

# Determinants of out-of-Pocket Healthcare Expenditure by Households in Sierra Leone

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## ABSTRACT

The study sought to identify the determinants that influence Sierra Leonean households' out-of-pocket healthcare expenditure. The research explicitly examined the demographic and socioeconomic determinants that impact out-of-pocket healthcare expenditure by households in Sierra Leone. The study was based on the positivism philosophy and used secondary data from the 2018 Sierra Leone Household Integrated Survey to address the study objectives. Logistic regression analysis was conducted to see whether there were any relationships between the dependent and independent variables. The analysis revealed that Sierra Leone's out-of-pocket healthcare expenditure is influenced by several demographic and socio-economic determinants which should be monitored by the policymakers. Sierra Leone households' out-of-pocket healthcare expenditure is influenced by the household size ( $p < 0.001$ ), place of residence ( $p=0.03$ ), employment status of the head of household ( $p=0.008$ ), health provider consultation ( $p < 0.001$ ) and wealth quintile ( $p < 0.001$ ). The government should continue to identify and address the main causes of high OOP healthcare expenditure. A concerted effort is necessary to reduce high out-of-pocket health expenditures by improving prepaid health payment arrangements. The study provides information that governments may use to establish policies that reduce the financial burden that families endure when seeking medical care. To address structural determinants of access to healthcare, such as availability, distribution, accessibility, and quality, regardless of an individual's location or socioeconomic status, the government could implement policies and activities aimed at increasing the availability, accessibility, and quality of healthcare services without the households suffering financial burden. The study encountered limitations inherent in the use of secondary data; however, these constraints do not undermine the validity of the findings. Such estimations remain crucial in advancing research on healthcare financing, providing valuable insights despite the methodological challenges associated with secondary data sources.

**Keywords:** out-of-pocket expenditure, household, healthcare, Sierra Leone

## BACKGROUND

Healthcare financing plays a crucial role in supporting health systems. It ensures that funding is made available, the providers get the right financial incentives and “that all individuals have access to effective public health and personal health care” (World Health Organization, 2010b). To achieve universal health coverage (UHC), sustainable and equitable financing of the health system is important (Cheng et al., 2022). Health financing is meant to raise sufficient funds and use them efficiently for the health system but this should be done equitably (World Health Organization, 2010a). Equitable utilization of the available funds would contribute to the protection of the population from incurring financial hardships when accessing healthcare services. General taxation, social health insurance, private health insurance, and out-of-pocket (OOP) payments are the primary sources of healthcare financing (Łyszczarz & Abdi, 2021).

Overdependence on out-of-pocket (OOP) spending limits access to care for the uninsured or underinsured population. This has an impact on health, increases poverty, and worsens health and socioeconomic inequalities not only in low- and middle-income countries but also in high-income countries (Ke et al., 2011). Scholarly evidence suggests that OOP payments are inefficient and inequitable methods of financing healthcare (Asante et al., 2016). To achieve universal health coverage (UHC), the population should be protected from financial hardship as a result of using healthcare services (Nundoochan et al., 2019). OOP is commonly associated with financial hardship.

In most countries, the main form of health financing involves direct payments, such as over-the-counter payments for medication, and fees for doctors and services (Mihaylova et al., 2011). The increase in out-of-pocket medical expenditures remains one of the world's biggest problems (Muremyi et al., 2020). In 2010, the World Health Organization estimated that each year, 100 million people are pushed into poverty and 150 million suffer financial catastrophe because of out-of-pocket expenditure on health services (Mihaylova et al., 2011). In many low- and middle-income countries (LMICs), out-of-pocket health payments represent a substantial portion of household expenditures. The OOP health payments are burdensome for several households and mostly act as a barrier to accessing healthcare (Gage et al., 2021).

