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Research Article

Utilization of Health Care and Burden of Out-of-Pocket Health Expenditure in Zimbabwe: Results from a National Household Survey

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Abstract—In the last decade, Zimbabwe has undertaken substantial changes and implemented new initiatives to improve health system performance and services delivery, including results-based financing in rural health facilities. This study aims to examine the utilization of health services and level of financial risk protection of Zimbabwe's health system. Using a multistage sampling approach, 7,135 households with a total of 32,294 individuals were surveyed in early 2016 on utilization of health services, out-of-pocket (OOP) health expenditure, and household consumption (as a measure of living standards) in 2015. The study found that the outpatient visits were favorable to the poor but the poorest had less access to inpatient care. In 2015, household OOP expenditure accounted for about one quarter of total health expenditure in Zimbabwe and 7.6% of households incurred catastrophic health expenditure (CHE). The incidence of CHE was 13.4% in the poorest quintile in comparison with 2.8% in the richest. Additionally, 1.29% of households fell into poverty due to health care–related expenditures. The study suggests that there are inequalities in utilization of health services among different population groups. The poor seeking inpatient care are the most vulnerable to CHE.

INTRODUCTION

Addressing inequality in access to health services and providing financial risk protection are two major, critical tasks to establish an effective, efficient, and functional health system. As part of the Sustainable Development Goals (SDGs) and universal health coverage (UHC) agendas,[1] many low- and middle-income countries have implemented health initiatives to improve access to basic health services for all and, additionally, provide financial risk protection to reduce out-of-pocket (OOP) health expenditure.

Keywords: catastrophic health expenditure, health financing, out-of-pocket expenditure, poverty, Zimbabwe

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During the 1980s and most of the 1990s, Zimbabwe's economy was on the path to middle-income status. The government of Zimbabwe invested in primary and preventive health care and rolled out primary health care services to within ten kilometers of at least 80% of the population. However, the deteriorating economic situation in the 1990s and the decline in government financing led public and not-for-profit health providers to introduce various forms of user fees. From 2009 onwards, when the Zimbabwean economy began to improve after the 2008 crisis, the recovery in social sectors showed a mixed picture with promising trends in some areas like infant/child mortality, but causes for concern in others, such as the high incidence of poverty and the low quality of reproductive health services and education. Between 2001 and 2010, the share of household OOP expenditures in total health expenditure increased, and government spending fell to low levels.

In 2008, public health services collapsed as a result of the financial crisis and Zimbabwe faced challenges in meeting some key health-related Millennium Development Goals (MDGs) as well as its own broad set of national health targets. Life expectancy at birth in 2015 was only 60.3 years,[2] with 65% of annual deaths attributed to communicable, maternal, perinatal, and nutritional illnesses in 2012.[3] Under-five mortality dropped from 84 in 2010–2011 to 69/1,000 live births in 2015 and infant mortality decreased from 57 to 50/1,000 live births during the same period, short of the MDG targets. In particular, Zimbabwe's high maternal mortality ratio, estimated at 651 deaths per 100,000 live births in 2015, in contrast to an MDG target of 174 per 100,000 live births, remains an urgent concern despite improvements from the 2010 estimate of 960 deaths per 100,000 live births.[2] Furthermore, Zimbabwe has the fifth highest HIV prevalence in sub-Saharan Africa, bringing with it a pernicious and costly lifelong HIV treatment burden. The Zimbabwean overextended health system is further compounded by accelerated burden of noncommunicable diseases (NCDs); in 2012, approximately 31% of total deaths in Zimbabwe were caused by NCDs.[3]

Total health expenditure per capita in Zimbabwe (103.8 United States Dollars [USD] in 2015) compares favorably with the sub-Saharan Africa average (84 USD), but spending is potentially regressive due to a high burden of household OOP expenditures at point of care. Zimbabwe's public health care spending per capita is one of the lowest among countries in the subregion and amounted to 8.72% in 2015. In the Southern African Development Community group, only the Democratic Republic of the Congo allocates fewer public resources for health as a share of total government spending than Zimbabwe. Despite comparable income levels, Mozambique, Madagascar, Zambia, Tanzania, Lesotho, and Malawi spend comparatively more on health than Zimbabwe, reflecting their governments' commitment to the sector.[4]

In 2015, 24% of health expenditures came from household OOP payments in Zimbabwe. External assistance was the biggest financing source (25%), whereas government spending comprised only 21% of all health spending.[5]

Prior studies suggest the existence of inequality in resources, access to and use of health services, as well as health outcomes between the rich and the poor. Zimbabwe has a large network of health facilities, with a higher per capita distribution of facilities in provinces with higher poverty incidence.[6] However, key health personnel, including medical doctors, nurses, and midwives, are more concentrated in areas with lower poverty incidence. The inequitable distribution of skilled health personnel compounds inequities in health outcomes. Poorer households typically rely on lower-quality, low-level facilities when seeking care, whereas richer people are more likely to use provincial or central hospitals as well as private services.[6]

