




# Households Health Care Financing Methods: Social Status Differences, Economic Implications and Clinical Outcomes Among Patients Admitted in a Pediatric Emergency Unit of a Tertiary Hospital in South West Nigeria

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## Abstract

**Background.** The affordability of health care services by households within a country is determined by the health care financing methods used by her citizens. In accordance with World Health Organization (WHO), health services must be delivered equitably and without imposing financial hardship on the citizens. **Aim.** This study aimed to determine the pattern of households health care financing method and relate it to the social-background, economic implication and clinical outcome of care in pediatric emergency situations. **Method:** It is a cross-sectional descriptive study. **Result.** 210 children from different households were recruited. Majority (75.9%) of the children were aged 0 to 5 years, males (61.2%) and belonged to the low socio-economic status (95.7%). The overall median (IQR) cost of care, income and percentage of income spent on care were ₦10 700 (₦7580–₦19 700), ₦65000(₦38000–₦110 000) and 17.6% (7.1%–39.7%) respectively. Though 70 (34.8%) of the respondents were aware of health insurance scheme, only 12.8% were enrolled. There were significant differences in the households' health care financing methods with respect to the socioeconomic status ( $P = .010$ ), paternal level of education ( $P < .001$ ), maternal occupation ( $P = .020$ ), paternal occupation ( $P = .030$ ) and distribution of income ( $P < .001$ ). Catastrophic spending was experienced by 67.4% of the household, all of whom paid via out-of-pocket payment (OOPP) ( $P < .001$ ), catastrophic health spending (CHS) was significantly associated with death and discharge against medical advice (DAMA) ( $P = .023$ ). All cases of mortality and 93% cases of DAMA occurred with paying out of pocket (OOP) ( $P = .168$ ). **Conclusion.** health care services were majorly paid for OOP among households in this study and CHS are high among these households. Clinical and financial outcomes were worse when health care services were paid through OOP.

## Keywords

health care financing, emergency services, clinical outcomes, households, catastrophic spending, mortality, children

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## Background

Health care financing (HCF) refers to the “function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively.”<sup>1</sup> For a country, this fund may be externally generated through donor funding or internally generated through government

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subsidy, individual taxation, individual pre-payments and payment at the point of purchase (direct out of pocket payment).<sup>2</sup> Whichever method is employed, the objective of an effective health care financing is to achieve equitable access to quality health care by all people including the most vulnerable without incurring severe financial hardship.<sup>2-4</sup>

There is a huge difference in the way different countries finance their health system; however no country has a perfect health system model in relation to cost of health care services and achievement of universal health care goals.<sup>5-8</sup> In Nigeria, health care is financed predominantly through households' direct out-of-pocket-payment (OOPP) at the point of delivery.<sup>9,10</sup> Although, there exist different prepayment methods, they are largely restricted to people who work for federal government, some state governments a few private companies and individuals who can afford private insurances companies.<sup>10-12</sup> External donation from different non- government organizations are sometimes available for some specific purposes or illnesses<sup>13</sup>

Protection from financial hardship and equitable use of healthcare services cannot be ensured where direct user payment for health care services is the predominant financing method; this is because financial solidarity is often lacked, the rich pay the same amount as the poor and only the sick pay.<sup>14</sup> The untoward effects of this type of health financing are not limited to financial hardship but may also have effect on the clinical presentation and outcome. A poor patient paying out of pocket may delay presentation to health facility, only to present when the illness has become complicated thereby presenting in emergency state and needing to spend more than could have been spent if they had presented earlier. At emergency, the inability to pay for certain services may hamper management and negatively impact the outcome. Also, while on treatment, users who pay directly from pocket often run out of fund and become exhausted, at which point, they request for discharge from the hospital even when still critically ill or still in need of in-patient care.<sup>15-17</sup>

The health system in general is weak if it solely relies on the payment of care directly from pocket at the point of purchase.<sup>2</sup> The patronage is poor, ability to procure good up-to-date facilities is hampered and the care providers are rarely adequately incentivized. These culminate in poor health care delivery and poor vital health statistics vis-a-vis under 5 mortality, maternal mortality, among others.<sup>2</sup>

The vital indices relating to children are important measures of the strength of the general health of a nation; it is also a measure of trends toward achieving set goals.