While healthcare access has increased over the past twenty years, the incidence of catastrophic health expenditure has also increased alongside it (World Health Organization, 2019). The incidence of catastrophic out-of-pocket health payments which is defined by the World Health Organization as exceeding 40% of household income, is linked to a cycle of poverty because households have to reduce spending on other necessities such as food and schooling (Jödicke et al., 2019). There is empirical evidence of high OOP payments for healthcare in low-income countries, even in public sector facilities where clients are exempted from user fees (Kruk et al., 2008). Research exploring the determinants affecting OOP payments in these settings largely examined demand-side characteristics such as the patient's age, education and employment (Kumara & Samaratunge, 2016). However, there is limited evidence regarding the extent to which OOP payments are correlated with socio-economic determinants and which of the determinants between demographic and socio-economic determinants have the greater impact on OOP healthcare expenditure, especially in Sierra Leone.

The relatively high out-of-pocket expenditure within the past two decades contributes to household financial hardship or catastrophe for essential healthcare services. It is estimated that 3.7 billion people are at risk of catastrophic expenditure globally (Saksena et al., 2014). Over the years, out-of-pocket (OOP) healthcare spending has consistently remained the major source of financing the healthcare system in Sierra Leone. According to the World Bank, in 2020 out-of-pocket spending contributed to 55.7% of the total health expenditure. Though it dropped from 75.7% in 2000 to 55.7% in 2020, it is still relatively high (World Bank, 2020).

The high OOP expenditure as a percentage of total healthcare spending and OOP expenditure per capita has led to inequities in the healthcare financing system, especially in the absence of a strong social financial protection system for the vulnerable, who face challenges in accessing healthcare (Ghoshi, 2011). Despite the high out-of-pocket expenditure on health care, there is limited evidence on its determinants in Sierra Leone. In 2017, the government of Sierra Leone established through an Act of Parliament, the Sierra Leone Social Health Insurance Authority whose mandate was to facilitate the establishment of the Sierra Leone Social Health Insurance Scheme (SLeSHI). SLeSHI was established but has not been implemented. The government has not yet finalized the best implementation approaches. The results from the current study will provide the government and other policymakers with determinants to consider when finalizing the implementation approaches for SLeSHI.

## Objectives

The main objective of the study was to assess the determinants of out-of-pocket expenditures by Sierra Leonean households. Specifically, the study sought to identify the demographic determinants affecting the out-of-pocket healthcare expenditure by households in Sierra Leone. Additionally, the research aimed to assess the socio-economic determinants influencing the out-of-pocket healthcare expenditure among those households.

## METHODOLOGY

This section focuses on the study methodology, with a particular emphasis on the research design, data collecting and analysis procedures, and ethical issues, which are discussed below.

## Research Design

The study was grounded in the positivism philosophy, which is particularly suitable for identifying the determinants of out-of-pocket healthcare expenditure in Sierra Leone. Positivism emphasizes the use of empirical evidence and quantifiable data to uncover objective truths about social phenomena. The research used secondary data from the 2018 Sierra Leone Integrated Household Survey (SLIHS), a nationally representative retrospective quantitative cross-sectional study. The SLIHS used a two-stage stratified cluster random sampling technique, selecting households based on localities used as Enumeration Areas (EAs) in the national housing and population census of 2015. The probability proportional to size (PPS) method was used to select 684 enumeration areas (EAs) as survey clusters. A total of 6,840 households, including men and women, were considered for the study.

The positivist approach is justified in this context as it allows for the application of rigorous statistical analyses, such as logistic regression, to uncover the underlying determinants of out-of-pocket healthcare expenditure (Asra & Wijesinghe, 2022; Edoa et al., 2017). The focus on quantitative data facilitates the identification of patterns and relationships that can inform policymakers about the socioeconomic and demographic factors impacting healthcare costs. Moreover, by using a nationally representative dataset, the study enhances the generalizability of its findings, making them relevant for broader applications in healthcare policy and planning. Overall, the positivist philosophy underpins the study's empirical approach, ensuring that the conclusions drawn are based on solid evidence and can contribute meaningfully to understanding healthcare financing in Sierra Leone.

## Data collection process/data extraction

The 2018 SLIHS collected data on health, household income, consumption and expenditure, demographics, and education. For this study, relevant data was retrieved from the 2018 SLIHS dataset in STATA format. The information was gathered from Statistics Sierra Leone's website. Only 15 variables were chosen from the numerous ones. The data was then re-cleaned, re-classified, and re-coded as needed.