Since 2010, the government of Zimbabwe has initiated health system reforms to improve access to health services and financial risk protection. Recent reforms aim at tackling core underlying health service delivery gaps and barriers that hinder utilization of health services by the poorest households. Results-based financing (RBF), combined with free health care for maternal and child health services, is one of the key reforms being implemented in Zimbabwe at the national scale to (1) increase demand for and utilization of priority maternal and child health services by poor households by removing financial barriers to accessing health services; (2) strengthen performance of health facilities, including through quality improvement; and (3) rebuild basic services that had collapsed in past years. After being piloted in the country, the RBF program was rolled out in all rural districts; it also benefits targeted low-income urban populations. A rigorous impact evaluation of RBF revealed key gains in selected health coverage and quality indicators, as well as improvement in equity in the use of health services.[7] Notably, the in-facility delivery rate increased by 14 percentage points.[7]

To better understand utilization of health care services in Zimbabwe and the degree of financial protection in the country, we used a national household survey to (1) examine the utilization of both inpatient and outpatient services, (2) estimate the incidence of catastrophic health spending, and (3) investigate the impoverishing impact of OOP health spending.

METHODS

In January 2016, the Zimbabwe National Statistics Agency (ZIMSTAT) conducted a national cross-sectional household survey, with the main purpose of investigating utilization of outpatient and inpatient health services and estimating related OOP spending.

Sampling and Sample Size

Originally, a total of 7,450 households were sampled for the household survey. All provinces in Zimbabwe are represented in the sample and the sample size for each province was proportional to the square root of the share of households in each province to the total number of households in Zimbabwe (see Table A1). A two-stage sampling process was conducted in each of the provinces, with the first stage being implemented at the enumerate area (EA) level and the second stage at the household level. EAs were selected using stratified random sampling and households within EAs were selected using systematic sampling. EAs were the primary sampling units and households were the secondary sampling units. The final sample consisted of 7,135 households with a total of 32,294 individuals from 373 EAs. More details on the sampling process were provided elsewhere.[5]

Measurement of Household Characteristics, Income, and Consumption

A survey was designed to collect required information to estimate OOP spending, as well as characteristics of households and household members. The questions for estimating income and consumption were adopted from the survey used for Zambia's national health accounts. The household characteristics included location of households (province) and household size. To assess income, the household head or most informative household member was asked about 13 income sources (including public and parastatal salaries, pensions, and sale of crops) and the amount received the month preceding the survey. Household consumption was estimated based on a one-month recall period for spending on 37 items (e.g., food, education, transport, rental, etc.). Monthly income and consumption were extrapolated to obtain annual household income and consumption. We used household consumption to measure living standard for the equity analysis, because consumption is less constrained than income for households with limited resources.[8] Individual characteristics included gender, age, relationship to head of household, education, and employment of household members.

Measurement of Utilization of Health Care and OOP per Visit or Admission

For outpatient visits, the recall period was four weeks. The number of outpatient visits, detailed information on the type of care, disease categories associated with the visit, and OOP spending on registration and consultation, drugs, medical investigation (e.g., lab tests, x-ray), food, and transportation, as well as in-kind payment for a maximum of four outpatient visits in the last four weeks were recorded. When a household member could not remember detailed spending by category, a lump sum estimate was used. OOP spending for each reported visit up to four visits in the last four weeks was then calculated by summing up all spending categories, and the average OOP spending per visit was then estimated. OOP spending for outpatient visits was estimated by multiplying the average OOP spending per visit by the number of outpatient visits over four weeks. The result was then extrapolated to 52 weeks to obtain the annual OOP for outpatient visits.

The estimation of OOP spending for inpatient admissions used an approach similar to that for outpatient visits described above, except that a recall period of one year was used and the detailed spending was recorded up to two admissions. The annual OOP spending for inpatient admissions was estimated by multiplying the average OOP per admission by the number of admissions in the last 12 months.

The total annual OOP health expenditure was estimated by summing annual OOP for outpatient visits and inpatient admissions for each individual. Data were aggregated at the household and national levels, weighted by the probability of a household withdrawing from the national population. The probability of sampling was estimated from Table A1.

Measurement of Burden of OOP: Catastrophic Health Spending and Headcount Index

The incidence of catastrophic health expenditure (CHE) was estimated as the share of households that spent more than 25% of total consumption (OOP expenditure included) on OOP expenditure on health. In the last decades, there have been several cutoff values used for defining CHE, including using OOP as a share of nonfood consumption expenditure[9] and OOP as a share of total consumption.[10] The cutoff values vary significantly when using the share of nonfood consumption, from 5% up to 40%. We primarily used the cutoff of 25% of total consumption to reflect recent developments in measuring catastrophic health spending.[9] Additionally, we provided the incidence of CHE using a

cutoff of 10% of total consumption because this cutoff is used for tracking the progress toward SDGs.

