

Research Article

Wasike M, et al. J Trop Med Health: JTMH-125.

DOI: 10.29011/JTMH-125. 000025

Correlates of Slum Household Indebtedness to Medical Care Costs: A Case of Kibera Slums Nairobi, Kenya

Metrine Wasike¹, John Gachohi^{1*}, Joseph Mutai²

¹Department of Environmental Health and Disease Control, Jomo Kenyatta University of Agriculture and Technology, Kenya

²Centre of Public Health Research, Kenya Medical Research Institute, Kenya

***Corresponding author:** John Gachohi, Department of Environmental Health and Disease Control, Jomo Kenyatta University of Agriculture and Technology, Kenya. Tel: +254727671796; Email: mwangigachohi@gmail.com

Citation: Wasike M, Gachohi J, Mutai J (2018) Correlates of Slum Household Indebtedness to Medical Care Costs: A Case of Kibera Slums Nairobi, Kenya. J Trop Med Health: JTMH-125. DOI: 10.29011/JTMH-125. 000025

Received Date: 02 May, 2018; **Accepted Date:** 10 July, 2018; **Published Date:** 17 July, 2018

Abstract

Many low income earners rely on meagre out-of-pocket payments for health expenditure leading of indebtedness. This study assessed the reasons for indebtedness a rising from medical costs by Kibera slum dwellers in Nairobi, Kenya. It was a cross- sectional study; households were systematically sampled from one randomly selected village (Makina) out of the 12 villages within Kibera slum. A semi-structured, questionnaire was used to gather information on medical expenses incurred by household members and socio-demographic and social economic characteristics. Univariate logistic regression was used to test the associations between indebtedness and social-demographic and social-economic characteristics at a significance level of $p \leq 0.05$. A total of 166 households were interviewed. About a quarter ($n=39$, 23.5%) were indebted from health care expenses. Result of logistic regression returned education, marital status and occupation as significant factors ($P \leq 0.05$). Respectively, study participants with primary and post primary education were 3.5 (95% CI, 1.215, 9.906) $P=0.020$ and 1.1 (95% CI, 0.435, 3.026) $P=0.782$ times more likely to be indebted in healthcare compared to those without formal education. Study respondents who were unmarried and separated were each 78% (95% CI, 0.090, 0.515) $P=0.001$ and 78% (95% CI, 0.083, 0.599) $P=0.003$, less likely to be indebted in health care compared to those who were married. Respectively, civil servants and casual workers on one hand and small scale business on the other were 2.8 (95% CI, 1.225, 6.286) $P=0.014$ and 1.2 (95% CI, 0.451, 3.338) $P=0.688$ times more likely to have debts in the health care as compared to those who were house wives/unemployed. The level of indebtedness was 23.5% among formally educated, married and employed slum dwellers. This finding is counterintuitive as these categories of people have a higher socio economic status relative to those without formal education, not living with a spouse and unemployed. Further studies are needed to authenticate these cross-sectional findings.

Keywords: Medical costs; Medical expenditures; Slum dwellers

Introduction

Currently there are strong international calls for the reform of health systems towards universal coverage and health financing schemes to ensure equity in access to care. In its 2010 World Health Report, the World Health Organisation (WHO) listed three fundamental barriers that hamper countries from reaching universal coverage: the limited availability of resources; an over-reliance on direct payments at the time people need care; and the inefficient and inequitable use of resources [1]. The majority of the burden of disease and disability in developing countries could be considerably less if quality health-care services are accessible and

could be used without any form of hindrance.

Health care finance in developing nations is mainly characterized by Out of Pocket (OOP) payments for health, and the lack of health insurance [2]. Borrowing money is a common source of funds to pay off healthcare costs. The impact of borrowing on households can be severe, leading to indebtedness. In the absence of insurance, the expenditure incurred on illness not only impacts the overall welfare but also increases the risk of not being able to recover them from existing resources and thereby slipping deeper into poverty. It is now widely acknowledged that health care expenditures can impoverish individuals and households [3]. Medical expenditure is regarded as catastrophic in nature if it exceeds a predetermined share of household income or total expenditure in a given period. The country has made little progress

towards achieving international benchmarks including the Abuja target of allocating 15% of government's budget to the health sector [4]. Currently, only 6.5% goes to health. The sector is thus largely underfunded and health care contributions are regressive (that is the poor contribute a larger proportion of their income to health care than the rich [5]. The Kenyan health sector thus relies heavily on out-of-pocket payments. Thus persons with low income levels and many competing needs like food, shelter, clothing and education have little or no capacity to afford health care. They are vulnerable to the shocks that result from catastrophic out-of-pocket health expenditure. Paying for health care remains a major challenge in Kenya and most African countries, this means that majority of Kenya still pay OOP for their health –care needs [6-8]. Payment for health-care service by individuals in Kenya could be through several means including Out-of-Pocket (OOP) expenses or prepayment through health insurance. This method of payment (OOP) is usually associated with non-utilization of health-care services, late presentation in health facilities, patronizing substandard health-care services, among others. OOP payment predisposes individuals and households to exhaust personal savings, borrow or loan money, sell properties and livestock, and sometimes pay by installments when permitted [9,10]. Capacity to access health care may be worsened as ill-health reduces or brings to a halt the earning capacity of a household member, and if the head of the household is affected, the basic needs of other members are negatively affected, including food consumption and child education [11].

