Health care-seeking practices of caregivers of under-five children with diarrheal diseases in two informal settlements in Nairobi, Kenya

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ABSTRACT

Background

Diarrhea is among the leading causes of childhood mortality in developing countries. In, Kenya it is the second highest cause of death among children. Despite diarrhea being a disease that is easy to prevent and treat, it causes about 1.5 million under-five deaths every year. The mortality due to diarrheal diseases is worse in slums which are characterized by poor hygiene and sanitation. Mortality due to diarrhea is preventable and appropriate and prompt healthcare-seeking is one of the ways of prevention.

Objectives

The study aimed at exploring the healthcare-seeking practices of caregivers with under-five children with diarrhea in two slum settlements – Korogocho and Viwandani in Nairobi city, Kenya. Specifically the study will: 1) Describe the socio-demographic characteristics of the study population; 2) Identify the healthcare-seeking practices of caregivers of under-five children with diarrhea; 3) Determine the prevalence of appropriate healthcare-seeking practices in the two slums; 4) Identify the socio-demographic factors associated with healthcare-seeking practices of caregivers of under-five children with diarrheal diseases.

Methods

The study used data from a project nested into the Nairobi Urban Health and Demographic Surveillance System, which collected data on morbidity for children reported to be ill over the last 2 weeks preceding the survey. The study was conducted between 2006 and 2010 in two informal settlements in Nairobi. There were a total of 11,677 interviews with caregivers who had children below five years, of which 1,656 had children who had diarrhea two weeks preceding the study. Appropriate multivariate statistical techniques were used to examine the factors associated with healthcare-seeking practices.

Results

The study shows that healthcare-seeking practices for diarrhea remains a great challenge among the urban poor with more than half (55%) of the caregivers seeking inappropriate health care. A significant proportion of caregivers (35%) are taking no action regarding the child illness. The use of ORS and Zinc supplements which have been widely recommended for the management of diarrhea by the UNICEF and WHO is very low. The critical predictors of healthcare-seeking identified by the study are duration of illness, place of residence and the child's age.

Introduction

Sub-Saharan Africa (SSA) has made the least progress in terms of reduction of infant and child mortality rates compared to all other regions in the world, with about 49 percent of the world's under-five deaths occurring in the region, yet only 22 percent of all the children in the world are born in this region (UNICEF 2009). The two leading death causes of under-five children are pneumonia, accounting for 18 percent of the deaths followed by diarrheal diseases, accounting for 15 percent of the total under-five mortality (UNICEF, 2009). Despite diarrhea being a disease that is easy to prevent and treat, it causes about 1.5 million under-five deaths every year (UNICEF, 2008). Eighty eight percent of all diseases due to diarrhea, the second most direct cause of under-five mortality, are attributed to poor sanitation, poor hygiene and unsafe drinking water (World Health Organization, 2002). Most caregivers are not usually aware of the danger of diarrhea until it becomes too late (Kudan 2007).

In Kenya, just like in other developing countries, diarrheal diseases are among the major causes of child deaths (Kenya National Bureau of Statistics (KNBS) & ICF Macro, 2010). According to the Kenya Demographic and Health Survey (KDHS) 2008, treatment and care-seeking for major illnesses for children remains poor. Nairobi is one of the regions in the country with comparatively high diarrhea mortality prevalence (KNBS & ICF Macro, 2010; Monica Akinyi Magadi, 2003). Diarrhea mortality prevalence is even worse in the informal settlements, which are characterized by poor sanitary, hygiene and unsafe drinking water among other problems (Magadi, Zulu, & Brockerhoff, 2003). In addition to lack of social amenities, informal settlements are also typified by overcrowding, insecurity and high levels of unemployment thus, have turned out to be hubs of ill health (Catherine Kyobutungi, 2008). A study on the burden of disease profile carried out in the Nairobi slums showed that children under the age of five had more than four times the mortality burden of the rest of the population, with diarrheal diseases accounting for about 20 percent of the deaths (Catherine Kyobutungi, 2008).

Most of the deaths that occur among children under the age of 5, as a result of diarrhea in Kenya can be prevented (Gove, 1997; World Health Organization, 2006). Prompt and appropriate health care-seeking is one of the ways that can prevent many of the deaths.

Studies have shown that practicing appropriate health care-seeking has great prospects of reducing morbidity and mortality due to childhood illnesses (Negussie, 2003). The World Health Organization (WHO) for example, estimates that seeking appropriate and prompt care could reduce by 20 percent childhood deaths due to illnesses (WHO 1997). A number of studies conducted in developing countries have also shown that delay in seeking appropriate care or not seeking any care causes a large number of child deaths (Amarasiri de Silva MW, 2001; D'Souza, 1999; Reyes 1997). Given the proliferation of a largely unregulated health care system in the informal settlements as a result of the poor access to formal health care services, it is likely that inappropriate health care-seeking behavior is rampant therein. There is also growing necessity to be more sensitive to the realities of health care-seeking behavior given the rapid growth in the sector of non-qualified allopathic providers, who engage in the trade of modern pharmaceuticals. Understanding health care practices in informal settlements therefore is essential to the improvement of the health care systems that serve the urban poor through programs that target both users and suppliers. This has the potential of ultimately reducing childhood mortality among the urban poor. However, in order to design appropriate child survival strategies in areas where infant and child mortality rates are high, such as in informal settlements, information about households' care-seeking behavior for childhood illnesses is required. This study therefore aims at providing evidence based information about the health care-seeking practices of under-five children with diarrheal disease in Korogocho and Viwandani slums in Nairobi, Kenya. The study specifically aims to identify the socio-demographic factors associated with health care-seeking practices of caregivers of under-five children with diarrheal diseases, identify the health seeking practices used by caregivers as well as determine the prevalence of appropriate health care-seeking in the two slums. The findings from this study are intended to inform policy makers, health educators, planners and other health professionals about the health care-seeking practices of residents of Korogocho, Viwandani as well as other similar settings. This way, they can inform policies that respond to the community needs which will in turn improve family and community childcare practices as one of the components of the Integrated Management of Childhood Illnesses (IMCI) strategies aimed at reducing morbidity, infant and child mortality. Appropriate health care-seeking in this

study will be defined as any attempt made by the child's caregiver to obtain professional advice or treatment from a skilled health care provider during the child's illness as well as those who make use of other approved methods of diarrhea treatment such as administering ORS to the ill child.