The poverty headcount index (incidence) is used to measure the impact of health spending on poverty. The incidence of poverty was measured under two scenarios: with OOP payments and without OOP payments. The difference in poverty head count measures under the two scenarios captures the impact of OOP health expenditure on poverty. We use the poverty line obtained from ZIMSTAT, which is equal to 96.6 USD of consumption per month per capita.[11] After removing 23 potential outliers (ratio of household consumption after excluding OOP health expenditure to the poverty line less than 2), we first estimated the incidence of poverty by including OOP health expenditure as household consumption; second, we estimated the incidence of poverty by excluding OOP health expenditure from consumption. We then calculated the difference between the two incidences as an indicator of the impoverishing impact of OOP health expenditure.

Analysis

We first calculated the utilization of inpatient and outpatient services by age, gender, and expenditure quintile. We then calculated total OOP health expenditure, incidence of catastrophic health spending, and poverty headcount.

We conducted a logistic regression (logit model) to estimate the determinants of catastrophic health spending. The dependent variable was whether a household incurred CHE (1 = yes, 0 = no), and the independent variables included characteristics of household head (e.g., age, gender, education, employment, and marriage, as well as household consumption). The full logistic regression model presented in (1) is

$$\begin{aligned}\mathrm{Ln}\left(\frac{P_{\mathrm{CHE}}}{1-p_{\mathrm{CHE}}}\right) = {} & \beta_0 + \beta_1 \mathrm{gender} + \beta_2 \mathrm{age} + \beta_3 \mathrm{age}^2 \\ & + \beta_4 \mathrm{household\ size} \\ & + \beta_5 \mathrm{education} + \beta_6 \mathrm{marriage} \\ & + \beta_7 \mathrm{employment} \\ & + \beta_8 \mathrm{consumption} + \beta_9 \mathrm{urban} \\ & + \beta_{10} \mathrm{inpatent\ care} \end{aligned} \quad (1)$$

where P_{CHE} is the probability of a household incurring CHE, and β is the coefficient or coefficient matrix for the associated variable or variable matrix.

We used the same set of independent variables and conducted a two-part model analysis to examine determinants of the occurrence of OOP expenditure using a logit model and predictors of total OOP expenditure once it occurred using a regression model. The simplified models are expressed in (2) and (3).

Part I:

$$\mathrm{In}\left(\frac{\mathrm{P}oop}{1-\mathrm{P}oop}\right) = YX \quad (2)$$

Part II:

$$\ln((\mathrm{OOP})|\mathrm{OOP}\rangle 0) \ = \Lambda \mathrm{X} \quad (3)$$

where P_{OOP} is the probability of a household incurring OOP expenditure, X is the same independent variable matrix as in (1), and Y and Λ are associated coefficient matrices. All data analyses were conducted using STATA 15 (StataCorp LLC, College Station, TX).

RESULTS

A total of 32,294 individuals (7,135 households) were sampled and included in the analysis. The average household size was 4.53, with a standard deviation of 2.16. Among individuals, 48.3% were males and 51.7% were females; 21.1% of the population was urban and the rest lived in rural areas. The average age was 23.6 years old (SD = 19.3). The share of individuals having preschool, primary, secondary, and tertiary school education was 13.2%, 41.0%, 35.6%, and 5.3%, respectively; another 4.7% of individuals were attending school at the time of the survey, and 0.2% individuals answered "do not know."

Outpatient Care

During the four weeks preceding the interview, 18.5% of individuals had sought outpatient care. A total of 5,633 outpatient visits were reported among the 32,294 individuals, with 0.174 visits per capita over the four weeks. This was equivalent to 2.26 visits per person per year. Table 1 shows the utilization of outpatient care by living standards (ranging from quintile one [poorest] to quintile five [richest] based on the consumption).

Overall, there is no consistent pattern of utilization of outpatient care across consumption groups. Among children under five, the third consumption quintile had the highest number of outpatient visit (0.267) and the next richest had the lowest (0.205). However, among the oldest age group (ages 65+) there was a more consistent pattern of demand of health services: the poorest quintile had the lowest number of visits with an average of 0.326 visits per person in four weeks and the fourth quintile had 0.462 visits per person in four weeks.

Age Group	Poorest (Quintile 1)	Next Poorest (Quintile 2)	Middle (Quintile 3)	Next Richest (Quintile 4)	Richest (Quintile 5)	Total	F Value
<5	0.233	0.245	0.267	0.205	0.241	0.238	1.70
5–19	0.130	0.125	0.102	0.085	0.085	0.107	7.39***
20–29	0.145	0.142	0.117	0.130	0.131	0.132	0.61
30–39	0.217	0.194	0.197	0.151	0.146	0.177	3.33**
40–49	0.195	0.275	0.278	0.218	0.201	0.232	2.54*
50–64	0.320	0.243	0.293	0.309	0.322	0.296	1.28
65+	0.326	0.341	0.431	0.462	0.387	0.380	2.08
Total	0.188	0.183	0.181	0.161	0.155	0.174	5.71***

*$P < 0.05$. **$P < 0.01$. ***$P < 0.001$.