In Kenya, about a quarter of the population lives in urban areas [12] where 60 to 80% of the urban residents live in informal settlements ('slums'), like conditions [13] characterized by a higher level of unemployment, general deprivation including monetary poverty, and poorer health indicators than the city average [14]. Such figures are alarming as 55% of the population of sub-Saharan Africa is projected to be living in urban areas by 2050 [15]. Out-of-pocket (OOP) payments account for more than a third of national health expenditures [16]. When out-of-pocket (OOP) payments for health services consume such a large portion of a household's available income, the household may be pushed into poverty as a result [17]. In Kenya, the government contributes 41% of the total health expenditure with households "out of pocket" contributing to about 30% of the expenditure [18]. Paying for healthcare out of pocket, may push households into poverty with 6-10% of households reporting catastrophic spending on health [3]. This paper presents the findings studies carried out in Kibera slum, focusing on the reasons why Kibera slum dwellers are indebted with medical expenses, factors affecting indebtedness and proportion of households incurred debts due to medical care. Findings will provide important evidence with regard to the new health financing reform which is essential to protect people from financial shocks caused by OOP payment, increasing government

spending on health through budget reallocation, proper monitoring of subsidized programs and to allocate budget for scaling up coverage to those vulnerable segments of the population (slum dwellers). The study outputs are expected to greatly assist in implementing policies and strategies that will help the Kenya government as a whole meet the requirements of the constitution, which advocates the access to essential healthcare, break the vicious cycle between illness & poverty and to reduce the OOP expenditure upto 25% as outlined in vision 2030.

Methods

Study Setting

The study was conducted in urban Kibera slum located in the Nairobi city, Kenya. An estimated 170,070 total slum population lives in Kibera [19] resulting in the proliferation of slum communities that are largely excluded from safe drinking water, sanitation facilities and health care. From the administrative records, Kibera Slum is subdivided into 12 villages, namely, Kianda, Soweto West, Raila, Gatwekera, Makina, Kisumu Ndogo, Kambimuru, Mashimoni, Lindi, Lainisaba, Silanga, and Soweto East.

Sampling Design

This study used cross-sectional data collected from the households. Simple random sampling technique was implemented for the 12 villages to pick one village for logistic purposes where by Makina was picked. Systematic random sampling was carried out on households to obtain a sample of 166 respondents, the sample size was calculated using statistical Cochran, 1977 for exact probability test. The village was divided into four quadrants labelled (N, E, W and S denoting the directional North, East, West and South cardinal points. Each quadrant was to share the sample size of 166 into 42 households per quadrant). Makina village had approximately 2,400 residents (from Ministry of Health Nairobi county not published). This number was used in the sampling strategy as follows: Each quadrant was assumed to have 600 households and since we desired to include all quadrants in the study, this number was used to compute the skipping interval. The skipping interval was calculated thus by dividing 600 by 42 which yielded 14. In all, 166 respondents from 2,400 households participated in the study.

Survey Instruments

A structured interview schedule was designed under the guidance of the supervisors which included both closed and open ended questionnaire. It was then translated into Kiswahili dialect to accommodate respondents whose mastery of English was inadequate. Interviews were conducted to collect the data by two experienced volunteers, who were trained on the concept of the study and with clear understanding of the questionnaire and data

collection process. Once the data were collected, the investigator went through the questionnaires to ensure they were complete before the participant was released and for any missing fields the participant was asked for their response. Data were collected using a structured questionnaire divided into three parts: socio-demographic characteristics, factors associated with medical debts and proportion of slum households incurred debts due to medical care. Descriptive statistics were used to describe the main variables on socio demographic features, which comprised the following: age, gender, education level, size of the family, employment, marital status, occupation, monthly income and local welfare (chama).

To assess the proportion of slum households incurred debts due to medical care the questionnaire sought to capture information related to those households heads who had debts for medical care, healthcare spending, expenditures on health care seeking (outpatient), households seeking medical care, utilization of the care provided, healthcare spending, coping strategies, presence of chronic diseases in the household, household members used medicine, household members above 18 years without income, inpatient hospitalization, and out of pocket expenditure. Expenditure were collected in Kenya shillings. In this study, there was the proportion piling activity which targeted relative income out of the total household income spent on medical expenditure. The researcher had the proportional piling question clear in the mind “Assume these 100 beans is the total household income for the last three months, please divide for me the relative income (without counting) that was spent on medical care”. This was on the on a flip chart. The researcher confirmed that this was the actual “relative” income used for medical care and the rest was for other expenses. The researcher then counted the beans representing the relative income that was spent on medical care and noted down. This was approximately the proportion of income spent on medical care which was repeated in all households.

Statistical Analysis

Quantitative data was cleaned, coded, entered in the data entry and analyzed using Statistical Package For Social Scientists (SPSS) windows version 21.0. Descriptive analysis was done and data was represented in form of tables. To identify factors associated with medical debts, we performed logistic regression model. All debts for health care among the slum dwellers: education (none or no education, primary, secondary and above); marital status (married, single, separated/divorced/widow/widower); and occupation (House wife, civil servant & casual workers, small scale business). Factors found significant at P-value <0.05 were incorporated. Our dependent variable in this analysis was households who had medical care debts one-month prior the study (No or Yes). We examined the distribution of this variable in relation to a range of independent variables that predict.

Ethical Consideration

Ethical approval for the study was obtained from the Kenyatta National Hospital/University of Nairobi Ethical Review Committee (P 718/10/2016). In all households included in the study, the head of the household was first approached to obtain consent to the participation in the interview. All the participants who consented to participate confirmed this by signing a written consent form which was completely voluntary. Respondents were assured that the data collected would be for purpose of the study and would be treated with uttermost confidentiality. A household head respondent was then interviewed.

