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Sanitation facilities in Kampala slums, Uganda: users' satisfaction and determinant factors

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Access to improved sanitation is a key preventive measure against sanitary-related gastro-enteric diseases such as diarrhoea. We assessed the access to sanitation facilities and users' satisfaction in 50 randomly selected slums of Kampala through a cross-sectional survey conducted in 2010. A total of 1500 household respondents were interviewed. Sixty-eight per cent of the respondents used shared toilets, 20% private, 11% public toilets and less than 1% reported using flying toilets or practising open defecation. More than half of the respondents (51.7%) were not satisfied with their sanitation facilities. Determinants for satisfaction with the facilities used included the nature and type of toilet facilities used, their cleanliness, and the number of families sharing them. The study findings showed that slum dwellers had high access to sanitation facilities. However, most of them were shared and majority of the respondents were not satisfied with their facilities, primarily due to cleanliness and over demand.

Keywords: access; sanitation facilities; satisfaction; slums; Uganda

Introduction

Poor sanitation and hygiene practices are one of the main causes of ill health and socio-economic problems, and present a major development obstacle in most developing countries (Mara 2003; UNICEF and WHO 2009; Crow and Odaba 2010; WHO and UNICEF 2010). However, prioritization and investments in improved sanitation facilities by individuals and governments in most developing countries are limited, creating an imbalance between the population's needs and available facilities. This leads to challenges in proper use and maintenance of the existing facilities (Kamara et al. 2008).

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The high rate of urbanization in developing countries, together with poor governance and the absence of sound and coherent policies or institutional support structures, leads to an increase in the formation of slum settlements within urban centres (UN-Habitat 2008). The slums are increasingly becoming a habitat for more than half of the population in most cities in developing countries (UBOS 2005; McFarlane 2008; Penrose et al. 2010), with the highest prevalence in Sub-Saharan Africa (UN 2009).

The slums are characterized by informal and unplanned settlements with poor infrastructure and inadequate sanitation facilities for most households (Graf et al. 2008; Govender et al. 2011). In addition, slum dwellers are also victims of poverty and the resulting hardships, as most dwellers have no access to adequate employment opportunities (Unger and Riley 2007; Lüthi et al. 2011).

Kampala, the capital city of Uganda, has a high rate of growth in slum populations, estimated at 9.6% per annum in some slums (Kulabako et al. 2010a). More than 60% of the population in Kampala City live in slums mainly occupied by urban dwellers with low incomes (UBOS 2005). Most slums are densely populated and situated in low-lying areas, making them susceptible to frequent flooding during heavy rains. In addition, pit latrines are the dominant sanitary facilities used in these slums, resulting in the main constant risk of faecal contamination of shallow ground water, which is used as a drinking water source by a large number of slum dwellers (Katukiza et al. 2010; Kulabako et al. 2010a). Even though pit latrines are not accepted as an appropriate logistical option in urban areas according to the Uganda Public Health Act 2000 (MoWE 2010), this has not deterred their construction.

The lack of access to adequate sanitation facilities is one of the main factors hampering progress towards the world's poor meeting their basic needs. Malnutrition, poor education and diseases are all exacerbated by inadequate sanitation, with children below 5 years of age being the most vulnerable (Bartlett 2008). Previous studies on sanitation have focussed on demand and hygiene practices, and the linkages to disease outbreaks such as diarrhoea (Curtis et al. 2000; Emerson et al. 2004; Jenkins 2004; Fewtrell et al. 2005; Jenkins and Curtis 2005; Jenkins and Scott 2007; Mara et al. 2010). Investigators often pay little attention to the nature of sanitation facilities used, users' satisfaction and reasons for such circumstances (Harpham 1986; Gutierrez 2007; Keijzer et al. 2008; Owusu 2010; Penrose et al. 2010). There is a knowledge gap regarding users' satisfaction with their sanitation facilities in urban slums. It is important to understand the factors that influence users' satisfaction, as it affects the way facilities are used and maintained. People use toilets if they are satisfied with them; otherwise, they shift to open defecation or defecation in polyethylene bags (flying toilets) which are unhygienic practices. Knowledge about the type of existing sanitation facilities and the factors that influence users' satisfaction is important for stakeholders involved in working towards the attainment of improved sanitation facilities, especially, in slums of developing countries with high population densities. Access to sanitation facilities alone may not lead to improved health. Factors such as cleanliness of the facilities, the number of sharing households and type of the facilities, among others, are equally important (UNICEF and WHO 2012).

