approach was used in this study and the research activities were carried out with support from community-based organizations Akiba Mashinani Trust and Muungano wa Wanavijiji. Twelve schools in Mukuru were investigated. Interviews were carried out with 14 school administrators, and focus groups were conducted with a total of 130 girls in classes six through eight. Additionally, researchers visited the on-site sanitation facilities at each school.

The results of the study show that overall, girls experience poor sanitation conditions in their slum schools resulting in stress, fear and shame. Five data themes were uncovered, including: privacy/gender insensitivity, insecurity, land, health, and water. The problems faced by the girls have significant implications for their physical health, emotional well-being, and academic careers, each of which is discussed. Two underlying variables – land security and violence against women – exacerbate sanitation problems.

The convergence of data gathered in this study and external research result in both short and long term solutions to the issues uncovered in the research. The report concludes with a personal message from the researcher, calling readers to action in order to protect and nurture the dignity of girls which is regularly violated to poor sanitation in slums.

II. INTRODUCTION

Mtu siyo kitu, bora utu.

A person is not a thing, the importance is their humanity.

- *Swahili Proverb*

For the first time in human history, more people live in cities than in rural areas. Urbanization is occurring rapidly around the globe, particularly in developing regions. Research shows that by the turn of the century, Africa boasted the fastest rate of urbanization on the planet, with Kenya as one of the front runners (Amnesty International, 2010, p. 8). While there are many reasons for urban migration, rural dwellers generally seek the promise of opportunity in booming metropolises.

Because of rapid urbanization, cities have become overcrowded, resulting in the formation of sprawling urban slums. Slums, or informal settlements, often go unrecognized by local and national governments or are deemed “illegal.” As a result, they tend to lack even the most basic infrastructure, leaving residents vulnerable to disease, hunger, insecurity, joblessness, and persistent poverty. In Kenya alone, 8 million people are estimated to reside in slums, and more than 60% of Nairobi’s population lives in informal settlements (Weru, 2012).

One of the most pressing concerns within urban slums is access to water and sanitation services. In this research project, “sanitation” and “sanitation facilities” refer to basic toilets, sewerage, drainage, bathing and washing areas. According to the World Health Organization (2013), 2.5 billion people – or 40% of the world’s population – live without a clean, safe, private place to defecate. Additionally, less than 1% of the national budgets in developing countries are spent on water and sanitation (p. 5).

A number of local and international organizations have prioritized urban sanitation due to the urgency and severity of the issue. The Bill and Melinda Gates Foundation has made sanitation one of its primary strategic emphases, citing that improved sanitation increases safety and dignity among women, and is the most effective health intervention for saving lives and improving health. Kenya’s new constitution states that all people have the right to “reasonable standards of sanitation” and the United Nations’ Millennium Development Goal #7 sets the objective to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation” (NCLR, 2010, article 43; WHO, 2006, p. 4).

This research project aligns with and is driven by the concerns of these national and global organizations, but they are not the project’s only motivation. The study is also founded on two key theological values. The first is the biblical principle of intrinsic human dignity. The biblical narrative describes God creating humankind “in his own image” (Genesis 1:27, New International Version) which assigns a divine dignity to all people. The second is the biblical theme of justice for the poor and marginalized. The God of the scriptures favors the oppressed and his son Jesus spent many of his days on earth with people who were outcast by mainstream culture, including women.

Therefore, this study is designed to promote human dignity among young girls as it calls for movement against the structures that violate human dignity, including poor sanitation. It is also designed to show compassion for young women whose voices are often stamped out by society’s most powerful players, to give them a voice, and to work toward provisions of sanitation facilities that will communicate their worth. According to Amnesty International (2010), “Sanitation, more than many other human rights issues, evokes the concept of human dignity” (p. 24)

III. LITERATURE REVIEW

Msilale wanawake!

Women: do not fall asleep!

- Swahili Proverb

This literature review presents an examination of existing research on the issue of slum sanitation. The texts described here were formative in the student researcher's understanding of slum sanitation, especially as it relates to women, and were instrumental in the development of this study. Much of the research is referenced in the Analysis section of this report to support and build upon the findings of the investigation.

While a few individual authors have investigated the subject of slum sanitation, most of the existing literature comes from major international organizations such as the World Health Organization and United Nations Human Settlements Program (UN-HABITAT). The literature falls under three main categories, discussed below: 1) Sanitation Improvement and Planning; 2) Sanitation and Gender; and 3) Sanitation and Health.

SANITATION IMPROVEMENT AND PLANNING

The United Nations and its umbrella organizations have played a major role in global understanding of sanitation concerns. The United Nations Millennium Summit in 2000 resulted in Millennium Development Goal 7, target 10, which aims to "reduce by half the proportion of people without sustainable access to safe drinking water and safe sanitation by 2015." In September 2010, the U.N. Human Rights Council affirmed by consensus that the right to water and sanitation is derived from the right to an adequate standard of living, which is contained in several international human rights treaties. These actions have resulted in a number of sanitation initiatives under U.N. jurisdiction through the infrastructure of UN-HABITAT, UN Water and others.

The work of UN-HABITAT relates most directly to this study as it deals with sanitation in urban settlements. The organization manages two major sanitation initiatives: a Water and Sanitation Programme, through which improvement and research projects are implemented throughout the developing world, and the Water and Sanitation Trust Fund, which provides funding to governments in order to bring sanitation to the standards outlined in the Millennium Development Goals. UH-HABITAT publishes reports annually on a breadth of sanitation issues from waste collection to access to drinking water, many of which are relevant to this study. However, a few of them are particularly relevant to this study as they deeply address slum sanitation.

One of them is a 305-page UN-HABITAT report from 2006 entitled, *Water and sanitation in the world's cities: local action for global goals*. In the first section of the report, sanitation needs and standards are discussed, with an argument that Africa is the region most in need of water and sanitation improvements. In the second section, the report addresses the impacts of deficient sanitation, including the physical implications of poor sanitation such as increased disease and infection, as well as emotional impacts and vulnerability. Section three addresses the causes of poor sanitation including a lack of infrastructure, the illegal status of slums, and rapid urbanization. The remaining sections provide suggestions for improving sanitation in cities such through better governance. The strength of the report is its presentation of a breadth of external research in a

graphical format showing the implications of poor sanitation for slum dwellers, with a focus on women and children.

Another piece of literature that advocates for improved sanitation infrastructure in slums was released in 2009 by Nairobi's own public water supplier, Nairobi City Water and Sewerage Company (NCWS). It is titled, *Strategic Guidelines for Improving Water and Sanitation Services in Nairobi's Informal Settlements*. The report states that Nairobi's infrastructure has been unable to keep up with the pace of urbanization and that the city currently utilizes piecemeal efforts to provide sanitation. The purpose of the report is to propose a more comprehensive, integrated approach to sanitation provisions, particularly for slum dwellers. NCWS describes the current players in the city's sanitation sector, the current state of sanitation and water in Nairobi's slums, and proposes a number of actions steps for improvement. Some of these include strategic corporate and government partnerships, improved infrastructure, and community-level forums to solicit feedback. NCWS is surprisingly bold in declaring slum sanitation as one of their primary "corporate strategies," and includes their company's plan for how involvement in improved slum sanitation. The report concludes with a call for other organizations to follow suit.

Finally, a book has been published the topic of city planning for sanitation, with a focus on poor and marginalized groups who are more likely to suffer from a lack of sanitation infrastructure. It is called *Urban Sanitation: A Guide to Strategic Planning*, written by Kevin Tayler, Jonathan Parkinson, and Jeremy Colin. The book is essentially a step-by-step planning guide targeted to governments and municipalities. The authors argue that "Unified urban sanitation planning is a vital weapon in the war against disease" and encourage collaboration from a variety of stakeholders during the process. While the book moves a step beyond what is covered in this study by addressing urban planning around the issue, it provides a basis for how local governments can engage in the process of strategic planning for sanitation.

SANITATION AND GENDER

Amnesty International, a global human rights organization, has published a significant study on the experiences of women in Nairobi slums. The organization's "Demand Dignity" campaign includes an initiative on clean water and sanitation, asserting that these provisions are basic human rights. As a part of the initiative, Amnesty International has published three major reports about access to sanitation around the world. The first focuses on slums in the Solomon Islands; the second on the slums of Slovenia; and third on the experiences of women in Nairobi's slums. The Nairobi report, titled *Insecurity and Indignity*, compiles three months of research that was collected in 2009 and 2010. 130 women from Nairobi's informal settlements were interviewed about the challenges they face as female slum dwellers. Personal stories and quotes are scattered throughout the report, giving the report a deeply personal touch. In addition, several members of government and leadership from the city's public water supplier were also interviewed.

Insecurity and Indignity narrows in on the startling levels of violence experienced by slum women in Nairobi in nearly every aspect of their lives – in the home, in the community, in the workplace, at the hands of authority (including police officers), and during forced evictions. The second half of the report focuses heavily on how the women experience inadequate access to sanitation services in and near their homes. Women share about the risk of violence they experience related to sanitation, such as the risk of rape and physical attack while using the toilets after dark. They also discuss the degrading conditions they are forced to endure, such as defecating in basins or plastic bags in their homes so they do not risk attack while being outside after dark to use the toilet. Ineffective policing and insecurity – exacerbated by the fact that violence largely goes unpunished – makes women

even more vulnerable to rape and other forms of gender-based violence. Amnesty International argues that this violence plays a major role in making and keeping women in poverty.

Another key resource from UN-HABITAT is an action plan titled *Mainstreaming gender: water and sanitation*. While it focuses on UN-HABITAT's Water and Sanitation Programme in the slums of India, it is highly relevant to this investigation, as it is intended to outline strategies for including the concerns and needs of women in development. The report argues that women "bear the maximum impact of inadequate, deficient or inappropriate water and sanitation services." This is due to the fact that they are often responsible for sanitation needs in the home (such as collecting water, washing clothes, etc.), because they oversee the sanitation needs of their children, and because they have unique physical needs that make sanitation a more pressing concern (i.e. child birth, menstruation, susceptibility to disease). The report suggests a number of actions steps for local governments and organizations to take in order to ensure the safety and well-being of women in sanitation planning. Some of these include the provision of gender-segregated latrines, water access in or near the home, accommodation for menstruation in planning, and training at the national, municipal and community levels on proper hygiene.

Another U.N. entity, UN-Water, is a membership group of organizations comprised of both UN and non-UN organizations concerned with access to safe water worldwide. Their two annual flagship publications include: the Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS), which is targeted to governments and organizations that seek to meet the MDG's around sanitation; and the World Water Development Report, which covers a wide variety of water issues from around the world, and strategies for improving access to water. These publications speak broadly about sanitation concerns globally.