## Data Analysis Techniques

The data were analyzed using STATA version 15, focusing on out-of-pocket healthcare spending. This included all health and medical care expenditures paid to health facilities used by individuals in the household. Descriptive statistics were used to analyze individual and household characteristics, while inferential statistics assessed the determinants of out-of-pocket healthcare expenditure. A logistic regression model was used to examine the determinants of out-of-pocket health expenditures, including household size, head education, health insurance coverage, socio-economic status, and employment status. The logistic regression model was used because of its suitability to analyze a binary dependent variable, such as whether households incur significant out-of-pocket healthcare expenses. This model is ideal for estimating the likelihood of an event based on various factors, such as socioeconomic status, household size, and health insurance coverage. Additionally, similar studies have used the same model (Babikir et al., 2018; Opeloyeru & Lawanson, 2023; Sriram & Albadrani, 2022). The data was collected in local currency and converted to US dollars using the average exchange rate for 2018.

Missing values can be problematic because they reduce sample size and may introduce bias into the study data. Values can be missing either randomly, due to unintentional non-responses, or non-randomly, due to intentional omissions, often in sensitive areas.

In the current study's data set, a few missing values were identified using STATA and appeared to be random, as no specific pattern was found. During data cleaning, missing values must be addressed. STATA offers three options for this:

1. Listwise Deletion: Removes respondents with any missing values, potentially losing a lot of data.
2. Pairwise Deletion: Removes only the specific missing values, retaining more data, which is advantageous for small samples with many missing values.

3. Imputation: Replaces missing values with mean scores or regression estimates.

The researcher used the pairwise deletion method to retain as much data as possible.

### Ethical Considerations

The study used public domain, anonymized secondary data without ethical concerns, ensuring no harm or injury to respondents who provided data for SLHIS 2018. The anonymized data is available in the public domain on Statistics Sierra Leone [website](#).

## RESULTS

This section presents the results of the study by objectives.

### Demographic characteristics of the households

Demographic characteristics describe attributes such as age, gender, ethnicity, or income. Before conducting inferential statistical analysis, the descriptive statistics of the study sample were examined, summarizing demographic variables like age, gender, educational status, employment status, wealth quintile, household size, place of residence, region, presence of a sick person, and health insurance status. The marital status of the household head was not collected, and the results are displayed in Table 1 as frequencies and percentages.

Table 1: Demographic characteristics of the households

Variable	Number	Percent
<b>Age of household head</b>		
15-24	197	2.9
25-34	1,341	19.7
35-44	1,906	28.0
45-54	1,532	22.5
55 and above	1,834	26.9
<b>Sex of household head</b>		
Female	1,713	25.2
Male	5,097	74.8
<b>Educational Status of Household Head</b>		
None	3,567	52.4
Primary incomplete	559	8.2
Primary complete	221	3.3
Secondary incomplete	1,371	20.2
Secondary complete	237	3.5

Post-secondary technical/vocational	598	8.8
University	252	3.6
<b>Employment status of household head</b>		
Employed	5,841	86.2
Not employed	938	13.8
<b>Wealth quintile</b>		
Poorest	1,011	14.9
Poorer	1,045	15.4
Middle	1,264	18.6
Richer	1,431	21.0
Richest	2,059	30.1
<b>Household size</b>		
1-5	3,571	52.4
6-10	2,927	43.0
>10	312	4.6
<b>Region</b>		
East	1,327	19.5
North	1,238	18.2
North West	908	13.3
South	1,705	25.0
West	1,632	24.0
<b>Place of residence</b>		
Rural	3,432	50.4
Urban	3,378	49.6
<b>Presence of a sick person</b>		
Yes	6,838	99.97
No	2	0.03
<b>Consulted health provider</b>		

Yes	4,489	65.6
No	2,351	34.4
<b>Whether there is anyone in the household with health insurance</b>		
Yes	1,697	24.8
No	5,143	75.2