Methods

Data

The data used in this paper are from a Maternal and Child Health (MCH) survey which is part of the Nairobi Urban Health Demographic Surveillance System (NUHDSS) conducted by the African Population and Health Research Center (APHRC) in two informal settlements in Nairobi, Korogocho and Viwandani from 2002. Between 2006 and 2010, the MCH survey collected data every 4 months on child morbidity for all children who were reported to have been ill in the 2 weeks preceding the survey. The survey interviewed a total of 19,456 respondents, 11,677 of who had a child under-five years. Out of the 11,677, 1,656 respondents reported that their children were ill with diarrhea in the two weeks preceding the study; these form the sample size for this study. Details about the child illness including signs and symptoms, duration of illness and treatment-seeking behavior were collected using interview questionnaires. Data was collected using a pre-tested questionnaire written in English and Kiswahili. Mothers or guardians provided information about the ill children. Various data on socio-demographic and economic correlates of health seeking, such as child age and sex, mother's age, mothers education, work status, parity, slum residence and household income were also collected.

Variables

Dependent variable

The dependent variable in the study is 'health care-seeking practice'. Based on the definition of appropriate care-seeking adopted by the study, the responses given regarding the action taken when a child fell ill with diarrhea were grouped into two categories, forming a binary outcome of either 'appropriate' coded as 1 or 'inappropriate' coded as 0. Appropriate health seeking included all the caregivers who took their children to a health facility or those who

administered ORS to the children. All other practices including buying drugs from a chemist, rubbing baby's gums with soda mint, administering left-over medicine from home were categorized under 'inappropriate' health seeking.

Independent variables

The independent variables used in the study are; sex of child, that is either male or female, age of child grouped into quintiles labeled 0-11, 12-24, 25-36, 37-48 and 49-59 months, age of caregiver grouped into below19, 20-29, 30-39, 40-49 and above 49. Ethnicity will also be used and it will be grouped into the three major ethnic groups in Kenya that is Luhya, Luo and Kamba and all remaining groups will be combined into a fourth category labeled others. Caregiver's education will be grouped into tertiles coded as none, primary and secondary and above. Similarly wealth status will be grouped into tertiles labeled poor, middle and rich. Marital status will also be grouped into tertiles and coded never married, currently married, and separated. Currently married women will include individuals in all forms of unions whether legally married or living together, and whether in a monogamous or polygamous union. Separated will include divorced and widowed women. Parity is another factor which will be coded as 1to2, 3to4 and above 5 and finally the slum of residence area that is either Viwandani or Korogocho.

Methods of analysis

The analyses in the study were conducted in three phases, first a univariate analysis was done to describe the socio-demographic characteristics of the study participants. Second, a binary logistic regression was done to explore the crude effect of the socio-demographic factors on health seeking behavior and lastly a multivariate logistic regression was conducted to capture the net effect of the socio-demographic factors on the of choice of seeking practice. Odds ratio were used to interpret the associations between the outcome variable and independent variables. Tests were done at 5 percent significance level (at a confidence interval of 95 percent). Data was analyzed using the STATA 11 statistical software.

Results

Description of study participants

Majority of the children who were found to have diarrhea were males (53.6%) and more than half (52.7%) of the children were aged between 12-24 months, followed by 0-11 months at 28.4%, 25-36 months at 16.6%. Only 2.2% were between 37-48 months old.

With reference to the characteristics of the caregiver's 99% of them were the mothers of the children, whereas the remaining 1% were relatives of the children. Forty eight percent of the caregivers were residents of Korogocho slum while the other 52% resided in Viwandani slum. About two-thirds (64.4%) of the caregivers were between ages 20-29, followed by 30-39 at 22.9%, and 10.2% of them were adolescent. Only 3.3% of the caregivers were above 40 years.

Approximately 84% of the caregivers were married, 8.6% were separated, divorced or widowed and only 7.5% had never been married. Majority (58.6%) of the caregivers had a parity of between one to two children followed by 28.0% with three to four children and 13.4% had more than five children. Thirty nine percent of the respondent came from a middle wealth status, followed by 31.2% who came from a poor background and the remaining 29.6% came from a rich background. It is important to note however that the wealth status referred here-in is only relative to that of the residents of the slum which differs to a large extent when compared to the classifications of other populations. Looking at the distribution of the respondent across the various ethnic groups, there seems to have been a fairly equal distribution across the major ethnic groups with the percentage hovering around 20%, that is, Kikuyu (21.7%), Luhya (21.3%), Kamba (20.3%) and Luo (19.3%) and the remaining (17.3%) comprising of other smaller ethnic groups combined.