TABLE 1. Utilization of Outpatient Care per Capita per Four Weeks by Expenditure Quintile

Across all age groups, outpatient visits were more frequently used by the poorest quintile (0.188 visits per person in four weeks in comparison with 0.155 in the richest quintile). The overall concentration index for outpatient visits was 0.029, suggesting that the utilization of outpatient care was pro-poor.

Inpatient Care

Among the 32,294 individuals, 2.48% (783 individuals) reported that they were hospitalized during the 12 months preceding the survey, with 0.03 admissions per capita per year (Table 2). The use of inpatient care increases with age, except for children under five, who had higher average hospital admissions than those aged 5–19 (0.021 versus 0.012 admissions per person per year). The oldest group (ages 65+) had an average admission of 0.174 per person per year.

Although the concentration index for inpatient care was estimated to be 0.015, suggesting an overall pro-poor pattern, the utilization of inpatient care for the poorest remained the most striking, with the lowest average number of admissions per person. The richest used more inpatient services than did the poorest (Table 2). The poorest quintile, on average, had 0.021 admissions per person per year compared to 0.036 (71.4% higher) for the richest. The population in the third consumption quintile had the second highest number of admissions per capita of 0.034.

Out-of-Pocket Spending

Total OOP was estimated at 343.7 million USD, equivalent to 24.90 USD per capita per year. As shown in Table A2, 73.59% of OOP expenditure was used for curative care and 9.91% was for long-term care. Expenditures on rehabilitative care, ancillary services, and medical goods were relatively low, accounting for 3.78%, 2.74%, and 1.77% of total OOP expenditure, respectively. About 88% of OOP expenditure was used for outpatient care and the remaining 12% was for inpatient care.

Table A3 shows OOP by diseases/conditions. Conditions with the highest OOP were hypertensive diseases; respiratory system diseases; accidents, poisoning, and injuries; and

Age Group	Poorest (Quintile 1)	Next Poorest (Quintile 2)	Middle (Quintile 3)	Next Richest (Quintile 4)	Richest (Quintile 5)	Total	F Value
<5	0.016	0.017	0.028	0.020	0.027	0.021	1.03
5–19	0.006	0.013	0.010	0.013	0.020	0.012	3.23*
20–29	0.026	0.026	0.040	0.033	0.042	0.034	1.03
30–39	0.045	0.056	0.045	0.044	0.043	0.046	0.29
40–49	0.021	0.054	0.048	0.037	0.036	0.040	1.30
50–64	0.056	0.043	0.079	0.053	0.082	0.062	1.10
65+	0.037	0.096	0.105	0.100	0.102	0.082	1.11
Total	0.021	0.029	0.034	0.030	0.036	0.030	3.72**

*$P < 0.05$. **$P < 0.01$.

TABLE 2. Utilization of Inpatient Care per Capita per Year by Income Quintile

Consumption Quintile	Total Consumption (USD)	OOP Expenditure (USD)	Total Consumption Excluding OOP (USD)	Percentage of Households Incurring OOP	OOP Expenditure as a Percentage of Total Consumption
1	199.8 ± 3.0	34.0 ± 6.1	165.9 ± 6.7	17.3	16.5
2	593.2 ± 3.5	75.5 ± 10.0	517.7 ± 10.5	22.4	12.7
3	1,212.1 ± 6.8	128.0 ± 16.1	1,084.1 ± 17.4	28.6	10.7
4	2,377.7 ± 11.6	115.2 ± 13.1	2,262.5 ± 17.1	26.7	5.0
5	7,341.9 ± 266.7	203.8 ± 16.3	7,138.1 ± 266.0	34.8	2.8
Average	2,404.4 ± 64.3	112.5 ± 5.9	2,291.8 ± 64.0	26.1	9.4

[a]Total consumption, OOP expenditure, and total consumption excluding OOP were measured per household per year.

TABLE 3. Consumption and Out-of-Pocket (OOP) Expenditure by Quintile[a]

intestinal infectious diseases, with shares of 11.93%, 9.27%, 9.87%, and 6.14%, respectively. HIV/AIDS accounts for 2.23% of total health OOP expenditure. Because 31% of expenditure was not categorized according to disease, we could not include the category of disease as a predictor of CHE.

Table 3 shows a summary of indicators for consumption and OOP expenditure. Total yearly consumption per household was highly skewed, with a mean of 2,404 USD and median of 1,186 USD. Yearly OOP expenditure per households averaged 112 USD, accounting for 9.4% of yearly total consumption. Although households with higher total consumption tended to incur OOP, OOP expenditure as a percentage of total consumption declined, from 16.5% among the poorest to 2.8% among the wealthiest.

Determinants of Out-of-Pocket Spending

Table 4 shows the results from the two-part model on determinants of incurring OOP expenditure and predictors for the amount of OOP if it occurred. Larger household size, households in urban areas, and a higher consumption level were associated with a higher chance of incurring OOP and higher amount of OOP expenditure. For example, compared to the poorest quintile group, the second poorest quintile group had 26% (exp(0.236) 1) higher odds of incurring OOP spending and 37.2% higher OOP expenditure occurred. Age and education were not associated with the occurrence of OOP but were associated with the amount of OOP when it occurred.