As shown in Table 1, fifty-two percent of the household heads did not have any form of education and 31% had attained at least primary education. Further analysis showed that 48% of the male household heads and 66% of the female household heads did not attain any education ( $p < 0.001$ ). Despite the low educational status, most of the household heads (86.2%) were employed, either formally or informally. The wealth quintile was calculated based on the household ownership of productive assets (axe, livestock, hoe, tractor, etc), non-productive assets (radio, television, refrigerator, motorbike, bicycle, etc) and household utilities (types of water supply, toilet, flooring, house walls, land ownership, etc). Table 1 shows that most of the households were in the richest wealth quintile (30.1%) and the least (14.9%) in the poorest wealth quintile. Most of the households (52.4%) had a household size of between 1-5 members. Further analysis showed that the mean household size was 5.7 (sd: 2.986). The mean number of adult members of the household was 4.3 (sd: 2.267) and that of child members of the household was 2.7 (sd: 2.005).

The southern region had the highest number of households selected for the survey (25%), followed by the Western region (24%), East (19.5%), North (18.2%) and lastly the Northwest (13.3%). This highlights that the results of the survey can be attributed to all five regions of Sierra Leone.

Almost all the households (99.97%) had at least one person who felt sick in the last 4 weeks before the survey. One in every three (65.6 percent) households consulted a health provider, implying that some of the households with at least one sick person in the four weeks preceding the survey did not consult a health provider. There was a relatively equal proportion between rural and urban households in the study. The presence of health insurance is crucial as it contributes to reduced financial healthcare burden. One in four households (24.8%) had someone with healthcare insurance.

### Demographic determinants affecting out-of-pocket healthcare expenditure

Five demographic determinants were examined to see how they impact out-of-pocket healthcare spending in Sierra Leone. The logistic regression results for these variables are reported in Table 2. The independent variable "presence of a sick person" was removed due to collinearity.

Table 2: Logistic regression of demographic determinants associated with OOP in Sierra Leone

Variable	Odds Ratio	Std. Err.	P-value	95% Confidence Interval
<b>Age of household head</b>				
15-24 (reference)				
25-34	1.032895	0.1623195	0.837	0.7590835 - 1.405473
35-44	1.019313	0.1581874	0.902	0.7519858 - 1.381675
45-54	0.996222	0.1568432	0.981	0.7317195 - 1.356337
55 and above	0.847338	0.1319669	0.287	0.6244361 - 1.149808

<b>Sex of household head</b>				
Female (reference)				
Male	1.036772	0.0583238	0.521	0.928536 - 1.157624
<b>Educational Status of Household Head</b>				
None				
Primary incomplete	1.431742	0.130541	<0.001	1.197444 - 1.711884
Primary complete	0.998252	0.139603	0.990	0.758929 - 1.313042
Secondary incomplete	0.981928	0.062997	0.776	0.865903 - 1.113500
Secondary complete	1.125817	0.151487	0.378	0.864833 - 1.465559
Post-secondary technical/vocational	1.175621	0.104138	0.068	0.988251 - 1.398517
University	0.943695	0.124568	0.661	0.728573 - 0.222336
<b>Household size</b>				
1-5 (reference)				
6-10	1.727830	0.0874212	<0.001	1.564709 - 1.907956
>10	2.612467	0.3166672	<0.001	2.060030 - 3.313052
<b>Place of residence</b>				
Rural (reference)				
Urban	1.115805	0.0564361	0.030	1.010498 - 1.232086
<b>Consulted health provider</b>				
No (reference)				
Yes	38.2887	3.927136	<0.001	31.31598 - 46.81396

Table 2 reveals that the odds of incurring out-of-pocket healthcare spending were 1.03 for the 25-34 year age group, 1.02 for the 35-44 year age group, 0.996 for the 45-54 year age group, and 0.85 for those 55 years and beyond, relative to families with a head of household aged 15-24 years. The p-values for each of these probabilities were more than 0.05, indicating that out-of-pocket spending is unaffected by the age of the head of the household. In comparison to households with a head in the 15-24-year age group, households with a head in the other age groups had the same risk of incurring OOP.

