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Patterns of Expenditure and Coping Mechanisms among Urban Slum Dwellers Admitted for Emergency Surgeries in Ibadan, Nigeria

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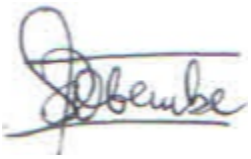
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Candidate Declaration

I, Taiwo A Obembe do solemnly declare, in accordance with Rule G27 that this thesis is my own work. This thesis is being submitted for the degree of Doctor of Philosophy at the University of Witwatersrand, Johannesburg, and has not been used as a submission for any other degree or submitted at any other university. All materials adopted from previously published work have been appropriately cited in this thesis.



14 November 2021

_____ _____

Taiwo A. OBEMBE **Date**

Dedication

Thanks to Almighty God – my creator and giver of life for His grace and mercy.
Without You, I am nothing.

This work is dedicated to my ever-supportive parents – Sir Dr. L.K. Obembe and Mrs. I.O. Obembe. I am grateful for building in me the values of hard work, diligence and perseverance.

To my dear wife, partner and best friend – Mrs. Princess U. Obembe.

You made the doctoral journey easy and worthwhile with your love and understanding.

To my beautiful daughters – Stephanie and Sophia Obembe.

To my siblings – Mr.& Dr. (Mrs.) Odebunmi, Mr.& Mrs. Aidelogie,

Mr. & Mrs. Opeoluwa Obembe, Mr.& Dr. (Mrs.) Okunade, and all my in-laws.

I dedicate the work also to all the families that continue to experience reduced health care access as a result of financial constraints.

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Abstract

Introduction: The Universal Health Coverage (UHC) mandates that everyone should be able to access promotive, preventive, curative, rehabilitative and palliative health services effectively, while also ensuring that the use of these services does not expose the users to financial hardship. This has been accomplished at different stages for different populations. Rapid formation of slums as a result of urbanization, for instance, has continued to place the slum dwellers at a heightened risk of impoverishment when a sudden health issue arises.

Aims: The broad objective of this research assessed the burden of out-of-pocket health care payments on payers[1] of hospital bills incurred by households from urban slums and non-slums, with a patient that is admitted for an emergency surgery. Precisely, the study (i) estimated the expenditure patterns of both groups of participants 1month before surgery, (ii) estimated the prevalence of catastrophic health expenditure incurred during the admission process (iii) conducted an exploratory interview (with a subsample) on how those that incurred catastrophic expenditures coped with the hospital costs and practices.

Methods: The study utilized a prospective study design using a mixed methods approach. A sequential explanatory design was used in which the quantitative component [objective (i) and (ii) above] was conducted before the qualitative component (objective iii). A total of 450 respondents (payers of hospital bills for patients scheduled for emergency surgery) were recruited from selected hospitals. The quantitative component consisted of 2 phases. During the first phase of the quantitative data collection, respondents were provided with cost diaries to recount household expenditure a month prior to the admission. The second phase required respondents to document all hospital costs during admission in a bid to estimate how catastrophic the hospital costs were. The qualitative component was conducted among a sub-sample of payers (13 slum dwellers and 18 non-slum dwellers) that had incurred catastrophic health expenditure from the quantitative phase. These payers were interviewed to explore their perceptions of hospital services and coping mechanisms one-month post-discharge from the facility. Analysis was conducted quantitatively using STATA Release 13 [1] while the qualitative data was analyzed using Atlas Ti [2] to extract relevant information required to answer the study objectives.

[1] Payers: Any family member or person who is responsible for offsetting the hospital costs during the index admission.

Key Findings: Earning capacity was much lower for slum dwellers compared to the non-slum dwellers. As documented extensively in literature, food constituted a major share of expenditure among both groups while the other household items varied largely between the two groups.

At 5% threshold, the prevalence of catastrophic health expenditures was significantly higher among slum dwellers compared to their non-slum counterparts ($F=8.59$; $p=0.019$). It was observed that 65.6% of the entire population of households recruited for the study experienced catastrophic expenditure. Multiple logistic regression showed that the significant predictors of CHE were insurance status of the payer ($p=0.012$) and setting of residence of the household payer ($p=0.019$).

Coping with hospital costs was associated with delays in payment, borrowing and relying on social networks. Not being able to pay was accompanied by hospital practices such as interrupted treatment and incarceration[2]. Managing catastrophic expenditure was exacerbated by confusing billing practices such as double billing and the absence of flexible payment mechanisms.

Conclusion: Slum dwellers are not the only group at risk of incurring catastrophic expenditure as non-slum dwellers are also prone, though to a lesser extent. The protection of households against catastrophic health expenditures is still largely deficient. Hospital services are still erratic and require concerted health policy reforms to improve the transparency with billing in the secondary and tertiary facilities. Solidarity schemes that cushion the effect of out-of-pocket health expenditures are also desired to support families in need of urgent health care services especially in emergency situations.

[2] Incarceration: The state by which a patient is denied hospital discharge and confined within the hospital premises due to an inability to offset hospital bills.

Conference Proceedings

1. **Taiwo Obembe,** Jonathan Levin, Sharon Fonn: Estimating the burden of catastrophic health care expenditures among Slum Dwellers Admitted for Emergency Surgery in a Metropolitan State of Southwestern Nigeria. September **(2017)**. College Research & Innovation Management Unit: **iResearch,** Ibadan, Nigeria. **Poster Presentation**.

2. **Taiwo Obembe,** Jonathan Levin, Sharon Fonn: Comparison of Household Expenditures between urban slum and non-slum dwellers in a Southwestern metropolis, Nigeria. September (**2018)**. College Research & Innovation Management Unit: **iResearch,** Ibadan, Nigeria. **Poster Presentation.**

3. **Taiwo Obembe,** Sharon Fonn, Jonathan Levin: Presented Joint Advanced Seminar – 4 (JAS-4) Conference. March **(2019)**. Organized by Consortium for Advanced Research Training in Africa (CARTA) at Makerere University, **Kampala, Uganda**. **Oral Presentation**

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2. Premier Medicaid International Doctoral Scholarship 2015 - 2019

3. Consortium for Advanced Research Training in Africa – Travel Award to the Epidemiology Congress of the Americas, Miami Florida, 2016.

List of Abbreviations

AHE	-	Actual Household Expenditure
CARTA	-	Consortium for Advanced Research Training in Africa
CHE	-	Catastrophic Health Expenditure
CPR	-	Contraceptive Prevalence Rate
DRC	-	Democratic Republic of the Congo
DPRS	-	Department of Planning Research and Statistics
FCT	-	Federal Capital Territory
HSB	-	Health Seeking Behaviour
IDI	-	In-Depth Interviews
LGA	-	Local Government Area
LMIC	-	Low- and Middle-Income Countries
NHIS	-	National Health Insurance Scheme
NSD	-	Non-Slum dwellers
OOP	-	Out of Pocket
OOPE	-	Out of Pocket Expenditures
PHC	-	Primary Health Care
RA	-	Research Assistant
SD	-	Slum Dwellers
SES	-	Socio-Economic Status
SSA	-	Sub-Saharan Africa
TFR	-	Total Fertility Rate
U5MR	-	Under-5 Mortality Rate
UCH	-	University College Hospital
UHC	-	Universal Health Coverage
UNICEF	-	United Nations Children's Fund
WHO	-	World Health Organization

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CHAPTER 1 Introduction

1.1 Background

Equity of access to health constitutes a crucial component of positive health outcomes and is a basic human right throughout the world today [3]. This has led to the adoption of the goal of "universal health coverage" by most countries worldwide with progress towards its attainment at different stages. Some countries have reached universal health coverage such as Japan [4,5], while others still strive towards its attainment [6].

Of those countries still striving to attain universal health coverage, Nigeria is still to achieve affordable health care for all. Notable factors that have prevented Nigeria from attaining this goal include weak political will and poor governmental allocation of resources [7]. The present national health insurance only covers the formal sector and organized private sector, but does not cover the informal sector. An important population within the informal sector that goes unnoticed when it comes to health and its related matters, are "*the urban slum dwellers*". With the growing rates of urbanization in Africa, the urban slum dwellers deserve extra consideration. Slum dwellers have specific medical needs because of their limited accessibility to fundamental sanitation and to standard regional development amenities, among other factors. Worldwide, it is estimated that slum dwellers have increased by over 50 million between 2000 and 2010 alone [8]. Today, estimates confirm that one in every three residents in the urban areas (that translates to one in every six persons globally) are already inhabitants of a slum [9].

From World Health Organization (WHO) records, Nigerian government expenditure on health as a percentage of total government expenditure was projected to be 6·7 percent in 2012, while private expenditure on health as a percentage of total health expenditure remained high at 68·9 percent in the same year [10]. Out-of-pocket expenditure as a percentage of private expenditure on health has consistently remained higher than 90 percent since 2002 (95·7 percent in 2012) with less than 5 percent of Nigerians covered by its National Health Insurance Scheme[3](NHIS) [11]. This has contributed to the poor WHO ranking of the Nigerian health care system as 187th out of 191 countries for health service performance [7]. In the same report by the WHO, the infant mortality rate is estimated at 110 deaths per 1000 live births, while the maternal mortality ratio is put

[3] National Health Insurance Scheme (NHIS) is a government run social health insurance scheme that is run on a private public partnership (between the federal government, health maintenance organizations and health care providers). Employees are enrolled and mandatorily required to contribute 5% of their income to the pool while the remaining 10% is contributed by the Federal Government.

at 1100 per 100,000 live births. On the flipside, countries that have achieved universal health care have done so through different paths, often from an iterative process involving politics, income growth and an increase in pooled health spending [4]. Being able to access health care when needed is an important issue, closely related to this is being able to pay for care and protection from the economic consequences of doing so. Universal health coverage attempts to make both possible [12].

National access to affordable health care has a significant impact on household spending patterns (how and what people spend money on), and ultimately on the utilization of health care services. In a quest to assess the long term effects of health insurance patterns on expenditure patterns, Aji and colleagues (2013) found that health insurance programs efficiently reduced out-of-pocket household expenditures [13]. Evidence equally suggests that patterns of expenditure are more unfavourable among those of the lower socioeconomic classes, which eventually can result in worse health outcomes within this class [14,15]. Families with health insurance coverage are protected from incurring exorbitant out-of-pocket payments during unexpected health events whereas households that lack coverage, particularly the poor households, in the advent of a sudden health need, are forced to divert substantial proportions of their income for the needed health service [16]. Thus, the lack of health insurance cover imposes erratic spending patterns and/or can push families into poverty.

A concept that has been developed is one of catastrophic health expenditure (CHE), which is said to occur when a certain proportion of income or household expenditure is diverted to defray health care costs. Several thresholds have been proposed in literature as cut-offs for when health care approaches catastrophic levels. It has been defined as expenditure that ranges from five percent to forty percent (or more) of total annual income [17,18]. In their study, Wagstaff and Lindelow (2008) considered health expenditure to be catastrophic if it exceeds 5 percent of average annual income [19], while Nguyen et al. (2011) used 10 and 20 percent of non-food consumption expenditure as a measure of CHE [20]. Kimani & Maina (2015) on the other hand, consider health care expenditure to be catastrophic if it equals to or exceeds 40 percent of a household's non-subsistence expenditure [21]. WHO (2000) likewise, compute health care expenditure as catastrophic if it equals to or exceeds 40 percent of household's non-subsistence expenditure [22]. Catastrophic Health Expenditure (CHE) has also been measured by the household's capaci-

ty to pay for health care [23,24]. In other studies, catastrophic expenditure was measured at three thresholds of greater than 10 percent, 25 percent and 40 percent of total expenditure/income respectively [21].

Some studies have identified and documented some determinants of CHE as dependent not only on the type of insurance provider [25,26], but also on the financial capacity of a household, health services accepted (or not accepted) by the household members and the share of health expenses paid by the household members and the society [25]. A study in Tanzania found large household size, a household member with chronic illness, domestic violence against women and traditional healer's visits as being significantly associated with high CHE [27]. Xu et al (2003) summarized three pre-conditions for catastrophic payments to include availability of health services requiring payment, low capacity to pay and the lack of prepayment or health insurance [28].