Catastrophic Expenditure and Impoverishing Effect of OOP Health Expenditure

Using the cutoff of 25% of total consumption, we estimated that 7.6% of households in Zimbabwe incurred CHE in 2015. The poorest suffered the most, with 13.4% of households having CHE, in contrast with 2.8% of households in the richest quintile (Table 5). When the cutoff of 10% of total consumption was used, the overall incidence of CHE was estimated to be 12.6% in Zimbabwe, with 16.7% and 9.4% in the poorest and wealthiest quintiles, respectively.

Figure 1 shows that the OOP drove 1.29% of households into poverty, with a 95% confidence interval of (1.02%, 1.56%), which is equivalent to 179,868 individuals who fell into poverty in 2015 in Zimbabwe due to health expenditure. As a result, the poverty rate increased from 55.39% to 56.69%. If outliers were included, OOP would increase the poverty rate by an additional 1.36%.

Determinants of Catastrophic Health Spending

Table 6 shows the determinants of CHE. We found that household size, consumption, residing in urban areas, and having inpatient care were the major determinants of CHE. One more member in the household was associated with an 8.4% increase in odds of incurring CHE ($P < 0.05$). Compared to the poorest households, all other groups of households had a lower odd of incurring CHE ($P < 0.001$). The odds decreased as the households became wealthier. All other things being equal, living in urban areas was associated with a 48.5% higher odds of incurring CHE ($P < 0.05$). Having inpatient care was associated with 6.03 times higher risk of incurring CHE ($P < 0.001$). Education, marriage, and employment were not statistically significant at a significance level of 0.05.

DISCUSSION

This study provides evidence on utilization of care, burden of OOP health spending in terms of CHE, and impoverishment due to OOP health expenditure in Zimbabwe.

Determinants of Risk of OOP (Logit Model)	Coefficient	SE	*t*	*P* > *t*	95% Confidence Interval	
Female	0.107	0.093	1.150	0.251	0.076	0.290
Age	0.001	0.013	0.080	0.940	0.025	0.026
Age^2	0.000	0.000	0.710	0.477	0.000	0.000
Household size	0.108	0.016	6.760	0.000	0.077	0.140
Preschool	Reference					
Primary school	0.220	0.276	0.800	0.426	0.322	0.762
Secondary	0.316	0.283	1.120	0.264	0.239	0.871
Tertiary	0.296	0.299	0.990	0.322	0.290	0.882
Never married	Reference					
Married	0.205	0.169	1.210	0.227	0.127	0.537
Divorced/separated	0.035	0.189	0.180	0.855	0.336	0.405
Paid employee						
Own account workers	0.074	0.084	0.880	0.378	0.238	0.090
Not employed	0.037	0.105	0.350	0.727	0.243	0.169
Quintile 1 (consumption)	Reference					
Quintile 2	0.236	0.118	2.000	0.045	0.005	0.467
Quintile 3	0.536	0.116	4.610	0.000	0.308	0.764
Quintile 4	0.366	0.124	2.960	0.003	0.124	0.609
Quintile 5	0.622	0.135	4.630	0.000	0.359	0.886
Urban	0.343	0.086	3.990	0.000	0.175	0.512
Inpatient care	0.000	(omitted)				
Constant	2.946	0.421	6.990	0.000	3.772	2.120
ln(OOP)|OOP > 0 (regression model)						
Female	0.019	0.093	0.200	0.842	0.164	0.201
Age	0.028	0.013	2.270	0.023	0.053	0.004
Age^2	0.000	0.000	3.570	0.000	0.000	0.001
Household size	0.060	0.017	3.530	0.000	0.027	0.093
Preschool	Reference					
Primary school	0.511	0.251	2.030	0.042	1.003	0.018
Secondary	0.388	0.255	1.520	0.128	0.887	0.111
Tertiary	0.069	0.267	0.260	0.795	0.454	0.593
Never married	Reference					
Married	0.170	0.141	1.210	0.227	0.447	0.106
Divorced/separated	0.235	0.162	1.450	0.147	0.553	0.083
Paid employee	Reference					
Own account workers	0.032	0.071	0.460	0.648	0.171	0.107
Not employed	0.043	0.094	0.450	0.651	0.142	0.227
Quintile 1 (consumption)	Reference					
Quintile 2	0.372	0.118	3.150	0.002	0.140	0.604
Quintile 3	0.611	0.111	5.500	0.000	0.393	0.828
Quintile 4	0.611	0.113	5.420	0.000	0.390	0.832
Quintile 5	1.001	0.117	8.520	0.000	0.770	1.231
Urban	0.328	0.070	4.690	0.000	0.191	0.465
Inpatient care	0.029	0.041	0.720	0.469	0.109	0.050
Constant	4.699	0.387	12.150	0.000	3.941	5.458

TABLE 4. Determinants of Out-of-Pocket (OOP) Health Expenditure (Two-Part Model)

Utilization of outpatient and inpatient care is not distributed equally among different populations. Those in the poorest quintile seek slightly more outpatient care than those in the richest quintile. By contrast, the richest quintile had 71.4% more inpatient admissions than the poorest. In total, OOP spending was estimated at 25 USD per person per year, and OOP health spending results in an additional 1.29% of households falling into poverty.