Male-headed families were 1.04 times more likely to incur OOP than female-headed ones. However, this was not statistically significant ( $p = 0.521$ ). Households with a head who did not complete elementary school were 1.4 times more likely to suffer OOP than those with no education. The result was statistically significant ( $p < 0.001$ ). The other levels of education are not statistically different from those in which the head of the family

has no education. The household size increases the likelihood of incurring OOP. Households with 6 -10 individuals were 1.7 times more likely to experience OOP compared to households with 1-5 members ( $p < 0.001$ ). Households with more than 10 members were 2.6 times more likely to have out-of-pocket expenses than those with 1-5 members ( $p < 0.001$ ). Those in urban areas were 1.1 times more likely to experience OOP than households in rural areas ( $p=0.03$ ). The likelihood of incurring OOP among households that consulted health practitioners was 38.3. This means that families that sought medical treatment were 38.3 times more likely to have OOP than those who did not.

Logistic regression coefficients of the independent variables are shown in Table 3.

Table 3: Logistic regression coefficients of the demographic variables

Variable	Coefficient	Std. Err.	P-value	95% Confidence Interval
Age of household head	-0.007673	0.002166	0.451	-0.011918 - -0.003429
Sex of household head	-0.036112	0.0562552	0.521	-0.146370 - 0.074146
Educational status of household head	0.013269	0.018601	0.476	-0.023188 - 0.049726
Household size	0.521068	0.042480	<0.001	0.437808 - 0.604328
Place of residence	0.297147	0.069919	<0.001	0.160108 - 0.434186
Consulted health provider	3.647717	0.104273	<0.001	3.443345 - 3.852088

Table 3 demonstrates that the household size, place of residence, and whether the household visited a health practitioner all had a significant impact on out-of-pocket healthcare expenditure. The logistic regression coefficient for the location of residence was 0.297 ( $p < 0.001$ ). The household size coefficient was 0.52 ( $p < 0.001$ ). Consulting a health practitioner had the highest positive logistic regression coefficient (3.648,  $p < 0.001$ ).

### Socio-economic determinants affecting out-of-pocket healthcare expenditure

Three socio-economic determinants were examined to see how they affect out-of-pocket healthcare expenses. A logistic regression was used to examine the impact of these determinants. Table 4 shows the results of the analysis.

Table 4: Logistic regression of socioeconomic determinants associated with OOP in Sierra Leone

Variable	Odds Ratio	Std. Err.	P-value	95% Confidence Interval
<b>Employment status of household head</b>				
Not employed (reference)				
Employed	1.818333	0.061372	0.008	1.706469 - 1.947909
<b>Wealth quintile</b>				
Poorest (reference)				
Poorer	1.178525	0.106305	0.069	0.987549 - 1.406432



Middle	1.421708	0.122168	<0.001	1.201341 - 1.682497
Richer	1.455817	0.121876	<0.001	1.235512 - 1.715404
Richest	1.407348	0.110433	<0.001	1.206726 - 1.641325
<b>Whether there is anyone in the household with health insurance</b>				
No (reference)				
Yes	1.116385	0.062744	0.050	0.999940 - 1.246390

The odds of incurring OOP were 1.8 times higher in families where the head of the family was working than in households where the head was not employed ( $p=0.008$ ). Households in the richest quintile were 1.4 times more likely to experience OOP compared to those in the lowest quintile ( $p<0.001$ ). Households with at least one member with health insurance were 1.12 times more likely to incur OOP than households without health insurance ( $p=0.05$ ). However, this was not statistically significant.

## DISCUSSION

This section places the research findings within the existing body of knowledge.

### Demographic determinants affecting out-of-pocket healthcare expenditure

In contrast to the findings of Du et al.(2019), which demonstrate that out-of-pocket expenses increase with age, this study found no statistically significant relationship between age and OOP expenditure ( $p > 0.05$ ). However, this discrepancy may be attributed to the study's focus on the household head's age, rather than accounting for the age of family members who may influence healthcare costs, particularly in households where younger household heads take care of older dependents. This highlights a potential limitation in the study design but also suggests that future studies should consider a broader demographic context when examining OOP expenditures.