This study thus had two research objectives. The first was to assess how many people in Kampala's low-income areas have access to sanitation facilities and the type of facilities used; the second was to establish how satisfied these people are with the sanitation facility they use and what reasons they mention for satisfaction or dissatisfaction. The findings are of importance to policymakers, researchers,

development agencies and slum inhabitants, in that they provide a better understanding of the sanitation situation and its determinants that may lead to more sustainable interventions.

Methodology

Study setting and population

This was a cross-sectional study carried out in urban slum communities in Kampala from October to November 2010. Kampala is the capital city of Uganda and is the country's only district that is 100% urbanized. It is divided into five administrative divisions: Central, Makindye, Kawempe, Nakawa and Rubaga. Kampala Capital City Authority is responsible for overseeing infrastructural development and social service provision in the city. Kampala has a residential population of more than 1.5 million people with over 60% living in informal settlements commonly known as slums (UBOS 2005). The slums exist in all of the five divisions, with the largest proportion in Kawempe division (31%), followed by Makindye (26%), Rubaga (16%), Central (14%) and finally Nakawa (13%).

Sampling procedure

A total of 1500 respondents were interviewed in this study. The term respondents as used in this study means household members who were interviewed during data collection. In each of the household, one member was interviewed. The respondents were drawn from 50 randomly selected slum zones in the five divisions of Kampala City (Kawempe division 14 zones, Makindye 13 zones, Rubaga 11 zones, Central five zones and Nakawa seven zones). A list of slums totalling to 188 zones was compiled from the Uganda Bureau of Standards 2005 Census data (UBOS 2005) to constitute the sampling frame. Using the statistical software package (STATA version 11), 50 zones were randomly selected from the five divisions of Kampala City. In each zone, 30 household respondents were interviewed, selected from every third house. This was due to the closeness of most of houses in the slums. On each housing block, only one household was interviewed. Interviews were conducted with a household member who was found at home during the visit after obtaining his/her consent to participate in the study. All respondents interviewed were aged 18 years and above. If the first household respondent failed to consent to be interviewed, the interviewer would move on to the next household. A semi-structured household questionnaire was used for data collection. The household questionnaires were administered by a team of trained research assistants. These were university graduates with expertise in the local language (Luganda) commonly used in Kampala's slums. After every household interview, observational questions were completed by the interviewers to ensure correctness of the responses given by the respondents. The observations were also supplemented by visual documentation, including photos of toilet facilities, as well as deposits of open defecation and flying toilets.

Data collection and analysis

Data were collected by trained research assistants. The research team consisted of the principal investigator, 15 data collectors and five field supervisors. The field supervisors were local leaders in the five divisions of Kampala whose roles were to

provide immediate guidance and supervision of the research assistants. The research assistants and the field supervisors were taken through three days of training on data collection procedures by the principal investigator of the study. The training focussed on reading and understanding the questionnaire, evaluating ways of approaching respondents, building rapport with the respondents and the logic of questioning, followed by one day for pre-testing the questionnaire. The questionnaire was translated into the local language and back translated to English to ensure that the meaning of the questions was not altered. The questionnaire was pre-tested among 50 respondents in one of the slums not included in our sample. After the field exercise of pre-testing the questionnaire, it was re-revised and made ready for actual data collection. Data collected were reviewed on a daily basis for completeness by the field supervisors before passing it to the principal investigator for further scrutiny. It was analysed using SPSS version 17 for the quantitative data, and qualitative responses analysed manually using context analysis techniques.

Field observations

In order to supplement collected data or to ensure correctness, interviewers were instructed to complete an observational checklist after every interview. The items on the checklist were: whether there was garbage around or near the household, stagnant water, any visible excreta around the house or in the neighbourhood, the ability of the interviewer to be shown the location of the toilet used by the household, distance to the facility, type of toilet facility and the materials of the superstructure, number of stances (rooms on the toilet block) and if the toilet was clean or not smelly.