In low and middle income countries (LMICs) such as India and Nigeria, CHE has resulted in as much as 40 percent of the population being pushed further into poverty [29] with 25 percent suffering catastrophic health expenditure [30]. In an attempt to cope, during illness episodes, families may opt for less costly traditional, sub-optimal care, or forego the healthcare services that they need altogether [29,31]. In order to meet the rising costs of seeking healthcare, some poor households resort to coping mechanisms that are further detrimental to their wellbeing. Onwujekwe et al. (2016) in a Southeastern Nigerian study, found that over one-third of diabetics paid for health care using out-of-pocket payments and most commonly coped with these costs by resorting to dissolving and spending savings [32]. Interestingly, the wealth status (index) of a household could determine the kind of coping strategy that is employed in the advent of a sudden health event. A study in Bangladesh found that families that borrowed money were ten times more likely to be low-income while wealthier families were more likely to utilize family savings or mortgage assets to defray health care costs [33]. In Bangladesh also, one out of nine people within the two highest income groups incurring CHE coped by selling assets [34], while skipping appointments to evade cost or withdrawing children from schools were alternative coping mechanisms commonly used by poorer households [35–37].

Within the African context, borrowing from professional money lenders that charge exorbitant interest rates is a common coping mechanism, with reported interest rates ranging from 5 percent

to as high as 30 percent [36]. This means that households incur an even greater debt trying to cope with the out-of-pocket payments that translates to worse economic and social status for households if accumulated debts are not repaid quickly [38]. Likewise, when households use money for health services that is meant for other essential purposes, such as food and shelter, it threatens the future health of all household members and could lead to further impoverishment [39,40]. This is also detrimental to the welfare of the households, because it reduces their human capital and productivity which plunges them further into poverty [41]. Substantial literature has compared the effects of out-of-pocket payments between low- and high-socioeconomic status, rural and urban, public and private health facilities. The impact of out-of-pocket payments varies, depending on various factors that range from geographic location, type of facility and socioeconomic status [32]. As urbanization has increased, there has been a greater interest in research looking at new arrivals (internal migrants) to cities who frequently end up living in urban slums [42]. Substantial literature has contributed to our knowledge on this. High rates of employment and higher income prospects in urban regions was observed to be a major predictor that influenced rural – urban migration in Jiangsu province of China [43]. The preparation for the influx of these migrants, which are at varying levels of readiness, predispose to formation and aggregation of urban slums. Less prepared cities in terms of urban and regional planning have a higher likelihood of having urban slums form more rapidly.

On arrival in the urban regions, the reality is different. Slums that are usually disorganized, with very little infrastructure are formed due to some major factors. First of all, search for affordable housing by rural migrants leads to settlements in less-developed areas of the city. These less developed areas are usually unplanned, unhealthy and fraught with lack of basic amenities such as electricity, water supply and basic health care services [43,44]. According to a United Nations Millennium project, these living conditions are deplorable and health-threatening, often lacking access to proper sanitation facilities and adequate clean water [45]. All these potentially have direct consequences on the physical and psychological wellbeing of slum dwellers with communicable diseases being prevalent in these areas [9].

Furthermore, these unsatisfactory conditions also predispose those in the slums to a higher disease burden from the surrounding unhealthy environments [46]. The effects of poor housing conditions, lack of basic amenities (including lack of access to health care) altogether increases

the vulnerability of slum dwellers to higher disease burdens particularly when attempting to access care. This vulnerability is more pronounced if they have to pay for services at the point of care through out of-pocket means and further complicated if the needed care is an emergency.

Emergency care could be surgical [47] or medical [48] and is often critically crucial to limit or prevent the possibility of heightened mortality or morbidity. Emergency surgery is defined as any surgical technique that cannot be postponed for any just cause; in which there is no other management therapy, and for which a postponement could end in mortality or permanent morbidity [47]. Over the past decade, there has been an increase in the number of emergency surgical cases; summed at over 230,000,000 cases worldwide [47]. Among this, emergency obstetric care, including Cesarean Section (CS) accounts for an estimated 18.5 million cases [49]. Emergency surgeries do not only pose heavier financial burdens on households alone but have worse health outcomes compared to elective surgeries [50]. Despite the development of six core surgical indicators to monitor progress towards universal access to surgical care, for which two of these relate to the impact of surgical care and impoverishing expenditure and catastrophic expenditure [51], the maximum share of disability-adjusted life years (DALYs) arising from surgical conditions that are sudden and established in Africa is projected to be 38 DALYs per 1,000 population [52]. As such, a combination of unfavorable living conditions, reliance on out-of-pocket expenditure to pay for hospital costs, in the face of emergency surgical needs, slum dwellers are grossly disadvantaged exposing vulnerability within slum households in a dramatic and obvious way.

Due to the increasing rates at which slums are formed and because of their residents' vulnerability given their living conditions, the need to study this population (urban slum dwellers) in depth is vital and must be explored considering the range of factors that interact to influence how urban slum dwellers pay for needed health care.

The interplay of these factors with regards to how the urban slum dwellers spend and cope with out-of-pocket health expenditure in this study is assessed using the framework in Figure 1. The model explains factors influencing need and use of emergency care based on three influencing and interacting factors – "predisposing", "enabling" and "need" factors respectively. Depending on the income of a household, the preparedness and readiness to pay for hospital bills with regards to emergency care is experienced differently. The predisposing, enabling and need factors

generally interact to influence demand. It is anticipated that households with higher incomes would be able to pay and thus enjoy desirable health outcomes. Conversely, households with lower incomes are unlikely to be able to pay under the same circumstances. This forces the adoption of coping mechanisms to meet paying for the health services. The adoption of coping mechanisms may inadvertently affect the standard of care leading to unfavourable health outcomes such as foregoing care completely, delay in seeking care or incurring catastrophic expenses.

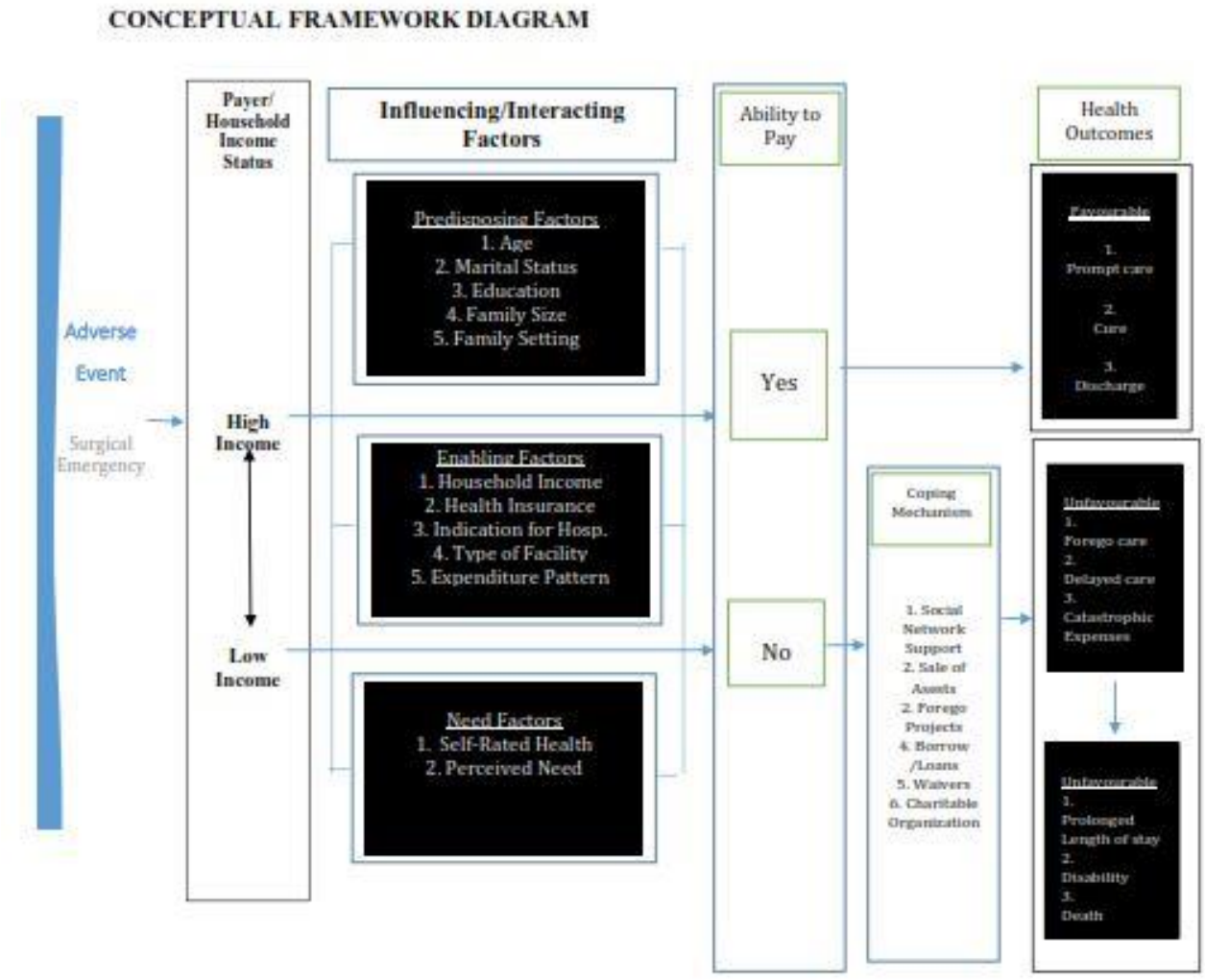


Figure 1. Conceptual Framework for Patterns of Expenditure, Coping Mechanisms among Urban Poor admitted for Emergency Surgeries in Ibadan, Nigeria.

Adapted from [53] pp 324, [54] pp3 and [55] pp 3.

Using an emergency surgery as a lens, because of its peculiar characteristics of being un-planned, sudden and needed, this thesis explored the association between expenditure patterns and coping mechanisms among two urban cohorts (the slum and non-slum dwellers) when admitted for emergency surgeries. The study compared expenditures among urban slum dwellers resident in a Southwestern Nigerian metropolis with expenditures from urban non-slum dwellers. This was conducted systematically to allow for comparison and proper interpretation of findings.

1.2 Objectives of the study

1.2.1 Broad objective of the study

The broad objective of this study assessed the burden of out-of-pocket payments on household expenditures and coping mechanisms/strategies when household members from urban slums and non-slum dwellers within Ibadan metropolis of Oyo State, Nigeria were admitted for emergency surgical care.

1.2.2 Specific objectives of the study

- **Objective 1**: Compared retrospectively the one-month pre-hospitalisation patterns of expenditure in slum and non-slum households in families with a hospitalised family member admitted for emergency care.
- **Objective 2**: Estimated the proportion of health-related expenditure to total expenditure and describe the percentage of slum and non-slum households that incur CHE.
- **Objective 3**: Found factors associated with CHE among respondents undergoing emergency surgeries in Ibadan.
- **Objective 4**: Explored lived experiences of households where emergency surgery of a household member resulted in catastrophic expenditure.

1.2.3 Organization of Thesis Structure

The thesis is structured into the following chapters:

Chapter 1: Introduction (background, problem statement, justification/rationale, broad and specific objectives)

Chapter 2: Literature Review (under the following sections: health, healthcare financing as a function of health system, the need for fair financing methods, universal health coverage, effects of payment patterns in resource poor settings, health seeking behaviour, CHE, coping mechanisms, healthcare expenditure for surgeries in LMICs, background of Nigeria and the health indices, health financing in Nigeria, urban poor in urban slums of Nigeria, conceptual framework.).

Chapter 3: Methods: The methods section documents the study setting and design used to address the different specific objectives. The different tools which were used to answer the various objectives and modes of analysis are also described, in detail, in this chapter.