	Poorest (Quintile 1)	Next Poorest (Quintile 2)	Middle (Quintile 3)	Next Richest (Quintile 4)	Richest (Quintile 5)	Total	F Value
Incidence of CHE (25% of total consumption)	13.38%	8.68%	8.37%	5.20%	2.77%	7.64%	28.07***
Incidence of CHE (10% of total consumption)	16.67%	12.98%	14.10%	10.20%	9.36%	12.63%	10.76***

***$P < 0.001$.

TABLE 5. Incidence of Catastrophic Health Expenditure (CHE) by Consumption Quintile

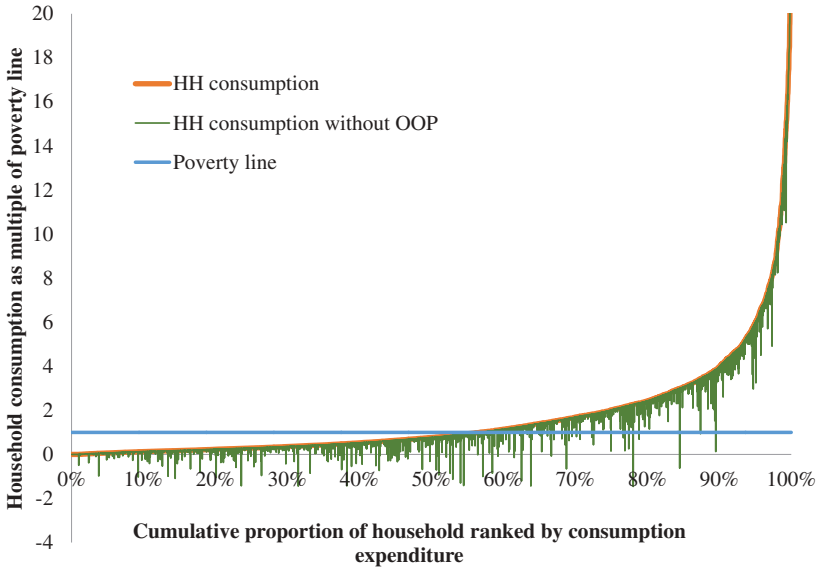

FIGURE 1. The Impact of Out-of-Pocket (OOP) Health Expenditure on Poverty

The study shows that there are substantial inequalities in utilization of inpatient care: The poorest utilize inpatient care to a much lesser extent than the richest, although they tend to use slightly more outpatient care. The findings of lower use of inpatient care by the poor are consistent with that found in Afghansitan,[12] China,[13] and Ethiopia.[14] In Zimbabwe, the exemption of user fees for maternal and child health services, coupled with RBF in all primary health care facilities and some district hospitals, removed the financial barrier to access to health care services, thus explaining the equitable distribution of utilization of outpatient health services. This is in contrast with inpatient care, because hospitals charge user fees. This is consistent with earlier studies in Zimbabwe that found that the poorest households relied on primary health care facilities and the richest households had greater hospital utilization, where the quality of care provided is better and range of services provided is much wider.[6] Additionally, high hospital treatment costs could deter the poor from using inpatient care, and the relatively low utilization of inpatient care among the poor may suggest a potential high incidence of foregone care for inpatient services due to financial barriers. A study has shown that OOP could be one of the major reasons why patients forgo health care.[6] Unfortunately, this study did not allow us to estimate the incidence of forgone care due to the lack of relevant questions in the survey. This is the major limitation of this study, preventing us from making more meaningful comparisons of utilization of care among different expenditure groups.

The emerging NCD disease burden is confirmed by our findings, which show that OOP spending has been concentrated on diseases such as hypertension.[5] The OOP of household members with NCDs could result in CHE. A study in Nepal showed that a household affected by chronic illness such as diabetes, heart disease, asthma, or hypertension is more likely to incur CHE.[15] Zimbabwe is also facing an increasing burden from NCDs.[16] Cerebrovascular disease is one of the leading causes of disability-adjusted life years.[17]