One of UN-Water's publications is directly targeted to policy makers about gender issues and sanitation. UN-Water's Inter-agency Task Force on Gender and Water released a policy brief titled, "Gender, Water and Sanitation." The report argues that reaching the water and sanitation MDG's will ultimately empower women because sanitation burdens are most significant for women. The report argues that improved sanitation approaches must include the concerns of both men and women if they are to be successful. It also draws a direct connection between land rights and sanitation, asserting that "lack of access to (ownership) to land may be the underlying cause of women's limited access to water and a key reason for the greater poverty of female-headed households." Action steps are targeted toward national governments and donor organizations.

Another crucial resource in this study is a report by the Water and Sanitation Supply Collaborative Council (WSSCC) entitled, *Celebrating womanhood: How better menstrual hygiene management is the path to better health, dignity and business*. It is the written work resulting from the 'Celebrating Womanhood 2013: Menstrual Hygiene Management' meeting held by WSSCC in Geneva on 8 March 2013. The meeting was attended by a number of key players in the sanitation realm including a number of international university representatives, Save the Children, UNICEF, the World Health Organization, WaterAid and the Global Economic Forum.

The WSSCC menstrual hygiene report goes in depth on the issue of sanitation as it relates to menstruation, highlighting issues of taboo and the challenges women face during menstruation, especially in low-income areas and slums. It cites several studies which indicate that girls around the world, particularly in parts of Africa and India, regularly miss school during their monthly periods due to a lack of proper sanitation facilities at their schools. Many of the struggles faced by the girls in the report echo the sentiments of those that participated in this study.

The final resource on Sanitation and Gender heavily referenced during the development of this study is a book by Adelaide M. Lusambili entitled, *Environmental sanitation and gender among the urban poor: a case study of the Kibera slums, Kenya*. Lusambili, a medical anthropologist, paints a descriptive picture of life in the slums and the daily challenges experienced by women to maintain proper hygiene for their families. She examines the existing waste disposal infrastructure and water systems (or lack thereof) in Kibera and relates them to the incidence of disease, sanitary behaviors and patterns, as well as health care provisions related to women.

SANITATION AND HEALTH

Much of the literature on sanitation and health comes from the World Health Organization. WHO's Water, Sanitation and Health campaign intervenes with research and development projects where "the health burden is high" and the "present state of knowledge is poor." These projects cover a variety of health-related topics from drinking water quality to cholera surveillance.

Several WHO reports, developed in partnership with UNICEF, contributed to this study. Two of them are highlighted here. The first is a 2006 report titled *Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade*. It describes some of the shocking realities surrounding sanitation in developing countries, such as the fact that 40% of people in the world do not have access to a toilet and that 1.1 billion people live without access to adequate water. This state of sanitation leads to a number of health complications such as water-borne diseases and high death rates among children under five. The report asserts that in slums, where public sewerage connections are sometimes impossible, high quality communal toilets are a better option than no toilets at all.

The second WHO/UNICEF report is the *Progress on sanitation and drinking-water: 2013 update*. This report seeks to communicate progress made on achieving improved access to water and sanitation around the globe over the last two decades. It highlights global trends in drinking water and sanitation from 1990-2011 by including a number of graphical representations that show sanitation trends based on geographic region. It concludes with a description of progress made on the sanitation and water MDG in each region.

LITERATURE REFLECTIONS

Overall, the body of literature available on sanitation in slums is relatively comprehensive, with a mixture of anecdotal stories and hard data on access to improved water and sanitation facilities. That being said, there is a large gap in the research that this study intends to address. While much of the research focuses on how poor sanitation affects adult women in their homes, there is little research on how poor sanitation affects girls as they attend school. Next, most of the literature provides action steps for local and national governments, but fails to include grassroots groups and organizations. This study, carried out in partnership with slum dwellers and the community-based organizations that represent them, provides action steps at a grassroots level so that both immediate and long-term change can be sought by those who are most affected by poor sanitation.

IV. COMMUNITY CONTEXT

Umoja ni nguvu, utengano ni udhaifu.

Unity is strength, division is weakness.
- Swahili Proverb

NAIROBI, KENYA

Situated in East Africa, Kenya is a social, economic and political powerhouse in the region and has been coined a “gateway” to Africa from the rest of the world. The nation was colonized by the British but gained independence in 1963 after a violent struggle, rapidly urbanizing since then. Kenya’s capital city of Nairobi is home to a population of nearly four million people, though its national government anticipates a population of 8 million by 2030 (Ministry of Nairobi Metropolitan Development, 2008, p. 27). Nairobi has become a magnet for those seeking employment and economic opportunity, resulting in mass migrations from the countryside and overflowing slums in urban areas. High fertility rates have resulted in a swelling population, contributing to the growth of slums. The country’s population is strikingly young with nearly 80% of Kenyans under the age of 35 years (KNBS, 2009). Currently, nearly two thirds of Nairobi residents live in slums which occupy a mere 1.62% of the city’s total land area (Weru, 2012).

MUKURU SLUM

An Introduction to Mukuru

The focus of this study is Mukuru slum in Nairobi, one of the largest informal settlements in East Africa. Mukuru is located 10 kilometers outside the city center. The unofficial and ever-evolving nature of the slum makes it nearly impossible to determine Mukuru’s exact population, but it is estimated to be somewhere between 600,000 and 700,000 people. The massive slum is divided into eight “villages,” with the two largest being Mukuru kwa Reuben and Mukuru kwa Njenga. In order to narrow the research focus, these two villages were selected as the subjects of this investigation.



FIGURE 1 - Map of Nairobi: The star indicates the location of Mukuru slum.

Mukuru borders Nairobi's industrial area where the majority of its residents are employed (COHRE, 2008, p. 107). While many of these industrial companies operate with multi-million dollar annual budgets, they employ thousands of low-wage workers who are unable to afford housing and goods outside of informal settlements. Mukuru, a Swahili word for "dumping site," is home to the industrial area's waste disposal location which has been known to contaminate community water and land (COHRE, 2008, p. 108). Most of the homes in Mukuru are ten foot by ten foot, single-room shacks made of perforated iron sheets or mud. The slum's density is estimated to average 318 households per acre.



FIGURE 2 – Aerial View of Mukuru: This image, captured by Google satellite, shows the density of Mukuru slum. The industrial area that borders the slum (where many of its residents are employed) can be seen in the bottom left corner.

While there are countless businesses, schools, and places of worship in Mukuru, there are almost no public or government services available in the slum such as waste collection, drainage, electricity or running water. As a result, most of these services are provided by private suppliers controlled by slum cartels, so their cost is usually between 10 and 100 times higher than what Nairobi residents pay outside of the slums (UNHABITAT, 2003, p. 66).



FIGURE 3 – Scenes of Mukuru: The image on the left shows a typical market in Mukuru slum; the image on the right shows Mukuru's large dumping site, representative of the slum's name.

Land Issues

Mukuru slum was formed in the late 1950's when Kenyan laborers who worked on white-owned farms began settling on the land (COHRE, 2008, p. 107). As the country rapidly urbanized, more people settled in Mukuru building makeshift homes as they arrived from the countryside. Officially, the land was declared public government land, but in the 1990's when President Daniel Arap Moi was in power, it was converted to private land. With the threat of a coup upon him, Moi seized vast plots of government land throughout Kenya and began divvying it up among his family members and colleagues. Nearly all of Mukuru was converted to private land in this way.

Since the original seizure of Mukuru's land, its plots has been bought and sold a number of times. The land is now owned by various companies, wealthy individuals and banks, even though some of the slum's residents have occupied the land prior to their possession of it. The Kenyan government now asserts that it does not have the ability to provide services or slum upgrading projects in Mukuru because the land is privately-owned. Some residents say they even have the resources to build permanent structures but refuse to do so for fear of demolition.

Because most of the title deed holders view Mukuru residents as illegal squatters, they regularly carry out violent forced evictions, demolishing homes and businesses of residents. Tens of thousands of households are under imminent threat of eviction by the land owners (Weru, 2012).

In October 2012, Muungano wa Wanavijiji filed a lawsuit against Mukuru's title deed holders and some former and current members of the Kenyan government over the land situation. MWW argues that the land owners are in possession of the title deeds illegally because they have not used the land for the purposes it was intended, and have failed to develop it according to the legal guidelines laid out by the government. For example, many title deeds were originally granted with the requirement that the land be developed for industry within 24 months. MWW hopes that their efforts will ultimately convert Mukuru's land back into public space (Muungano Support Trust, 2012).

V. METHODS

Elimu ni kama taa, gizani itazagaa.

Knowledge is like a lamp, it will shine in the dark.

- Swahili Proverb

RESEARCH QUESTIONS

This research project is guided by a number of research questions which have informed the design of the study. The primary research question asks, *How do pre-teen and teen girls experience primary school sanitation facilities in Nairobi's Mukuru slum?* The inquiry targets the firsthand experience of girls who are transitioning into puberty and how they interact with the toilets, bathing and water facilities in the schools they attend.

The primary research question generates three sub-questions that contribute to the study:

- *What is the physical state of sanitation facilities in Mukuru primary schools?*
- *How do girls use/interact with the toilet, bathing and water facilities in their primary schools?*
- *Do girls experience any physical, emotional, and/or academic impacts of poor sanitation facilities?*

There is a significant assumption in the final sub-question, and that is that at least some of the Mukuru-based primary schools included in the study would have poor sanitation conditions. This assumption is based on the partner organization's extensive experience in Mukuru (see "Partner Organizations" section to follow) as well as external research which reveals generally poor sanitation facilities throughout the slum. A 2012 research project conducted by the partner organizations exposed significant emotional and physical impacts to adult women who used inadequate sanitation facilities in Mukuru, and external research has shown similar impacts for women in other slums around the world. Therefore, the final sub-question was included to determine if pre-teen and teen girls are similarly affected. The research tools have been designed to probe in a neutral manner so that the responses of research participants are not negatively influenced (see *APPENDIX 1 – Teacher Interview Guide* and *APPENDIX 2 – Student Focus Group Guide*). Research findings will be utilized as a basis for seeking an amelioration of the conditions.

PARTNER ORGANIZATIONS

The activities of this research project were carried out in partnership with community-based organizations Akiba Mashinani Trust (AMT) and their affiliate, Muungano wa Wanavijiji (MWW). AMT is an urban poor trust that provides innovative, inclusive systems of financing tailored to residents of informal settlement which build on a foundation of community-level group savings. Savings schemes are augmented with livelihood loans and financing for land acquisition and construction capital. The organization has been recognized globally as a pioneering leader in financial solutions and land tenure for slum dwellers.

The clientele base of AMT is a network of community-based saving schemes that have joined together under a social movement called Muungano wa Wanavijiji, meaning "Federation of Slum Dwellers" in Swahili. MWW started in 1996 as a network of slum dwellers living in the Nairobi area. The movement has since spread throughout Kenya and currently represents 100,000 members spanning over 300 informal settlements across the nation. Its mission is to innovate for social

transformation through organizing, community planning and project financing, and it seeks to improve the quality of life of its members through an extensive process of policy advocacy and dialogue with the government, civil society and private sector organizations.