Chapter 4: Results for paper 1: Comparison of household expenditure between urban slum and non-slum dwellers with a health emergency in a Southwestern metropolis, Nigeria

The results (and manuscript draft) for the retrospective household expenditures among non-slum and slum dwellers one-month pre-hospitalization that had a family member admitted for emergency care are compared and presented in this section.

Chapter 5: Results for paper 2: Prevalence and factors associated with catastrophic health expenditure among slum and non-slum dwellers undergoing emergency surgery in a metropolitan area of southwestern Nigeria.

The results in this chapter depicts the percentage of non-slum and slum families that incurred catastrophic health expenditure (CHE) in a comparative manner. The summary of the factors and predictors associated with CHE among the households faced with emergency surgical care (and the published article) are detailed in this chapter.

Chapter 6: Results for paper 3: Affording unavoidable emergency surgical care – the lived experiences and payment coping strategies of households in Ibadan metropolis, Southwestern Nigeria

The results (and published article) in this chapter explores and presents the perceptions and lived experiences of household payers that incurred CHE from hospital expenses one-month post discharge from the health facility.

Chapter 7: Discussion/Integration of Key Findings/Conclusion and Recommendations

This section discusses in detail the key findings of the results chapters and provides a conclusion and recommendations to summarize the thesis.

CHAPTER 2 Literature Review

2.1 Health

Health care is a necessity and a basic human need. It is in recognition of this that the Alma Ata Declaration of the 1978 primary health care conference, endorsed by practically all governments, called for social guarantees that would ensure that the basic needs, including health and food of all people are met [56]. Sadly, for most developing countries, the prospects of achieving even a minimal level of adequacy in health services and health remains remote [57]. Government health expenditures have not kept up and in many cases declined in the face of increasing health care costs [58]. Notably, the health sector, a major contributor to human capital development in any country is acknowledged as a locomotive for growth and development [59]. Many negative physical health indicators such as high mortality, low life expectancy, high poverty level and unwholesome lifestyles as documented by the WHO are associated with poor economic growth [60]. To improve accessibility to health care for the poor, several initiatives have been explored, one of such is abolishment of the cost sharing formulae in most public facilities [61].

2.2 Healthcare financing as a function of health systems

Given the essential and complex nature of health, specific activities designed to ensure the delivery of health to the population are necessary. Health systems, as defined by the WHO encompasses "all the activities whose primary purpose is to promote, restore or maintain health" [60]. The importance of functional health systems in improving healthcare of people all around the world cannot be over-emphasized. Health systems provide a network that are involved in maintaining and/or improving healthcare [62]. The evolution of health systems over the decades, has resulted in the general improvement of healthcare indices. For example, average life expectancy for males and females worldwide in the 1950's was estimated to be 48 years at birth. However, due to the global improvements in health systems and the social determinants of health, the life expectancy has gradually but steadily increased to 68 years at birth [22]. The successes achieved on a global scale however, is not evenly spread across different nations. While the improvements in certain countries have been rapid, others still have enormous gaps, which continue to impact negatively on the health status of their citizens. The difference in health systems' performance, resulting in varying healthcare indices, have been found even among nations of comparable resources and possibilities [57,63,64]. This underlines the fact that the constitution or strength of a health system determines the health status of the population it covers. However, since the strength of a health system is an aggregate of

the different aspects of the system, improving the performance of specific aspects of the health systems invariably leads to a stronger health system and in turn, better health status for the population [65]. The WHO has classified the objectives of a health system into oversight, investment and training, service provision and collecting, pooling of finances. Based on these objectives, the major aspects of a health system were classified as stewardship, creating resources, service delivery and health financing [22,60].

Health financing has been defined as 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, in the health system" [66]. The goal of health financing is to ensure that funding is available, as well as to set the right financial incentives to providers, while ensuring access to effective public health and personal health care to all individuals. Health financing involves the mobilization of funds, their allocation as well as the mechanisms for healthcare payment [58,67]. There are three basic functions of any health care financing system namely revenue collection, pooling resources, and purchasing services. However, it is necessary that the funds spent on healthcare are cycled to prevent healthcare from becoming a bottomless pit of financial demands. To achieve this, a number of options are available to governments. They generally include government taxes [63,68,69]; social insurance [70–73]; private health insurance [69,74]; and out of pocket payments [30,66,75,76]. The manner, however, in which a health financing sub-system generates revenue to fund healthcare can determine whether or not all its citizens can access healthcare when needed. Any health financing sub-system that cannot guarantee that all of its citizens can access healthcare when required is termed as inequitable and has failed in providing better care. The main reason why health systems exist is to guarantee access to healthcare for all citizens[77]. It was in this light that the concept of 'fair financing' was evolved as one of the foundations of a successful health financing system.

2.3 The need for fair financing methods - Health equity

While health systems in theory do not differ from other social systems (whose functions are to provide services to the population and all face competing demands for resources), the peculiarity of healthcare necessitates that health systems and by extension, health financing be treated in a unique manner. The unpredictability of health care demand, for example, demonstrates the uniqueness of health as a good [67,78]. And since people with varying socioeconomic characteristics are all exposed to this unpredictability differently, there is a need for the poor to be as protected from these unpredictable circumstances as the rich [79]. A uni-

form consensus on the overarching goal of a health system is that it should not only seek to collect and pool funds for health, but should do so in a way that allows people to use the needed services without the risk of severe financial hardship often termed as financial catastrophe or impoverishment. Provision of healthcare services on a basis of how much a consumer can pay or earn, will in a health system, often times lead to several undesirable consequences ranging from individual to household impoverishment [80,81].

Thus, fair financing in health systems seeks to ensure that the risks each household faces due to the costs of the healthcare system are distributed based on an ability to pay. Simply put, a fairly financed health system ensures financial protection for everyone. In such a system, no individual or household is pushed into poverty as a result of costs associated with accessing health from the health system [82,83]. One measure is that the ratio of total health contribution to total non-food spending should be identical across all households, regardless of their income, health status or use of the health system [84,85]. A good number of studies have reiterated the use and need for health financing to alleviate devastating consequences of paying for health care services among vulnerable populations [86,87]. Fair financing should be able to cover rural and urban locations, formal and informal sectors, low- and high-income earners, irrespective of class, race, color or ethnicity.

With respect to methods that governments use to recover funds from the citizens, the use of out of pocket (OOP) payments have been found to be the most regressive payment method, as even arrangements that attempt to exempt only the extremely poor or impose a sliding scale based on socioeconomic status, are usually marred by their high administrative costs [29,30]. As such, it has been advocated that more progressive pre-payment methods replace OOP payments, as is exemplified by health insurance [88].

Notably, health insurance is not only needed for protection from high medical costs but also to sustain a ‘fragile safety-net system” with respect to remuneration of health care providers [89]. Minorities and other vulnerable groups are generally believed to achieve better health status when they are covered by health insurance [90,91]. Participation in health insurance schemes has also been seen to increase financial access, utilization of health services and reduce delays in seeking healthcare [92,93]. Similarly, health insurance has been observed to be associated with a simultaneous reduction in regressive OOP expenditure on healthcare. In Indonesia, the OOP payments of respondents who enrolled in health insurance dropped by as much as 50% within 4 years. Within the same period however, OOP of uninsured respond-

ents increased by about 5% [13]. Also, when households were exempted from paying OOP, it increased their financial protection against adverse effects of excessive healthcare expenditure [94]. Bai and Wu (2014) [95] and Falkingham (2004) [96] have also reported that when health insurance is introduced, households have more money to spend on non-medical costs [97]. All these point to the progressive (pro-equity) nature of health insurance and the regressive nature of OOP. Health insurance has been promoted as a payment method that improves access to healthcare. This has resulted in a transition sweeping the globe, changing how health is or should be financed, with emphasis now on coverage [98,99]. Equity in healthcare financing has become an even more cogent discussion in the light of the resurgence of universal health care as a pillar of improving healthcare in the global context.

2.4 Universal Health Coverage

Put in its simplest terms, universal health coverage (UHC) has been interpreted to mean all actions put in place to ensure the ability of everybody within a community to access adequate and timely health care when needed without having to suffer financial losses [100]. This is described severally in literature. Some of these terms include universal health system, universal health care, universal health care coverage, universal health coverage, or simply universal coverage[6,101]. Wagstaff and Yu (2007) also noted that universal health care is often used to describe health care reforms in high income countries whereas universal health coverage is associated with health system reforms within low and middle-income countries (LMICs) [102]. As all these terms essentially refer to the same set of goals, the three basic domains of UHC remain constant, i.e. population coverage, financial protection and access to health services.

The term universal health coverage was defined at the 2005 World Health Organization's General Assembly as "access to key promotive, preventive, curative and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access"[58]. The importance of UHC is best described by Margaret Chan's words in her acceptance speech in 2012, "*In my view, universal coverage is the single most powerful concept that public health has to offer*"[103]. The means to achieving this concept, however, has elicited several approaches, with different authors acquiescing that a rigid set of policies cannot give the needed results in all settings [6,12]. As encouraged by several international organizations concerned with achieving health for all, countries should study the peculiar circumstances in their environment and make changes as required by the settings in order to achieve UHC.

With respect to achieving universal health coverage , development of financing mechanisms that shield the poor and prevent others from getting impoverished by health costs have taken center stage as one of the most important, if not the most important, principle[72,104]. It has been said that once an appropriate payment mechanism is established and financial protection is ensured for the population, the other two domains of population coverage and access to services are also likely to improve [73,105]. With reference to the mechanisms of payment described above, research has shown that direct out-of-pocket (OOP) payments, whether sanctioned or unofficial, such as user fees, copayments and deductibles, at the point of use are a deterrent to achieving UHC, while the use of pooled prepaid mechanisms such as tax revenue, whether general or dedicated, and contributions from health insurance, social, private or micro health insurance, contribute to UHC [93,106,107]. In many instances, the degree of success a country has in achieving UHC is often a reflection of how well the country has adapted its health financing system to these principles.

Because pooled payment options reduce financial barriers at the point of care, access and utilization of health services might be enhanced by any user. On the other hand, such OOP payments induce worse health outcomes among vulnerable populations [108]. These worse health outcomes, which can often result in repeated episodes of illness, are either direct (inability to cater for treatment costs related to the condition e.g. consultation fees, drugs, laboratory fees etc.) or indirect (inability to continue catering for other expenses such as education, feeding etc.)[109,110]. Broadly, how people pay, can have effects at the individual or population level on health seeking behavior; can result in catastrophic health expenditure that will invariably result in different coping strategies.

2.5 Effect of payment patterns in resource poor settings

2.5.1 Health seeking behaviour

Health seeking behaviour (HSB) has been defined as any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy [111]. It can also be referred to as illness behavior or sick-term behavior [112]. It encompasses all activities undertaken to maintain good health, prevent ill health, as well as dealing with any departure from a state of good health. HSB is said to be a complex process with several domains, influenced by both external and internal factors [113].

Payment patterns among populations have been found to be directly related to the likelihood of individuals taking appropriate action when faced with healthcare decisions. While house-

holds using pooled prepayment options like insurance are more likely to demonstrate appropriate health seeking behavior, households who have to pay OOP are more likely to delay contact with the formal health system, seek treatment from the informal health sector (e.g. chemists, traditional birth attendants and traditional healers) or even do nothing at all about their illness [37,80].