Sanitation terms used in this study

- Private toilets: toilets used by only one household or members of the same family.
- Public toilets: toilets that can be used by everybody.
- Shared toilets: toilets used jointly with different families often known to each other or share a compound house.
- Flush toilets: waterborne toilets where excreta are flushed away after use to either a septic tank or sewerage connection.
- Pour flush toilets: waterborne toilets, but unlike the flush toilets that have a water connection within the toilet, here water is carried to the toilet and manually poured to flush-off the excreta after use.
- Ventilated improved pit (VIP) latrines: pit latrine sanitation facilities that are lined from the bottom and allow for easy emptying when full.
- Traditional pit latrines with a slab: pit latrines that are not lined at the bottom but with a slab and superstructure.
- Flying toilets: using polyethylene bags, an excreta containment option.
- Open defecation: defecation in the open.

Questionnaire

The questionnaire was developed to generate the responses needed to answer our research objectives. The first research objective regarding how many people of

Kampala's low-income areas have access to which type of sanitation facilities was assessed using the questions below:

Where do most of the members of your household usually ease themselves (including yourself)?

Choose one of the following responses: 1. public toilet, 2. shared, 3. private, 4. outside (open/bucket/flying toilet)

Do you own or rent the house in which you live? Response: own/rent

How many households share the toilet room with your household? Numeric response

How many minutes do you need to walk to the toilet? Numeric response

How many people currently live in this household (including all the children)? Numeric response

What type of toilet facility does your household use?

Choose one of the following responses: 1. flush toilet, 2. pour flush, 3. VIP latrine, 4. traditional pit latrine with a slab, 5. other (pits with no slab, hanging and bucket toilets)

Are there separate toilets for men and women? Response: yes/no

Do you usually have to wait before you can use the toilet?

Choose one of the following responses: 1. never, 2. sometimes, 3. often, 4. always.

Are there signs of open defecation or use of "flying toilets" around the household or in the direct neighbourhood of the interviewed respondent? Response: yes/no (observational question)

The second research objective regarding how satisfied these people are with the sanitation facilities they use, and what reasoning they mention for satisfaction or dissatisfaction, was assessed using the questions below:

How satisfied are you with your current toilet used? Scored on a nine response scale ranging from very dissatisfied to very satisfied

What is the reason for your response? Open-ended question

What is your relationship to the majority of the other people you share a toilet with. Choose one of the following responses: 1. close family, 2. extended family, 3. next door neighbours, 4. well-known neighbours (not next door), 5. not well-known neighbours (not next door), 6. friends outside neighbourhood

Does it sometimes happen that you cannot use the toilet during the day (because the key is missing, or someone else is using it at the same time, or it is full and not yet emptied, or because of flooding or any other reasons)? Response: yes/no

How much do you (would you) like or dislike sharing a toilet with neighbours? Scored on a nine response scale ranging from I dislike it very much to I like it very much.

Usually how clean is the toilet your household uses?

Choose one of the following responses: 1. very clean, 2. clean enough to use, 3. neither clean nor dirty, 4. dirty but usable, 5. very dirty/not usable

What do you consider as the five most important characteristics for an improved toilet?

Responses: 1. close to my house, 2. separate toilets/rooms for males and females, 3. water for hand washing, 4. no smell, 5. private toilet, 6. easy to clean, 7. cheap to empty, 8. cannot see into the pit when using it, 8. room has light inside, 9. does not heat up, 10. toilet room has adequate space, 11. toilet superstructure built with cement.

Results

Out of the 1500 respondents, more than half (59.9%) were tenants while 40.1% were landlords. The majority of the respondents (74.2%) were females, while most of the household heads were reported to be males (69.9%). A third of the slum dwelling household heads were aged between 30 and 39 years (32.9%), followed by age group 20–29 years (29.1%) and 40–49 years (19.1%). The majority of slum dwellers (64.1%) were engaged in business ranging from petty trade to jobs at hardware shops, while slightly over a fifth (20.9%) were engaged in salaried or civil service employment. The level of unemployment was 9.3%, farmers 1.1% and others (elderly and students) 2.5%. The reported monthly income estimates for household heads ranged from Uganda shillings 10,000 (approximately US$ 4) to more than one million (approximately more than US$ 405.2). Over half (51.7) of the respondents reported monthly income for the household heads was not more than Uganda shillings 30,000 (approximately US$ 12.2), followed by 36.3% of the respondents reporting those earning not more than Uganda shillings 100,000 (approximately US$ 40.5).