Many of the caregivers reported to have completed at least primary education (47.1%), and only 21.9% had gone up to secondary or higher level of education. Thirty one percent had either not gone to school or not completed primary level of education. For the duration of illness before treatment, majority of the children (34.3%) had been ill for about 3-4 days,

followed by 7-13 days with 31.6% and more than two weeks with 17.5% days. Only 16.2% had been ill for two days before action was taken about the illness.

Table 1: Percent distribution of caregivers whose children suffered from diarrhea by demographic and socio-economic characteristics

Variables	Category	Frequency (N)	Percentage
Sex of child			
	Male	882	53.62
	Female	774	46.38
Age of child (Months)			
	0-11	471	28.44
	12-24	873	52.72
	25-36	275	16.61
	37-59	37	2.23
Caregiver's relation to child			
	Not Mother	15	0.91
	Mother	1641	99.09
Slum of residence			
	Korogocho	801	48.37
	Viwandani	855	51.63
Age of caregiver (years)			
	Below 19	169	10.21
	20-29	1065	64.35
	30-39	367	22.18
	40-49	54	3.26
Marital status			
	Married /living together	1305	83.98
	Separated/divorced/widowed	133	8.56
	Never Married	116	7.46
Parity			
	1-2	969	58.59
	3-4	463	27.99
	5 and above	222	13.42
Wealth index			
	Poor	503	31.18
	Middle	633	39.24
	Rich	477	29.57
Ethnicity			
	Kamba	335	20.28
	Kikuyu	359	21.73
	Luhya	353	21.37
	Luo	319	19.31

	0thers	286	17.31
Caregiver's education level			
	Incomplete primary	513	31.00
	Complete primary	780	47.13
	Secondary and above	362	21.87
Duration of illness			
	1-2 days	274	16.61
	3-6 days	566	34.3
	7-13 days	522	31.64
	14 days and above	288	17.45

Health care-seeking practices of caregivers

The results show that majority of the caregivers practiced inappropriate health seeking (55.2%). As shown in table 2, although both male and female children had a higher percentage of inappropriate care compared to appropriate care, a higher percentage of females received inappropriate care compared to the males (58.4% and 54.8% respectively). Despite inappropriate care being higher than appropriate care in all child ages, higher percentages of appropriate health seeking were seen among the lower ages, with the younger children having a higher percentage of appropriate health seeking than that of the children of older ages i.e. those between 0-11months (49.9%), 12-24 months (44.8%) 25-36 months (37.1%) and 37-48 months (37.8%). Surprisingly those in the lowest wealth status had a higher percentage of caregivers who sought appropriate care (47.9%) compared to the middle and rich wealth categories. Those in the middle wealth index had more caregivers practicing inappropriate seeking (56.4%) than appropriate and this was similar to those in the rich wealth group who had the highest percentage (60.6%) of inappropriate health seeking compared to the poor and middle wealth groups.

When comparing the health seeking practices by caregiver's ages, it is observed that younger caregivers had a higher percentage of appropriate seeking as compared to the older caregivers, with the youngest caregivers (below 19 years) having the highest percentage of appropriate health seeking (49.9%) and the oldest ones having the lowest percentage (37.8%).

Residents of Korogocho had 48.6% of caregivers practicing appropriate health care-seeking while that of Viwandani only had 38.8%. Caregivers who were never married had the highest percentage (46.6%) of appropriate health care-seeking, followed by the married (44.3%) and the least was the separated (41.4%). Women of all parities had higher percentages of inappropriate health seeking than appropriate care, although the percentages increased as the parity increased with those with a parity of 1-2 having 54.9%, 3-4 parity 58.1% and parity above 5 59.5%. Caregivers with secondary and higher education level had 58.3% of inappropriate health seeking, those with primary education had 56.3% of inappropriate health seeking and those with incomplete primary education had 55.4%. Caregivers from all the major ethnic groups had higher percentages of inappropriate health seeking compared to appropriate health seeking however those from the Kamba ethnic group had the highest percentage (62.1%) seeking inappropriate care.

The percentage of those who sought appropriate health care increased with the increase in the duration taken before seeking care.

Table 2: Demographic and socio-economic characteristics of study participants by health seeking practice

Variables	Category	Appropriate (%)	Inappropriate (%)
Sex of child			
	Male	45.24	54.76
	Female	41.60	58.40
Age of child (Months)			
	0-11	49.89	50.11
	12-24	44.79	55.21
	25-36	37.09	62.91
	37-59	37.84	62.16
Age of caregiver (years)			
	Below 19	51.48	48.52
	20-29	45.35	54.65
	30-39	41.69	58.31
	40-49	35.19	64.81
Wealth index			

	Poor	47.91	52.09
	Middle	43.60	56.40
	Rich	39.41	60.59
Ethnicity			
	Kikuyu	45.96	54.04
	Luhya	39.09	60.91
	Luo	43.57	56.43
	Kamba	37.91	62.09
	0thers	52.10	47.90
Caregivers education			
	Incomplete primary	44.64	55.36
	Complete primary	43.72	56.28
	Secondary and above	41.71	58.29
Slum of residence			
	Korogocho	48.56	51.44
	Viwandani	38.83	61.17
Marital status			
	Married /Living together	44.29	55.71
	Separated/Divorced/Widowed	41.35	58.65
	Single	46.55	53.45
Parity			
	1-2	45.10	54.90
	3to4	41.90	58.10
	Above5	40.54	59.46
Duration of illness			
	1-2 days	28.83	71.17
	3-6 days	38.52	61.48
	7-13 days	48.85	51.15
	14 days	65.63	34.38