Results

Social Demographic Characteristics

Description of variable	Frequency	Percentage
Gender		
Male	57	34.34
Female	109	65.66
Age		
19-30	45	27.1
31-40	53	31.9
41-50	24	14.5
>50	44	26.5
Education level		
None	35	21.1
Primary	90	54.2
Secondary and above	41	24.7
Marital statuses		
Married	80	48.2
Single	48	28.9
Separated/Divorced	38	22.9
Widow/Widower		
Family size		
One to two	34	20.5
Three to four	71	42.5

Four to five	37	22.3
Five and above	24	14.5
Occupation		
House wife/Unemployed	48	28.9
Civil servant and casual workers	23	23
Small scale business	87	52.4
Employment		
Formal	9	5.5
Informal	156	94.6
Income		
Ksh.0-5,000	105	63.3
Ksh.5001-10,000	40	24.1
>10,000	21	12.7
Chama		
Yes	38	22.9

No	128	77.1
-----------	------------	-------------

Table 1: Social demographics of the respondents in the study (n=166).

(Table 1) above presents results of respondents' characteristics. There were slightly more females (109) 65.66 % than males (57) 34.34%, in general, a proportion of men and women were interviewed with the largest proportion being within the age bracket of (53) 31-40 years. The highest education level attained by a majority of the respondents was primary education (90) 54.2%, while (35) 21.1% never had any formal education. The informal sector (156) 94.6% was the largest proportion for the form of employment by most of the Respondents, this constituted such as dressmaking, carpentry, running a kiosk or small grocery shop, house-help, drivers, vehicle conductors, construction workers, regular saloonist, shoemaker among others. The majority of the respondents were living with partners 48.2% (80), living in rented houses (walls, roof and floor of the unit is not a permanent structure and vulnerable to illnesses) (140) 84.3%, the biggest proportion of family size, (71) 42.8 % had three to four and above members, many of the respondents were not in the local social welfare (128) 77.1%. The study revealed that, the income level of most of the respondents was up to Ksh. 10,000 a month (145) 87.4

VARIABLES	No		Yes		Total		OR	95% CI	P value
	n	%	n	%	n	%			
Education									
None	21	16.5	15	38.5	36	21.7	1		
Primary	72	56.7	17	43.6	89	53.6	3.469	[1.215,9.906]	0.020
Secondary and above	34	26.8	7	17.9	41	24.7	1.147	[0.435,3.026]	0.782
Marital statuses									
Married	67	52.8	13	33.3	80	48.2	1		
Single	40	31.5	8	20.5	48	28.9	0.216	[0.090,0.515]	0.001
Separated/divorced/widow	20	15.7	18	46.2	38	22.9	0.222	[0.083,0.599]	0.003
Occupation									
Housewife/unemployed	29	22.8	17	43.6	46	27.7	1		
Civil servant and Casual workers	27	21.3	7	17.9	34	20.5	2.775	[1.225,6286]	0.014
Small scale business	71	55.9	15	38.5	86	51.8	1.227	[0.451,3.338]	0.688

Table 2: Factors associated with medical debts among slum dwellers in Kibera.

Inferential Analysis

The factors that were significantly related to debts of medical expenses were -; education level, marital status and occupation. There was a significant association between education and household indebted for healthcare. Study participants with primary and post primary education were 3.5 (95% CI, 1.215, 9.906) P=0.020 and 1.1 (95% CI, 0.435, 3.026) P=0.782 times more likely to be indebted in healthcare compared to those without formal education. Study respondents who were unmarried and

separated were each 78% (95% CI, 0.090, 0.515) P=0.001 and 78% (95% CI, 0.083, 0.599) P=0.003, less likely to be indebted in health care compared to those who were married. Respectively, civil servants and casual workers on one hand and small scale business on the other were 2.8 (95% CI, 1.225, 6.286) P=0.014 and 1.2 (95% CI, 0.451, 3.338) P=0.688 times more likely to have debts in the health care as compared to those who were house wives/unemployed. Shown in the (Table 2) above.

Variables	NO		YES		TOTAL	
	n	%	n	%	n	%
Debts due to medical care	127	76	39	23.5	166	100
Presence of chronic diseases in the household	81	48.8	85	51.2	166	100
Inpatient hospitalization	129	77.7	37	22.3	166	100
Household members used medicine	39	23.5	127	76.5	166	100
Household members above 18 years without income	79	47.6	87	52.4	166	100
Respondents seeking medical care	31	18.7	135	81.3	166	100
Coping strategy: Wages	96	57.8	70	42.2	166	100
Salary	158	95.2	8	4.8	166	100
Sold property	157	94.6	9	5.42	166	100
Borrowed	146	88	20	12	166	100
Loaned from a friend	150	90.4	16	9.6	166	100
Sale of assets	157	94.6	9	5.4	166	100
Donation from well-wishers	149	89.8	17	10.2	166	100
Relatives, children	148	89.2	18	10.8	166	100
Utilization of medical care services: None	134	80.7	32	19.3	166	100
GOK facility	107	64.5	59	35.5	166	100
Private facility	105	63.3	61	36.7	166	100
Spiritual healer	162	97.6	4	2.4	166	100
Self -medication	134	80.7	32	19.3	166	100

Table 3: Proportion of slum households that incurred debts due to medical care (n=166).