With regard to the first research objective concerned with how many people of Kampala's low-income areas have access to sanitation facilities and the types of facilities they use, the first finding is that 99% of the respondents reported having access to sanitation facilities. Two-thirds of 1500 respondents (67.9%) reported the use of shared sanitation facilities, followed by private (20.4%) and public (11.4%) facilities (Table 1). Less than 1% (0.3%) of the respondents reported the use of flying toilets or open defecation. Evidence of the use of flying toilets was observed to be at 14.9% by the interviewers. Shared facilities were the most commonly used by both tenants and landlords. The use of private facilities was most common among landlords as shown in Table 1. However, results in Table 1 also show that more than a half of the landlords use shared facilities.

The median number of households sharing each toilet room was three (range, minimum = 1 and maximum = 92), and the mean walking time from the households to the sanitation facilities was reportedly 1.76 min [range, minimum = 0 (if the toilet was in the house which the respondent occupies) and maximum = 23 min]. The majority of respondents (91.7%) take less than 4 min to get to the sanitation facilities, with only 8.3% of the respondents taking four or more minutes. The mean number of people living in a household was four people per household (range, minimum = 1 and maximum = 30). Therefore, the median number of people per household sharing a toilet stance multiplied by the mean number of people living in each household indicates 12 users per toilet stance. Most sanitation facilities were traditional pit latrines with a slab (70%), followed by VIP latrines (21.6%) and flush toilets (8.3%). More than 90% (93.4%) of the respondents reported that both men and women use the same toilets. Only 6.6% reported that there were separate toilets

Table 1. Comparison of the household ownership status and the nature of sanitation facilities used in 50 slum zones in Kampala.

Ownership status	Public	Shared	Private	Flying toilets or open defecation	Total
Tenants (rent household occupied)	139 15.5%	698 77.7%	58 6.5%	3 0.3%	898 100%
Landlords (own household occupied)	32 5.3%	321 53.3%	248 41.2%	1 0.2%	602 100%

or toilet rooms for males or females. The majority of the respondents (76.7%) mentioned that the toilets are accessible during the day. Among respondents using private or shared facilities, close to half of the respondents reported (47%) that they sometimes have to wait before they can use the toilets because of being in use at the time of need. Most of the remaining respondents (46.4%) mentioned never having to wait before using the toilet.

With regard to respondents' satisfaction with the sanitation facilities used and the reasons mentioned for satisfaction or dissatisfaction (Table 3), four in every 10 (41.5%) respondents were rather satisfied with their facilities. Most of the household respondents who were very dissatisfied with their sanitation facilities were users of shared toilets (65.9%), while half (50%) of the respondents who use private toilets were very satisfied, as shown in Table 2.

Comparison of means showed that satisfaction was greater among respondents who use private facilities ($M = 6.26$), followed by shared facilities among known households ($M = 4.39$) and lastly public facilities ($M = 2.95$) (all $p < 0.001$; T test for the equality of means). Satisfaction also had a significant negative correlation with the number of families sharing toilet rooms (Pearson correlation = –0.238; $p < 0.001$). Household respondents who shared toilets with close relatives expressed higher satisfaction levels ($M = 5.57$) compared with those sharing with extended families ($M = 4.74$), all had $p < 0.001$; T test for the equality of means. Close families are those that contain people from the same biological relationships, while extended families contain even distant relatives who are not biologically related.

Table 2. General satisfaction levels and comparison with the nature of sanitation facilities used by household respondents in Kampala's slums.

	General satisfaction levels		Satisfaction with nature of sanitation facilities used by households			
Variable	Frequency	Percentage	Public toilet	Shared toilet	Private toilet	Total
Very dissatisfied	221	14.8	60	145	15	220
			27.3%	65.9%	6.8%	100.0%
Dissatisfied	282	18.9	44	217	19	280
			15.7%	77.5%	6.8%	100.0%
Quite dissatisfied	186	12.5	17	140	29	186
			9.1%	75.3%	15.6%	100.0%
A little bit dissatisfied	82	5.5	3	59	20	82
			3.7%	72.0%	24.4%	100.0%
Neither dissatisfied nor satisfied	101	6.8	16	64	20	100
			16.0%	64.0%	20.0%	100.0%
A little satisfied	109	7.3	9	83	17	109
			8.3%	76.1%	15.6%	100.0%
Quite satisfied	166	11.1	10	110	46	166
			6.0%	66.3%	27.7%	100.0%
Satisfied	228	15.3	6	144	78	228
			2.6%	63.2%	34.2%	100.0%
Very satisfied	116	7.8	4	54	58	116
			3.4%	46.6%	50.0%	100.0%
Total	1491	100	169	1016	302	1487

There was a positive Pearson correlation (0.233; $p < 0.001$) between satisfaction and not having to wait before one can use a toilet during the day. The majority of the respondents expressed a rather negative attitude towards sharing toilets with their neighbours, as shown in Table 3.