Determinants of Risk of CHE (Logit Model)	Odds Ratio	SE	t	$P > t$	95% Confidence Interval	
Female	1.023	0.154	0.150	0.878	0.762	1.375
Age	0.998	0.019	0.110	0.911	0.962	1.036
Age^2	1.000	0.000	1.380	0.166	1.000	1.001
Household size	1.084	0.027	3.220	0.001	1.032	1.139
Preschool	Reference					
Primary school	0.736	0.203	1.110	0.266	0.428	1.264
Secondary	0.866	0.253	0.490	0.623	0.489	1.536
Tertiary	0.965	0.353	0.100	0.923	0.472	1.976
Never married	Reference					
Married	0.963	0.260	0.140	0.889	0.568	1.634
Divorced/ separated	0.805	0.242	0.720	0.471	0.447	1.450
Paid employee	Reference					
Workers in the informal sector	0.874	0.122	0.960	0.335	0.666	1.149
Not employed	1.017	0.165	0.110	0.916	0.740	1.398
Quintile 1 (consumption)	Reference					
Quintile 2	0.589	0.083	3.760	0.000	0.448	0.776
Quintile 3	0.497	0.075	4.650	0.000	0.371	0.668
Quintile 4	0.255	0.046	7.570	0.000	0.179	0.363
Quintile 5	0.099	0.026	8.860	0.000	0.059	0.165
Urban	1.485	0.239	2.460	0.014	1.084	2.035
Inpatient care	7.029	0.931	14.730	0.000	5.422	9.112
Constant	0.077	0.044	4.530	0.000	0.025	0.234

TABLE 6. Determinants of Catastrophic Health Spending (Logit Model)

Given the increasing burden of chronic diseases in Zimbabwe,[16] a focus on preventive care to avert high treatment costs of NCDs and a more balanced budget with more funds provided for preventive services could help avoid high OOP and CHE.[18]

This study also found that OOP spending plays a significant role in financing the health system in Zimbabwe. OOP spending amounts to 25 USD per person per year, accounting for 24% of Zimbabwe's total health expenditure.[5] The share of OOP in total health expenditure in Zimbabwe is similar to that in Tanzania (23.31%) and Angola (23.96%) but is lower than that in the Democratic Republic of the Congo (38.77%) and Madagascar (41.36%).[19] The high share of OOP spending affects utilization of health care, particularly for the poor who use inpatient care, which incurs higher costs.

Inpatient care is significantly associated with CHE, with 6.03 times higher odds of incurring CHE. OOP expenditure per inpatient admission was estimated to be 103 USD, compared to 9.64 USD per outpatient visit. OOP expenditure is much higher for inpatient care. OOP expenditure per inpatient admission is equivalent to 51.4% of average monthly consumption per household. Additionally, a hospitalized patient is absent from work, and forgone earnings may reduce consumption due to financial constraints, leading to a higher chance of incurring CHE. As mentioned previously, chronic illness is the major reason for hospitalization. Focusing on preventive care and prevention of chronic diseases (e.g., behavior change and lifestyle modification) and developing mechanisms to reduce OOP for expensive inpatient care would help alleviate the concern of CHE.

The poor suffer most from the high OOP expenditure, with a much higher incidence of CHE. Although the wealthier group tends to have a higher chance of spending OOP, the amount of OOP expenditure as a percentage of total consumption is lower that that among the poor. In fact, given that some poor households may not seek care due to high OOP spending, the financial burden could be even higher for the poor if this factor is accounted for. Developing financial protection for the poor is thus critical. Prior to 2012, mechanisms to protect the poor against financial loss in the event of illness were limited in Zimbabwe: according to the 2014 Labor Survey, only 9% of the total population, primarily the rich, were covered under any form of health insurance.[20] Accordingly, direct user fees remain an important source of funding for district, mission, central, and local government health facilities.

In a country like Zimbabwe where almost 90% of the population is in the informal sector, expanding employer-based health insurance to increase financial protection cannot be a short- to medium-term option to reduce the financial burden of health care spending on the poorest households. Given the limited financial resources available, in 2012, Zimbabwe started by offering a limited package of free basic health services to reduce OOP through removal of user fees at primary health care facilities, combined with RBF for maternal and child health services in rural areas[7] or a voucher system for maternal services in urban areas. RBF schemes covered 3.5 million people in 2012, representing 23.7% of the national population. As of March 2016, the voucher schemes had helped more than 2,500 mothers access needed health services, although coverage remains low.[21]

OOP spending on health drove 1.29% households into poverty, increasing the poverty rate from 55.39% to 56.69%. This may still be in a lower bound of the estimate. If households expect OOP expenditures, they may reduce expenditures in other categories and thus reduce total consumption. This could drive some households into poverty before OOP expenditure incurs and underestimate the impact of OOP expenditure on impoverishment. The 1.29% is similar to that reported in Ghana: 1.95% among the rural population and 1.01% among the urban population.[22] Poverty and utilization of health services affect each other.[10] Making users of health services pay OOP impoverishes some households that choose to seek services.

Such impoverishment, in turn, has an impact on a population's health and affects utilization of health care services. This points to the need to develop innovative ways to reduce the financial burden on households, particularly for the poorest, to improve equity in access to health care services and improve financial protection. In the short term, this includes improving resource allocation across provinces and user fee exemptions for some population groups and or/services. However, the country needs to explore ways to expand prepayment mechanisms that eliminate user fees from the point of care for priority diseases beyond maternal and child health services. becoming increasingly necessary, because the accelerating incidence of NCDs requires a more comprehensive policy response to address the financial burden that households are experiencing and to improve the provision of NCD services to all segments of the population.