Proportion of Slum Households Incurred Debts Due to Medical Care

Debts Due to Medical Care

The field survey established that (39) 23.5% of respondents had borrowed money and other had debts in the health care to

meet medical expenses for their families (medical bill) in last one month, while (127) 76% had no debts. It is a common notion that sickness involves expenditure that needs financing. Expenditures can range from insignificant amounts to very expensive ranges depending on the disease and kind of treatment sought. Illustrated in (table 3) above.

Presence of Chronic Diseases in the Household

Information was obtained on chronic ailments such as: diabetes, hypertension, ulcers, asthma, arthritis, cancer, HIV and others. Once diagnosed, the treatment of such illnesses has to be fairly regular and sustain. From 166 households, (85) 51.2% individuals stated that they were diagnosed with chronic ailments. Hypertension (BP) was reported to be the major illness prevalent. Diabetes and HIV came next then followed by Asthma and Ulcers, Arthritis finally cancer. However, not all took regular treatment for these illnesses, the reason being due to lack of income (resources) or awareness. Shown in the (Table 3) above.

Respondents Used Medicine in the Past One Month

The field survey revealed that (39) 23.5% of the respondents never used medicine in their homes while accumulative of (127) 76.5% of the respondents primarily relied on the medicines prescribed by the local chemist (quacks) for treatment on falling sick. These responses clearly indicate that most of the slum dwellers prefer to treat minor sickness in conventional way by consuming medicines in the absence of a health worker consultant. In addition to that the cost of medicine is equally high thus forcing people to strain from their pockets. Illustrated in (Table 3) above.

Household Members Above 18 Years Without Income

Our study found out that (87) 54.4% of household members their dependents were above 18 years and without income this means that in case of illness the household head will be forced to use out of pocket to offset the medical bill which is a challenge to them. Shown in (Table 3) above.

Inpatient Hospitalization

We were also interested in finding out how many were hospitalized among the members of the household. From the analysis done, (37) 22.3% were hospitalized while the majority of the respondents, (129) 77.7% were not hospitalized this could be atypical response pattern among the poor, where they tend to ignore minor ailments in the beginning, but then have to be later admitted to hospital due to prolonged ill-health and increasing severity of the illness. Thus, it can be concluded that a majority of poor population visit government hospital as a measure of last resort when they fail to obtain result from all other sources. Illustrated in the (Table 3) above.

Health Seeking for Medical Services

The residents of Kibera face a variety of health challenges and this is evidence by the number of times they seek medical attention at health facilities nearest to them. Cumulatively (87) 52.3 % of respondents said that they had visited a health facility more than once to seek medical services in the past one month. Only (48)

28.9 % of the respondents had visited a health facility once while (31) 18.7% were not sick during that month prior to the study. This is illustrated in (Table 3) above. It is clear that majority of the respondents" experienced frequent need for medical services

Payment Coping Strategy

(Table 3) above shows the different payment-coping mechanisms that the respondents used to pay for medical expenses; From wages at (70) 42.17%, salary at (8) 4.82%, borrowing (20) 12.05%, loaned from a friend (16) 9.64%, sale of asset (9) 5.42%, donations from well-wishers (17) 10.24%, Relatives, children (18) 10.84%. This is a clear indication of the coping strategy of Kibera residents which most of them use in case of illness. The analysis also gives a clear indication that OOP is the mechanism they use to pay for their medical expenses.

Utilization of Medical Care Services

As evidenced by the high frequency in which residents of Kibera sought medical attention, the following were the most preferred areas where they went to receive these services. Government facilities is one of the areas where (59) 35.54% of respondents went, private health facilities were the most preferred by of (61) 36.75% of respondents, (32) 19.51% choose to self-medicate themselves, while the least (4) 2.41% went to spiritual healer due to their religious belief and those who never sought medical services were (32) 19.51%. This is illustrated in (Table 3) above. This indicates that almost similar proportions of Kibera residents had preference for private clinics just the same way they preferred government health facilities.

Variable		Frequency	%
Health expenditure	Self	87	60.8
	Self & Relative	2	1.4
	Spouse	20	14
	Spouse & Relative	1	0.7
	Relative	26	18.2
	Pastor	4	2.8
	Well-wishers	1	0.7
	Neighbour & friends	2	1.4
Expenditure on healthcare seeking	Below Ksh.100	21	12.7
	Ksh.100-500	21	12.7
	Ksh.501-1,000	17	10.2
	Ksh.1,000-1,500	17	10.2
	Above 1,500	56	33.7
	None	34	20.5

Table 4: How they meet their health expenditure and amount spent on health care seeking.

Health Expenditure Through Out of Pocket

Our findings showed that the majority (87) 60.8% of the slum dwellers met their health expenditure through (self) out of pocket thus it shows how difficult the situation is to the poor even buying of drugs and paying of medical bill was no longer possible to them, some paid through their spouse especially to them who were housewives and their husbands were formal employed (20) 14 %, a combination of self and spouse (2) 1.4%, Relatives at (26) 18.2%, a combination of spouse and Relative was (1) 0.7%, Others involved children and friends (6) 4.2 % and lastly a combination of Relatives and friends was (1) 0.7%. The results shown in (Table 4) above.