Regarding the gender of household heads, no significant difference was found in OOP expenditure between male- and female-headed households, a finding that contrasts with multiple studies. For instance, Gao & Yao (2006) identified higher health expenditures among women, while Brinda et al. (2012) noted higher OOP among men in rural India. In contrast, Aregbeshola & Khan (2021) found that male-headed households in Nigeria are less likely to incur OOP expenses. These contradictions may reflect socio-cultural and economic variations across contexts, suggesting that gender disparities in healthcare spending are influenced by localized factors such as household decision-making power and access to health services. In Sierra Leone, the absence of a significant difference between male and female household heads may point to similarities in health-seeking behaviors or economic constraints that equally affect both genders.

The significant relationship between lower education levels and increased OOP expenditure found in this study ( $p < 0.001$ ) is consistent with research across different contexts, including Uganda (Nabyonga Orem et al., 2013), Brazil (da Silva et al., 2015), and Nigeria (Aregbeshola & Khan, 2021). However, studies from India (Leone et al., 2013) and other regions have shown that higher educational attainment correlates with increased healthcare spending. This divergence could be attributed to differences in healthcare systems and the degree of access provided by each country's infrastructure. In Sierra Leone, lower education may result in reduced healthcare literacy, forcing individuals to rely more on costly out-of-pocket services, whereas better-educated individuals may be more adept at navigating healthcare systems to avoid high costs.

Consistent with findings from Kumara & Samaratunge (2016) and Rous & Hotchkiss (2003), this study demonstrated a clear link between larger household sizes and higher OOP expenditure. Larger families likely incur greater healthcare costs due to the increased likelihood of illness or injury among a larger number of individuals. Moreover, the financial burden is amplified in households with numerous dependents. This trend

holds true across multiple studies from diverse geographical regions, including the United States (Hong & Kim, 2000) and Kenya (Oluwatimilehin, 2014), highlighting a global pattern that underscores the need for policies targeting larger households in healthcare financing schemes.

The study revealed that urban households were more likely to experience OOP expenditures than rural households ( $p=0.03$ ), a finding in line with You & Kobayashi (2011) but at odds with research from Sri Lanka (Kumara & Samaratunge, 2016) and Pakistan (Muhammad Malik & Azam Syed, 2012), which demonstrated higher OOP spending in rural areas. These contrasting findings may stem from differences in healthcare access, transportation costs, and environmental health determinants across countries. In Sierra Leone, proximity to urban healthcare facilities may reduce indirect costs, but the overall higher cost of living in urban areas might contribute to the greater likelihood of OOP expenditures in cities and towns.

### **Socio-economic determinants affecting out-of-pocket healthcare expenditure**

The findings on the socio-economic determinants of out-of-pocket (OOP) healthcare expenditure in this study largely align with existing literature, particularly in terms of household employment and income levels. The finding that households where the head of the household is employed are 1.8 times more likely to experience OOP ( $p=0.008$ ) is consistent with Baharin & Juni (2019) observation that higher salaries are linked to increased OOP spending. Similarly, households in the richest quintile being 1.4 times more likely to experience OOP compared to those in the lowest quintile ( $p < 0.001$ ) supports previous studies from Bangladesh Molla et al. (2017), which showed that a 10% rise in income led to a 2% increase in OOP healthcare expenditure. This pattern is echoed in Zambia, where higher-income households demonstrate greater OOP spending due to their preference for private healthcare and higher associated transportation costs (Baharin & Juni, 2019; Masiye & Kaonga, 2016). These findings affirm the global trend that wealthier households tend to incur more healthcare costs, especially in low and middle-income countries.

However, this study diverges from existing literature in its findings on health insurance and OOP spending. While previous research (Bock et al., 2014) suggests that uninsured patients generally have higher OOP expenses compared to those with insurance, this study found that households with at least one insured member were not statistically different from the other households in incurring OOP ( $p = 0.05$ ). This discrepancy may reflect limitations in Sierra Leone's health insurance system, where the insurance coverage may not sufficiently encompass all health-related expenses. As Bock et al. (2014) noted, insurance systems that only cover part of the health services or products can lead to higher OOP expenses, even among insured households. This is particularly relevant in low-income settings like Sierra Leone, where insured households may still face substantial costs for medications or "unofficial" user fees.