In developed settings, such as in the United States of America, uninsured households in rural areas have been found to exhibit poorer HSB than their insured counterparts. They were less likely to see a doctor or have their prescription filled than those with insurance. They were also more likely to rate their health status as fair or poor [89]. However, the effects of payment patterns on the health seeking behavior of households are not limited to developed countries. If anything, the effects are more pronounced in LMICs. For example, in Tanzania, Chomi et al (2014) [80] showed that more than 60% of insured households sought treatment on the day they fell ill, more than two-thirds of those who paid OOP delayed seeking treatment with the formal health sector, with some delays lasting over a week. Furthermore, lack of money to pay for treatment was reported as the most frequent reason provided for delays in seeking healthcare or not seeking healthcare at all. In Burkina Faso, the proportion of insured households who sought treatment from the formal health care centers surpassed that of the uninsured households more than twofold while almost 3 of every 5 uninsured households sought care from traditional healers [114]. This was in spite of the fact that the distribution of socioeconomic status in both insured and uninsured groups was similar. Other studies in LMICs also show that better health-seeking behavior was noted among households who had other people pay for their treatment [14,115]. This implies that when poorer households are protected from financial catastrophe resulting from healthcare expenditure, they are more likely to use formal healthcare services and do so promptly. Twenty-two percent of patients in a study in another LMIC, for example, did not seek appropriate medical help as a result of lack of finances, more than 40% of tuberculosis patients delayed seeking treatment for the same reason while 39% of tuberculosis (TB) sufferers were further impoverished by TB treatment [116,117]. Poor households have also been noted to define illness more ‘narrowly’ in an attempt to reduce the number of visits they make to formal health centers [96].

The effects of the worse health seeking behavior exhibited by households who lack the protection of pooled payments are usually noticed in their worse health outcomes. Increased morbidity and mortality rates have been reported among households who pay OOP rather than enjoy pooled prepayments such as insurance. In addition, their life expectancy at birth

and disability adjusted life years are lower. These worse outcomes negate the objective of the health system as discussed in earlier sections. Riman and Akpan (2012) found that longer delays in seeking treatment by women for reproductive health was associated with worse health outcomes and perceived health status [61]. Similarly, Moses et al. (2014) in Liberia associated prolonged delays before presentation of peptic ulcers with increased risk of in-hospital mortality [118].

Another trend observed in relation to HSB and household expenditure pattern was that poorer households were less likely to participate in some form of health insurance and thus, more likely to exhibit inappropriate HSB. For example, in the study from Burkina Faso earlier quoted, households in the richest quartile were almost 3 times more likely to have a form of health insurance than households in the poorest quartile [114]. Thus, poorer households have been shown to require financial protection more urgently than their wealthier counterparts if they are to demonstrate proper health seeking behavior and enjoy better health outcomes. If the health system fails to provide this protection, then these poorer households may end up spending more than they can afford on healthcare if they are to exhibit proper health seeking behavior [105,119]. This is a situation known as catastrophic health expenditure.

2.5.2 Catastrophic health expenditure

A situation in which OOP for health services consumes so much of a household's available income and pushes the household into poverty as a result, is termed as catastrophic health expenditure (CHE) [83,120]. In order to determine which households are suffering from or are at risk of CHE, defining the exact terms for what CHE means is important. Unfortunately, due to the complexities resulting from equity issues, different approaches have evolved as to how CHE should be measured, with different approaches being used in different circumstances. Yet, none has been adopted as a gold standard. These approaches are broadly classified into two - those that use a threshold based on income and those that are based on ability to pay.

The first approach calculates the healthcare spent as a proportion of household income. Based on this, CHE has been described by different scholars as between 2.5% and 15% of the household's total annual income, with 5% of total income being the most popular benchmark [17,18]. While certain schools of thought have considered this approach as problematic for equity as richer households may reach the threshold more easily than poorer households, the approach remains popular among CHE research [120].

The second approach to determining CHE, based on ability to pay, is also split into various schools with some using income less actual food spending as a method of computing ability to pay. Based on this, 40% or more of non-food expenditure has been set as a threshold for CHE [28,121]. However, since food spending among richer households may include non-essential food items, this method has been criticized as being unable to capture actual subsistence. To remedy this, the WHO proposed that ability to pay be based on effective income left after subsistence expenditure has been deducted [60]. However, complications still exist as to what represents subsistence expenditure and how to harmonize this in diverse settings [24,122].

Despite the plethora of definitions of CHE, research shows the same determinants and effects of CHE on populations. For example, regardless of the definition of CHE used, CHE has been observed predominantly among poorer households who lack any form of health insurance, the elderly and households with chronically ill members [123]. In addition, households with members undergoing emergency in-patient services in private hospitals have been found to be more susceptible to CHE than those undergoing elective surgeries [25,124]. It has also become universally accepted that while pooled prepayments tend to mitigate CHE, OOP results in higher levels of CHE and further pushes households into poverty [125].

Similarly, CHE results in worsened financial status for such households. CHE has been implicated in pushing households, particularly poorer households who pay OOP further into poverty. In LMICs such as India, Tanzania and Uganda, CHE has resulted in as much as 40% of the population being pushed further down the poverty line [27,126,127] with as much as 25% of the population suffering CHE [30,128]. In addition, in Brazil, CHE was found to increase by as much as 21% between 2003 and 2009 with the poorest-to-richest ratio (Q1:Q5) increasing from 3.3 in 2003 to 5.2 in 2009, signifying that the households with least favorable economic situations always suffered the worst consequences [129]. Furthermore, additional and sometimes indirect effects of CHE include vulnerable families opting for less costly traditional or sub-optimal care, or forgoing healthcare services that they need during further illness episodes altogether [29,130].

In summary, CHE among households remains a cause for concern for health policy makers as it is usually accompanied with inequities in accessing healthcare among different segments of the population [131]. This translates into worse health seeking behaviours (HSB) and worse health outcomes among these segments of the population. CHE has resulted in exposing

households to social risk and in many cases economic ruin by forcing families to sacrifice household assets and future welfare in order to cope with current out of pocket health payments [111,132]. These coping strategies eventually lead to worsened socio-economic situations for households that experience CHE.

2.5.3 Coping Mechanisms

Coping strategies have been defined by Nguyen et al.(2012) as "actions intended to maintain household "economic viability" in the face of an economic shock" [133]. Coping is believed to determine the relationship between stressor events (such as illness of a household member) and the responses which ultimately impact on health outcomes [134]. Bakhshayesh et al.(2012), opine that the strategies used to encounter stressful events and the resultant strain differ across individuals and their respective situations [135]. Coping mechanisms have been grouped into action-based coping mechanisms and emotion-based coping mechanisms. While the former relates to actions taken to deal with the stressful event, the latter describes coping mechanisms that reduce the strain without addressing the main sources of stress [135–137]. However, it is agreed that the coping mechanism used by an individual depends on the options available to the person at a given point in time [138].

In order to meet the rising costs of seeking healthcare, many poor households resort to coping mechanisms that are further detrimental to their wellbeing. Coping mechanisms are negative when they result in a lower socioeconomic status for the household involved, however not all coping mechanisms are negative and for example using social networks can be positive [55,139]. Nonetheless, negative coping mechanisms have been found to abound where CHE is present as households struggle to meet the financial demands arising from OOP [35,88]. In extreme cases, these large health expenditures may trigger a vicious cycle of depleted assets and impoverishment of the household (Table 2.1). They may force households to reduce their consumption of items that are necessary for their well-being and economic security [140]. Reducing the size of meals and shifting to less quality and less expensive food items have been reported as a common strategy among households with low income within urban areas [141]. Carter and Maluccio (2003) demonstrated that economic shocks could eventually lead to malnutrition in young children [142]. Wilkes et al. (1997) have classified coping mechanisms of households into maintenance or modification. In either case, specific responses of households that suffer CHE are likely to impact negatively on the household's economic status directly or indirectly [55].

Table 2.1. Household Strategies and responses to cope with severe ill-health; Adapted from Wilkes et al. (1997) [55]

Trigger Event	**Generic Strategy/Mechanism**	**Specific Response**
Higher CHE Levels (healthcare costs beyond routine budgets)	Maintain current consumption levels	Sell assets
		Borrow cash
		Obtain loans
		Postpone debt repayment
	Modify consumption	Reduce food consumption
		Purchase inferior food substitutes
		Poor HSB for subsequent illness episodes e.g. delay or inaction

Resorting to spending savings to cope with OOP health expenditures is very common [32]. Use of savings to defray health care costs have been also reported as common coping mechanisms in other African LMICs such as Zambia, Cote d'voire and Chad [139,143]. Within the context of LMICs, coping mechanisms which have been found to negatively affect household resources are commonly employed. For example, it has been noted that when households use money meant for other essential purposes, such as food and shelter, as coping mechanisms, it jeopardizes the future health of the subject and could lead to further impoverishment [39,40].

Within the higher income groups, it was found that selling or mortgaging assets was another common coping mechanism. A literature review of coping mechanisms in LMICs revealed that this method is prominent among the wealthier groups, alongside using up available savings [144,145].

Withdrawal of children from schools was found to be a common coping mechanism arising from high OOP in Africa [36,37]. In some cases, as many as 1 in every 11 households have to remove their children from school as a result of costs incurred from emergency obstetric care [146]. As expected, the poorest households were more vulnerable to using this coping strategy, which has been noted to be also detrimental to the welfare of the households, as it reduces their human capital and productivity and can plunge them further into poverty [133,147,148].

Borrowing is another coping mechanism often used to cope with excessive healthcare costs. Within the African context, borrowing is often done from professional money lenders who charge exorbitant interest rates, with reported rates ranging from 5% to as much as 30%

[36,109,132]. This means that households have an even greater future debt after coping with the immediate OOP. In addition, accumulated debts can result in worse economic and social status for households if not repaid quickly [149,150].

Skipping healthcare appointments to save/evade cost has been noted in several studies in LMICs as a coping mechanism used by poorer households [108,151,152]. In other cases, it was found that instead of household using formal healthcare centers, they resort to using informal health providers such as traditional medicine practitioners and patent medicine vendors [153]. The worst hit by OOP have been noticed to desist seeking any form of healthcare and depend self-treatment [111].

The scope of coping strategies has been noted to surpass the concept of CHE, as many families who experience these coping strategies do so not as a result of direct healthcare costs but rather from other non-direct healthcare costs such as unofficial payments, transportation, food, gifts and lost income arising from missing work due to illness [154,155]. Most of these costs are not encapsulated in the calculations of CHE. As such, coping strategies have been touted as a more comprehensive measurement of the impact of illness episodes or healthcare on households.

Studies have shown that the frequency and extent to which households adopt these coping strategies vary across socio-economic status. As with HSB and CHE, despite the fact that almost every household is vulnerable to using these strategies, the lower the socioeconomic status of a household, the more likely it would adopt one or more of the above negative coping strategies [74,140,156]. Similarly, the extent to which poorer households use these coping strategies has more profound consequences than households of higher socio-economic status. For example, 60% of poor households in households in rural Vietnam were found to be heavily indebted, with a third of them citing health-related costs as the reason for their indebtedness [133,149].

With regard to the type of illness, while acute health problems present more of an initial shock to households, chronic health conditions are more likely to elicit these coping strategies as the non-direct health costs, such as mentioned earlier, could even surpass the direct healthcare costs [37,101,157]. In Ghana, indirect costs of treating malaria, a common ailment represented 79% or more of the total healthcare costs in all three districts surveyed by Asenso-Okyere & Dzator (1997) [158]. Similarly, for conditions that require in-patient services, the likelihood of increased direct and non-direct health costs leading households to

these coping strategies is higher than out-patient services[122]. A systematic review by Baumeister, Knecht, & Hutter (2012) showed that the synergistic effect of both chronic diseases and in-patient services resulted in far higher healthcare costs [159]. In fact, Nguyen et al. (2012) found that in-patient services cost about 5 times more than out-patient services [160]. Thus, in-patient services, such as surgeries, pose more of a threat to a household's economic status than most out-patient services. It is worth noting that there is an increased threat of impoverishment posed by emergency surgeries due to their sudden nature and higher direct and non-direct health costs to the patient (sufferer) and the household.