The main reasons for respondents' satisfaction with sanitation facilities included cleanliness and sanitation facilities lined from the bottom (VIP latrines) (Table 4).

The main reasons for respondents' dissatisfaction, as shown in Table 4, were sharing sanitation facilities with too many users (36.7%) and facilities that were dirty and smelly (28.5%). On the other single response question on cleanliness, only 1% of the respondents rated the toilets they use as very clean. Other responses on cleanliness of the toilet facilities used by household respondents are shown in Table 5.

Table 3. Respondents' attitudes towards sharing a toilet with neighbours in Kampala's slums.

Variable	Frequency	Percentage
I dislike it very much	410	27.5
I dislike it	320	21.4
I quite dislike it	311	20.8
I rather dislike it	228	15.3
I neither dislike nor do iI like it	115	7.7
I rather like it	36	2.4
I quite like it	40	2.7
I like it	20	1.3
I like it very much	13	0.9
Total	1493	100

Table 4. Reasons for respondents' satisfaction or dissatisfaction with sanitation facilities used in Kampala's slums.

Variables	No. of respondents	Percentages
Reasons for satisfaction*		
Clean sanitation facilities and not smelly	232	39.7
Toilet improved type (lined from the bottom)	216	36.9
Toilet used by few people	93	15.9
Facilities easy to clean	32	5.5
Cooperation among sharing households in cleaning the toilet	12	2
Total	585	100
Reasons for dissatisfaction*		
Toilet used by many people	378	36.7
Facilities not clean and are smelly	294	28.5
Bad toilet super structures	155	15
Unemptiable toilets that are full	122	11.8
Toilets filling fast	25	2.4
Toilets far from house	22	2.1
No cooperation among sharing households	19	1.8
Facilities expensive to empty	12	1.2
Using toilets still under construction	5	0.5
Total	1032	100

*Note: Multiple responses.

Table 5. Cleanliness of shared and private sanitation facilities in Kampala's slums.

Toilet type	Level of cleanliness					Total
	Very clean	Clean enough to use	Neither clean nor dirty	Dirty but usable	Very dirty/not usable	
Shared	114	464	220	204	13	1015
	11.2%	45.7%	21.7%	20.1%	1.3%	100.0%
Private	126	129	41	10	0	306
	41.2%	42.2%	13.4%	3.3%	.0%	100.0%
Total	240	593	261	214	13	1321
	18.2%	44.9%	19.8%	16.2%	1.0%	100.0%

Note: Only responses of users of private and shared toilets were considered in this analysis.

The main characteristics respondents attributed to a good sanitation facility were: closeness of the toilets to the households (90%), accessibility during day and night (60.2%), inability to see the contents of the pit when using it (81.6%), rooms having light inside (82.2%), the facility not heating up during the day (90.8%) and a lockable facility for privacy when one is in the toilet (68.7%).

Discussion

The aim of this study was to establish the proportion of people in Kampala's low-income areas with access to sanitation facilities, the types of facilities used, respondents' satisfaction levels with their facilities and the reasons mentioned for satisfaction or dissatisfaction.

Access to sanitation facilities and facility type

Regarding the first research objective, almost nine in every 10 household respondents had access to sanitation facilities, with only less than 1% of the respondents reporting the practice of open defecation. Most of the facilities were located at a distance (away) from the respondent's house, with a mean walking distance of almost 2 minutes to reach them. The distance in this study was measured in time, i.e. the minutes a respondent took to reach the sanitation facility. These findings are comparable to those of other related studies on sanitation. In a study conducted in Bwaise III, one of the slum communities in Kampala, the author found that all the respondents interviewed reported having access to a toilet facility (Kulabako et al. 2010a). A study conducted in the slums of Freetown in Sierra Leone, aimed as assessing the demand for sanitary facilities and services, also found that the vast majority of adult respondents had access to excreta disposal facilities and only 7% practiced open defecation (Mikhael 2010). However, on the issue of open defecation, it was observed that there were more practices of open defecation around respondents' households or in the neighbourhood than reported by the respondents. The practice of using polyethylene bags, otherwise referred to as "flying toilets," for excreta disposal is a common practice in slum settlements in East Africa (Crow and Odaba 2010; Kulabako et al. 2010b). Unfortunately, open confession of its use is rarely reported by respondents, as it is viewed as a demeaning practice. The use of polyethylene bags and disposing of them in neighbourhoods, garbage heaps, or

drains was also reported in a slum study in Kenya concerned with water disinfection and hygiene behaviour (Graf et al. 2008).