Table 3 shows results of the adjusted odds ratio, 95% confidence interval and associated p-values for the factors that predict the health seeking practices of caregivers of under-five children with diarrhoeal diseases. The results show that after controlling for other factors three factors are shown to be of significant importance when it comes to health seeking practices in informal settlements. Duration of illness remained statistically significant after controlling for other factors. The longer the duration taken before treatment, the lesser the likelihood of seeking appropriate care. Caregivers who waited for more than two weeks before seeking care

were the most likely not to seek appropriate care compared to those who took action after 1-2 days illness (OR=0.220, 95% CI= 0.150,0.321; p<0.001). Those who waited for 3-4 days were 33% more likely to seek appropriate care than those who waited for 1-2 days (OR=0.671, 95% CI=0.482, 0.932; p<0.01). Place of residence also emerged as an important factor that influenced health seeking, with residents of Viwandani being 41% more likely to seek appropriate health care than those of Korogocho slums (OR=1.410, 95% CI=1.065 1.866 p<0.05) this could be explained by the proximity to the health facility as will be further explained in the discussion section. The results also show that caregivers were the most likely to seek care for children of ages between 25-37 months compared to 0-11 months (OR=1.620, 95% CI=1.142, 2.296 p<0.01), a result which was unexpected. Although not significant the results also suggest that married women are more likely to seek appropriate care than never married women. In addition, older caregivers are more likely to seek appropriate care than younger ones; the rich are the most likely to seek appropriate health care than the poor and those with no education or at least incomplete primary level of education have the least likelihood of seeking appropriate care a finding which is consistent with literature.

Table 3: Adjusted odds ratio from logistic regression analysis of factors influencing health care-seeking for children with diarrhoea

/Variable	Category	Adjusted Odds Ratio	Conf. Interval [95%]	
Marital Status (Married)				
	Separated	1.189	0.795	1.776
	Never Married	0.970	0.619	1.519
Ethnicity (Kikuyu)				
	Luhya	0.830	0.579	1.189
	Luo	1.274	0.913	1.779
	Kamba	1.180	0.837	1.662
	Others	1.328	0.935	1.886
Caregivers Age (Below 19)				
	20-29	1.136	0.773	1.670
	30-39	1.161	0.707	1.906
	40-49	1.231	0.557	2.724
Wealth Status (Poor)				
	Middle	0.979	0.734	1.304

	Rich	1.128	0.811	1.569
Parity (1-2)				
	3to4	1.224	0.937	1.599
	Above5	1.302	0.842	2.013
Childs age (Ref. 0-11 months)				
	12-24 months	1.268	0.994	1.617
	25-36 months	1.620**	1.142	2.296
	37-48 months	1.122	0.483	2.605
Child Sex (Ref. Male)				
	Female	1.118	0.902	1.385
Caregivers education (Incomplete)				
	Complete primary	0.777	0.590	1.023
	Secondary	0.788	0.569	1.091
Slum residence (Korogocho)				
	Viwandani	1.410*	1.065	1.866
Duration of illness (1-2)				
	3-4 days	0.671**	0.482	0.932
	7-13 days	0.413***	0.297	0.576
	14 days and above	0.220***	0.150	0.321

NB: ***P<0.001; **P<0.01; *P<0.05

Discussion

The study confirms what numerous studies have shown with regard to high prevalence of inappropriate healthcare-seeking and not seeking care at all especially for childhood illnesses. Results from this study shows that fifty five percent of caregivers practiced inappropriate healthcare-seeking, with about 35% taking no action for the child illness, 10% buying medicine from a chemist and about 9% giving the children leftover medicine from home.

The concern of inappropriate healthcare-seeking practice for childhood diarrhea has been reported in various studies, for example a report by WHO (2009) noted that in developing countries only about 39% of children suffering from diarrhea were given the recommended treatment and this figure has remained more or less constant since 2000. Tee and colleagues (2011) studied the healthcare-seeking behavior among Malaysians with acute diarrheal disease and found that only about 43% of those who had diarrhea sought care for the illness. Although

some studies have shown some importance in self-health care to individuals and the health care system, inappropriate cases of self-treatment have often been reported in the literature (Segall, 1990); some of these include misuse of over the counter products and concurrent use of several drugs which have in many cases resulted in masking or misdiagnosis of illnesses. A study on the management of diarrhea in under-fives at home and health facilities in Kashmir, reported that 77% of the children with diarrhea were given antibiotics which were not part of those advised by the Diarrheal Disease Control Programme. Such practices in many instances have led to serious consequences on the individual or collective health of the population. Improving the health care practice of caregivers would therefore play a key role in improving the health status of children.

Appropriate management of diarrhea is important in the prevention of dehydration and child mortality (Duggan et al., 1992). One of the recommended ways of managing diarrhea by the Centers for Disease Control and Prevention (CDC) as well as by the WHO is the use of ORS as the hub of treatment (World Health Organization, 2005). As shown by the study results, a mere 1% of caregivers reported to have administered ORS to the children with diarrhea. Despite the advocacy of the ORS solution by WHO and other NGOs, as well as the consistent campaigns and activities that have been conducted to promote awareness and the use of ORS, the use remains gravely low. This is seemingly the case in various other parts of the developing world as has been shown in other studies, which have reported low ORS use for childhood diarrhea (Fayaz et al., 2009; Gilany&Hammeds, 2005). In Brazil, the ORS use rate has been approximated to be about 7% (Barros FC et al., 1991). Another study conducted in Egypt showed that 25% of children who had diarrhea had received ORS (Gilany&Hammed, 2005).