2.6 Healthcare Expenditure for Surgeries in LMICs

Recent studies have shown that many LMICs currently face a multidimensional burden of diseases - infectious disease, maternal disease, neonatal disease, non-communicable diseases, and injuries [57,151,161]. For example, Abegunde, Mathers, Adam, Ortegon, & Strong (2007) projected that about 41 million people died from non-communicable diseases in 2015, with chronic diseases responsible for more than 50% of the total disease burden in the 23 countries that account for 80% of the world's chronic disease mortality burden [162]. In addition, Falkingham (2004) found out that more than 60% of the health conditions suffered within one month were chronic health problems [96].

While chronic diseases are important and contribute significantly in terms of burden of disease and cost of care in LMICs [157,162–165] the need for surgery also is very important. Surgeries are essential and thus should be given special attention if a functional, responsive, and resilient health system is to be developed and maintained [47]. The costs of surgeries have been on the rise worldwide with Birkmeyer et al (2012) reporting an average of $40,671 for procedures such as hip replacement and colectomy in high income countries [166]. However, due to complexities arising from the healthcare financing methods in place in most LMICs, expenditure on surgeries arising from these diseases and other conditions continues to remain a source of impoverishment to most households as they pay OOP and lack financial protection [146,167,168].

An estimated 32.8 million people experience catastrophic expenditure annually from direct medical costs from surgeries in LMICs alone. This represents a little under one-quarter of the total 150 million people in LMICs suffering catastrophic health expenditure from all forms of healthcare [169]. Dare et al (2014) noted that most of these individuals live in sub-Saharan Africa (SSA) and South and Southeast Asia [170]. Meara et al. (2015) suggest that as many

as 41 million unmet cases of surgical care exist in sub-Saharan Africa alone, with inability to meet healthcare costs serving as a major barrier in the region[171].

Analysis within different wealth groups in the LMICs showed that when accessing surgical care, the poorest wealth groups always suffer significantly higher CHE proportions when compared to other groups. In fact, Abegunde & Stanciole (2008) found that the poorest wealth group were 61 times more likely than their richest counterparts to suffer CHE from surgeries [163]. Similarly, in Mali, while none of the members of the richest quintile suffered CHE from emergency care, more than three-quarters of those belonging to the poorest quintile experienced CHE [146].

Evidence from LMICs has consistently shown that OOP from surgeries has continually resulted in increased risk in the occurrence of CHE and worse health outcomes. Daivadanam et al (2012) also noted that CHE resulting from surgical operations are often higher than those from general illnesses [145], with CHE experienced from surgeries being more than 4 times than incurred from general illnesses [171]. Those who experienced CHE within the first 3 months were also more likely to die within the first year than those who did not. Similarly, poorer households who experienced CHE during obstetric care were more likely to suffer maternal and neonatal mortality than those who did not [146].

Nonetheless, it would be wrong to equate this number with the total number of people suffering CHE from surgeries. This is because several non-medical costs which are not represented in the direct costs equally have the potential to incur catastrophic health expenditure for some families [154,172]. Some of these costs include transportation, lodging, feeding and other miscellaneous expenses incurred during surgical care. As explained earlier, these indirect costs may even exceed the direct medical costs. An estimated 48 million annual cases of catastrophic expenditure have been attributed to indirect costs [173,174]. In Nigeria, between 1% and 5% of the annual Gross Domestic Product (GDP) is lost to indirect costs of seeking healthcare while other African countries such as Rwanda recorded a higher proportion of indirect costs (58%) than direct costs (42%) [175].

This highlights the importance of avoiding CHE among patients with surgery as worse health outcomes are associated with presence of CHE among them. Thus, fair financing for healthcare expenditure (such as surgeries) in LMICs has received increased attention in recent times. Since Nigeria is the setting in which the research was conducted, a discussion of

the current trends in healthcare, healthcare financing in the country and especially among the urban poor is essential.

2.7 Background of Nigeria and the Health Indices

Nigeria's projected population size was put at 168 million as at October 2011 [176].The capital of Nigeria is Abuja, geographically situated in the center of the country. Nigeria has a federal system of administration, with a Federal Capital Territory (FCT) and 36 States. The states and FCT are grouped into six geo-political zones: South-South, South-East, South-West, North-East, North-West, and the North Central. Nigeria is further subdivided into 774 Local Government Areas (LGAs) and these are again sub-divided into 9,565 wards. [177]. These 774 LGAs are the constitutionally designated providers of Primary Health Care (PHC) [178]. Nigeria is home to four large ethnic groups: Fulani, Hausa, Igbo and Yoruba with as many as 350 other minor dialects and languages existing across the country [179].

The healthcare system is structured in 3 tiers- primary, secondary and tertiary levels. The primary healthcare is overseen by the local government, which is the closest to the people. The target of PHC was to ensure that all citizens have access to healthcare. Though PHC centers were established in both rural and urban areas, rural areas remain understaffed and underserved when compared with the urban areas [180,181].

Despite the several global debates on the need to protect individuals and households from disastrous consequences of unexpected high medical costs, uptake and progress to achieving universal health coverage (UHC) in Nigeria has been slow and daunting [182]. This is evidenced by both sub-optimal national and local health indices.

Recent literature estimates neonatal mortality (NMR) and infant mortality rates (IMR) as 39 deaths per 1,000 live births and 67 deaths per 1000 live births respectively in 2018 [183]. Under-five mortality was as high as 132 deaths per 1,000 live births in the same year. Differences in under-five mortality (U5MR) according to the same study [183] ranged from 92 deaths per 1,000 live births (LB) in the urban regions compared to 157 deaths per 1,000 live births (LB) in the rural areas [183]. Malaria is the leading cause of child mortality with an estimated 300,000 deaths annually accounting for almost 60 percent of outpatient visits and 30 percent of hospitalizations. Despite introduction of insecticide-treated nets (ITNs), in 2018, Nigeria alone still accounted for 25% of global malaria burden. Malaria in Nigeria, also contributes to an estimated 11 percent of maternal mortality [184]. More than half of the patients with suspected malaria first seek treatment in the private sector. Proportion of fully

immunized children has only increased minimally from 23 percent in 2014 [59] to 31 percent in 2018 [183].

In contrast to the WHO report referenced earlier, the maternal mortality ratio (MMR) nationally, according to the 2014 Nigerian Demographic Health Survey (NDHS), is currently estimated at 545 per 100,000 live births – with a drop compared to 576 per 100,00 live births in 2008 [185]. More recent data (in 2018) showed a further but slow decline in national MMR estimates (512 deaths per 100,000 live births) [183]. The total fertility rate (TFR) as a whole also recorded a slight decline from 5.7 in 2008 to 5.6 in 2013 but there is significant within-country variation where in Northern Nigeria the TFR is over 7. In 2018, the TFR is now set at 5.3 [183]. This is also the region where only 9.7 percent of women use modern methods of contraception [186]. The national average unmet need for family planning is 20 percent while the contraceptive prevalence rate (CPR) in the north is estimated at around 2-4 percent which is much lower than the national average. Childbearing begins early and births are closely spaced [185].

2.7.1 Health financing in Nigeria

Inadequate, inefficient and inequitable healthcare financing has proven to be one of the main barriers to the achievement of UHC in Nigeria [187]. Inadequate tax collection systems, corruption, weak management and oversight as well as insufficient skilled personnel are problems typical to developing countries, and which have hindered the achievement of UHC in Nigeria [103]. Health remains on the concurrent list in the country, meaning that, apart from the national budgetary provisions, each state and local government area is expected to allocate part of its budget towards health. Unfortunately, though, this approach has not resulted in improved health financing in the country. As of 2013, Nigeria spent just 5.3% of its Gross Domestic Product (GDP) or $139 per capita on healthcare [188], while government expenditure on health remained at 4% [137]. These figures are low considering that ‘smaller’ countries such as Burkina Faso and Democratic Republic of Congo spend 6.7% and 7.9% of their respective GDPs on health care. Thus, the government at all levels is responsible for only a little over one third of the country’s total spending on health, with the remaining two-thirds financed through OOP [30].

The country’s National Health Insurance Scheme was introduced in 2005 in order to increase access to quality affordable healthcare by the citizens. However, over a decade later, the scheme still covered only federal civil servants who represent less than 1% of the population

[189]. Initiatives to introduce health insurance programs to the rural areas have been hampered by poor and/or inconsistent funding, willingness-to-pay issues and programmatic defects [92,190]. The result of this inadequate government spending, coupled with low levels of external health financing and the relative novelty of health insurance, means that OOP remains the predominant form of healthcare expenditure in the country [191]. The condition is further exacerbated by the high levels of unemployment, poverty and inflation present in the country. More than 3 out of every 5 Nigerians live below the $2 per day poverty threshold [181].

As discussed earlier, the effects of OOP as a predominant method of paying for healthcare, has hindered access and a lack of financial protection for the vulnerable [153,192]. Similarly, the levels of CHE reported in the country are very high, with as much as 25% of the population suffering from CHE during their last illness episode [32]. This excessive level of CHE limits healthcare consumption, further aggravates the already inequitable access to quality care, and exposes Nigerian households to the financial risk of expensive illness treatment [124,152]. This has affected the HSB of several Nigerians, with 22% of patients in parts of the country not seeking appropriate medical help as a result of lack of finances [193]. In addition, the pattern of healthcare payment in use presently in Nigeria has been said to reduce the likelihood of seeking treatment by as much as 62%. This has resulted in self-medication, untreated morbidity, reduced access to health care and increased impoverishment among people worse hit by catastrophic payments [194] that has in turn contributed to the poor health indices of the country. For example, delays in seeking treatment, especially for chronic diseases have been reported to be longer among Nigerians than in other LMICs such as Vietnam [113]. Coping strategies that Nigerian households use commonly include borrowing money, selling of assets, reducing food consumption and removing children from school [192].

Another stand out observation from analysis of health financing in Nigeria is the variation of health indices based on socio-demographic characteristics such as education, economic status and location. For example, while coping strategies were observed in as much as 71% of the rural population, only 53% of urban population used coping strategies [194]. However, this disparity in effects of health expenditure has been observed even between various groups in urban settings. The rapid urbanization of several cities has meant that many more rural dwellers are migrating to urban cities. This in turn has led to an increase in the number of urban poor, posing a unique challenge to healthcare in urban areas [195].

2.7.2 Urban Poor in Urban Slums of Nigeria

Global attention is gradually shifting to the urban poor: a group of poor individuals/households usually underrepresented in surveys, health interventions but yet with special needs [196]. An urban poor individual is any person living on less than $1.25 a day [197]. However, UNICEF defined the urban slum as, *"*a group of ten or more adjacent households whose housing structures are of visibly poor quality, and/or whose homes have been laid out in a non-conventional fashion without adherence to a ground plan". In addition, such houses lack one or more of the following criteria:

- Durable housing of a permanent nature that protects against extreme climate conditions
- Sufficient living space, which means not more than three people share the same room
- Easy access to safe water in sufficient amounts at an affordable price
- Access to adequate sanitation in the form of a private or public shared toilet by a reasonable number of people
- Security of tenure that prevents forced evictions*"* (pp. 17) [198]

Slums have been defined variously in literature with Alagbe (2006) [199] describing them as a wide range of low-income settlements combined with poor living conditions. However, the definition could be widened to include several informal settlements that are becoming 'visual expressions of urban poverty'. Often times, they are characterized as household or families living in informal settlements [121] that are fraught with daily challenges; challenges that include limited access to employment opportunities, income, inadequate and insecure housing and services [198] and in extreme cases compounded by the consequences of climate change such as flooding [200].

The urban poor in slums are becoming the focus of global attention due to the rapid urbanization, which is the also found in sub-Saharan Africa (SSA). The numbers of slums and urban poor living in SSA have continued to rise thereby necessitating attention from policy makers. About one-third of the world's urban population live in slums with the figure rising to as high as 43% in developing countries [201]. Nigeria is not excluded from the menace of speedy development and population expansions, considering that a number of slums have been reportedly growing in cities located in the urban areas. The nexus of economic (the pursuit for improved incomes), technological (availability and accessibility to recreational and communica-

tion amenities in urban cities) and demographic (substantial amount of youths) factors have all culminated in an even quicker rate of migration from rural and traditional communities to municipalities [202]. These factors end in increased pollution, lower food production and other similar outcomes that impact population health negatively and increase population mortality [203]. Nigeria is thus one country that is documented to have a spiking proportion of slum dwellers with as much as sixty percent of urban dwellers inhabiting the slum regions [202]. In Lagos State, the former capital of Nigeria, as much as 48.3 percent of its total population live below the poverty line, despite being responsible for about 45 percent of the national industrial labour force and 62 percent of the Gross National Product (GNP) [204]. Lagos as described by Davis (2006) is "probably the biggest continuous footprint of urban poverty on earth"[205].