Nigeria has the highest burden of under 5 mortality at 117/1000 live birth,<sup>18</sup> and most of the deaths are from the common preventive infective childhood illnesses like complicated malaria, pneumonia, and complicated diarrhea diseases.<sup>19-22</sup> This reflects the poor state of the Nigeria health system, and emphasizes the need for better health funding at all levels.

This study aims to explore the differences that exist in the households' health care financing methods in relation to the social background and clinical outcomes of care among children accessing emergency care at Ekiti State University Teaching Hospital.

## Materials and Methods

### Study Design and Setting

This was a cross-sectional descriptive study conducted at the pediatric emergency unit of Ekiti State University Teaching Hospital, Ado – Ekiti (EKSUTH). EKSUTH is a tertiary, state owned health facility providing health care to citizens of Ekiti State. It is located at Ado-Ekiti, the capital city of Ekiti State. EKSUTH serves as a referral center to other hospitals within the state and other adjoining states like Osun, Ondo, Kwara, and Kogi that share borders with Ekiti State. While the total population of Ekiti- State is around 3.3 million people, about 308 621 live in the capital city.<sup>23</sup> Majority of the inhabitants of Ado Ekiti are civil servants, others engage in farming, small businesses, artisan and the minimum wage for the civil servants (N30,000 ) is similar to that of other states in Nigeria.<sup>23,24</sup>

The pediatric emergency unit is an 11-bedded ward. The emergency unit is accessible at all times, all year round. Services such as diagnostic investigations and medications are paid for at the point of purchase. Bills for Consultations, procedures and nursing services are calculated and paid for on daily basis. Where patients are unable to pay on daily basis, the outstanding bill is summed up and offset at the point of exit of pediatric emergency unit irrespective of the outcome. A copy of every receipt of payment of services within the hospital is left in charge of the ward matron who enters the amount paid and the services rendered into a hospital payment ledger. Outcomes of care included death, DAMA (discharge against medical advice) and discharge for those who were discharged home or discharged to a specialist care.

All children admitted to the children emergency and whose care-givers gave consent were recruited. The care-givers gave the information requested (respondents).

## Data Collection

This data was collected over a 4-month period, from March to July 2021 using a purpose-designed proforma. The proforma had sections on the children's bio-demographic data, parents' occupation and educational attainments, family income, method of health financing, family size, amount spent during the admission, duration of illness prior to presentation, forms of pre-hospital care, diagnosis and outcome of care at the emergency.

Information regarding each of these sections was first documented in the case file of the patients at the point of admission and as events unfolded, it was then collected into the proforma at the point of exit of emergency unit.

Cost of care was extracted for documentation from the ward's ledger into the proforma by the investigators after the patient must have exited the ward.

Diagnosis of illness was made based on the history and clinical examination findings and, where necessary, investigation reports were reviewed by physician in charge of the unit to confirm the diagnosis. Duration of hospital stay was calculated from the day of admission to when the patient exited the ward. The classification of socioeconomic status into High, Middle and Low as proposed by Oseni and Odewale was used.<sup>25</sup>

The total health expenditure during the period was computed by adding up all the expenditures made by the households to maintain the health of their child on admission. These included the addition of all expenses spent on inpatient treatments including laboratory investigations, purchase of drugs, consultation, nursing care and admissions. The monthly income of each family was determined by adding together all the income accruing to the family such as salaries, money realized from business engagements, and all other traceable sources of income. The total family income during the period was computed by summing up all the monthly income of the households (addition of parents' income).

For the purpose of this study, health expenditure >10% of total household income was used to assess whether a family was involved in catastrophic health spending or not while caring for their child in the index illness.

The study was approved by the Ethics and Research Committee of the Ekiti State University Teaching Hospital, Ado Ekiti with protocol number EKSUTH/A67/2022/03/005. Written informed consent was obtained from caregivers of children that were enrolled in this study. Participation in this study was voluntary and the parents of the study participants were assured of confidentiality.