The study found that use of shared sanitation facilities is a preponderant practice in Kampala's low-income areas. Each toilet room was found to be used by approximately 12 people, taking into account the multiple of the median number of three households sharing a toilet room, with the mean of four people living in each household. However, the actual number of users per toilet room for some households can be significantly greater than 12 people. In this study, the maximum number of households reported to share a toilet room was 92 households with up to 30 people living in the same household. The use of shared sanitation facilities by households was found to be almost three times greater than private usage. This is consistent with findings from a study in Freetown, Sierra Leone, where shared facilities were twice as common compared to exclusive use by just one household (Mikhael 2010). Most landlords with rental houses that live within the slums also shared sanitation facilities with their tenants. In a study conducted in Kibera slum in Nairobi, Kenya, the authors contend that it is not feasible to provide individual sanitation facilities in high-density slums with high poverty levels (Schouten and Mathenge 2010).

On the technology type of sanitation facilities, seven of every 10 household respondents reported the use of traditional pit latrines with slabs. The preponderance of traditional pit latrines across Kampala slums is in line with previous research findings, in which they are reported to be the preferred sanitation option in low-income informal settlements in Sub-Saharan Africa (Grimason et al. 2000; Katukiza et al. 2010; Kulabako et al. 2010a). On-site sanitation systems such as pit latrines are often preferred because they are cheaper to construct and maintain compared to other more advanced technologies such as flush toilets (Kulabako et al. 2010a). The problem with traditional pit latrines, however, is that the pit is not lined and thus difficult to empty when they fill up (Isunju et al. 2011). The unlined pits pose a challenge in emptying using emptier trucks because of the excreta mixing up with soil or gravel particles from the pit walls. A common problem with unlined pit latrines is collapse especially during the rainy season. Excavating new pits within an ever diminishing space due to the high density and close proximity of households is not practicable or sustainable. We recommend the adoption of sustainable sanitation technologies such as VIP latrines. Whichever facilities are used, they must be context appropriate and cost effective to the low-income earners (Rheingans et al. 2006; Paterson et al. 2007; Tilley et al. 2008).

Satisfaction with the sanitation facilities and reasons mentioned for satisfaction or dissatisfaction

Regarding the second research objective, while the majority of the respondents had access to sanitation facilities, the satisfaction derived from using the different facilities varied. In general, most people were not satisfied with the sanitation facilities they were using. Only four in every 10 household respondents stated that they were rather satisfied. This finding is notably different from that obtained in a Freetown study in Sierra Leone, where majority of households were found to be satisfied with their sanitation facilities (Mikhael 2010). This disparity could be due to the differences in community settings and variations in people's priorities, as well as the technology types and conditions of the sanitation facilities. For example, most of

the facilities in Freetown were flush toilets, while those in Kampala slums are mainly traditional and improved ventilated pit latrines.

The reasons mentioned by respondents for their satisfaction or dissatisfaction with their sanitation facilities varied greatly. The first major factor is the nature of sanitation facilities used in these poor or low-income urban areas. In this study, five of every 10 respondents using private toilets were very satisfied with their sanitation facilities; meanwhile, out of those using shared toilets, close to seven of every 10 respondents were very dissatisfied with the facilities they used. The mean comparison of satisfaction with the sanitation facilities used are also in agreement with the above statement, as the results showed that people using private toilets were the most satisfied, and those using public facilities were least satisfied.