Correspondingly, the urban poor have been observed to have a disproportionate exposure to unmet needs (such as clothing, shelter and food), low wages, thus, are extremely susceptible when exposed to health risks manifesting in different ramifications [206–208]. Birhane and colleagues (2014) suggest as much as 75% of urban poor experience food insecurity as a result of poor wages, dependence on markets (as supposed to self-production) and poor agricultural infrastructure [141]. The significance is that in many parts of these cities, low and middle income people have formed congested areas with inadequate water supply and poor waste disposal methods [199,209].

These people have little financial resources and thus form a vulnerable group who need financial protection against health risks which they are more prone to but less prepared for. The housing and environmental conditions within which they live aggravate the likelihood of their falling ill, which in turn, poses additional financial threats to already impoverished households [210]. This is compounded by inequalities in access to health care services, which have also been noticed to be a major challenge that the urban poor face [211].

The rapid urbanization witnessed in many cities in Nigeria has also affected Ibadan. The city's population is estimated to have doubled within a decade; but several experts insist that these estimates are not capturing the true situation [212]. Slums in Ibadan have been broadly categorized into five (three main slums with two minor slums). The first slum is the oldest and largest slum which forms the core area of the city while the second group consists of the slums found at the city's margins. The third, fourth and fifth groups of slums in Ibadan are the numerous tiny slums found close to local labor markets or major roads. Regardless of the

type of slum, however, research has shown that deplorable conditions that characterize slums and as discussed above are common in all five kinds of slums. For instance, while densely populated areas like Yemetu and Elekuro have a paucity of infrastructure and poor housing facilities, residents of other slums such as Sabo also predominantly use makeshift housing structures and lack access to basic amenities [213].

2.8 Conceptual Framework

The conceptual framework as illustrated in Figure 1 was used to understand the risk of CHE. In the event of an emergency surgery, households are either able or unable to pay for the hospital costs. Factors influencing which outcome will occur can be classified as predisposing and enabling factors. It is anticipated that if a household is able to pay for the hospital costs when required, the outcome of the hospital admission and management of condition will be favorable as measured by, prompt care, treatment for the ailment and an on-time discharge (Figure 1).

When a household is unable to pay, they will be at risk of unfavorable health outcomes which can range from foregoing care completely, delay in seeking care or subject to catastrophic health expenditures which can be measured by delay receiving in care, suboptimal care and delayed discharge. This can lead to prolonged length of stay in the hospital, disability (morbidity) and/or death in extreme conditions (Figure 1). The introduction of "prompt or delayed discharge" in this framework is because in many African countries and in Nigeria, patients are often denied discharge until they have paid their bills [214–216].

CHAPTER 3 Methods

3.1 Study Site

This was a prospective study that followed up the payers of hospital fees for patients who underwent emergency surgery in Ibadan, Nigeria (payments were medical expenses incurred by the patient and paid for by the respondent/payer). Ibadan metropolis is the capital of Oyo State. Oyo state is located in the southwest zone of Nigeria and lies within longitude 3.933^{o} East and latitude 7.85^{o} North. It has a population of approximately 6,183,000 on a landmass of 28,246.264 km^{2} [217]. Administratively, the State has three (3) arms, namely the Executive, the Legislative and the Judiciary that govern Oyo State; each arm has its own clearly defined constitutional roles and responsibilities. The State comprises of thirty-three local government areas (LGAs) that run as its administrative divisions. Five of these 33 local government areas (in which the urban slums are located) together make up the State metropolis named Ibadan (Ibadan North East, Ibadan North, Ibadan South-West, Ibadan North-West, and Ibadan South East). Within the metropolis (the five local government areas), there are 93 public health facilities and 47 secondary private hospitals in 2016. The ninety-three public health facilities are subdivided into 79 primary health care (PHC) centers while 14 are tertiary and secondary public health facilities [218].

Within the identified five LGAs that make up the metropolis, the primary unit of selection were the health care facilities that attended to the population of the selected LGAs. A list of all the secondary facilities and tertiary facility was obtained from the Department of Planning Research and Statistics, Ministry of Health in Oyo State Secretariat. The hospitals were placed on an ordered list and using random selection, a total of 15 secondary facilities (comprising of both nine private and six public facilities were selected to participate in the study). The only tertiary facility – University College Hospital was also purposively selected to participate [219]. These facilities were selected based on their capacity to offer emergency surgical services.

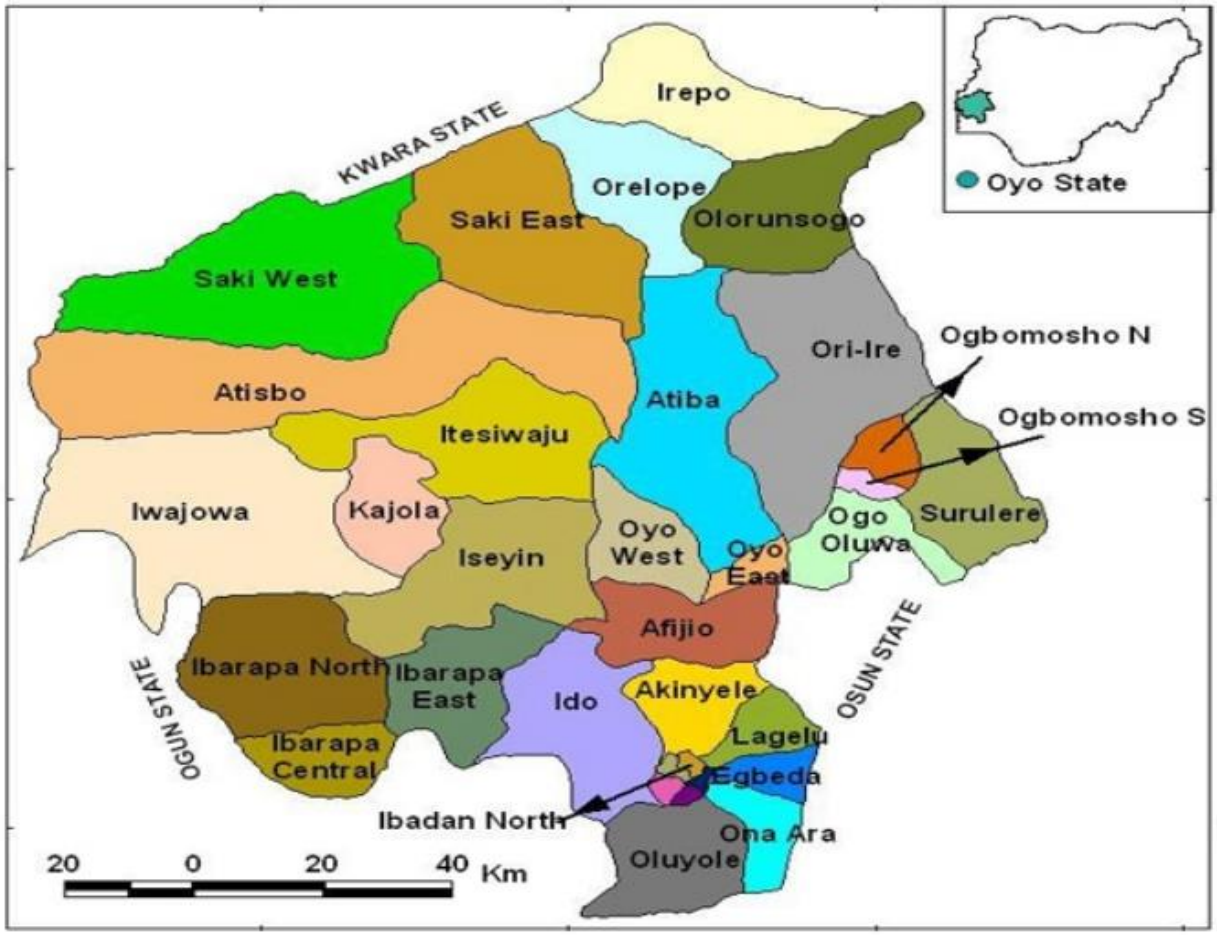


Figure 3.1 Map of Ibadan metropolis in Oyo State. Source: Oyo State of Nigeria [220]

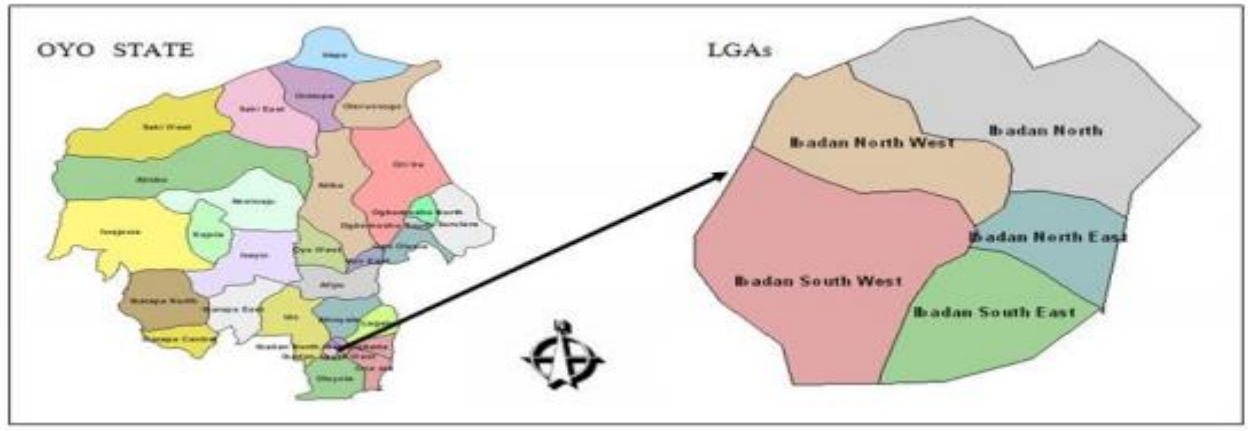


Figure 3.2 Map of the five urban LGAs within Ibadan metropolis Source: Oyo State of Nigeria [221]

3.2 Study Population

Study participants were household members (both males and females) in charge of remunerating the hospital for bills raised on behalf of an admitted family member who has just been admitted for emergency surgical condition. In this thesis, the study participants are referred to as *"payers"* while the admitted family member is referred to as the *"patient"*. The payer had to be over 18 years and confirm residency in the study area for a minimum of 12 months before the commencement of the study – either in the non-slum or the slum areas (See Appendix VI for operational definitions). The patient however, could be any age as long as he/she was listed for emergency surgery. The existence of a patient that was scheduled for an emergency surgery was used to determine eligible households for the study. The patient was taken as the index case that was used to identify the household while the payer was the actual study subject; the patient nonetheless, had the study explained to him/her and was required to sign an informed consent as well. In order for the payers to qualify to participate, they also had to provide consent for a hospital-based baseline study and a one-month follow up visit (for the qualitative component of the study).