Expenditures on Healthcare Seeking

For those who had sought medical attention, it was established that about (21) 12.7% of the respondents had spent less than Kshs. 100, (21) 12.7% had spent between Kshs. 100-500, (17) 10.2 % had spent between Kshs. 501-1000, (17) 10.2 % had spent between Kshs. 1,000- 1,500 and (56) 33.7% had spent a sum of over Kshs. 1,500 while (34) 20.5% never sought medical attention. The results shown in (Table 4) above.

High Health Expenditure Pushing Poor into Debt Trap

The findings show how much it costed the households out of pocket expenditure when they were hospitalized. They were 35 respondents who had challenges of paying medical bill, this is not surprising since the Kibera slum is located in one of the poorest regions of Nairobi (Kenya). In terms of catastrophic impoverishment at 10th percentile Ksh.3500 was spent, at 50th percentile it was Ksh. 5,500 spent and at 90th percentile it was Ksh.70, 000 spent.

Proportion of Household Income Spent on Medical Expenditure

The results show how household income spent on medical expenditure out of the total income. It was revealed in the field survey that the medical health care expenditure used by households, at 10th percentile was 37% of the household income, 50th percentile was 50% of the income and at 90th percentile was 68% of the household income.

Discussion

Our study revealed that majority of slum dwellers are young adults (<40) and have no formal education (35) 21.1% or primary (90) 54.2%, Secondary & above (41) 24.7% 18.7% thus this correlates with other finding reported by [20], education level in slums is low, with only 16% of the population finishing high school & above and 33% not going beyond primary school. Majority of schools in slums begun as a business venture and do not truly meet their function as learning institutions, in most

cases teachers themselves are not trained. Regarding the factors associated with debts of medical expenses in health care access, which could either promote or serve as a barrier to the uptake of available health –care services. We found that having (education, marital status and occupation) were significant in the survey. Those who had primary and secondary education were 3 and 1.1 times more likely to be indebted which was quite different with other studies by Liu and Chen, [21] who said that education is a factor that improves the health seeking and knowledge of making small payments or looking other means of getting money to avoid the risk of catastrophic medical expenditure. This observation was also made by (Breyer and Felder, 2006) [22] who stated that the more educated the people are, the less the debts they make. The results also showed that the occupation was significantly associated with household indebtedness for health care. Study participants who were civil servants, Casual workers and Small scale business were more likely to have debts in the health care than housewives/unemployed. This results differs with those of a study conducted in Nepal, Kenya and Ghana which indicated that presence of a household member with the unemployment were found to increase the odds of a household incurring catastrophic health expenditures [23-25]. This difference might be to the fact that they had so many source/resources of raising cash and thus they over spent to unnecessary things hence end up having so many debts as compared to housewives/unemployed who have few source/no resources thus they fear having debts because there is no way paying.

Marital status was found to play a role in indebtedness, with those married having a high risk than those who are unmarried and separated. This results differs with the study of Breyer and Felder, [22] who states that being married enhances financial support to each other due to the combined income or when one fails the other one will support and thus controls catastrophic health expenditures hence less indebtedness. High out-of-pocket expenses on illness of a patient can not only impoverish the family, but can cause indebtedness in the household especially to slum dwellers. This has been variously described as 'medical poverty trap' [26]. WHO estimates put nearly a 100 million people around the world who are poor due to healthcare costs, while another 150 million suffer due to catastrophic expenditure on health [1]. Our study found that around 23.5% of households faced distress financing to pay for healthcare costs thus they encountered indebtedness. Some of the respondents reported of borrowing money from friends and family, non-banking sources such as private moneylenders who are generally exploitative or selling household assets. These borrowings lead to large scale indebtedness and further poverty of masses. This is consistent with other studies in developing nations [14], states that households in slums buy/ borrow goods/ items on credit probably in small quantity and/or increment which are more expensive and hence do not benefit from economies of

scale. A previous study also indicated that the risk of using distress financing was strongly associated with household socio-economic status [27]. On the other hand, the poor go without treatment if they fail to raise money from friends and relatives as they are shunned both by banks and the moneylender due to their low creditworthiness.

Our findings had (85) 51.2% respondents who had chronic diseases, this study offers some insight into who amongst the slum population are most vulnerable to catastrophic health expenditures. Households that have no formal education, have an unemployed head/housewives, families who are unmarried, have a member with a chronic ailment such as diabetes, HIV, hypertension, ulcers, asthma, arthritis, cancer, and others, have high chances of incurring catastrophic expenditures. Of the chronic illnesses, the highest expenditure incurred on cancer, diabetes and hypertension followed by arthritis, asthma and ulcers. This correlates with [28] who found that households containing a member with cancer experienced significantly higher OOP health expenditures per capita. The reason for having this high prevalence of chronic diseases could be due to late diagnoses and lack of awareness or resources. These findings are consistent with evidence from other settings on the determinants of the incidence of catastrophic health expenditures. The presence of a household member with a chronic illness, or the unemployment of the household head were found to increase the odds of a household incurring catastrophic health expenditures in Nepal [23], Kenya [24].

Also recent studies in four South Asian countries (Bangladesh, India, Nepal and Sri Lanka) and Eastern Europe (Ukraine and Russia) showed that households containing a member with Non-Communicable diseases or chronic diseases experienced significantly higher OOP health spending than those without [29,30]. Seeking remedy by purchasing drugs over the counter from a pharmacy, increased the likelihood of medical debts. Majority of them mentioned that in case of minor illness like cold, flu, cough, fever, headache, etc., they personally treat themselves by consuming some antibiotics prescribed by a local chemist or by following any home remedy and so wait for 2-3 days for self-recovery. Our findings corroborate existing literature reported in the Sub-Saharan Africa region (Zambia and Ghana) that outpatient care and costs of medicines are the greatest cost drivers of direct OOP costs paid to healthcare facilities and in the local chemists [25,31]. This finding is important given that often health financing schemes, and specifically social health insurance schemes in LMICs do not adequately cover the cost of medicines and outpatient care [32].