According to the KDHS 2008-09 report the ORS solutions in Kenya are usually distributed by health facilities and pharmacies and are also available in shops and kiosks. In the KDHS, in order to ascertain how extensive knowledge about ORS in Kenya was, women were asked whether they knew of ORS packets and approximately 80% of women reported to know the ORS packets. This implies that the main problem does not lie with the lack of awareness about ORS,

although it would be good if the data was disaggregated by residence to show the figures for the urban poor especially owing to the fact that management of diarrhea is likely to be inadequate among the economically disadvantaged communities as noted by Douglas et al (Ewbank&Gribble, 1993). The question therefore arises, why is the use of ORS so low yet women are aware about ORS? One possible explanation for the low use of ORS could be caregivers' misconception about ORS or lack of proper information regarding the need for ORS in the management of diarrhea. Some studies have reported caregivers' misconception about ORS. For example, a study conducted in Zimbabwe showed that ORS was perceived to be medicine to stop diarrhea (Nyatoti V et al., 1993). It is possible that women are aware of ORS but they do not know how to prepare the homemade solution or are not getting access to the ones being distributed in the health facilities as they are not visiting these facilities nonetheless. Given its vital component in the prevention of dehydration, ORS use needs to be improved. To avoid misconception about ORS in Kenya as in the case of Zimbabwe is paramount that proper information regarding home preparation of the solution is given in order to ensure that the use increases. Increased training of caregivers and the general community in the importance of ORS use should also be fostered. Distribution of the ORS packets should also not only be distributed in the health facilities as is currently done as stated in the KDHS report but also in the homes. Distribution in health facility caters only for a small percentage of people given that majority are shown to be seeking care in other places but the health facilities.

Interestingly none of the caregivers admitted using Zinc supplements for the treatment of diarrhea, this is somewhat reflected in the 2008-09 KDHS which reported less than 1% use of zinc supplements for diarrhea treatment. The use of Zinc for diarrhea treatment was introduced in Kenya in 2006. According to the 2004 UNICEF and WHO joint statement, zinc was included as an important development in diarrhea treatment. The introduction of zinc tablets in the treatment programs in India, Pakistan and Mali showed great improvement (Bhandari et al., 2008). Following the disconcerting results regarding the use of ORS and Zinc in the treatment of diarrhea, there is dire need for intensified health education regarding the use of ORS and Zinc supplements for diarrhea management.

From the study, three factors emerged as having significant effects on the healthcare-seeking practices of caregivers. The first one is the duration of illness before seeking care. The longer the duration before treatment was sought, the lower the likelihood of caregivers seeking appropriate care. This could be related to the severity of illness where the longer the caregiver takes to seek care the worse the child's condition becomes and thus the need for the caregiver to seek better care, preferably at a health facility. Illness severity or the perceived severity of the illness by the caregivers has been shown to be a predictor of health care seeking where caregivers tend to seek better care or at least seek care for an illness that they perceive to be 'very severe' (Ndugwa&Zulu, 2008; Ricardo et al., 1997). A study on the health and livelihood needs of residents of informal settlements carried out in Nairobi, showed that mothers waited for days while using homemade remedies until the situation became worse, after which their first line of service was a chemists and drug stores. Only until the child's health deteriorated that is when the child was taken to a health facility (African Population and Health Research Center, 2002). The earlier methods used by the caregivers could also have negative outcomes on the child and therefore the need to seek appropriate care.

Place of residence also emerged as an important factor that influenced healthcare-seeking. The study results show that caregivers residing in Viwandani slums were significantly more likely to seek appropriate care than those from Korogocho. As noted in the study site description, Viwandani is made up of people who are better educated compared to Korogocho residents. This could be one of the explanations for this difference in healthcare-seeking between the two slums dwellers as education is often reported as a predictor of healthcare-seeking (Thind&Cruz, 2003). Residents of Viwandani are also have been shown to fare better than those of Korogocho in terms of wealth status and that could also be a factor that explains the difference in healthcare-seeking practices between the two slums.

Unexpectedly the results show that caregivers were more likely to seek appropriate health care for children between ages 25-37 compared to those between 0-11 months. Several studies have found child age to be an important predictor of health care for childhood illnesses, with caregivers being more likely to seek care for younger children (Ndugwa&Zulu, 2008; Negussie&Chepngeno, 2005). One possible difference in the finding could be because many of

the studies focus on whether the caregivers seek care or not as opposed to whether the care they sought was appropriate or inappropriate (Goldman&Heuveline, 2000). The results therefore raise an important question, whether caregivers tend to seek care for younger children but the care is not appropriate. The results suggest that this might be the case. It would be important then for studies looking at whether or not care is being sought to further explore the appropriateness of the care as it may not be very useful to simply know that care is being sought, without further knowing whether the care is appropriate or not. If the care being sought is inappropriate, it could worsen the state of the child's illness and worse still lead to mortality hence it is vital to identify the type of care sought.

In terms of sex preference in healthcare-seeking, the study shows no significant difference between male and female children. A number of studies have shown male preference in seeking health care especially for childhood illnesses (Sudharrsanam&Rotti, 2007).

Although not significant, the results show that caregivers with a higher parity have a higher likelihood of seeking appropriate care than those of lower parity. It could be that those with more children have learnt the importance of appropriate healthcare-seeking and thus practice it with the subsequent children. Other studies have shown a higher likelihood of seeking care among those with fewer children, the explanation being that those with fewer children are likely to have more resources and hence can afford taking their children to a health facility (Nyamongo, 2002; Thorson et al., 2000). The other possible explanation for the difference in the finding could be the fact that the focus is on whether or not the care sought was appropriate or inappropriate as opposed to whether care was sought or not as used in many studies.