3.3 Sample Size Determination

It was estimated that 150 non-slum dwellers and 150 slum dwellers (300 participants in total) would have 80% power to detect a true absolute difference of 15% in the proportion of participants that incur CHE between the two groups (non-slum dwellers and slum dwellers). The sample size was estimated assuming that approximately 23% in the non-slum area would experience catastrophic health expenditure (CHE) as found in a Kenyan study [121]. The calculated sample size was inflated to 500 to account for the loss in precision due to the clustering of participants within hospitals. Out of the 500 participants that were eligible and invited to participate in the study, 50 respondents refused to participate. As such, 90% response rate was attained with a total of 450 respondents that provided consent to participate in the study. Households with a patient (household member) booked for emergency surgery were recruited as they presented to the hospitals that were selected for inclusion into the study. The recruitment of study participants (the payers of hospital bills for admitted patient) was done in order as the patients arrived for in the emergency rooms (ERs) emergency surgery until the sample size requirement was met for each group of slum and non-slum dwellers.

Using a multistage sampling technique to recruit respondents, the 5 local government areas (Ibadan North, Ibadan North-East, Ibadan North-West, Ibadan South-West, and Ibadan South East) were enumerated to differentiate the slums from the non-slum regions to be used for the

study [213]. A list of all health care facilities located within the metropolis was also obtained and classified as either located in the slum or a non-slum region. Primary health care facilities were excluded because they were ill-equipped to provide surgical services. The secondary facilities were stratified as private/public (type of hospital), tertiary/secondary (grade of hospital), to facilitate an equal selection and representation of the various cadres of health care facilities.

The only tertiary facility, (in the tertiary stratum) located in the urban region was selected purposively [219]. All secondary health care facilities were listed in order and a sample of nine private and six public secondary facilities were randomly selected across the five urban LGAs.

Across the designated secondary facilities, units that offered emergency surgeries were visited [Obstetrics and Gynaecology, Emergency Medicine (Casualty), Surgery] in each hospital. Approval was obtained from all the Heads of Department to conduct the research with their team. Using the register of patients, patient recruitment was estimated per facility. Using proportional allocation, the maximum number of patients to be recruited per facility was calculated. The calculated sample size per facility was divided into four to ensure that an equal number of patients was recruited from the units listed earlier. Using residence of the patients to differentiate those from the slums and non-slum areas, patient recruitment was completed in a systematic manner after being screened for eligibility.

3.4 Study Instruments

For the research, a total of 3 instruments (2 quantitative tools and 1 qualitative tool) were used. Quantitative tools included a baseline survey and a cost diary where data on the following was collected: sociodemographic/baseline data; expenditure patterns (one-month pre-admission); health costs during admission. All questionnaires were administered to the payer (Operational definitions in Appendix VI). The qualitative tool was an in-depth interview guide (Appendix V). All instruments were pre-tested and validated first amongst patients similar to the study population to eliminate ambiguities.

3.4.1 Quantitative Instruments:

Baseline survey: This tool was administered at recruitment to obtain baseline data from the head of household/payer alongside the cost diary. (See Appendix IV) (Adapted from World Health Survey [222]).

Cost diary: This was also opened up for each patient at recruitment phase (See Appendix IV). The details, with proper documentation, were provided to the participants. Details of expenditure regarding 13 household items (entertainment, health care costs, toiletries, communication, food, utilities, education, transportation, voluntary insurance[4], care requiring overnight stay, all other goods & services, diagnostic/laboratory care, care by traditional healers, dentists, care by medical staff not requiring overnight stay, healthcare products, any other healthcare products not listed above, medication/drugs) were sought. Utilities were further sub-divided into 8 household items (rent, heating fuel, telephone, construction, gas, electricity, clothing and water).

3.4.2 Qualitative Instruments:

In-depth Interview Guide: An in-depth interview (IDI) guide (Appendix V) was used to explore the experiences of households using a case study approach. Participants that were invited to participate were those that had incurred catastrophic expenses based on preliminary analysis of baseline and cost of treatment questionnaires and who were willing to participate in the interviews. A minimum of twenty in-depth interviews (IDIs) were anticipated and planned with the payers of hospitalized patients. This was discontinued on the thirty-first interview when saturation was attained and no new information was obtained from the interviews. The interviews were done to document lived experiences of the households who had a member hospitalized and who had experienced CHE.

All instruments (baseline survey, cost diary and in-depth interview guide) were translated into Yoruba. A back translation into English was conducted to verify that the true meanings and interpretations of the questions were preserved. Trained research assistants were matched with respondents based on gender for both quantitative and qualitative data collection. All interviewers had a minimum of tertiary education.

[4] Voluntary Health Insurance refers to insurance provided by private insurance companies (vertical and parallel structures to the NHIS). Based on special request by the enrollee, insurance services may be limited to provision of health insurance coverage only or extend to property (car or housing) insurance.

3.5 Data Analysis

A summary of the data analysis plan is presented in Table 3.5 to highlight the mode of data analysis methods utilised for each objective.

Table 3.5: Summary of Data Analysis Plan

Objective		**Study Design**	**Tools Used / Data Sources**	**Study Participants**	**Data Outcome Variable**
1	**Objective 1:** To compare retrospective-ly the patterns of expenditure of slum households with non-slum households in families with a hospitalized member one month before the hospital admission for emergency care	Quantitative	1. Baseline Survey 2. Cost Diary *(Appendix IV)*	Payers of bills of a family member scheduled for an emergency surgical procedure	Comparison of household expenditure one-month pre-hospitalization
2	**Objective 2**: To estimate the proportion of health-related expenditure to total expenditure and describe the percentage of slum and non-slum households that incur CHE.	Quantitative	1. Baseline Survey 2. Cost Diary *(Appendix IV)*	Payers of bills of a family member scheduled for an emergency surgical procedure	Proportion of study respondents incurring CHE
3	**Objective 3**: To find factors associated with CHE among respondents undergoing emergency surgeries in Ibadan.	Quantitative	1. Baseline Survey 2. Cost Diary *(Appendix IV)*	Payers of bills of a family member scheduled for an emergency surgical procedure	Computation of factors associated with CHE and its predictors
4	**Objective 4**: To explore lived experiences of households where emergency surgery of a household member resulted in catastrophic expenditure	Qualitative	In-depth Interview Guide (IDI) *Appendix V*	Payers that incurred CHE in the quantitative survey	Lived experiences and perceptions of slum and non-slum dwellers with hospital admission

3.5.1 Quantitative Components

The baseline survey was interviewer administered and it captured the sociodemographic data (of both the payers and patients) and hospital costs. The cost diaries on the other hand captured three phases (i) all retrospective household expenditure incurred one month prior to hospitalization (with regards to entertainment, health care costs, toiletries, communication, food, utilities, education, transportation, all other goods & services, diagnostic/laboratory care, voluntary insurance, care by medical staff not requiring overnight stay, dentists, medication/drugs, care by traditional healers, healthcare products, any other healthcare products not listed above, care requiring overnight stay), (ii) all household expenditure incurred during the index hospitalization [for all 13 items listed above] and (iii) all prospective household expenditure incurred from date of discharge till one month after hospitalization [also for all 13 items listed in (i) above].

The cost diary was provided to payers and scheduled for collection one-month post discharge and it was designed to enable a cost comparison of household expenditures four weeks before surgery, during admission and from date of discharge till 4 weeks post-discharge. Cost diaries were composed based on standard guidelines as proposed by Goossens and colleagues (2000) that included a self–explanatory guide [223]. Participants were taught how to fill the diary on the day of recruitment and were asked to take them home after discharge to continue with filling post discharge expenditures. Thrice weekly face to face follow up visits during admission and post-discharge, were conducted by research assistants to ensure that participants filled the diary properly while on admission and at home. Those who could not be visited for one reason or the other were followed up by telephone calls to ensure that diaries were filled appropriately.

The explanatory variables for this study included the age of payer, age of patient, gender of payer, gender of patient, marital status of the payer, religion of the payer, ethnicity of the payer, educational status of the payer, relationship of the payer to patient, indication for surgery, type of facility, grade of facility, insurance cover, income of payer. The outcome variables were the total amounts expended by each respondent four weeks before admission on household expenditure - actual household expenditure (AHE) and proportion of families with CHE (direct costs such as costs of admission, consultation, drugs, and investigations). In order to capture AHE objectively, respondents were required to provide a complete list of routine household expenditures for a total duration of 4 weeks before the admission. A four week recall period was decided upon to limit challenges posed by recall bias. The four week recall

is a duration that has been substantiated by literature and analogous research [224], to be adequate enough to provide quality data.

Estimation of catastrophic expenditure: was estimated using *Ti*/*xi* exceeding a specified threshold, *z*, (where *Ti* is the OOP health expenditures for household *i*, xi is the total expenditure for household *i)*. A household was considered to have experienced catastrophic health care expenditure if out of pocket expenditure exceeded 5% percent of average annual income [225] that served as the primary outcome for this objective. Since catastrophic expenses have been measured extensively in literature using 5% threshold, this threshold was utilized to examine catastrophic health expenditure also in this study. However, analysis was also conducted at 3 other thresholds where health care costs exceeded 10%, 25% and 40% of total income [21]. Sensitivity analyses were carried out using these alternative cut-offs. An average exchange rate over the time of data collection was used to estimate the dollar equivalent of every naira. At the time of data collection (between May 2017 – August 2017), a dollar was equivalent to ₦360 which was factored into analysis and presentation of results. Health expenditure was computed by totaling the cost of inpatient care while household expenditure was computed by totaling all costs spent while at home. Information on household expenditure was collected forward in time to understand the impact of the hospitalization on the payers over a longer term. Computations of proportions were carried out in each group (i.e., slum dwellers and non-slum dwellers) with CHE (as defined by the 5% cut-off). Hence, participants were grouped as those with catastrophic health expenditures (CHE) and those without CHE. A sensitivity analysis of CHE was also conducted at 10%, 25% and 40% thresholds to determine the factors and predictors that would be significant at these other thresholds (thresholds that have been debated on rigorously by experts).

The data was weighted for analysis in order to take into consideration the fact that the probabilities of selecting a participant might vary between different facilities. As such, the weighted proportions and percentages were reported in this thesis. The proportions incurring CHE were compared using the Rao-Scott adjustment to the chi-square test (using STATA Release 13.0), in order to take into account, the clustering of respondents within hospitals.

The results of the actual household expenditures were presented as means with 95% confidence intervals. Descriptive statistics were used to summarize continuous variables while frequency tables were created for categorical variables. The 95% confidence intervals were estimated taking into account the effects of clustering. Bar charts were also used to present

some of the data findings. Results of catastrophic health expenditure (CHE), were reported using odds ratios with 95% confidence intervals.

3.5.2. Qualitative Component

An in-depth interview (IDI) guide was used. Thorough training of research assistants by the principal investigator was conducted so that they understood the intention of the study and were familiar with the research tool. To maximize the reliability and validity of the data, Lincoln and Guba's criteria [226] were used: thorough researcher training in interview skills, data analysis and data management. Thereafter, two research assistants were assigned per facility under the supervision of a field supervisor. The field supervisor (who was informed of all recruitments) verified all recruitments and ensured supervision and collection of quality data.

Any person that was found to have suffered CHE in the larger study and had provided consent from inception to be enrolled in this latter qualitative study was eligible to be part of this study. Details of participants that met these eligibility criteria were extracted and arranged on a list. Contact was established with the participants sequentially from the 1st payer and written informed consent were sought. In the event that a payer declined to participate or was unavailable for an interview, the next eligible candidate on the list was approached. This was continued until all available participants were enrolled.

In-depth interviews were recorded. Each individual included was regarded as a case study. Information with regards to recent hospital admission and consequent experiences with respect to paying for health services was obtained using probing and funneling as core strategies for the interviews [227,228]. In total, interviews were stopped at the 31st interview when saturation was noticed. Interviews were conducted in person and in localities that were conducive and convenient for the participants. The interviews were conducted both in English and Yoruba. Yoruba interviews were initially transcribed verbatim before translation to English.