Our study found out that (87) 54.4% of household members their dependents were above 18 years and without income this means that in case of illness the household head will be forced to use out of pocket to offset the medical bill of the dependents which

is a big challenge to them. This agrees with WHO which puts it is estimates nearly a 100 million people around the world who are poor due to healthcare costs, while another 150 million suffer due to catastrophic expenditure on health [1].

It was found that (37) 22.3% of the respondents, got themselves or any of their family member admitted to hospital for treatment of any major illness. When one member in the household is sick, other than parents, they incur costs, financial burden affects all members of the family. A large burden due to health care costs from one member could have consequences for other family members, acting as a deterrent to seeking needed health care, making it difficult for the family to afford other necessities, and causing increased family stress. This is similar with other studies [33,34] which states that a severe ailment or injury that requires inpatient care has been found to increase the likelihood of catastrophic spending, as well as the use of inpatient service especially in private hospitals. This reflects the loss of income caused by work days due to sickness in a slum population largely engaged in casual employment that pays per day worked.

The effect of healthcare services utilization probably reflects the severity of the disease/condition, the higher cost of getting a service in a hospital and the nature of service needed. Our study shows that (135) 81.2% respondents had visited the health facility at least once sought medical attention, this implies how residents of Kibera face a variety of health challenges due to their lower social economic statuses. A series of studies done by the African Population and Health Research Center in two Nairobi informal settlement from 2006 indicates that in 2012, only 6% of households had access to piped water [35]; and 51% shared toilets [36]. In addition, in these slums, three households out of four had no garbage disposal arrangement. As a consequence of inadequate sanitation, open spaces, a nearby river and drains are used as garbage disposal and toilets in the slums, leaving residents vulnerable to diseases caused by poor personal hygiene, water and sanitation conditions. The poor living conditions contribute to higher mortality in the slums. Notwithstanding that health services are more available in urban areas than rural areas, urban slum dwellers have poorer health compared to urban and rural dwellers [37]. A household confronted with an illness is obliged to meet varied expenses-the cost of treatment and transport, opportunity costs for the sufferer & caregivers and the cost of caring, besides other routine household expenses. To cover the expenses associated with an event of sudden illness, the slum households in Kibera, often employ coping strategies such as drawing down savings from wages and salaries, borrowing, donation, loaned from friends, selling productive assets such as Mobile phones, Television, radios, bicycles, chairs, utensils, and land. This is similar with a recent study that analysed the ways households cope with financial shortfalls in Nairobi slums [38], not eating enough meals, working longer hours, receiving help from family and friends and withdrawing children

from school. These coping mechanisms are frequently inadequate to cover the healthcare costs and the consequential debt resulting in impoverishment of the effected households. This observation was also made by [39] study in Pakistan which stated that, the low income people employed risk coping strategies to address healthcare costs, include, borrowing, selling productive assets such as cattle, poultry and land, depletion of household savings, decreased consumption patterns which were inadequate to cover the health expenditure thus leading to the impoverishment of the household [33].

Over half of the respondents (87) 60.8% of the slum dwellers relied on individual out-of-pocket payment in order to pay for health care services at the moment of seeking medical treatment for themselves or their dependents. The majority of the respondents reported their difficulties in accessing quality health care services as a result of financial hardship. Evidences from previous studies has shown that a health system where individuals have to pay out of their own pockets for a substantial part of the cost of health services at the moment of seeking medical treatment clearly restricts access only to those who can afford it, delayed utilization, or failure to seek care at all and is likely to exclude the poorest members of society [40,41]. Inability to pay for health services is therefore a major factor determining the utilization of health services. Under-utilization of health services especially by the poor and disadvantaged remains a chronic problem in developing countries even though there is a huge unmet need for health care.

Households in our sample are poor as illustrated by the fact that health care expenses consumes about half the income. Indeed, for about (132) 79.5% household respondents incurred financial catastrophe due to healthcare costs. Poor households spent high on healthcare, facing disproportionately higher financing burden. The findings correlates with [6] which states that paying for health care remains a major challenge in Kenya and most African countries. Also another observation was made by [16] who stated that, the number of patients that pay their health services OOP in Kenya is very high (one third of the total health expenditure). The OOP health spend is a big barrier for Kenyans accessing healthcare services as it drives the poorer households easily into poverty.

The costs of treatment continue to limit the access of care especially by the poor. Over 100 million people globally are pushed into poverty annually as a result of OOP healthcare payments by [1]. As food, shelter, and other necessities exhaust the bulk of the household's income, little is left for other items of expenditures such as health care. It is possible that informal settlements residents are not able to afford the care they may need, thus they forgo healthcare. These results illustrate inequity in the access to care when payment for the care is out of pocket. The literature suggests that a wide range of household characteristics affect the probability of incurring catastrophic health expenditure.