Together, AMT and MWW launched a “Women and Sanitation” campaign after a group of women from Mukuru slum voiced concerns about how females, in particular, experienced poor sanitation in their neighborhoods. The group expressed a desire to collectively tackle the issue, setting the stage for in-depth research on the conditions and implications of sanitation facilities in Mukuru slum, including this study.

Two members of the AMT/MWW team were instrumental in supporting the research activities of this study. Edith Kalela, Communication Officer at AMT and organizational lead for the Women and Sanitation campaign, served as the research guide. Edith was heavily involved in designing the study, developing research tools, and carrying out research. Doris, a member of MWW, served as the research assistant. As a long-time resident of Mukuru and an experienced community organizer, Doris assisted in building community relationships, selecting the sample of schools, scheduling school visits, and carrying out research activities. Furthermore, she is a leader in the original group of women that expressed a concern about sanitation in Mukuru.



FIGURE 4 – Research Support: Doris, left, served as the research assistant; Edith, right, served as the research guide.

In addition to Edith and Doris’s support, the Executive Director and Board Members of AMT and its affiliate organizations were highly invested in the project. The organizational leadership was generous in providing overall strategic guidance and funding provisions for research activities such as transportation and technical support.

A PARTICIPATORY APPROACH

Participatory research (or participatory action research) is a method of development research that views community members as active participants of research in terms of issue identification, design, inquiry and subsequent action (Desai & Potter, 2006). The outside researcher acts as a learner and facilitator rather than a “dominator,” ensuring that the community is empowered by the research and is able to gain new knowledge. According to Pant (2008), the ultimate goal of participatory research is “fundamental structural transformation and the improvement of the lives of those involved” (p. 97).

This study was designed to be participatory in nature. First, the topic was directly inspired by the voices of those in the community – a group of women in Mukuru who expressed concern about the community’s sanitation conditions. Second, the research process involved the key member of the women’s group and the leadership of the two community-based organizations that have a breadth of experience and a long-term investment in the well-being of Mukuru residents. Their involvement

has ensured that the design of the study reflects the interests of the community so that it can be used for action.

With support from the infrastructure of AMT and MWW, the group of women from Mukuru plan to use the research findings to conduct advocacy and seek funding for sanitation. This approach to research makes it truly participatory in nature because the very people who brought the issue to light will be involved in designing and conducting research as well as making positive change in their community as a result.

SAMPLE SELECTION

Doris, the research assistant, was responsible for selecting the sample of schools to participate in the study. She is a trusted and respected member of the community, has the ability to facilitate and benefit from relationship building with local schools, and will be involved in the issue long-term. In order to secure school partners, Doris spent time walking through the villages visiting schools, utilized existing relationships to make connections, spoke with the head teacher or principal at each school to describe the research project, and presented invitations to participate. None of the schools were urged or forced to participate if they were not eager and willing to do so.

A sample of 12 schools was selected – six in Mukuru kwa Njenga and six in Mukuru kwa Reuben. An attempt was made to include both boarding and day schools, co-educational and girls-only schools, private and public schools, a wide variation in student population size, and schools geographically spread out within the villages.

DATA COLLECTION

A Qualitative Focus

While some quantitative data was collected in order to provide context – such as the number of toilets at each school and the student-to-toilet ratios – the research tools were designed to primarily gather qualitative data. Such data includes an assessment the physical qualities of the facilities, how girls use them each day and how they feel about them. Therefore, the research collection tools included interviews, focus group discussions, field notes/observations and photos, rather than, for example, written questionnaires. In addition, Kenyan culture tends to be more oral than written in nature, so face-to-face interactions were more likely to result in comprehensive answers to the research questions than written documents.

Interviews

Using an interview guide, individual interviews were conducted with at least one teacher and/or administrator at each participating Mukuru-based primary school. At one school, double interviews were conducted with staff members. The majority of interviews were conducted with the school's head teacher, but other staff interviewed included an accountant, a teacher/counselor, a principal, and an office assistant.

The interviews were led by the student researcher, with Edith and Doris present to ask questions and provide clarification as needed. Teachers were invited to speak either in English or Swahili, whichever they found most comfortable, though all the teachers chose to speak primarily in English. Prior to each interview, participating staff were asked by the student researcher for permission to use a digital voice recorder. All the teachers/administrators willingly agreed. (If a teacher had expressed any discomfort about the use of a voice recorder, it would have not been

used). Data gathering through interviews resulted in a collection of audio recordings, notes, interview transcriptions and tallied data. See *APPENDIX 1 - Teacher/Administrator Interview Guide* to review the interview questions.

Photos

Following each teacher/administrator interview, researchers asked for permission to visit the toilets and other sanitation facilities in each school and take photos. All schools willingly agreed to allow researchers to enter the toilets and take photos. Photos were used during data analysis to review and compare the conditions of the facilities.

Focus Groups

Using a focus group discussion guide, focus groups of between ten and 16 female students were conducted at each school. Teacher interviewees were instructed to randomly choose a mix of female students from class six through class eight. Two schools did not have any students in class eight. At one of those schools, the focus group was conducted with students in class five through seven. At the other, the focus group was conducted with students in classes six and seven. At another school, the focus group was conducted only with students in class eight because the younger students were taking exams. The ages of the student participants ranged from 9 to 16, though most students were between 11 and 15.

Focus group discussions were led by the student researcher and research guide in a mixture of English and Swahili, with the research assistant contributing as needed. The students were invited to speak in either English or Swahili, whichever they felt most comfortable using, and their responses were given in a mixture of English and Swahili. A digital voice recorder was not used in the focus group setting in order to create a more comfortable environment for the girls. Instead, researchers took turns leading the focus groups while the other took detailed notes. Focus groups resulted in a collection of notes and tallied data. See *APPENDIX 2 - Student Focus Group Guide* to review the content of the focus group discussions, and *APPENDIX 3 - Ethical Considerations* for measures taken to protect the privacy and welfare of the student participants.

Field Notes

Following each day of research, the student researcher spent time writing detailed field notes about each school visited. Field notes were important for gathering qualitative data that was not captured elsewhere. For example, they included descriptions of the precise location and surroundings of the schools; descriptions of the schools' physical layout; non-verbal attitudes and reactions of research participants; physical descriptions of sanitation facilities visited including smells and sounds; and interactions between staff and students.

Student Essays

In order to gain supplemental qualitative data, approximately 500 girls in classes six through eight were asked to write a one-page essay about the effects of poor sanitation in their schools. The students were selected from participating schools in Mukuru, as well as from schools not participating in interviews and focus groups. This provided students with the opportunity to share their experiences in a setting their peers could not hear or see. They were given the following prompt: *"What problems do you encounter because of lack of toilet, bathroom and poor drainage?"*

The essay prompt has an obvious negative bias, as it was given to the girls before the student researcher began the study. Therefore, the essay responses were not used as a primary tool for answering the research questions, but rather as illustrative content in the project.

VI. DESCRIPTION OF RESEARCH FINDINGS

Mtoto umleavyo ndivyo akuavyo.

The way you raise a child is how he or she will grow to be.

- Swahili Proverb

In this section, raw data collected from the 12 participating primary schools is presented. The findings are intended to answer the original research question, *How do pre-teen and teen girls experience primary school sanitation facilities in Nairobi's Mukuru slum?*, followed by sub-queries that seek to describe the state of the school's toilets and sanitation facilities, how female students use and interact with them, and – assuming some schools have poor facilities – whether there any negative impacts on girls physically, emotionally or otherwise.

KEY DEMOGRAPHICS AND FINDINGS

Research Participant Demographics

# of Participating Schools	# of Teachers/ Administrators Interviewed	Teacher/ Administrator Gender	# of Student Focus Group Participants
12	14	Female: 9 Male: 5	130

TABLE 1 – Research Participant Demographics: Basic demographics of the research participants.

School Data

# of Schools in Mukuru kwa Reuben	# of Schools in Mukuru kwa Njenga	Boarding vs. Day schools	Type of school	Student Population Size
6	6	Day only: 10 Mixed: 2 Boarding only: 0	Private/community: 11 Public/government: 1	Largest: 2,000 Smallest: 155 Average: 531

TABLE 2 – School Data: Basic data about the schools that participated in the study.

Because of the informal nature of slums, public government schools were rare. However, an attempt was made to conduct research with at least one public school in each village. A public school in Mukuru kwa Njenga participated in the research, but the public school identified in Mukuru kwa Reuben declined to participate for fear of appearing in the media. It was the only school in this study that declined to participate.

Toilet Data

Schools with Toilet on School Grounds	Students Per Toilet	Type of Toilet	Toilet External Structure	Toilet problems?
12	Highest: 200 Lowest: 20 Average: 82	Pit latrine: 8 Pour-flush: 3 Fresh Life: 1	Iron sheets: 7 Stone/cement: 5	Yes: 10 No: 2

TABLE 3 – Toilet Data: Basic data about the existing toilets at each participating school.

Types of Toilets Used

As noted in *Table 3*, nine of the 12 participating schools used a pit latrine toilet. A pit latrine is a hole in the ground designed to collect human waste. This type of toilet is not connected to sewage systems and therefore must be emptied or exhausted regularly by private companies that charge to remove the waste. The frequency of exhaustion varies based on how deep the latrine is and how many people use the latrine. Schools varied greatly in frequency of exhaustion, ranging from monthly to annually.

Three schools used “pour-flush” toilets that were connected to some kind of sewage system and required that water be poured into the toilet to flush it. The remaining school used a “Fresh Life” brand toilet. Fresh Life toilets are a type of latrine made by a social enterprise company called Sanergy which are said to be more private, more hygienic and occupy a smaller space than traditional latrines. Local entrepreneurs are employed to manage small franchises of toilet facilities. They are exhausted and cleaned daily by Fresh Life workers, and each toilet is equipped with a bin for sanitary towel disposal. The human waste is brought to a processing facility and converted into electricity and fertilizer. Most Fresh Life toilets are installed for use by the community and small fees are collected for each use, covering the cost of the toilet and maintenance. However, the school in this study obtained the toilet through a loan and received a subsidized rate with a financial contribution from an external donor. They are required to pay an annual fee for maintenance which is taken from students’ school fees.

Sanitation Problems and Causes

Out of the 12 schools studied, administrators at only two schools reported that they had no problems with their toilets, or that they were “sufficient.” Comparatively, participants of only one of the student focus groups collectively reported that there were no problems with the toilets. In the remaining focus group, the students were split evenly, some citing problems and some stating that the toilets were sufficient. The girls who did not find the toilets to be sufficient were unhappy that they had to share the toilets with younger students who made them “dirty.”

The most significant toilet problem cited was simply a shortage of toilets for the number of student attendees. One school in this study had as many as 200 students using one toilet, with the school average at 82 students per toilet. Beyond the number of toilets, teachers and students described a variety of toilet problems reporting that they were dirty, smelly, lacked sufficient water, were not gender-sensitive, lacked security, leaked sewage, or were not in good physical condition.