## Data Analysis

The data analyzed using SPSS software version 25.<sup>26</sup> Means and standard deviations were calculated for continuous variables that were normally distributed, while median and IQR were calculated for skewed data. Categorical variables were computed as proportions with 95% confidence interval. Chi-square and Fisher's tests were used to compare proportions. Medians and distributions of income were compared with independent median k-test

## Result

There were 210 children recruited over a 4-month period. Twenty-three (10.9%) of the respondents could not give a figure to their households' monthly income and were excluded from the analysis, all other analyzes were done on the 187 children of the respondents that were able to provide estimated household monthly income. All respondents were females.

### Socio-Demographic Characteristics of the Study Population

One hundred fifteen (61.5%) of the children were males, 86 (46.0%) were infants (age less than 1 year), 56 (29.9%) were aged 1 to 5 years, 26 (13.9%) were aged 6 to 10 years, the rest (10.2%) were older than 10 years. The respondents' (maternal) ages were grouped as displayed in Table 1. Mothers whose ages were between 31 and 35 years constituted most (66; 35.5%) of the respondents. Most (104; 55.6%) of the mothers attained tertiary education (Table 1). Fifty-seven (30.5%) of the mothers were civil servants, 42 (22.5%) were petty traders, 39 (20.9%) were full-time housewives, 37 (19.8%) were artisans, 11 (5.9%) engaged in business and 1 (0.5%) was a clergy.

Majority (107; 57.2%) of the fathers had tertiary education (Table 1). Occupation types were not disclosed among 13 (7.0%) of the fathers, 1 (0.5%) was not employed, 63 (33.7%) were civil servants, 56 (29.9%) were artisans, 31 (16.6%) were petty-traders, 18 (9.6%) engaged in business and 5 (2.7%) were clergy.

The family size of the households ranged from 3 to 11, with a median (IQR) of 4 (3-5). In all, 8 (4.3%) of the households belong to higher socio-economic status, 93 (49.7%) were in the middle and 86 (46%) belong to the lower socio-economic status.

### Patterns of Health Care Financing Methods

There were 70 (37.4%) respondents who were aware that healthcare could be financed through health

**Table 1.** Socio-Demographic Characteristics of the Study Populations.

Characteristics		Frequency (187)	Percentages %
Gender	Male	115	61.5
	Female	72	38.5
Age (years)	<1	56	29.9
	1-5	86	46
	6-10	26	13.9
	>10	19	10.2
Maternal age(years)	<20	2	1.1
	20-25	23	12.3
	26-30	35	18.7
	31-35	66	35.3
	>35	61	32.6
Maternal occupation	Full time House-wife	39	20.9
	Artisans	37	19.8
	Civil servants	57	30.5
	Business	11	5.9
	Clergy	1	0.5
	Trader	42	22.5
Maternal highest educational level	No education	7	3.7
	Pry	22	11.8
	Secondary	54	28.9
	Tertiary	104	55.6
Paternal occupation	No occupation	1	0.5
	Artisans	56	29.9
	Civil servants	63	33.7
	Business	18	9.6
	Clergy	5	2.7
	Trader	31	16.6
	missing	13	7
Paternal highest education level	No formal education	11	5.9
	Primary	6	3.2
	Secondary	63	33.7
	Tertiary	107	57.2
Socio-economic status	Lower	86	46
	Middle	93	49.7
	Higher	8	4.3

insurance, 24 (34.2%) of whom financed emergency care for their wards through HI scheme. Overall, 24 (12.8%) of all the respondents paid for emergency services through a pre-paid plan (health insurance scheme), the rest of the respondents 163 (87.2%) paid from out of pocket.