The higher the caregiver's age, the higher the likelihood of seeking appropriate care. In a study by Taffa and Negussie, maternal age was found to be a strong predictor of health care seeking with older caregivers being less likely to seek care for their children (Negussie&Chepngeno, 2005). Although not statistically significant, the findings tend to support the idea that maternal age is an important determinant of healthcare-seeking for childhood illness.

Virtually all studies that have looked at caregiver's education and healthcare-seeking practice have shown a positive relationship between the two variables (Ndugwa&Zulu, 2008). In the

current study, before adjusting for other factors this was the case, but after adjusting for other factors there was not a clear pattern portrayed. In fact, although not significant, those who have not completed primary education are shown to be more likely to practice appropriate healthcare-seeking although those with more than secondary education are more likely to seek appropriate care than those with only primary education. More educated caregivers might feel that they have better knowledge of how to treat diarrhea and thus may not deem it necessary to take their child to a health facility.

In the informal settlements, majority of the residents when compared to residents of the rest of the urban areas fare worse when it comes to indicators of economic status. However, among the slum residents themselves some tend to be worse off economically compared to their counterparts and thus participants were categorized into three groups which are only relative to the population in the slums and thus cannot be compared to other settings. Based on this classification, results show that those classified under rich were the most likely to seek appropriate care compared to the poor and middle class wealth categories. Despite the study results not being significant, they tend to agree with what other studies have found with regards to the relationship between economic status and healthcare-seeking practice (Sudharrsanam&Rotti, 2007)

Marital status did show that those who were never married were the least likely to practice appropriate healthcare-seeking and those who were formerly married were the most likely to seek appropriate care.

People from the Luo community were the most likely to practice appropriate healthcare-seeking and those of the Luhya ethnic group were the least likely to practice appropriate healthcare-seeking.

The study hypothesis stated that more than 60 percent of the caregivers do not practice appropriate healthcare-seeking in the treatment of diarrheal diseases in under-5 children. The study results on the other results showed that 55 percent of caregivers practice inappropriate healthcare-seeking. Although the results did not prove the hypothesis it agrees that a higher

percentage in caregivers do not seek appropriate care hence a lot needs to be done on ensuring that appropriate care is sought. The results found no significant relationship between healthcare-seeking and wealth status as well as with caregivers' education thus the second and third hypothesis were proven.

Study limitations

This study has a number of limitations. First, the study did not consider the type of diarrhea when looking at the healthcare-seeking practice, that is, whether it was acute or chronic diarrhea. However, given the nature of the survey, it would not have been possible to clearly ascertain the type of diarrhea since we rely on self-reported information and the perceptions of the type would vary across the respondents, thus increasing bias.

Secondly, the episode of diarrhea was defined based on what the caregivers reported and there was no way to verify whether what they referred to as diarrhea was actually diarrhea. Some symptoms of other illnesses such as anaemia and AIDs can overlap. Thirdly, we rely on reported action taken by the caregiver and lastly, the study did not take into account other factors that could affect healthcare-seeking such as perception of quality and access to a health facility.

Conclusion

The study showed that healthcare-seeking practices for diarrhea remains a great challenge among the urban poor with more than half (55%) of the caregivers seeking inappropriate health care with a large number of caregivers (35%) taking no action regarding the child diarrheal illness. The use of ORS together with Zinc supplements which has been widely recommended for the management of diarrhea by the UNICEF and WHO is also very low. The critical predictors of healthcare-seeking identified by the study are duration of illness, place of residence and the child's age.

The findings from this study are intended to inform policy makers, health educators, planners and other health professionals about the healthcare-seeking practices of residents of the two slum areas. This way, they can initiate policies and programs that respond to the community needs, which will in turn improve family and community childcare practices as one of the

components of the IMCI strategies aimed at reducing morbidity, infant and child mortality. The study therefore makes the following recommendations aimed at improving healthcare-seeking.
The high percentage of caregivers that did not seek appropriate healthcare highlights the need for improving the caregivers' healthcare-seeking practices. Given that a large group of caregivers are taking no action in managing diarrhea among children, it is recommended that efforts to educate the caregivers as well as the general public about the importance of seeking care and proper management of diarrheal and other childhood illnesses should be intensified.

Given the low use of ORS and Zinc supplements in the management of diarrhea, programmes aimed at improving the use of ORS should be initiated. The programs should focus on teaching mothers not only how to use ORS but also how to identify signs of dehydration. Given its vital component in the prevention of dehydration, ORS use needs to be improved. In order to ensure that the ORS use increases proper information regarding home preparation of the solution can be given to mothers and caregivers. Increased training of caregivers and the general community in the importance of ORS use should continue to be fostered. Distribution of the ORS packets should also not only be distributed in the health facilities as is currently done, as stated in the KDHS report, but also in the homes. Distribution in the health facility only caters only for a small percentage of people given that majority are shown to be seeking care in other places but the health facilities. Where viable, families should be encouraged to have ORS and zinc supplements readily available for use, when needed. The main focus should be on women as their awareness, practices as well as attitudes are key in promoting proper use of ORS. This is however not to say that other member of the general public should be excluded.
More studies to unravel the treatment of diarrhea in the homes are needed in order to improve healthcare-seeking practices. For instance, studies on why ORS is not used in the management of diarrheal diseases. Programs should look into improving the health care at home as this has the potential of improving the health status of children.
Studies looking at whether or not care is being sought should further explore the appropriateness of the care as it may not be very useful to simply know that care is being

sought, especially if the care being sought is inappropriate and thus it could worsen the state of the child's illness.