For example, availability of health insurance reduces the likelihood of occurrence of catastrophic health expenditure [33]. A study on how households cope with OOP health expenditures in 15 African countries found that in most of these countries, health financing is too weak to provide protection for households from health shocks [42]. Thus, borrowing and depletion of assets to finance health care was prevalent among the median and 90th percentile. This means that many of the households could not afford to pay medical bill for themselves or of their family members who were admitted. Though, most of the respondents preferred Government hospitals in case of major illnesses, but due to lack of required facilities and when the personnel are on strike, they are compelled to get various tests and services done from private clinics. In addition to that the cost of medicines is equally high. This finding corroborates previous studies [43] which states that unaffordability of healthcare is now accepted as one of the most decisive barriers to access to healthcare.

Finding from the study points towards increase in out of pocket expenditures as a direct result of usage in medical expenses. This finding is in line with the vision of WHO, views that medical fees are a significant obstacle to healthcare coverage and utilization due to the fact that large populations remain over-reliant on direct Out of pocket expenses that include over the counter payments for medicines and fees for consultations and procedures [1]. A high proportion of those who had financial catastrophe and impoverishment as a result of medical expenses, were among in the 50th and 90th percentile. This finding corroborates previous studies which states that OOP payments for health care comprise 4-5.5% of total household consumption in China, India, Bangladesh and Vietnam, WHO estimates put nearly a 150, million suffer due to catastrophic expenditure on health [44,1]. The expenditures on chronic illnesses includes expenditures on drugs, tests and doctor's consultations. Of the three, we took the expenditures on drugs to be the sustained and recurring element in the cost. Of the chronic illnesses, the highest expenditure incurred was on cancer, hypertension and diabetes, followed by arthritis, asthma and ulcers. These findings are consistent with evidence from other settings on the determinants of the incidence of catastrophic health expenditures. For example, the presence of a household member with a chronic illness, hospitalized members with elderly or the unemployment of the household head and those who use in patient service especially private hospitals were found to increase the odds of a household incurring catastrophic health expenditures in Nepal [23], Kenya [24], and Ghana [25].

Conclusion

Our study indicates that the proportion of households facing debts due to medical expenditure is 23.5%. However, the proportions are not negligible especially considering the study was conducted among residents of slum areas where the majority of

residents are poor or vulnerable to poverty. The small proportion of medical debts found relates to capacity to pay are likely to reflect the fact that in those slum areas, poor households have little income left after other expenditures to spend on healthcare and probably forgo the care needed. This raises an inequity question as to what happens to the poorest of the poor who cannot afford health care when a health crisis starts. Modifiable socio-economic factors like: Education, occupation and marital status were among those increased the level of indebtedness for medical costs. This study also provides evidence that efforts to protect the poor are critical from the adverse impact of OOPs and that positive measures to improve household's socio-economic status are necessary. The government and Policies makers should aim at providing financial risk protection and empowerment of vulnerable groups. For instance, schemes that focus on slum dwellers in particular for ensuring access to health care and protection from catastrophic costs. The health policy research and debates ought to be broadened to consist of interventions beyond the health sector; interventions focused on enhancing the livelihoods of households, that save the poor from harm and increase their incomes. The results of this study also call for an insurance mechanism that is equitable, affordable and inclusive to the poor urban slums residents.

Acknowledgments

The authors wish to acknowledge the medical director of Nairobi County and management team of Langata health center. We also wish to acknowledge the nursing in charge of Langata health center, Kibera health center and the public health department for the support during the study period. We extend our sincere thanks to (Makina) Kibera community for their continued support and participation in our research project.

References

1. World Health Organization (2010) The World Health Report: health systems financing: the path to universal coverage. Geneva: WHO.
2. McIntyre D, Garshong B, Mtei G, Meheus F, Thiede M, et al. (2008) Beyond fragmentation and towards universal coverage: insights from Ghana, South Africa and the United Republic of Tanzania. *Bull World Health Organ* 86: 817-908.
3. Kenya MoH-GoK (2014) Kenya household expenditure and utilization survey. Nairobi; 2013.
4. Kimalu PK, Nafula NN, Manda D K, Bedi A, Mwabu G, et al. (2004) A Review of the Health Sector in Kenya. Nairobi: Kenya Institute for Public Policy Research and Analysis.
5. Sachs JD (2012) Achieving universal health coverage in low-income settings. *Lancet* 380: 944-947.
6. Munge K, Mulupi S, Chuma J (2015) A critical analysis of the purchasing arrangements in Kenya: the case of the National Hospital Insurance Fund, Private and Community-based health insurance.
7. Onoka CA, Onwujekwe OE, Uzochukwu BS, Ezumah NN (2013) Promoting universal financial protection: constraints and enabling factors in scaling-up coverage with social health insurance in Nigeria. *Health Res Policy Syst* 13: 20.
8. World Bank World Bank Data. (2013). World Development Indicators (WDI).
9. Mathauer I, Schmidt JO, Wenyaa M (2008) Extending social health insurance to the informal sector in Kenya. An assessment of factors affecting demand. *Int J Health Plann Manage* 23: 51-68.
10. Carapinha JL, Ross-Degnan D, Desta AT, Wagner AK (2011) Health insurance systems in five sub-Saharan African countries: medicine benefits and data for decision making. *Health Policy* 99: 193-202.
11. Sudha VM (2006) Health Security for Rural Poor. Study of Community Based Health Insurance.
12. Kenya National Bureau of Statistics (2010) Kenya 2009 Population and Housing Census Highlights.
13. Candiracci S, Syrjänen R (2007) UN-HABITAT and the Kenya Slum Upgrading Programme. Nairobi: United Nations Human Settlements Programme (UN-HABITAT).
14. World Bank (2006) Kenya inside informality: poverty, jobs, housing and services in Nairobi's Slum. Washington D.C.: Water and Urban Unit 1, Africa Region 122.
15. United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352). Annex 1 table 1 page 20
16. World Bank Group (2014) Laying The Foundation for A Robust Health Care System in Kenya: Kenya Public VOL II, December 2014 Expenditure Review.
17. Xu K (2005) Distribution of health payments and catastrophic expenditures methodology. ((HSF) DHSF, (EIP) CEalfP eds.). Geneva: WHO Discussion Paper No. 2.
18. Kenya MoH-GoK (2015) Kenya National Health Accounts 2012/2013. Nairobi.
19. Kenya National Bureau of Statistics [KNBS], ICF Macro. (2010). Kenya demographic and health survey 2008-09. Calverton, Maryland: KNBS and ICF Macro.
20. USAID, (1993). Nairobi's Informal Settlements: An Inventory March. USAID.
21. Liu T, Chen C (2002) An analysis of private health insurance purchasing decisions with national health insurance in Taiwan. *Social Science & Medicine* 55: 755-774.
22. Breyer F, Felder S (2006) Life expectancy and health care expenditures: a new calculation for Germany using the costs of dying. *Health Policy* 75: 178-186.
23. Saito E, Gilmour S, Rahman MM, Gautam GS, Shrestha PK, et al. (2014) Catastrophic household expenditure on health in Nepal: a cross-sectional survey. *Bull World Health Organ* 92: 760-767.
24. Buigut S, Ettarh R, Amendah DD (2015) Catastrophic health expenditure and its determinants in Kenya slum communities. *Int J Equity Health* 14: 46.
25. Kusi A Hansen KS, Asante FA, Enemark U (2015) Does the National