When asked about the reason for the toilet problems, the most frequent response from school administrators was a lack of funds; the second was a shortage of land and/or land insecurity; and the third was a lack of infrastructure in the slums.

The teachers and administrators who described their school’s toilets as “sufficient” were asked what contributed to the high quality facilities. In both cases, the schools had major donors that contributed to the construction of the toilets, including access to stable water supplies (one used a bore hole and the other had a connection to the city’s water system). One of these was the only school that had a bathing facility for students to use.

DATA THEMES

During data analysis, five major themes emerged from the information collected across the sample of primary schools. These themes cover a variety of topics that relate either directly or indirectly to

the condition of the sanitation facilities. In this section, data related to each theme is presented, with an emphasis on how teachers and students illustrated the girls' experiences with the facilities.

Privacy & Gender Sensitivity

Teachers and girls described school toilets as failing to take into account privacy and the unique needs of girls. Nine schools reported that they had separate toilet facilities for males and females; and three schools reported that the toilet facilities were used generally by both male and female students and staff.

While the number of gender-segregated toilets is high, in reality, many of them were separated only by iron sheet barriers, often with large holes and gaps, exposing users to the opposite sex while in the toilet. For example, *Figure 5* depicts one school's toilet. The latrine in the forefront is used by female students, and the latrine on the other side of the iron sheet barrier is used by boys. The adjacent toilet can easily be seen through the large gap at the bottom of the iron sheet, yet this is the only barrier between the girls' and boys' toilets.

Only four schools had toilets that were either physically separated or had a large, secure barrier between the girls' and boys' toilets, while eight did not.



FIGURE 5 - Gender Separation in a Latrine



FIGURE 6 - Using Rocks for Privacy

At the majority of schools, girls reported shame, embarrassment and fear while using the toilet because of a lack of privacy. One young woman explained, "Someone can see inside the toilets. You try to get the one that doesn't have so many holes; you must be careful which toilet you choose." *Figure 6* shows stones that female students placed at the bottom of the toilet door at one school, in order to cover a large gap where the boys could peek in at them. At another school, the girls' toilet had no door on it at all, though the boys' toilet had a door with a lock. One of the pupils reported, "The boys can peep at us when we are using the toilet. We feel so embarrassed and ashamed."

The lack of privacy was particularly stressful for girls undergoing menstruation. Several girls explained that they feared boys would see them carrying a sanitary pad into the toilet, resulting in harassment, or that the boys or younger children would be able to see them changing their sanitary pad through the cracks in the toilet. "We are going through changes they don't understand," one student said. Many girls were fearful of male students finding blood or a used sanitary pad inside the toilet, because they would tell the other students. One girl explained, "It feels very bad, so I just pretend I am not the one who did it."

For some girls, the embarrassment was so extreme that they would not to attend school during their menstrual period. One student described the situation: "I know students who miss school

because the boys and girls toilets are not separate. It is uncomfortable when they have to use the same toilets with boys during their monthly period.”

“The boys can peep at us when we are using the toilet. We feel so embarrassed and ashamed.”
- 13 year old student

Most schools did not provide a place for sanitary towel disposal. At eight schools, the girls primarily disposed of them into the toilets or latrines. Most teachers and school administrators discouraged the girls from doing so because it caused the toilets to block or fill more quickly, but the schools did not provide another option. Two schools provided small bins for the students to use, though at one school they were described as “constantly overflowing,” so many girls simply threw them into the toilets, getting them into trouble with teachers. “We dispose the pads into the toilets which we are not supposed to throw there. But we have no choice.”

One school literally had nowhere to dispose sanitary pads, so the girls were forced to carry them back to their classrooms and put them into their bags in order to dispose them at home. One girl explained, “I get some problems when I am in my monthly period because I don’t have anywhere to dispose my pads. I normally suffer a lot.”

Insecurity

There is a general sense of insecurity in Mukuru slum as it is overcrowded and lacks police presence. Many primary school toilets also lacked security. Six schools had only small fences between the school and the rest of the community; three had no physical barrier at all; and three had large, locked gates. Most school toilets were not equipped with locks.

Three schools reported that community members regularly came into the school compound and used the toilets for their own purposes. At one school, girls described a constant fear while using the toilets because of the community members that entered: “People from the community also use the toilets...adult men come in and find the girls naked. Sometimes they throw stones at us or harass us while we are using the toilet. We always feel afraid to use the toilets.”



FIGURE 7 - No Door on the Girls' Toilet

Figure 7 shows the school toilet with no door. The structure behind the toilet is someone’s home, and there is no barrier between the school toilet and the rest of the neighborhood. Furthermore, this particular toilet is located on the edge of the school grounds and cannot be watched over by staff.

Two schools reported that men from the community were regularly found smoking marijuana in the toilets, exposing children to risk. One school administrator reported that her students risked rape by men who hid in the school’s toilet. “When a small child goes and knocks, he doesn’t know who is inside. The person will just open and grab the child and lock the door. So it’s a challenge. A big challenge.”

“We always feel afraid to use the toilets.”
- 12 year old student

At one of the boarding schools, girls reported that they could only use the toilets until 7pm. When asked why she could not use the toilet at night, one girl replied, “We might get kidnapped, raped or robbed. Insecurity is why we can’t use them at night; insecurity in the slums. We are afraid of rape.” After 7pm, girls are forced to defecate in a plastic bag or basin, tossing the contents outside in the morning. This is known in Nairobi slums as a “flying toilet.”

Water

Water is used for a wide variety of activities at Mukuru schools including cleaning toilets and classrooms, “flushing” toilets, washing hands, washing utensils and cloths, preparing food and drinking. Yet, ten schools reported regular or constant water shortages. Of the two that reported having enough water to cover the needs of the school, one had a bore hole and the other had a direct connection to the city’s public water supply. The others used a combination of purchasing water from private vendors on a daily basis, and catching water during the rainy seasons of April and November. Two schools reported that they regularly ask their students to bring water from home to supplement the school’s water supply.

<i>What is your school’s water source?</i>	
<i>Source</i>	<i># of Schools</i>
Purchase from private vendors	7
Purchase from private vendors/collect rain water	2
Piped form Nairobi City Water	2
Bore hole	1

TABLE 4 – School Water Sources

At four schools, the students were responsible for fetching water from private vendors each day for the school’s use. Some water sources were very near the schools, while others were forced to walk for up to ten minutes to fetch water. A few schools paid to have the water delivered. When asked who fetches the water at her school, one teacher replied, “The children! Every work that is done here, in fact, even our kitchen, we run it through cost sharing with the children. Like right now if you look outside they are washing the utensils. After they have eaten they rush, they wash the utensils, they get back in class.”

Teachers complained that water from private vendors was much more costly than from the city’s water utility. Most schools paid between 5 and 15 shillings per 20 liter jerry can (about 6-18 cents), depending on the school’s location and the time of year (water prices increase during dry seasons).

That is more than double the cost of water purchased through a direct connection to the city's water supply. When a teacher from the school with a Nairobi City water connection was asked about the price they paid for water, he replied, "It's not too high. It definitely cannot be compared to buying water from a [private vendor]."

Three schools used "pour-flush" toilets, but two of them reported regular water shortages, leading to dirty or smelly toilets. One student stated, "The toilets are the kind you are supposed to pour water down to flush but there is no water! So the feces just sits there and never gets flushed." Comparatively, a student at a school that reported having enough water described what she liked most about her school's toilets, "They are always clean. I like that you pour water down them so it removes the waste so they are not smelling."



FIGURE 8 - *No Water to Wash Hands*

Half the schools did not regularly provide or were completely unable to provide water or soap for washing hands after using the toilet. One student explained, "There is no water so we can't clean our hands, even after we change our sanitary towels." Ironically, at her school the toilets were painted with a large mural encouraging students to "Wash your hands after visiting the toilet" (see *Figure 8*). Two schools provided water and soap for students to use, two schools provided only water, and one restricted water and soap use to "long calls."

According to one teacher, the issue of water was a more pressing concern than the state of the toilets: "There is no water, and when the children are here they are eating, they can't wash their hands. They need to drink water every day. I think if there is something that's an emergency, it's water here. Not even the toilets. Water should even come first."

Land

Land is directly related to sanitation because of the physical space required to build toilets, and because insecurity of tenure prohibits construction. Five schools, or half of the schools that identified their toilets as 'problematic,' proactively identified land as a limiting factor in their ability to build better facilities. In some cases, they simply lacked enough space. In other cases, they were afraid to build facilities or were not willing to invest for fear of demolition. When schools have no legal right to the land, the owners can come in and evacuate the land at any time.

In general, schools participated in three-tiered land use structure comprised of a land user, a land renter, and a land owner. The land user was usually the principal or the director of the school who entered into an agreement with the land renter. Most of the renters were local chiefs or individuals from the community who had occupied or possessed the land for many years. Finally, the land owner was the individual or company which possessed the land's title deed.

Most of the schools were technically squatting on privately-owned land. For example, one school was located on land owned by Kenya Railways, but when the school was to be built, the land was in possession by the local community leaders. The head teacher obtained a loan and "purchased" the land from the local leaders for 50,000 Kenyan Shillings (about \$600). While she had a written

document stating the land belonged to the school and the school had resided there for many years, Kenya Railways has the legal ability to re-possess the land at any time or demolish the structures that inhabit it.

The constant threat of eviction has prevented schools from building permanent structures on their land, especially toilets. When one teacher was asked why his school had so many problems with the toilets, he responded: “The problem is fear. You know this land – we don’t own it. And now sometimes we fear to invest in it. That’s the major problem.” Furthermore, school leaders felt they did not have the clout to lobby for better sanitation facilities because they were viewed by the government as illegal squatters. One teacher described the issue: “If we come from an informal settlement, maybe the government will actually say ‘It is illegal for these people to stay here’... This is where we have lived for the last 20 – all those years – so we can’t move. So maybe [the government] does not want to bring that kind of proper system here because basically these people are not supposed to be settling here and they want people to vacate.”

While most schools had no direct interaction with the title deed holders of their land beyond rumors of eviction, two have had contact. One was given a donation of water from the land owner, but had received an eviction letter that had yet to be carried out. The other had actually met with the land owner, the head of a large corporation, after receiving an eviction notice. The head teacher described her interaction with the land owner:

“Sometimes back he had written a letter to me; we went and talked. He wanted like to lease the land to us and then I told him it’s not possible because what we are doing here is just a support program...We need to support the kids first before we talk of land. So we negotiated, we told him please give us time. If you want to use the land let us just be caretakers of the land meanwhile, because the land is not being used. So we came to an understanding that we’ll be using the land. But there was also an option, like if we can raise money like 2 million [Kenyan Shillings] to buy the land we can buy the land from him. But he can come anytime and say ‘I want my land back.’”

Conversely, in one case the school was given a plot of land as a donation by the land owner, and they were granted the title deed. Interestingly, they were also one of the schools that reported having no toilet problems. The school had plenty of space and excellent toilets with permanent infrastructure.