Overall, while this study's findings largely align with existing literature in certain areas (such as household size, socioeconomic status, and employment status of the household head), there are significant contrasts in the roles of age, gender, education and insurance. These differences underscore the importance of considering the local socioeconomic and healthcare contexts when interpreting the determinants of OOP healthcare expenditure. Local nuances, such as healthcare access, socio-cultural factors and the structure of health insurance systems, can create distinct patterns of healthcare spending that differ from global trends.

## **CONCLUSION**

The study identified household size, place of residence (rural or urban), employment status of the household head, and wealth quintile as significant determinants of out-of-pocket healthcare expenditure in Sierra Leone. Larger households are likely to incur higher healthcare costs due to the necessity of addressing the medical needs of more individuals. Geographic location significantly influences healthcare expenditures, as factors such as cost of living, availability of healthcare providers, and local healthcare policies are shaped by the specific characteristics of the area. For instance, the scarcity of healthcare facilities in rural regions may lead to higher travel-related expenses for accessing medical care.

Wealth quintile is also a critical determinant, with more affluent households being more likely to cover healthcare costs out of pocket. Additionally, the employment status of the household head has a direct impact

on healthcare spending patterns. In Sierra Leone, the role of health insurance in influencing out-of-pocket expenses appears insignificant; however, this conclusion remains uncertain due to inconsistent findings in existing literature. Some studies suggest that uninsured individuals are more prone to incurring out-of-pocket expenditures compared to their insured counterparts, although the evidence remains inconclusive as this may depend on country context and the health insurance coverage.

## Implications

The study provides data and information that the government of Sierra Leone could utilize to develop policies that alleviate the financial difficulties that families face when seeking medical care. Based on the study findings, the following practical implications and recommendations are proposed for the government of Sierra Leone to reduce the burden of out-of-pocket healthcare expenditure and improve healthcare access for all citizens:

1. **Targeted Health Financing Interventions:** Given that larger households are more likely to face higher out-of-pocket (OOP) healthcare costs, the government could develop targeted healthcare subsidies or social safety nets for these households. This could include implementing family-based health financing schemes or introducing healthcare vouchers for low-income families to alleviate the financial burden.
2. **Employment and Healthcare Affordability:** Employment status plays a critical role in healthcare spending. The government could integrate healthcare benefits into employment policies, particularly in the informal sector where employment is more precarious. Expanding job-linked health coverage schemes or creating employment-linked health insurance could help mitigate OOP expenses for households headed by unemployed or informally employed individuals.
3. **Progressive Health Financing:** The influence of wealth quintile suggests the need for a more progressive health financing system. The government should explore taxation policies that can redistribute healthcare financing more equitably, ensuring that wealthier households contribute more to the national healthcare system, while lower-income households receive greater subsidies or free access to basic health services.
4. **Strengthening Health Insurance Coverage:** Despite the uncertain role of health insurance in reducing OOP expenses, the government could focus on expanding health insurance coverage and improving its effectiveness. This could involve reviewing the implementation modalities of SLeSHI so that once implemented it provides sufficient financial protection to reduce OOP costs, especially for low-income and rural households.
5. **Preventative Healthcare Programs:** Implementing and incentivizing preventative healthcare programs could help reduce the overall healthcare burden. By focusing on early detection and prevention, such programs can reduce the need for expensive, curative treatments and lower the out-of-pocket costs for households. A reimbursement model focused on preventative care could also be explored as a way to shift the healthcare system towards more cost-effective practices.

## Limitations And Strengths of the Study

This study faced limitations inherent in using secondary data, but these do not undermine the findings, as estimates are crucial in healthcare financing research. The cross-sectional nature of the data prevented establishing causality for determinants associated with OOP healthcare spending and made it challenging to determine long-term trends. In developing countries, longitudinal expenditure data are often lacking. Household OOP healthcare spending estimates may have been affected by the questionnaire structure, data collection methods, and recall bias from self-reported data. This issue is common in expenditure studies that rely on self-reported surveys. The data used was several years old and may not reflect current OOP medical expenses in Sierra Leone. However, although the 2018 SLHIS dataset is outdated it remains the most recent and relevant for policy and practice.

## Conflicts Of Interest

The author has no conflicts of interest to report.

## Financial Disclosure

The author has no financial disclosures.

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