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References

African Population and Health Research Center. (2002). *Health and Livelihood Needs of Residents of Informal Settlements in Nairobi City. Nairobi*. Nairobi: African Population and Health Research Center.

African Population and Health Research Centre. (2002). *Population and Health Dynamics in Nairobi's Informal Settlements*. Nairobi, Kenya: African Population and Health Research Centre.

Amarasiri de Silva, M., Wijekoon, A., Hornik, R., & Martines, J. (2001). Care seeking in Sri Lanka: one possible explanation for low childhood mortality. *Social Science and Medicine, 53*(10), 1363–1372.

Arulmony, T. (2004). *Health seeking behaviour of women with living with HIV/AIDS*. Paper presented at the International conference on AIDS.

Barros FC, Victora CG, Forsber B, Maranhao A, Stegeman A, & R, G. (1991). Management of childhood diarrhoea at the household level: a population-based survey in North East Brazil. *Bull WHO, 69*, 59-65.

Bhan, M. (2003). Current concepts in management of acute diarrhea. *Indian pediatrics, 40*(5), 463-476.

Bhandari, N., Mazumder, S., Taneja, S., & et. al. (2008). Effectiveness of Zinc supplementation plus oral rehydration salts compared woth oral rehydration salts alone as treatment for acute diarrhoea in a primary care setting: A cluster randomized trial. *Pediatrics 121*(5), e1279-1285.

Black, R. E., Morris, S. S., & Bryce, J. (2003). Where and why are 10 million children dying every year? . *The Lancet, 361*, 2226-2234.

Breiman, R. F., Olack, B., Shultz, A., Roder, S., Kimani, K., Feikin, D. R., et al. (2011). Healthcare-use for Major Infectious Disease Syndromes in an Informal Settlement in Nairobi, Kenya. *J health populkation Nutrition, 29*(2), 123-133.

Bryce J, Boschi-Pinto C, Shibuya K, & Black RE. (2005). WHO Child Health Epidemiology Reference Group. WHO estimates the causes of death in children. *Lancent, 365*(9465), 1147-1152.

D' Souza, R. M. (2003). Role of health seeking behavior in child mortality in the slums of Karachi, Pakistan. *Journal of Biosocial Science, 35*(1), 131-144.

Desilva, M., Wijekoon, A., Hornik, R., & Martines, J. (2001). Care-seeking in Sri Lanka: one possible explanation for low childhood mortality. *Soc Sci Med, 53*(1), 1363-1372.

Doumani, F. M. (2002). *Environmental Health in Sub-Saharan Africa: A Road Map*: World Bank.

Duggan, C., Santosham, M., & Glass, R. I. (1992). The management of acute diarrhea in children: oral rehydration, maintenance, and nutritional therapy. Centers for Disease Control and Prevention. *Recomm Rep, 41*(16), 1-20.

Emina, J., Beguy, D., Zulu, E., Ezeh, A., Muindi, K., Elung'ata, P., et al. (2011). Monitoring of Health and Demographic Outcomes in Poor Urban Settlements: Evidence from the Nairobi Urban Health and Demographic Surveillance System. *Journal of Urban Health, 88*(0), 200-218.

Ewbank, D. C., & Gribble, J. N. (1993). *Effects of health programs on child mortality in Sub-Saharan Africa*. Washington D.C: National Academy Press.

Fayaz, S. A., Farheen, A., Imtiyaz, A., Thakur, M., Muzaffar, A., & Samina, M. (2009). Management of Diarrhea in Under-fives at Home and Health Facilities in Kashmir. *International Journal of Health Sciences, 3*(2), 171-175.

Fotso, J., Ezeh, N., Madise, N., Ziraba, A., & R, O. (2009). What does access to maternal care mean among the urban poor? Factors associated with use of appropriate maternal health services in the slum settlements of Nairobi, Kenya. *Maternal & Child Health Journal, 13*(1), 130-137.

Fotso, J. C., Ezeh, A., & Oronje, R. (2008). Provision and Use of Maternal Health Services among Urban Poor Women in Kenya: What do we know and what can we do? . *Journal of Urban Health, 85*(3), 428–442.

Fotso, J. C., Ezeh, A. C., Madise, N. J., & Ciera, J. (2007). Progress towards the child mortality millennium development goal in urban sub-Saharan Africa: the dynamics of population growth, immunization, and access to clean water. *BMC Public Health, 7*, 218.

Fotso, J. C., & Mukiira, C. (2011). Percieved quality of and access to care amng poor urban women in Kneya and their utilization of delivery care: harnessing the potential of private clinics. *Health Policy and Planing*, 1-11.

Gilany, A. E., & Hammeds. (2005). Epidemiology of diarrhoeal diseases among children under 5 years of age in Dakahlia, Egypt. *Eastern Mediterranean Health Journal, 11*(4).

Gilany, A. H., & Hammed, E. I. (2005). Epidemiology of diarrheal diseases among children under 5 years of age in akahlia, Egypt. *Eastern Mediterranean Health Journal, 11*(4).

Glass, R. I., Lew, J. F., Gangarosa, R. E., & LeBaron, C. W. (1991). Estimates of morbidity and mortality rates for diarrheal diseases in American children. *J Pediatr.*

Goldman, N., & Heuveline, P. (2000). Health seeking behavior for child illness in Guatemala. *Tropical Medicine and International Health*(5), 145-155.

Gove, S. (1997). Integrated management of childhood illnesses by outpatient health workers: Technical basis and overview. Interventions to improve the use of antimalarials in South East Asia: an overview. *Bulletin of World Health Organization, 75*(7), 7-24.