Another problem reported by administrators was simply the lack of space for slum schools, as they were located in overcrowded areas. Of the eight schools that reported a need for more toilets, five said that space would be a challenge for them in building additional facilities. At some schools, toilets were crammed into small spaces next to classrooms or offices, as shown in *Figure 9*. In the image, the wall on the right is shared with a classroom.

When asked about why the school had problems with their toilets, one teacher responded, “We are located in the slums where there is not enough land – space. The big problem is that the space is not there.” Another stated, “When you look the compound is too small. The space is too small.” However, some of the schools did have enough space. One teacher explained, “Yeah the space is there. Space is not a problem for us.”



FIGURE 9 – No Space to Build Toilets

Health

In many schools, students had regular exposure to human waste and lacked the supplies to adequately clean themselves. For example, students were primarily responsible for cleaning the toilets at eight of the 12 participating schools. Three schools had hired workers that were responsible for cleaning the facilities, and at one school the head teacher cleaned them. More than half of the schools whose toilets were cleaned by students said they could not afford to buy soap or disinfectants, so they used only water and brooms to clean the toilets. One of the students reported, “We cover our noses with handkerchiefs and sweep the toilets with brooms and water.” The students were usually given weekly duties on a rotating schedule by class to clean the toilets.

<i>Who is responsible for cleaning the school's toilets?</i>	
<i>People or Person Responsible</i>	<i># of schools</i>
Students	6
Hired worker/caretaker	3
Students and teachers	2
Head teacher	1

TABLE 5 - Toilet Cleaning Responsibilities

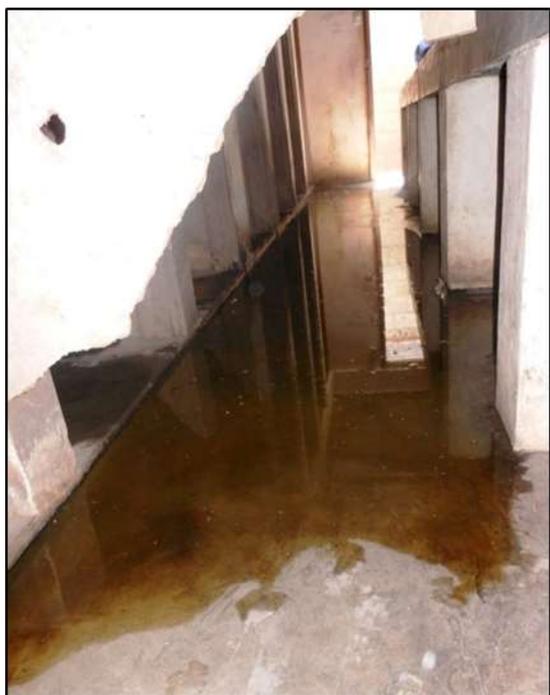


FIGURE 10 - Urine on the Floor

Human waste could be seen around many of the latrines, and in a few schools the waste was overflowing. The toilets at one school appeared to be in good condition from the outside as they were made of stone, but the teachers that accompanied the research team refused to enter. The smell was overpowering, and upon entering, researchers saw a teenage girl emerging from one of the stalls whose feet splashed through a half inch of urine that covered the entire floor. *Figure 10* shows the urine on the floor.

In the same toilets, the latrines overflowed with feces which were covered by maggots. Bloodied sanitary pads dotted the floor. Yet, this was one of the schools that had a hired worker to clean the toilets, and was the only public, government-funded school that participated in the research.

A girl from the public school described her experience using the toilets, “It feels disgusting but we have no choice. We cover our eyes when we go in so we are going blindly – so we don’t have to see

what is inside. It makes me feel like vomiting.” At two other schools, students described being “splashed” by urine while using the toilet, either as a result of un-drained urine from previous users, or from boys using the toilet next to them with large gaps in between.

Another contributing factor to student exposure to waste was poor drainage in and around the schools. Ten of the 12 schools cited drainage as a major problem. This was often caused by flooding during the rainy seasons or the drainage of sewage away from school grounds. At several schools, open sewage could be seen passing through or around the school. At one school, students and teachers had to walk over an open sewage line in order to enter the school.

At another, a large sewage line passed through the middle of the school grounds. The staff had tried to protect the children from it by covering it with wood panels, but explained that during the rainy season, it would overflow and sewage would cover the school playground. The school administrator explained, "When it rains the water floods so you find that the dirt comes and it gets on the ground, on the playground. It is sewage. We tell [the children] not to play with the water because it can cause many illnesses and diseases." *Figure 11* shows the sewage line in the children's play area.



FIGURE 11 – *Sewage Lines on School Grounds*: The image on the left shows a sewage line covered with boards passing through the center of a school's play area; the image on the right depicts a sewage line near the entrance of a school.

At another school, the head teacher explained, "Drainage is one of the biggest problem. Let's talk of April – I wish I could show you what I saw. The water that has flooded all over that place. Even the water comes up to the classrooms. In fact, children, their legs are in that water. And truly is not even clean water. It's water that has been splashed from the sewages, from all over." Several teachers explained that the latrines would flood and overflow onto school grounds during the rainy season. "You find when it rains now the water tries to come up through the toilet and it spills away, out, causing a disaster to the community."



FIGURE 12 – *Maggots and Leaking Sewage*

For some schools, the latrines and sewage lines filled quickly causing them to overflow or leak. Schools reported paying anywhere from \$25 to \$180 per month to exhaust the latrines. Sometimes it was the school's largest expense.

One girl told researchers, "Right now the toilets are near the kitchen and the pipes that carry water to the kitchen pass the toilets; the toilets are overflowing and it gets into the water for the kitchen which can give us diseases." The research team visited the area and indeed, the toilets were located only a few feet from the kitchen and the cement covered sewage system was squirting out human feces. As

shown in *Figure 12*, maggots were breeding and squirming around on top of the sewage.

At many schools, students reported that they delayed using the toilet at school for as long as possible because of the conditions of the toilets. One of the teachers said about their female students, “They hold until it is too much for them. You find that they ‘mess’ their clothes.” One girl explained, “Sometimes I just postpone and don’t use the toilet; I avoid it and stay pressed because it is better than using those toilets.” Another girl reported, “Sometimes if the toilet is very dirty we just decide not to use it. We don’t go to the toilet until we leave school.”

THE IDEAL TOILET

At the end of each interview and focus group, teachers and students were given the opportunity to consider and describe their ‘ideal’ toilet. Though many answers were consistently repeated – a “flushing” toilet being by far the most common – a range of responses were offered. The list below demonstrates these responses from most cited to least:

1. FLUSHING TOILETS/CONNECTED TO SEWAGE SYSTEM
2. MORE TOILETS
3. CLEAN
4. IMPROVED PHYSICAL STRUCTURE
5. FRESH LIFE BRAND TOILETS
6. SEPARATE TOILETS FOR BOYS AND GIRLS
7. BINS FOR SANITARY PADS
8. SITTING TOILET (VS. SQUATTING)
9. BETTER SECURITY/LOCKS
10. MORE WATER FOR FLUSHING/WASHING
11. SEPARATE TOILETS FOR OLDER AND YOUNGER CHILDREN
12. SEPARATE TOILETS FOR TEACHERS AND STUDENTS
13. A MIRROR

A few times, the girls were encouraged to “dream big” and to consider the best toilet money could buy. Yet, even in those cases, their requests were far from extravagant (only one girl thought to mention a mirror). Rather, the students and teachers had simple requests for toilets that allowed for the most basic privacy, safety and sense of dignity.

SUMMARY

The study results described above portray a deep sense of urgency for the injustices experienced by young women in the slums. Girls attending many of the primary schools in Mukuru not only lack a decent place to defecate, they also risk violence, illness, shame and embarrassment every time they use their school’s toilet. Yet, lack of infrastructure as basic as a water connection or land tenure prevents their school administrators from being able to provide adequate sanitation facilities.

VII. ANALYSIS

Penye wanaume wengi hapaugui mwana.

Where there are many good men, no child will get sick.

- *Swahili Proverb*

It is clear from the research findings described in the previous section that many girls in Mukuru slum experience fear, shame, embarrassment, a lack of resources, and exposure to hazardous conditions while using sanitation facilities in their primary schools. These circumstances have serious implications for the physical, emotional and even academic well-being of the girls. In this section, such implications will be analyzed with support from external research on the topic.

This section will conclude with a brief analysis of two key underlying contributors to the experiences of the girls – violence against/marginalization of women and land tenure – in order to lay a foundation for future action.

IMPLICATIONS OF RESEARCH FINDINGS

Physical Implications

Exposure to Waste

This study revealed that many young girls in Mukuru were constantly exposed to human waste. School administrators and students alike described overflowing toilets, cleaning duties without proper disinfectants, as well as contaminated water. The most consistent factor in exposure to human waste was poor drainage – a problem for ten schools in this study. Poor drainage resulted in open sewage lines flowing through or near school grounds, standing water, and leaking feces. At one school, the research team witnessed children playing in an open sewage line which was located next to the children’s play area.

This is all too common in the slums as there is no infrastructure in place to provide proper waste disposal and processing, which spreads disease. A report by Nairobi City Water and Sewage Company describes slum drainage:

“Natural drainage ditches and storm water gullies carry liquid and solid waste but not in an environmentally friendly or hygienic path. Rain water sometimes flows into latrine structures, forming pools and flowing into footpaths and nearby rivers. These appalling conditions and lack of environmental sanitation lead to acute water and vector-borne infectious diseases such as diarrhea and malaria, with epidemics such as cholera and typhoid occurring with greater frequency and impact” (NCWSC, 2009, p. 13).

Whether students were exposed to waste through poor drainage or by cleaning the toilets without proper equipment, this contact put them at high risk of contracting debilitating, life-threatening diseases. Three teachers proactively asserted a direct link between the condition of the toilets and the health of the students. According to one teacher, “It affect them cuz if the toilet is dirty or if the compound is dirty, you know, the children are affected. They get cholera, dysentery, of which most of the students here they get those diseases because of the environment – the toilets are dirty.”

Third party research confirms the connection between poor sanitation and disease. Human waste is full of dangerous bacteria that can cause serious illness when it comes into contact with skin, food

or waterways. According to research by UNICEF (2008), one gram of feces can contain 10,000,000 viruses, 1,000,000 bacteria, 1000 parasite cysts and 100 parasite eggs (p. 1). These microorganisms cause a number of ailments including diarrhea, cholera, typhoid and parasitic infections. Unfortunately, children are most affected by these diseases. UN Water (2006) states that, “the incidence of these diseases and others linked to poor sanitation – e.g., round worm, whip worm, guinea worm, and Schistosomiasis – is highest among the poor, especially school-aged children (p. 5). UN-HABITAT research (2003) demonstrates that there is a direct connection between the lack of decent sanitation facilities in urban slums and the incidence of disease in children (p. 58). In Kenya specifically, health indicators are worse in informal settlements than anywhere else in the country, including remote areas, largely because of the lack of decent sanitation (Amnesty International, 2010, p. 20).