The median (IQR) income of all the households was ₦65 000 (₦38 000-₦110 000) while the median (IQR) cost of healthcare services paid at the point of care during emergency was ₦10 700 (₦7580-₦19 750), the median (IQR) of percentage income paid for health at the point of care 17.6% (7.1%-39.7%). The median (IQR) income of House hold on health insurance scheme was twice the income of households who paid OOP with

median (IQR) of ₦120 000 (₦80 000-₦150 000) versus ₦60 000 (₦36 000-₦100 000)  $P=.000$ . They (household on health insurance) also spend less directly from pocket during emergency with median (IQR) of ₦0 (₦0-₦811) versus ₦12 400 (₦8750-₦20 000) among those paying via OOP ( $P=.000$ ). The median percentage of income paid for health at the point of care was 20% (10.6%-41.1%) among the patients paying OOP and 0% (0.0%-1.6%) among those paying through HI scheme.

There was a significant disparity in the use of HI scheme for payment of services at the point of care during emergency across the different socio-economic statuses with only 3 (3.5%) households from lower socio-economic status, 19 (20.9%) households from

**Table 2.** Health Care Financing Methods and Socio-Economic Factors.

Socio-demographic factors		Health care financing methods		Chi-square value	P-value
		OOPP	HI		
Maternal education level	No education	7 (4.3%)	0 (0.0%)	3.7	.45
	Primary	21 (12.9%)	1 (41.7%)		
	Secondary	48 (29.4%)	6 (25.0%)		
	Tertiary	87 (53.4%)	17 (70.8%)		
Paternal education level	No education	11 (6.7%)	0 (0.0%)	10.6	.03
	Primary	6 (3.7%)	0 (0.0%)		
	Secondary	60 (37%)	3 (12.5%)		
	Tertiary	86 (52.8%)	21 (87.5%)		
Maternal occupation	Full house wife	37 (52.8%)	2 (8.3%)	16.4	.02
	Artisans	33 (20.2%)	4 (16.7%)		
	Civil servants	42 (25.8%)	15 (62.5%)		
	Business	9 (5.2%)	2 (8.3%)		
	Clergy	1 (0.6%)	0 (0.0%)		
	Trader	41 (25.2%)	1 (41.7%)		
Paternal occupation	No occupation	1 (0.6%)	0 (0.0%)	27	< 0.01
	Artisans	54 (33.1%)	2 (8.3%)		
	Civil servants	45 (27.6%)	18 (75.0%)		
	Business	14 (8.6%)	4 (16.7%)		
	Clergy	5 (3.1%)	0 (0.0%)		
	Trader	31 (19.0%)	0 (0.0%)		
	undisclosed	13 (8.0%)	0 (0.0%)		
Social status	Lower	83 (50.9%)	3 (12.5%)	13.2	.01
	Middle	73 (44.8%)	19 (79.2%)		
	Higher	6 (3.7%)	2 (8.3%)		

middle socioeconomic status and 2 (25%) of the household in higher socioeconomic status paying through such schemes ( $P = .010$ ). Though, there was no significant disparity in maternal highest formal education levels in respect to the HCF methods, none of the households where mothers had no formal education paid for health via insurance for emergency services. Maternal occupational status, paternal highest formal of educational levels and paternal occupational status were all found to be significantly associated with HCF methods (Table 2)

### Clinical Presentations, Financial and Clinical Outcomes

The various primary diagnoses of the patients presenting for emergency services included severe malaria (56; 29.9%), complicated diarrhea diseases (43; 23%), sepsis (16; 8.6%), sickle cell crisis (14; 7.5%), complicated pneumonia (13; 7.0%), Tonsilo-pharyngitis (10; 5.3%), pediatric surgical cases (10; 5.3%), others (24; 12.8%). Table 3 showed the cost-income relationship of managing each of the emergency conditions.

Seventy (37.4%) of the children presented within 24 hours of onset of symptoms, 56 (29.9%) presented between the 25th hour and 72nd hour, 31 (16.6%) presented between 73rd and 98th hour and 30 (16%) presented later. More Respondents (6; 60%) with pediatric surgical emergencies present in the first 24 hour of onset of their ailments. Fourteen (58.3%) of the patients on health insurance presented within 24 hours of the onset of their illness as opposed to 56 (34.3%) among those who paid via OOP ( $P = .094$ ). There was no significant difference in the median duration of admission among those who paid via OOP and HI ( $P = .636$ ). The median duration of stay in emergency ward is least among patients with surgical cases 1 (1-4) Table 3.