CONCLUSIONS

This study revealed inequality in utilization of health care services in Zimbabwe. The poorest use much less inpatient care than the richest do, and the poor are provided with limited financial protection against CHE. Though OOP expenditure remains an important mechanism to finance the health system in Zimbabwe, it also increases the risk of household impoverishment. For Zimbabwe to achieve UHC, policy makers and development partners should carefully explore options for financing health care that minimizes user fees at the point of care, promote equitable access to inpatient care, and expand access to preventive care. Some of these financing approaches are well articulated in the government of Zimbabwe's 2018 health financing strategy (e.g., RBF coupled with user fee removal, health insurance, etc.), the implementation of which will be critical to Zimbabwe's progress toward key national and global SDG targets. As is the case for other low- and middle-income countries, financial protection for the poor is a major concern and should remain at the heart of Zimbabwe's health financing reforms. Although OOP expenditure and CHE remain concerns in Zimbabwe, as many low- and middle-income countries are moving toward UHC and aiming to achieve SDGs by 2030, initiatives (e.g., RBF and the voucher scheme) that Zimbabwe has taken to address financial risks among populations, particular the poor, provide valuable lessons for other countries to design and implement tailored financing mechanisms to reduce OOP expenditure and CHE.

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DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

None of the authors have any conflicts of interest to report.

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APPENDIX

Province	Total Number of Households	% of Households	Square Root of the Share	Planned Sample Size	Actual Sample Size
Bulawayo	165,345	0.05	0.23	558	533
Manicaland	410,082	0.13	0.37	879	850
Mashonaland Central	263,923	0.09	0.29	705	559
Mashonaland East	326,825	0.11	0.33	785	792
Mashonaland West	345,223	0.11	0.34	807	800
Matabeleland North	160,912	0.05	0.23	551	541
Matabeleland South	154,875	0.05	0.23	540	540
Midlands	359,572	0.12	0.34	823	819
Masvingo	338,153	0.11	0.33	798	723
Harare	534,106	0.17	0.42	1,003	978
Grand total	3,059,016	1.00	3.10	7,450	7,135

TABLE A1. Sampling of Households for the Survey

	Share of Outpatient Care (%)	OOP for Outpatient Care (USD)	Share of Inpatient Care (%)	OOP for Inpatient Care (USD)	Total (USD)	% of Heath Spending
Curative care	70.16	222,532,336	74.90	30,421,979	252,954,315	73.59
Rehabilitative care	1.73	9,375,152	5.43	3,617,893	12,993,045	3.78
Long-term care	9.52	33,038,230	5.12	1,040,068	34,078,298	9.91
Ancillary services	1.01	9,218,738	0.56	196,751	9,415,489	2.74
Medical goods	1.71	6,064,399	0.19	3,867	6,068,266	1.77
Preventative care	9.78	2,466,154	0.76	86,780	2,552,934	0.74
Other services	6.08	19,662,098	13.03	6,018,291	25,680,389	7.47
Total	100.00	302,357,107	100.00	41,385,629	343,742,736	100.00

TABLE A2. Out-of-Pocket (OOP) Health Expenditure by Function

Disease/Condition	% of Outpatient Care	OOP for Outpatient Care (USD)	% of Inpatient Care	OOP for Inpatient Care (USD)	Total OOP (USD)	%
Tuberculosis	1.48	5,120,422	2.59	629,883	5,750,305	1.67
Malaria/fever	7.77	15,758,161	5.82	965,187	16,723,348	4.87
Intestinal infectious diseases	10.40	18,242,120	5.11	2,861,197	21,103,317	6.14
Human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS)	6.07	7,450,080	2.76	222,917	7,672,997	2.23
Sexually transmitted infections (syphilis, etc.)	0.29	586,091	0.00	—	586,091	0.17
Diseases of neoplasms (tumors)	0.73	2,292,104	1.82	978,096	3,270,200	0.95
Diabetes	1.47	13,870,916	2.77	406,155	14,277,071	4.15
Nutritional diseases	0.41	2,443,046	0.36	16,213	2,459,259	0.72
Mental and behavioral disorders	0.94	3,425,010	1.52	551,079	3,976,089	1.16
Hypertensive disease	5.80	39,656,413	5.29	1,345,411	41,001,824	11.93
Heart disease	1.03	9,990,117	0.88	444,318	10,434,435	3.04
Respiratory disease	12.53	29,408,743	7.75	2,460,514	31,869,257	9.27
Digestive system disorders	3.40	16,895,942	4.07	1,865,647	18,761,589	5.46
Pregnancy, child birth, family planning	3.26	15,430,940	12.97	5,235,854	20,666,794	6.01
Skin diseases	4.04	9,571,294	3.16	627,024	10,198,318	2.97
Accidents, poisoning, and injuries	4.98	27,718,455	9.76	6,216,167	33,934,622	9.87
Eye diseases	3.50	15,415,836	2.36	726,154	16,141,990	4.70
Other	31.90	69,081,415	31.00	15,833,812	84,915,227	24.70
Total	100.00	302,357,105	99.99	41,385,628	343,742,733	100.00

TABLE A3. Out-of-Pocket (OOP) Health Expenditure by Disease