In addition, respondents' satisfaction with sanitation facilities used was related to the number of households sharing a toilet room. There was a slight correlation between satisfaction and the number of households sharing a toilet room, and this relationship was shown by the mean values in the Results section. The negative correlation as stated in the Result section means that satisfaction decreases as the number of households sharing a toilet room increases. These findings are similar to those from Freetown-Sierra Leone, where it was also found that the more households shared a toilet, the less satisfied the respondents were with their facilities (Mikhael 2010). During interviews, it was common for respondents to mention that they were satisfied with their facilities if only a few people were using them. Other respondents reported not being satisfied with the facilities because they were sharing them with too many people. Shared sanitation facilities are the most likely option in densely populated low-income urban slum areas, where there is little connectivity to municipal sewage systems and populations are largely dependent on on-site sanitation systems (Schouten and Mathenge 2010). The high number of users per toilet facility is a common phenomenon in most informal settlements in Sub-Saharan Africa and other developing countries (McFarlane 2008). While shared toilets is a usual practice in most informal settlements, close to nine in every 10 respondents in this study stated that they rather disliked sharing sanitation facilities with neighbours (Table 3).

With respect to the cleanliness of the sanitation facilities, respondents using toilets that were clean or not smelly reported satisfaction with their facilities, as opposed to those who viewed their facilities as dirty and smelly. In this study, close to five in every 10 household respondents were using dirty toilets. General concern over cleanliness is an important factor that has been emphasized in previous studies. In a study conducted on why people want latrines in rural Benin, cleanliness and no smell were found to be important factors for family pride or a good home environment (Jenkins and Curtis 2005). In a slum settlement in India, women preferred to use open space rather than using toilets that were not clean (McFarlane 2008). Furthermore, the findings of a study conducted in three East African countries (Uganda, Kenya and Tanzania) showed that urban sanitation facilities were dirtier than those in rural areas (Tumwine et al. 2003). Sanitation facilities that are not clean have little or no impact in the prevention of sanitation-related diseases, especially for children (Songsore and McGranahan 1993; Montgomery and Elimelech 2007). If having an improved sanitation facility is complemented with enhanced hygiene practices, such as proper usage, cleaning of the facility and washing of hands with soap at critical times, it leads to a greater effect in the prevention of sanitation- and hygiene-related disease outbreaks (Curtis et al. 2000; Grimason et al. 2000; Bartlett 2003; Biran et al. 2005; Cairncross et al. 2005). It is

also reported in previous studies that good hygiene practices are an important complement to improved water and sanitation initiatives in reducing diarrhoea mortality (Tumwine et al. 2002).

The other main characteristics respondents reported as important features for a good toilet included: closeness of the toilet to the households, accessibility during day and night, toilet rooms having light inside and a toilet that is lockable for privacy when in use. In a study conducted in Nairobi's Kibera slum in Kenya, it was reported that communal toilets were not used at night due to security reasons (Schouten and Mathenge 2010). In our study, the category of respondents who did not use toilets at night due to security reasons reportedly used buckets at night and emptied them into their sanitation facilities in the morning. The contents of these buckets, if not disposed of within the sanitary facility the following day, were discarded into natural or artificial drainage channels located around the household compound. This practice is also adopted by slum dwellers who do not have access to, or can afford the cost of using a latrine facility.

Conclusion and recommendation

Our findings reveal that a large proportion of the population living in Kampala's low-income slum areas have access to various forms of sanitation facilities while the most common facility used by slum inhabitants are shared toilets. Less common facilities included private especially among the landlords.

An analysis of how satisfied respondents were with the sanitation facilities they were using shows that the issue is not only about the availability of the facilities. Factors such as the nature and type of sanitation facilities used, the number of families sharing a toilet facility and the cleanliness of the facilities are important attributes with user satisfaction.

While most people in low-income urban areas continue to depend on shared sanitation facilities to reduce the sanitary-related diseases, more emphasis must also be placed on hygiene education practices, focusing on proper use and cleanliness of the facilities.

The current preponderance of traditional pit latrines used by majority of the urban slum dwellers is also not a long-term sanitation option. These facilities fill up quickly due to small volumetric capacity for most pits, high number of users, and are not easily or regularly emptied. As a result of the steady increase in the population of the slum dwellers coupled to the construction of unplanned structures, the space available for constructing new traditional pit latrines is continually diminishing. To this end, we recommend that slum dwellers and other sanitation providers are encouraged to move away from traditional pit latrines to alternative low-cost sustainable options, such as VIP latrines or pour flush facilities. The contents within the pits of these facilities can be easily removed after they have become full enabling the latrine to be re-used without the need for the construction of a new pit and superstructure in such densely populated areas.

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