Seventy-six (40.6%) of respondents had tried over the counter medication for their wards before presenting in the hospital, 35 (18.7) had not administered any medical care, 31 (16.6%) had used herbal concoction, 2 (1.1%) used faith-based care and 43 (23%) did not disclose details of care given before presentation. None of the patient who used faith-based care and only 1 (3.3%) of the patients who administered herbal concoction had health insurance scheme.



**Table 3.** Duration of Hospital Stay and Income-Cost Per Diagnosis Type.

Diagnosis ( )	Median (IQR) cost of care ( )	Median (IQR) income ( )	Median (IQR) percentage of income spent on health care	Median (IQR) duration of admission (days)
Severe malaria	10710 (7662.5-17902)	50250 (35000-100000)	19.16 (10.4-40.1)	2 (2-2)
Complicated diarrhea disease	10600 (7600-20000)	75000 (38000-100000)	15.6 (8.9-35.6)	2 (1-2)
Complicated pneumonia	16000 (7750-21600)	80000 (46000-135000)	25.7 (7.8-25.8)	2 (1-3)
Sepsis	16400 (10500-35150)	48000 (38000-95000)	27.33 (13-64.9)	2 (2-6.5)
Tonsillopharyngitis	8900 (4575-16575)	110000 (50000-150000)	13.19 (3.1-20.9)	1.5 (1-3.25)
Sickle cell crisis	10350 (1728.7-16412.5)	90500 (66000-135750)	7.3 (2-17.9)	2 (2-3.25)
Surgical cases	12850 (3750-18200)	67500 (36000-175000)	26.6 (1.5-39.9)	1 (1-4)
Others	10000 (5912-15150)	63500 (36750-107500)	12.06 (5.1-32.9)	2 (1-3)
Total	10700 (7580-19700)	65000 (38000-110000)	17.6 ( )	2 (1-3)
Independent samples median test	0.252	0.083	0.217	0.098

Overall, 155 (82.3%) of the patients were discharged, 15 (8.0%) left against medical advice and 17 (9.0%) died on admission. None of the household that had health insurance died on admission versus 17 (10.4%) among that paid OOP. One (4.2%) of the household that had HI left against medical advice versus 14 (8.5%) among those that paid OOP.

Also, 127 (67.9%) of all the households suffered from CHS. Among those who paid OOP, 127 (77.9%) were involved in catastrophic spending. None of the patients on health insurance scheme was involved in CHS; this is a significant finding  $P < .001$ . Among those who suffered catastrophic spending, 16 (12.6%) died while only one (1.6%) of those without CHS died ( $P = .023$ ).

## Discussion

In this study, the 3 most common conditions that necessitated emergency care were malaria, diarrhea and sepsis, all of which are infectious in origin. Similar pattern has been reported from other parts of Nigeria.<sup>19,20,27,28</sup> The persisting re-occurrence of these diseases over the years in Nigeria and other sub-Saharan African countries highlights the defects in preventive medicine and health funding in this part of the world.

The median cost of managing any of the pediatric emergencies in this study was nearly 20% of the median household monthly income. This implies that majority of households will suffer severe financial hardship if this amount were to be paid directly out of pocket at the point of accessing health care services. This is contrary to the objectives of universal health coverage; financial protection and equitable access to health.<sup>4</sup>

In the current study, nearly 90% of the households financed emergency services for their wards via OOP. This is comparable to reports of studies by Ipinnimo et al<sup>29</sup> in 2021, World Bank in 2018,<sup>30</sup> Ogaji et al<sup>31</sup> in 2015 and Olatunya et al<sup>32</sup> in 2015. To reduce burden of OOPP, Nigeria had enacted health insurance schemes in 1999 and fully launched it in 2005.<sup>33,34</sup> These various health insurance schemes designed to cater for all Nigerians still cater for less than 5% of Nigeria population.<sup>35,36</sup> The social insurance cater for only the government workers, the community-based insurance designed for rural communities is plagued by extremely low enrollments and the private insurance is often too expensive for the common man.<sup>36</sup>