Health Insurance Scheme provide financial protection to households in Ghana? *BMC Health Serv Res* 15: 331.

- 26. Whitehead M, Dahlgren G, Evans T (2001) Equity and health sector reforms: Can low income countries escape the medical poverty trap? *Lancet* 358: 833-836.
- 27. Nguyen KT, Khuat OT, Ma S, Pham DC, Khuat GT, et al. (2012) Coping with health care expenses among poor households: evidence from a rural commune in Vietnam. *Soc Sci Med* 74: 724-733.
- 28. Mahal A, Karan A, Fan VY, Engelgau M (2013) The economic burden of cancers on Indian households. *PLoS One* 8: e71853.
- 29. Abegunde DO, Stanciole AE (2008) The economic impact of chronic diseases: how do households respond to shocks? Evidence from Russia. *Soc Sci Med* 66: 2296-2307.
- 30. Murphy A, Mahal A, Richardson E, Moran AE (2013) The economic burden of chronic disease care faced by households in Ukraine: a cross-sectional matching study of angina patients. *Int J Equity Health* 12: 38.
- 31. Masiye F, Kaonga O, Kirigia JM (2016) Does User Fee Removal Policy Provide Financial Protection from Catastrophic Health Care Payments? Evidence from Zambia. *PLoS One*.
- 32. Bredenkamp C, Buisman LR (2016) Financial protection from health spending in the Philippines: policies and progress. *Health Policy Plan* 37: 919-927.
- 33. Amaya Lara J, Ruiz GF (2011) Determining factors of catastrophic health spending in Bogota, Colombia. *Int J Health Care Finance Econ* 11: 83-100.
- 34. Limwattananon S, Tangcharoensathien V, Prakongsai P (2007) Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand. *Bull World Health Organ* 85: 600-606.
- 35. Emina J, Beguy D, Zulu EM, Ezech AC, Muindi K, et al. (2011) Monitoring of health and demographic outcomes in poor urban settlements: evidence from the Nairobi Urban Health and Demographic Surveillance System. *J Urban Health* 2: S200-218.
- 36. Elung'ata P (2013) Shared toilets in the Nairobi Urban Health and Demographic Surveillance System. In: Amendah DD, editor.
- 37. World Bank (2002) Preliminary desk review of urban poverty in the East Asia region: with a particular focus on Indonesia, The Philippines and Vietnam.
- 38. Amendah DD, Buigut S, Mohamed S (2014) Coping strategies among urban poor: evidence from Nairobi, Kenya. *PLoS One* 9: e83428.
- 39. Kruk ME, Goldmann E, Galea S (2009) Borrowing and selling to pay for health care in low-and middle-income countries. *Health Aff* 28: 1056-1066.
- 40. Ezeoke OP, Onwujekwe OE, Uzochukwu BS (2012) Towards universal coverage: examining costs of illness, payment, and coping strategies to different population groups in southeast Nigeria. *Am J Trop Med Hyg* 86: 52-57.
- 41. Gopalan SS, Durairaj V (2012) Addressing women's non-maternal healthcare financing in developing countries: what can we learn from the experiences of rural Indian women? *PLoS One* 7: e29936.
- 42. Leive A, Xu K (2008) Coping with out-of-pocket health payments: empirical evidence from 15 African countries. *Bull World Health Organ* 86: 849-856.
- 43. Peters DH, Garg A, Bloom G, Walker DG, Briege WR, et al. (2008) Poverty and access to health care in developing countries. *Ann N Y Acad Sci* 1136: 161-171.
- 44. Xu K DB, Evans G, Carrin AM, Aguilar-Rivera P, Musgrave and T Evans (2003) Protecting households from catastrophic health spending. *Health Affairs*.