Kimani-Murage, E. W., & Ngindu, A. M. (2007). Quality of Water the Slum Dwellers Use the Case of a Kenyan Slum. *Journal of Urban Health, 84*(6), 829-838.

KNBS, & ICF Macro. (2003). *Kenya Demographic and Health Survey 2003*. Calverton, Maryland: KNBS and ICF Macro.

KNBS, & ICF Macro. (2010). *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland: KNBS and ICF Macro.

Kung'u, W. N., Musau, P. M., Ochieng, A., Wachira, E. G., Omol, R. T. A., & Rakwar, J. (2002). Diarrhea prevalence ans risk factors in slums. *Journal of national institute of public health, 51*(1), 73-76.

Kyobutungi, C., Ziraba, A., Ezeh, A., & Ye, Y. (2008). The burden of disease profile of residents of Nairobi's slums: Results from a Demographic Surveillance System. *Population Health Metrics, 6*(1).

Magadi, M. A., Zulu, E. M., & Brockerhoff, M. (2003). The inequality of maternal health care in urban sub-Saharan Africa in the 1990s. *Population Studies 57*(3), 347-366.

Mosley, H., & Chen, L. (1984). An analytical framework fro the study of child survival in developing countries. *Population and development review, 10*, 25-45.

Ndugwa, R., & Zulu, E. (2008). Child morbidity and care-seeking in Nairobi slum settlements: the role of environmental and socio-economic factors. *Journal of child health care, 12*(4), 314.

Negussie, T. (2003). A comparison of pregnancy and child health outcomes between teenage and adult mothers in the slums of Nairobi, Kenya. *International Journal of Adolescents Medical Health, 15*(4), 321-329.

Negussie, T., & Chepngeno, G. (2005). Determinants of Health Care Seeking for Childhood Illnesses in Nairobi Slums. *Tropical Medicine and International Health, 10*(3), 240-245.

Nyamongo, I. K. (2002). Health care switshing behaviour of malaria patients in a Kenyan rural community. *Social Science & Medicine, 54*, 377-386.

Nyatoti V, Nyati Z, & Mtero S. (1993). Knowledge, attitudes and practices of mothers and health workers in relation to the use of sugar and salt solution in Masvingo Province, Zimbabwe. *Centr Afr J Med, 39*, 95-102.

Perry, H. B., King-Schultz, L. W., Aftab, A. S., & Bryant, J. H. (2007). Health equity at the local level: Socio-geography, access, and health outcomes in the service area of the Hospital Albert Schweitzer-Haiti. *International Journal for Equity in Health, 6*(7).

Pokhrel, S., & Sauerborn, R. (2004). Household decision-making on child health care in developing countries: the case of Nepal. *Health Policy and Planing, 19*(4), 218-233.

Ricardo, P.-C., Hector, G., Guillermina, R., Leticia, R., & Gonzalo, G. (1997). *Mothers' Health-seeking Behaviour in Acute Diarrhoea in Tlaxcala, Mexico*. Mexico: The Ministry of Health, Mexican Social Security Institute.

Ryan, G. W. (1995). *Medical decision making among the Kim of Cameroon: Modeling how characteristics of illnesses, patients, caretakers and compounds affect treatment chooice in a rural coimmunity.* University of Florida.

Segall, A. (1990). A Community Survey of Self-Medication Activities. *Medical Care, 28*(4), 301-310.

Sudharrsanam, M., & Rotti, S. (2007). Factors determinig helath seeking behaviour for sick children in a fisherman community in Podicherry. *Indian Journal on Community Medicine, 32*(1).

Thind, A., & Cruz, A. M. (2003). Determinants of children's health service utilization in the Phillipines *Journal of tropical pediatrics, 49*, 260-273.

Thorson, A., Hoa, N., & Long, N. (2000). Health seeking behavior of individuals with a cough of more than 3 weeks *Lancet, 356*, 1823-1824.

Tipping, G., & Segall, M. (1995). *Health care seeking behaviour idn developing countries: an annotated bibliography and literature review*. Sussex: Institute of Development Studies.

Tumwesigire, S., & Watson, S. (2002). Health seeking behaviour by families of children suspected to have malaria in Kabale: Uganda. *African Health Science, 2*(3), 94-98.

UNICEF , & WHO (2009). Diarrhea: Why children are still dying and what can be done. *The Lancet*.

United National International Children's Education Fund. (2008). *The state of the worlds Children* New York: United Nations Children's Fund (UNICEF).

United National International Children's Education Fund (UNICEF). (2008). *The state of the worlds Children* New York: United Nations Children's Fund (UNICEF).

United Nations. (2008). *The Millennium Development Goals Report*. New York.

Vania, D. P., Juliana, C. P., & Débora, F. d. M. (2011). Integrated Management of Childhood Illness With the Focus on Caregivers: an Integrative Literature Review. *Rev. Latino-Am. Enfermagem, 19*(1), 203-211.

Victora, C. G., Bryce, J., Fontaine, O., & Monasch, R. (2000). Reducing deaths from diarrhoea through oral rehydration therapy. *Bull World Health Organ, 78*, 1246-1255.

William, B., Gouwse, & Dye C. (2002). Estimate of Worldwide distribution of child deaths. *Lancet, 2*, 25 - 32.

World Health Organization. (2002). *The world health report 2002: Reducing risks, promoting healthy life*. Geneva: World Health Organization.

World Health Organization. (2005). *The treatment of diarrhea: a manual for physicians and other senior health workers*. Geneva: World Health Organization.

World Health Organization. (2006). *Mortality fact sheet Kenya world health statistics*: World Health Organization.