School administrators seemed well aware of the need for improved sanitation, particularly cleaner facilities and the use of soap and water. Some teachers even expressed embarrassment at the fact that their school was unable to provide soap and water for the children’s use. Others asserted that students washed their hands after using the toilet, but upon further probing revealed that they had no water or soap most of the time, but provided them whenever they were able. Yet, if schools in Mukuru were able to implement even the most basic sanitation infrastructure, the physical risks to their students would decrease significantly. Simple hygienic practices like hand washing with soap and water can reduce the transmission of diarrheal diseases by a third (WHO, 2000, p. 1). Furthermore, when slum dwellers experience improvements in sanitation and water supply, major reductions in morbidity from disease occur (UN-HABITAT, 2003, p. 75).

Overcrowded Conditions

Most of the girls in this study were forced to share one latrine with between 50 and 200 other students, though the Kenyan government states that toilets should not be shared by more than 25 people to be considered adequate. Above all other issues, teachers and students alike asserted that their most pressing sanitation concern was the number of toilets per student.

This type of overcrowding further encourages the spread of disease. The UN HABITAT’s Sustainable Housing for Sustainable Cities (2012) remarks, “Overcrowding reinforces diseases, as the infection is spread easily,” and “poor sanitation due to poor infrastructure leads to severe infections (e.g. water- and foodborne diarrheal diseases)” (p. 35).

Avoiding the Toilet

Another health concern uncovered during the research was the fact that many girls simply avoided using the toilets in their schools. At schools where sanitation conditions were particularly dismal, students consistently reported that they preferred to “stay pressed” or “hold it” for the entire school day. This was either due to the toilet’s poor construction which allowed boys to “peep” inside (the concern about this vulnerability was especially heightened during menstruation), or because the toilets were extremely unclean. At two schools, teachers reported that they had witnessed female students soil their clothing as a result of avoiding the toilets.

Avoiding the toilet is not just uncomfortable and potentially embarrassing; research shows it can also lead to health complications, particularly for females. The WSSCC’s discussion on gender and sanitation issues clearly states that women “ignoring their natural bodily functions...increases the likelihood of health problems such as urinary tract infections, chronic constipation or mental stress, especially during menses” (“Gender and WASH,” 2013).

Emotional Implications

Privacy

Ensuring the privacy of girls while using toilets posed a significant challenge for many of the schools in this study. Because of the lack of privacy, due primarily to poor construction of toilets or a failure to adequately separate boys and girls toilets, students consistently reported that they felt anxious, ashamed, and even *fearful* of using the toilets at their schools. They experienced perpetual anxiety about the facilities they used multiples times per day in the place they spent the majority of their waking hours. Such stress can be detrimental to girls' emotional health. During menstruation in particular, toilets must be used even more frequently, which means the stress of having a poor toilet can be a constant burden.

United Nations Human Rights commented in 2011 that “not only do women and girls have different physical needs from men but they also have greater need for privacy when using toilets.” In accordance with the challenges described by the girls in this study, external research explains that menstruation presents an even greater challenge for privacy. According to Catarina de Albuquerque, UN expert on the human right to safe drinking water and sanitation, girls need toilets not just for defecation, but also for specific sanitary uses during menstruation – a topic that is rarely discussed or considered, especially in the slum context (UN Human Rights, 2011). Furthermore, many of the schools did not provide girls with a place to dispose of sanitary towels, leading to further stress and embarrassment. WSSCC states that comprehensive menstrual hygiene management must include “gender-sensitive facilities, which provide women with a private and safe space in which to attend to their menses with sufficient clean water and hygienic disposal receptacles” (George, 2013, p. 16).

Most of the teachers and administrators interviewed recognized the need for greater privacy for girls, but felt as though they did not have the resources to provide better facilities. Some of the female teachers reported that they could not use the school's toilet facilities themselves because of the lack of privacy, and were forced to travel off-campus to use the toilet. Ensuring privacy is a challenge for slum sanitation around the globe. UN Water states in a report produced by the UN Department of Economic and Social Affairs (2004) that one of the biggest and most pressing challenges of slum sanitation is ensuring the security and privacy of girls, especially in shared toilets (p. 8).

Sexual Violence and Harassment

Sexual violence and harassment are traumatic events, especially for young girls in the process of developing physically, mentally and socially. Yet, some of the girls in this investigation were forced to face the risk of violence and harassment on a daily basis.

Factors that contributed to insecurity included a failure to provide locks on the toilets, lack of secure physical barriers between schools and the rest of the community, and poor construction of toilets. At a few schools, all three of these factors converged. One of them was a boarding school where girls had no other option for using the toilet. At this school, the girls' toilet did not even have a door, and girls reported that they were regularly harassed by men in the community who could watch them while they defecated. These experiences are detrimental to the human psyche, often impacting victims for a lifetime.

A great deal of research portrays the risk of sexual violence for women in the slums surrounding sanitation facilities, though most of it focuses toilets used while at home rather than at school. Albuquerque states that “Women and girls disproportionately face risks of sexual violence when

they have to walk long distances to sanitation facilities, especially at night.” Similarly, on their website, WSSCC argues that women and girls are in desperate need of safe places to defecate because “where they do not exist, women often use the night as privacy, which exposes them to the risk of rape or other violence.” This study has shown that the risk of sexual violence is not just an issue for women using toilets near their homes; it is also a real issue for girls during the day and on school grounds.

Lack of Dignity

Sanitation is such an important issue because it deals with the most basic human element instilled in each of person: dignity. Yet, tragically, many girls in Mukuru experienced the most undignified conditions while using the toilet and sanitation facilities at their schools. Violations of the girls’ human dignity were regularly cited, as they were forced to wade in human feces, experienced shame associated with men watching them while defecating, and used generally undignified facilities. WSSCC firmly states that inadequate water, sanitation and hygiene services mean that “defecation and hygiene routines are unhealthy, *undignified* and even risky, which has a huge negative impact particularly for girls and women” (“Gender and WASH,” 2013).

Academic Implications

The results of this study reveal that poor sanitation causes pre-teen and teen girls to miss out on significant amounts of class time. Missed class time occurred for a number of reasons: queuing in long lines to use school toilets; spending class time cleaning toilets and other facilities; fetching water; skipping school during menstruation due to a lack of clean, private toilets; and illnesses contracted by students as a result of poor facilities. One teacher explained, “Sometimes we lose time coming to class because like in the morning they walk to the toilets, they make a line like for 20, 30 minutes and the lessons are on. You find that they will be missing the first lessons like every day because they are lining up at the toilet.” A few research participants reported that students had difficulty concentrating on their studies either because of the toilets’ repulsive smells, or when pressed or under stressed about the poor toilet facilities. All of these factors mean that deprive students of an adequate education.

When sanitation conditions were poor and finances low, students were given the bulk of the responsibility for maintaining school facilities, contributing to lost class time. In her one-page essay, a girl described this dilemma: “A child can fail classwork to do cleaning and you cannot get anything the teacher has taught. You can fail the exam because the teacher cannot stop teaching because you were cleaning.” Similarly, a UN-HABITAT report (2003) asserts that for slum dwellers, “The time that has to be spent queuing and then filling the water containers is a particularly unwanted extra burden” (p. 71). The report describes how for adult women, time spent fetching water can take time away from earning an income. But in the case of young girls, it takes away crucial time from their education.

A major contributing factor to girls missing school during their menstrual period is the fact that menstruation is fiercely taboo in Kenya. It is rarely discussed, even between mothers and daughters, and is regarded as an experience that should be kept silent and hidden from others (George, 2013, p. 4). Furthermore, young women are particularly sensitive while experiencing drastic changes in their bodies. When a young woman attends a school where boys can see inside the toilet she is using or if the latrines are not gender-segregated and there is a risk that boys will see the remains of menstruation in the toilet, girls may decide it is simply better to refrain from attending school. According to WSSCC, barriers to girls staying in school during menstruation include: “fear of soiling, fear of odour, and even when there were WASH facilities at school, fear of leaving visible blood in the latrine or toilet” (George, 2013, p. 9). According to UN-HABITAT (2003),

school attendance for girls “can also be affected by the quality of sanitation facilities in school, especially once they have started to menstruate” (p. 77).

There are many barriers to girls in Nairobi’s slums obtaining a proper education, but the provision of adequate sanitation can remove one of the most significant. If poor toilets prevent girls from attending school, the provision of properly constructed toilets can mean increased attendance for girls, giving them the education they deserve. According to UN Water (2006), simple sanitation measures like the provision of water and latrines, along with basic hygiene lessons, can allow puberty-aged girls to receive a full education (p. 5).

VARIABLES THAT CONTRIBUTE TO SANITATION CONCERNS

Land Tenure

Beyond the lack of funds (usually due to parents’ difficulty in affording their child’s school fees), the most significant barrier to a school’s provision of adequate facilities reported by administrators was land. That is, either insecurity of land tenure, inadequate land to build, or both.

Because slum dwellers are often viewed as illegal squatters by authorities, they are completely ostracized from infrastructure and services that those with title deeds are accustomed to. Service providers may not only be unwilling to accommodate slum dwellers, they may be legally unable to. According to the UN-HABITAT (2003), the informality or illegality of slums “has considerable importance for water and sanitation provision since public or official private water and sanitation providers may be forbidden by law from operating in such settlements” (p. 104). This is certainly true for Nairobi where slums “fall outside the formal planning framework of the State authorities, and therefore lack legal standing,” meaning that public utilities simply ignore informal settlements while planning provisions (NCWSC, 2009, p. 14). In places like Nairobi, owning land is often a precondition for accessing a stable water supply (UN Water, 2006, p. 4).

Only one school in this study was in possession of their land’s title deed, and it was one of the two schools that reported having no problems with their toilets. But it was not just the school administrators that reported having sufficient facilities, it was the only school that had unanimous agreement on the issue from students and teachers alike, and the girls said they actually *liked* using the school’s facilities.

In addition to the land title deed, the school had a major local donor that contributed to the upgrading and construction of the toilets. According to the school’s head teacher, the donor organization was more inclined to construct permanent facilities because there was no risk of demolition.

The school’s facilities were impressive. The toilets were constructed from stone, with boys and girls toilets appropriately separated. They were divided by class and each was equipped with a lock (i.e. the class 8 girls shared three toilets and were the only ones who had access to the key). Girls’ toilets were furnished with bins to dispose of sanitary towels that were regularly emptied. Plenty of water was available for flushing, washing hands, and cleaning the toilets, because the school had a direct connection to the city’s water source at a reasonable cost. It was also the only school that had a bathing room/shower for students to use.