One of the factors that have been found to affect enrollment into community and private health insurance schemes is poor awareness.<sup>12,37,38</sup> In this study the awareness rate of health insurance was low and is comparable to findings by Ipinnimo et al<sup>29</sup>

The current study also showed that high level of paternal education; parental occupational status and the overall social status of the household are all factors that are associated with health care financing method of the household, such that more household with high paternal educational levels, civil servants and higher social status had health insurance. Similar findings were reported in other studies.<sup>39,40</sup> The households paying for health through insurance schemes earn twice as much as the income of households paying directly from pocket. These findings show that great inequalities exist in the ability of people to be financially protected while accessing health care; the poor suffer financial hardship while the rich are protected through health insurance highlighting the need for urgent social intervention for the poor.

The impacts of health care funding methods adopted by households span across both their finances and clinical outcomes. About 65% of all the households and 80% of the households paying OOP incurred catastrophic expenditure. In Ibadan, a study by Tongo et al<sup>41</sup> in 2009, reported that 100% of the patient paid out of pocket and all of them spent above 20% of their household monthly income on health expenditure for preterm babies needing special care. Catastrophic health spending was also reported among 65% of Ibadan dwellers needing emergency surgery.<sup>42</sup> Households often fall back on several measures to offset bills incurred on health, these measures may range from selling asset, mortgaging of asset, borrowing from friends and relatives, spending life-time savings, collecting salaries in advance, taking loans from financial institutions and many other strategies.<sup>43-47</sup> The fall out of catastrophic expenditure often include stopping children from going to school, diverting their children's school fees to offset health service bills, loss of job or means of livelihood among others.<sup>29</sup> These are potentially impoverishing effects of household financing their health OOP. These effects are made worse by the fact that majority of people in Nigeria are already living in poverty or are on the verge of poverty.

Beyond the socio-economic effects, paying for healthcare services OOP often has effect on health seeking behavior of the household and the clinical outcomes. In this study, majority of the households paying OOP with hospitalized children delayed presentation beyond 24 hours after the outset of illness; this is contrary to findings among households paying through HI, where majority presented within 24 hours of outset of illness. More so, children from households paying OOP spent longer time on admission during emergency care perhaps because they waited too long before presenting and have suffered more complications leading to increased bills and potential for financial hardship. In this study, the outcome of care appears to be worse for household paying OOP as 100% of the mortality and 95% of cases of LAMA in the emergency unit during the study period occurred among them. Similar observation was made among women of reproductive age in cross-river, Nigeria in 2012 by Riman and Akpan.<sup>48</sup>

The majority of the participants presenting in the emergency unit in this study were less than 5 years and the mortality rate was similar to the national mortality rate of 113/1000 live birth, a reflection of a weak health system.<sup>49</sup> To improve on this, the overall funding of the health system must improve. There must be a system in place that will provide equitable access to health for children especially the under 5 children. A risk pooling system where the rich pay more and the poor pay less

will go a long way in improving the health seeking behavior of the low social strata and hence morbidity and mortality among their children.

## Conclusion

The disparity in financial protection and clinical outcomes of children hospitalized for emergency care among households of various socio-economic strata is of an enormous concern and if Nigeria must strive to bridge this gap toward achieving universal health coverage and targets of sustainable development goal 3, especially those pertaining to wellbeing of children, the health insurance scheme must be purposively targeted toward all her citizens. There must be a system in place that create awareness and educate people about the schemes and its benefits. The citizens, especially those in lower socio-economic status must be encouraged to voluntarily participate. This has potential to reduce the financial risk of emergency care and the clinical outcomes.

## Author Contributions

Taiwo Adekunle: Contributed to conception and design; Contributed to analysis; Drafted the manuscript; Gave final approval; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Fatunla Adebukola: Contributed to conception and design; Contributed to analysis; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Ogundare Ezra: Contributed to conception and design; Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Babatola Adefunke: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Ajite Adebukola: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Ajibola Ayotunde: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Olajuyin Adebola: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Oluwayemi Oludare: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy. Olatunya Oladele: Critically revised the manuscript; Agrees to be accountable for all aspects of work ensuring integrity and accuracy.

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