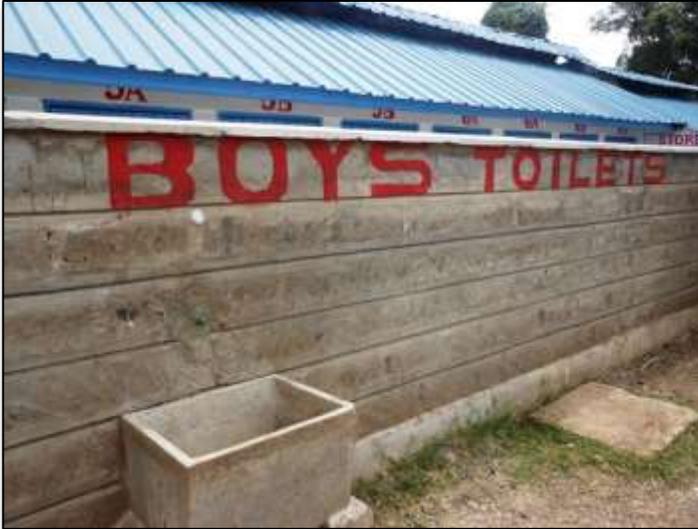


FIGURE 13 – *The Effect of a Title Deed (Toilets)*: The image on the left shows well-constructed, gender-segregated toilets at the one school in this study with a title deed; the image on the right shows a close up of a toilet at the same school.



FIGURE 14 – *The Effect of a Title Deed (Water)*: The image on the left shows the school’s bathing room for students; the image on the right shows the school’s washing area. Both are made possible by a direct, low-cost connection to the city’s water supply thanks to a title deed.

The results of this study expose the fact that sanitation solutions cannot be effective unless the issue of land is considered. When schools lacked land and land security, they were apprehensive or fearful to build permanent sanitation facilities for fear of demolition, or they simply had no space to build. Therefore, a permanent solution to land for slum dwellers will mean that girls will be more likely to access to safe, private, gender-sensitive, adequate facilities in their schools. According to the city’s own water supplier, Nairobi City Water and Sewage Company, “Provision of basic services and improved quality of living will have a more positive impact on the poor if it involves a holistic approach that improves their legal situation” (NCWSC, 2009, p. 14).

Marginalization and Violence

This study has brought to light a second underlying issue, which is the general marginalization of and violence against women experienced by female slum dwellers. Marginalization, while not explicit, was evident in the fact that facilities largely did not take into account the needs of the girls. Violence and harassment were much more explicit, with girls reporting harassment from boys at their schools and the risk of violence from adult men in the community.

Girls are affected to a greater extent by poor sanitation due to their need for safety, yet it is clear that most of the schools had not considered these needs in the construction of toilets. Most often, men are responsible for decision-making around the design and implementation of toilet facilities in slum schools, which largely means that the concerns of girls and women are left out. Due to the sensitive nature of toilets, girls are often afraid to raise concerns about the toilets in a public setting or to their male administrators.

Next, girls in the slums face a shocking level of violence in their daily lives. Amnesty International's study on women in the slums uncovers a culture of violence in almost every sect of life – the home, the workplace, around the settlement, at the hands of authority, and during forced evictions and political turmoil. They report that “Violence against women is endemic in [Nairobi's] settlements” and “studies indicate that women from all socio-economic backgrounds and in all areas of Nairobi are at risk of gender-based violence” (p. 42; p. 10). A 2003 study cited in the report by the Kenya Demographic and Household Survey found that up to two thirds of women in Kenya experience physical or sexual violence.

Not only do women risk gender-based violence, they usually believe that nothing can be done to prosecute its perpetrators after it has happened. Women rarely report rape because of the “barely functioning” justice system, for fear of retaliation by the criminals, for fear of the police and a general apathy toward them, and because they fear stigmatization after an assault. Women who live in Nairobi's slums report that when they do tell the police of their experiences, the police tell the women they must have done something to deserve it, or to “work out” their differences (Amnesty International, 2010, p. 13).

Much of the research available on the topic of women and sanitation in informal settlements addresses the issue of violence by describing residents' experiences such as being attacked while using a toilet at night outside of the home. This study reveals that girls risk violence, assault or rape in their school's toilets as well. Lack of security puts them at risk of violence in almost every place they go.

Experts in many research reports published on sanitation suggest that the solution to this problem is to build safer facilities for women near their homes so they are not forced to be outside after dark to use the toilet. For girls, this would also mean building secure toilets within their school compounds. While this is important, it is only a short term solution and does nothing to address the underlying issue of violence. The real issue is that women experience the risk of violence at all. Any effort to improve sanitation in Nairobi's slums must include efforts to reduce the culture of violence against women as well as structural factors that enable violence to continue. A teenage girl should never have to risk being raped when she uses the toilet, whether at school or home, at night or during the day, accompanied or unaccompanied.

VIII. RECOMMENDATIONS

Mwanamke ni chachu ya maendeleo

Woman is the “yeast” of progress.

-Swahili Proverb

The findings of this study must be used for action if it is to have any meaningful impact. In this section, several short-term and long-term recommendations are made that will improve conditions for girls related to sanitation. While these proposed actions are targeted to the partner organizations, they are applicable to a plethora of individuals and organizations in various settings. Each concerned citizen must do his or her part in tackling this pressing issue.

SHORT-TERM ACTION

Two high priority short-term actions should be taken in order to improve sanitation conditions for Mukuru schools:

Build more high-quality sanitation facilities: Resources must be mobilized in order to fill an urgent need for better toilets and other basic sanitation infrastructure. Akiba Mashinani Trust and its partners can solicit funding from the wide variety of local and international donors invested in the issue of sanitation through targeted relationship-building and the submission of funding proposals. Next, strategic partnerships should be developed between organizations and schools to provide high-quality short term solutions and products, like low-cost or subsidized improved toilets. (Note: Since this research project commenced, an additional school has been provided with two Fresh Life toilets through a funding partnership between Sanergy and UNICEF. This is an excellent example of a short-term solution for sanitation).

Organize for Action: An advocacy group for sanitation in schools must be mobilized in order to lobby for improved facilities in Mukuru. Some of the teachers interviewed in this study expressed an interest in creating such a group, and many women from Mukuru are already involved in advocacy around improved sanitation. Organizations like AMT can be instrumental in providing organizing and administrative support for such groups. Furthermore, the new Kenyan constitution makes this a timely solution by stating that basic sanitation is a right of all Kenyan citizens.

LONG-TERM ACTION

Due to the complex nature of sanitation concerns, as demonstrated by its contributing variables, long-term solutions that address these deeper factors must be implemented:

Fight for Secure Land Tenure: AMT and MWW are involved in an ongoing initiative to fully understand land tenure in Mukuru slum and to advocate for land security for slum dwellers. The information in this study should be used to provide further evidence of the impact of land legalization through the organizations’ land initiative. For schools, piped water connections and external donations are more likely to be available when land tenure is secure. In the long run, land tenure must be obtained in order for students to benefit from permanent, comprehensive solutions to sanitation problems.

Reduce the Culture of Violence and Systematic Injustices that Harm Women: Reducing the culture of violence against women and addressing systematic injustices that harm women can only be addressed through targeted, long-term, multi-sector approaches. The Kenyan Government, non-governmental organizations and citizens must come together to do so. Some of these activities may include:

- Research about the causes of violence in the slums and corresponding solutions.
- School-based and community-wide efforts to teach young people and adults about respecting the rights of both men and women.
- Law enforcement training that teaches police officers to recognize violence against and marginalization of women, to understand its causes, and to be informed about legal procedures women can undergo to assert their rights. This must include a high-level effort to reduce corruption at the hands of law enforcement.
- Institute and enforce legal protections for women who face violence.
- Incorporate women's voices in all sanitation upgrading projects in order to accommodate their unique needs.

IX. RESEARCH SIGNIFICANCE

In this section, the significance of the findings is discussed, including the study's contribution to the field of research and to other projects. It concludes with reflections about the research process including its limitations and further research that is needed.

CONTRIBUTIONS TO THE FIELD OF RESEARCH

A great deal of research has been carried out by major international organizations about the state of sanitation in slums and its impacts. As noted in the Literature Review section of this report, some of these organizations include the United Nations, Amnesty International, the World Health Organization, and the Water Supply and Sanitation Collaborative Council. While this research is relatively comprehensive in describing sanitation concerns for slum dwellers as they use sanitation facilities in or near their homes, there is currently a lack of existing research on sanitation's impact on young girls, and especially that which relates to school sanitation. Yet, this is where girls spend the majority of their time during their childhood and teenage years. This study intends to fill that gap in the research by uncovering and communicating the unique plight of pubescent girls as they experience sanitation in their schools, and the impact sanitation has on their emotional, physical and academic lives.

CONTRIBUTIONS TO OTHER PROJECTS

The findings of this study will contribute to a major research project being carried out by a team of researchers from Akiba Mashinani Trust, the University of Nairobi, Strathmore University and other partners, funded by the International Development Research Centre (IDRC) in Canada. The IDRC project will assess the current state of land legality in Mukuru slum, with a secondary focus on sanitation. The research team will create, test, and implement land tenure and sanitation solutions for slum dwellers using AMT's community-based approach. The full body of research from this study will be passed on to the IDRC project team in order to provide a framework on the state of sanitation in Mukuru related to young women, to incorporate their unique needs as sanitation solutions are developed, and to use in other ways as they see fit. (No IDRC funding was used to support this study).

The research findings from this study may also contribute to the legal case in which Muungano wa Wanavijiji is suing corporate and governmental leaders surrounding land legality in Mukuru. Some of the data may be used to describe the current plight of schools as they attempt to operate on land which they have no legal right to, as well as the experiences of girls related to sanitation.

LIMITATIONS OF RESEARCH

Evaluation of Research Process

Overall, integrity of data was maintained throughout the research process. Utmost care was taken in accurately recording responses of participants, removing bias in the research tools, interpreting data with the support of local guides to ensure accuracy, and triangulating data between three separate sources (teachers, students and observation).

However, reflecting back on the research process, there are two elements that may have impacted the integrity of the research outcomes. The first is known as "reactivity bias," meaning that research

participants may have felt a need to present a more negative picture of the sanitation situation if they believed money would be tied to the findings of the study. Because the student researcher was a Caucasian foreigner, there may have been an assumption that international funding would result from the research. An attempt was made to mitigate this by describing the purpose of the study in detail to each participating school. The researchers explained that while the partner organizations would use the research findings for action, no money would be tied to the results. Next, a community member and a representative from the local partner organization worked with the student researcher to carry out the investigation, which was intended to demonstrate local ownership. Despite all of this, administrators at two schools seemed to be influenced by a desire for funding, as they repeatedly asked for donations and requested that the research team fund the school (both sanitation-related needs and non-sanitation needs). In order to ensure that this had minimal impact on the findings described in this report, the student researcher used other sources to analyze the data, including the student focus groups and by viewing the sanitation facilities on school grounds.

The second threat to the integrity of the data was evident during the student focus group discussions. During these dialogues, some teachers stayed in the room with students and some did not. At one school, the students seemed to be impacted by the presence of the teacher. They appeared to be fearful of sharing negative comments about the school's sanitation facilities in front of the head teacher, and regularly glanced at her to gauge her reactions to their comments. At one point, a student answered a question about the school's toilets, and the teacher interrupted her, telling her to give another answer. On the other hand, some of the teachers were helpful in "breaking the ice," getting honest answers from the girls, and encouraging authentic reflections – good or bad. At one school, the head teacher noticed that the girls' answers were impacted by her presence, and she left the room, telling them to "just be honest!"

If similar research were to be carried out in the future, a decision should be made about whether to include teachers in the student discussions or not, with consistency throughout. It would be best to have the teacher introduce the researchers, then leave the room during the focus group discussion so as not to impact the students' responses.

Additional Research Needed

Akiba Mashinani Trust, its partners, and interested organizations must continue to investigate sanitation concerns in Mukuru and other Nairobi slums. This study has only skimmed the surface of the issue. Additional research is needed so that it can be applied to short and long term efforts to improve access to decent sanitation facilities:

- **Health Implications:** An in-depth study of health implications for girls would include tracking physical ailments experienced by girls, as well as comparisons to students who use improved sanitation facilities at their schools. This type of study would demonstrate the positive impacts of decent sanitation on the physical health of girls.
- **Land Tenure:** Only one school in this study had a title deed to their land, and it was the school with the best sanitation facilities. While this – and external research – suggests that secure land tenure is important for improved sanitation, a study that covers a larger sample of schools, including those with and without tenure, would demonstrate or disprove this theory on a wider scale.
- **Sanitary Towels:** Following the interviews, a couple of teachers raised the issue of sanitary towels, explaining that many girls' families were unable afford sanitary towels each month. The issue was not addressed in this study because it does not relate directly to school sanitation, therefore further investigation and action is needed about the scope and nature of the problem.

- Impact on Boys: A teacher at one of the participating schools complained that research was regularly conducted with girls in Mukuru, but that boys were usually left out. A study that considers how boys are impacted by poor sanitation would address this concern, and would allow the needs of boys to be included in the construction of sanitation facilities.

X. CONCLUSION

Love must be shown by deeds, not words.

Mapenzi huonyeshwa kwa vitendo siyo kwa maneno
- *Swahili Proverb*

A PERSONAL MESSAGE FROM THE RESEARCHER

I had been living in one of Nairobi's largest informal settlements for nearly 15 months (and had used some rather squalid toilets myself) when I began this research project. Of course, I knew it would not be glamorous to trudge around in slum toilets. Though, in all honesty, I did not realize just how un-glamorous it would be. I spent day after day hearing stories of little girls messing their pants in order to avoid using the toilets; of the same little girls experiencing robbery and rape simply because of their need to use the toilet; and of the fear and shame they experience on a daily basis for doing one of the most fundamentally human things to do.

There were also a few light-hearted moments. I recall visiting a toilet at one school, pausing to take a few photos. All of a sudden, I heard a roar of laughter behind me. I turned around and saw about 100 small children pointing and laughing at me – the white foreigner – taking photos of a toilet. Instantly, I burst into laughter as I considered the sight it must have been for these young students.

But more than laughter, there were cries. In a sense, the girls I spoke to were crying out, and there was no one to hear them. Returning home from the toilets each day, I found myself angry and disgusted. I frantically scanned the scriptures for passages that would communicate to the girls their worth. I wanted to shout from the rooftops that this was not their purpose, and throw them into the safety of their heavenly Father's arms.

I did not expect trudging around slum toilets to be a spiritual experience, but it most certainly was. Toilets are deeply spiritual places because they represent a defilement of justice for the poor which is commanded throughout scriptures. They are places where a young girl's God-given sexuality can be violated. They are places where the inherent value and dignity implanted by God into humanity is disregarded. But they are also places where God speaks loudly to his people, commanding them to take action.

My hope is that above all, the findings of the study will serve as a call to action for those who read it; whether it is the group of women in Mukuru who are already fighting for their rights, or a casual reader in the United States. Together, we must work to raise awareness, to seek funding for better toilets near the girls' home and schools, to address the deeper issues of gender-based violence and land injustices in the slums – and ultimately, to nurture and restore dignity for the girls of Mukuru.

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Appendix 1

Teacher/Administrator Interview Guide

Name of school

Interviewee position at school

Interviewee gender (Male/Female)

Location of school (Mukuru kwa Njenga/ Mukuru kwa Reuben)

Type of school (Community/Public)

Is this a boarding school, day school, or mixed?

How many students attend your school?

How many of your students are female?

Who owns this school?

Who owns the land that this school sits on?

Does the school have a toilet?

If no:

- Where do students use the toilet during the school day?
- How long does it take the students to walk to the toilets they use during the day?
- Are the students charged money to use the toilets? If so, how much?
- What types of toilets do they use during the school day? Pit latrine? Sewerage system? Other?

If yes:

- How many toilets does the school have?
- Are there separate toilets designated for girls and boys? If yes, how many for are designated for each?
- Do teachers and students use the same toilet facilities? If not, how many are designated for teachers?
- What type of toilet is in the school – pit latrine, sewerage system, water pour, Fresh Life or another type of toilet? If latrines, how often are they emptied and what is the cost to empty them?
- What are the toilet facilities constructed from – Stone? Mabati? Another material?
- How long does it take the students to walk to the school's toilets from their classrooms?
- Who is responsible for cleaning/maintaining the facilities and how often are they cleaned?

Where do the girls dispose of sanitary towels while at school?

Do you know of any female students who have missed school because of their menstrual period?

Do you consider the toilets to be sufficient for your school, or do you consider toilets to be a problem for your school?

If sufficient:

- What factors contribute to you having good facilities in your school?

If problem:

- What type of toilet problems do you have? For example, there are not enough toilets; the toilets are poor quality; the toilets are dirty; there are no toilets at all; other problems.

- Why do you think the school has these problems with toilets?
- How does the sanitation problem affect students and teachers? Academically? Physically? Emotionally? Other?
- How should sanitary towels be disposed at the school?
- Do you have enough land/space for toilets?
- What types of improvements need to be made to the sanitation facilities in your school? Describe the ideal toilet for your school, and how many would be enough?

Do you have a bathroom at your school?

If yes:

- How many bathrooms do you have?
- What are the bathrooms constructed from? Mabati? Stone? Another material?
- Who is responsible for cleaning/maintaining them and how often?

Do you have tapped water or stored water in your school, or no water source?

If tapped:

- What is the source of the water? (i.e. Nairobi Water)
- How often does water flow in the school?
- Is the tapped water sufficient to cover the needs of the school at all times? If not, where does the school obtain water when there is not enough tapped water? Who is responsible?
- How much do you pay for water on a monthly basis?

If stored:

- What is the source of the water? (i.e. Private vendor)
- Who is responsible for obtaining water for the school?
- How much do you pay for water on a monthly basis?

Do students ever bring water with them to school?

Do students have a place to wash their hands before they take tea or food, or after they use the toilet? If so, do they use soap and water?

Approximately what is the monthly cost of water and maintaining the toilet facilities in the school?

Is there a problem with drainage around/near/in your school? Does the drainage system flood when it rains, or any other time?

In your opinion, who is responsible for providing sanitation facilities and water in a school?

Does the government provide any type of support to your school? (i.e. books). Do you interact with the government at all/do they visit your school?

Is there anything else you would like to share about sanitation or water in your school?

(If the school has a toilet): Is it ok for us to look at the toilet facilities in the school?

Appendix 2

Student Focus Group Discussion Guide

Name of school

Number of participants

Age range of participants

Classes of participants

Gender of participants

Location of school (Mukuru kwa Njenga/ Mukuru kwa Reuben)

Type of school (Community/Public)

Boarding, Day or Mixed

Does the school have a toilet/toilets?

If no:

- Where do you use the toilet during the school day?
- How long does it take you to walk to the toilets you use during the day?
- Are you charged money to use the toilets? If so, how much?
- What types of toilets do you use during the school day? Pit latrine? Sewerage system? Other?
- What is the toilet constructed from? Mabati? Stone? Another material?

If yes:

- How many toilets does the school have?
- Are there different toilets for girls and boys? If so, how many are for boys and how many are for girls?
- What type of toilet is in the school? Is it a pit latrine, sewerage system or another type of toilet?
- How long does it take you to walk to the school toilets from your classrooms? 1 minute? 5 minutes? 10 minutes?
- Do you ever have to wait in a queue to use the toilet?
- Who is responsible for cleaning the toilets? If the students, describe what you do when you clean them. Are the toilets usually clean?
- Are the toilets private?
- (*Boarding schools only*): Can you safely use the toilet any time of day or night, or only certain times? If only certain times, until what time? Escorted vs alone? If you are unable to use the toilet at night, why can't you use it?
- Where do the girls dispose of sanitary towels when they are at school?

Do you think toilets are okay at your school or are a problem at your school?

If good/okay:

- What do you like about the toilets?
- Why do you think your school has good toilets?

If problem:

- What type of toilet problems do you have? (For example, there are not enough toilets; they have holes so people can see inside; the toilets are dirty; there are no toilets at all).

- How does the toilet problem make you feel?
- Are there any difficulties you experience because of the toilet problem?
- Have you or someone you know ever missed school because of the problems with the toilets? Have you or anyone you know ever missed school because of your menstrual cycle?

Do you usually have enough sanitary towels during your monthly menstrual period? What type do you use (disposable or reusable)? Where do you get them?

What would make the toilets better at your school? If you had the best toilet in your school, what would it be like?

In your opinion, who should provide toilets in a school? Teachers, parents, the government, or someone else?

Is there anything else you would like to share about toilets in your school?

Appendix 3

Ethical Considerations

Because this research project involved minors, ethical considerations surrounding the use of children and teens in research was of utmost importance. A researcher's first priority must be to protect the safety and well-being of the research participants, especially when they are minors. Therefore, this research project was marked with the following features to account for welfare of participants, both child and adult:

- Informed verbal consent was obtained from all participants with clear communication to minors in a language that they could easily understand. The structure and content of the study was described to all participants, as well as how the data would be used.
- Participants were told that they could withdraw from the study at any time with no negative repercussions.
- All data and participant information has been kept confidential. This was communicated to participants and explained in a way a young person can understand.
- All personal identities and school names have been kept anonymous. The names of student participants were never written down in order to protect their identities.
- Professional advice about whether to use parental consent for pre-teens and teens varies. Therefore, the head teacher at each school was given the discretion to forego or require parental consent for their students. The head teacher was given sufficient time to make a decision about whether or not to use parental consent, and the researchers prepared simple parental consent forms in English and Swahili with instructions for completing them.
- In the case of potentially painful topics arising while discussing sanitation, contact information for free crisis resources was provided to participants (i.e. rape hotline).
- Contact information for the research team was provided to each school so that participants could communicate with them at any time to ask questions, express concerns, or follow up on findings.
- A research update and debrief will be provided to each participating school so that they have a clear understanding of findings and how the data will be put into action.