Data transcription was conducted and the raw data were imported into Atlas.ti vs 7.5.21 [2]. The validity of the study was verified using respondent validation and maximum variant sampling [229,230]. This qualitative study utilised conventional content analysis [231]. Thereafter, the texts from the interviews were coded by meaning into themes by means of an inductive method [232]. The qualitative data were explored for relevant themes or codes that had emerged during the analysis. Relationships between key issues of economic hardship and coping styles were cross-examined with sociodemographic characteristics, slum/non-slum

dweller status, and type of hospital facility (private or public). The analysis was continued in a stepwise manner until all similarities and differences were identified. Relevant emerging themes were interpreted. As part of the qualitative results, a summary of the demographic characteristics is reported using percentages and counts.

3.6 Data Management

Data from the field was initially entered into excel and later uploaded into STATA. Validation of entered data was cross-verified by two data entry clerks in order to ensure accuracy.

3.7 Funding

This thesis was financed by the Consortium for Advanced Research Training in Africa (CARTA). CARTA is jointly led by the University of the Witwatersrand and African Population and Health Research Center. It is funded by the Sida (Grant No: 54100029), Carnegie Corporation of New York (Grant No--B 8606.R02), the DELTAS Africa Initiative (Grant No: 107768/Z/15/Z). The DELTAS Africa Initiative is a sovereign funding scheme of the Alliance for Accelerating Excellence in Science in Africa (AESA), African Academy of Sciences (AAS)'s and supported by the New Partnership for Africa's Development Planning and Coordinating Agency (NEPAD Agency) with financial backing from the Wellcome Trust (UK) (Grant No: 107768/Z/15/Z) and the United Kingdom government.

3.8 Ethics

Since the thesis involved humans, prior to the commencement of the study, approval to carry out the protocol was obtained from 3 ethics committees –

- AD13/479/123: Department of Planning Research and Statistics, Ministry of Health, Oyo State.
- UI/EC/17/0006: University of Ibadan/University College Hospital (UI/UCH) Health Research Ethics Committee
- M170284: Human Research Ethics Committee (HREC), University of Witwatersrand Johannesburg

Due to the sensitive nature of data that was collected from critically ill patients with recent hospitalizations, special considerations were observed. Household items such as hand towels, bar soaps and detergents, were offered to families that volunteered to participate in the study as a form of non-financial incentive. In addition to these items, a shuttle assistance was also offered to as many households that opted for support to run hospital related errands such as

visit to pharmacies or laboratory services located outside the vicinity of the hospital as another form of non-financial assistance.

3.8.1 Anonymity and Confidentiality:

At every hospital facility, there was an assigned supervisor that oversaw patient recruitment and ensured that there was no exchange of information other than with the assigned supervisor. A research assistant group comprised of 2 research assistants each. One supervisor was responsible for over-seeing five groups of 2 research assistants/group. Two research assistants (1 group) were paired per household to ensure continuity in data collection (in case one of the research assistants had to be unavailable at any time during the data collection process). Research assistants were made to sign a confidentiality form that they will not discuss any of the findings from the participants or from the study with anyone other than their respective supervisors and principal investigator of the study research group. Furthermore, they were compelled not to disclose information to any other individual in the household what other family members had shared. The research assistants (two in a group) were responsible for administering all the tools for the baseline collection of data, training of payer on how to fill the cost diaries and follow up for the succeeding 1 month. This was done in a bid to facilitate continuity in data collection process and a reduction in drop-out of families that had initially consented to participate. In order to improve anonymity, names were not requested at any time during the data collection process but rather identifiers (initials and phone number) of the payer were documented for easy reference at every phase of data collection particularly to aid the interviews that were planned for the 1-month follow-up period.

3.8.2 Consent

Written consent was required from both the payers and the patient for a household to participate in the study (if the payer was different from the patient). For patients that were below the age of 18years, a written assent was required along with a written consent from the parent or guardian in charge (if payer is not the parent/guardian). For patients above 18years, only written consents were obtained along with the payers' written consents.

3.8.3 Risks & Benefits

Risk and benefits were clearly explained to all participants (payers and patients) to ensure that they are fully aware of the scope of the study. They were made to understand that there are no risks involved in participating in the study neither were there any consequences if they chose not to participate in the study. Participants were made to realize that there would be no

immediate benefits in the study except for long term benefits such as formulation of policies that would help to relieve burden and predicament of emergency surgeries on families in future. Participants were also made to understand that there were no financial incentives provided for participating in the study. However, families that participated were offered assistance with transport to run hospital related errands for their patient from time to time with the help of a vehicle and a driver that was provided by the principal investigator. The provision of the vehicle and driver equally assisted the researcher's ability to trace the respondents after discharge as a means to facilitate the 1-month follow-up interviews.

Risks to the researcher and research assistants such as mental or psychologic breakdown were also anticipated particularly in cases where patients pass away after recruitment of the payer. In these circumstances, psychological and mental care was sought and obtained from the Department of Psychiatry, at the University College Hospital, Ibadan, to provide short term counselling services for distressed research assistants, supervisors or household members that opted for such support services (after the loss of a recruited patient). The support services were provided by the Chief Registrar, with the permission of the Head of Department of the Psychiatry unit. Research assistants and supervisors were re-evaluated after the counselling services and debriefed. Only research assistants that were pronounced mentally fit after a psychiatric and specialist evaluation were allowed to proceed with patient recruitment process. To prevent a re-recruitment and re-training of research assistants for such assistants, an extra 10 research assistants had been included in the training right from the onset of the study that might have required some research assistants to be changed or replaced. As such all the principles of beneficence, justice & non-maleficence were observed.

3.9 Expected Publications

This thesis is supported by a manuscript draft and two publications that address the specific objectives.

- Paper 1: Comparison of household expenditure between urban slum and non-slum dwellers with a health emergency in a Southwestern metropolis, Nigeria.
- Paper 2: Prevalence and factors associated with catastrophic health expenditure among slum and non-slum dwellers undergoing emergency surgery in a metropolitan area of South Western Nigeria.
- Paper 3: Affording unavoidable emergency surgical care – the lived experiences and payment coping strategies of households in Ibadan metropolis, Southwestern Nigeria.

The summary of the objectives and papers generated are presented concisely below (Table 3.9). The key findings of each paper are presented in the following chapters 4, 5 and 6 respectively (Table 3.9).

Table 3.9: Status of Publications

Paper	**Objective addressed**	**Status of Publication**	**Chapter summarizing key findings**
Paper 1: Comparison of household expenditure between urban slum and non-slum dwellers with a health emergency in a Southwestern metropolis, Nigeria.	**Objective 1**: To compare retrospectively the one-month pre-hospitalization patterns of expenditure in slum and non-slum households in families with a hospitalized family member admitted for emergency care.	Manuscript draft is complete and submitted to PlosOne .	Chapter 4
Paper 2: Prevalence and factors associated with catastrophic health expenditure among slum and non-slum dwellers undergoing emergency surgery in a metropolitan area of South Western Nigeria.	**Objectives 2:** To estimate the proportion of health-related expenditure to total expenditure and describe the percentage of slum and non-slum households that incur CHE. **Objective 3**: To find factors associated with CHE among respondents undergoing emergency surgeries in Ibadan.	Published in PlosOne on September 1, 2021	Chapter 5
Paper 3: Affording unavoidable emergency surgical care – the lived experiences and payment coping strategies of households in Ibadan metropolis, Southwestern Nigeria.	**Objective 4**: To explore lived experiences of households where emergency surgery of a household member resulted in catastrophic expenditure.	Published in PlosOne on May 20, 2020	Chapter 6

In the following chapters 4, 5 and 6, the submitted draft and published articles are inserted in the corresponding chapters.

PLOS ONE

Comparison of household expenditure between urban slum and non-slum dwellers with a surgical emergency in a Southwestern metropolis, Nigeria

--Manuscript Draft--

Manuscript Number:	
Article Type:	Research Article
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Comparison of household expenditure between urban slum and non-slum dwellers with a surgical emergency in a Southwestern metropolis, Nigeria

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Abstract

Background: The spending patterns linked to the household income of slum dwellers is of particular interest as there is a dearth of literature among this vulnerable population in Nigeria. Thus, this study sought to provide baseline data of income and household expenditure patterns of slum and non-slum dwellers in Southwestern Nigeria in a population who had been admitted to hospital with a surgical emergency one month prior.

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Conclusion: Non-slum dwellers prioritized a major part of their spend on health care in comparison to slum dwellers. Basic household items accounted for major portions of the slum dwellers' income; thus, they are less likely to be prepared to deal with costs of a surgical emergency (compared to non-slum dwellers). Concerted efforts are needed to provide financial protection for people who live in the slums.

Keywords: Slum dwellers, urban poor, household expenditure, urbanization, food expenditure, catastrophic health expenditure

Introduction

Urbanization, defined as, "a constantly growing global phenomenon of increasing populations living in cities", is becoming more widespread [1]. As of 2017, it was estimated that about 55% of the world's population (over 4 billion people) lived in urban areas. Urbanization has also been found to be most pronounced in high income countries such as Western Europe and the Americas where over 80% live in urban areas. This trend is less pronounced in upper-middle income countries (such as Eastern Europe, South Africa and East Asia), where between 50% and 80% are urban residents. In low to lower middle-income countries, the majority of people still live in rural areas[2].

Even though urbanization has been observed on a global scale, the weights and consequences of urbanization have been considerably noticeable in low-income countries [3]. Notable amongst such consequences is the simultaneous growth of poverty among urban dwellers living in sub-par conditions called slums. According to a United Nations Millennium project, urban slums are formed primarily by the migration of households to an urban area in search of better living conditions and employment opportunities [4]. To define a slum, we draw on two inter-related definitions of slums; firstly, a slum is an area with at least 300 residents or that has at least 60% of the households having poorly congested rooms with inadequate infrastructure (housing not in compliance with current building regulations), lack of proper sanitation and drinking water facilities [5]. Secondly, we define a slum as an urban colony that has not been authorized by the government and that lacks basic amenities such as durable housing, sufficient living area for inhabitants, access to improved water and sanitation facilities [6].

It is estimated that one out of three urban dwellers (one out of every six people worldwide) already live in a slum[7]. Nigeria is not exempted from the problem of rapid urbanization, with major cities reporting increased numbers of slums in urban areas[8,9]. Nigeria is one of the countries estimated to have the highest number of slum dwellers with as many as 60% of urban dwellers believed to be residing in slums [10]. The combination of demographic (high number of youths), technological (availability of communication and recreational facilities in urban cities) and economic (the search for better incomes) factors have resulted in an even faster rate of migration from traditional villages to cities[10]. This influx is coupled with an absence of significant industrial expansion, conversion of agricultural lands for residential and industrial

purposes and a lack of adequate planning required to handle the growing population in urban areas in Nigeria. These factors result in lower food production, increased pollution and, coupled with the poor living conditions in slums, this puts slum populations at risk of negative health outcomes[11].

The growth of the urban slum-dweller population has become a source of global concern due to the less-than-optimal conditions in which they exist [12]. Residents of slums are subject to disproportionate and inadequate access to basic sanitation, proper urban and regional planning facilities, which may lead to health problems compared to non-slum dwellers[13–15]. Similarly, the urban poor have been observed to suffer from low incomes, unsatisfied basic needs (e.g. shelter, food and clothing) and are highly vulnerable when exposed to any form of risk [16,17]. Birhane et al (2014) suggest that as many as three-quarters of the urban poor have food insecurity arising from low incomes, low agricultural production and dependence on markets rather than self-production for food[18].

A direct consequence of these conditions is that urban slum dwellers possess lower spending power while indirect consequences include postponing expenditure on certain necessities such as healthcare until they become emergencies that are life-threatening [19,20]. For instance, a study conducted in Ebonyi state Nigeria found that almost 30% of the study respondents delayed seeking health care due to financial limitations[21]. This pattern of health seeking behavior is related to worse health care outcomes for urban slum dwellers[22].

In order to understand how this increased vulnerability of slum dwellers plays out when faced with urgent health care needs, a baseline study was conducted to describe household expenditure among urban slum dwellers and non-slum dwellers in a metropolitan state of Southwestern Nigeria.

Methods

This paper presents the baseline data from a longitudinal study of the impact of unavoidable health care expenditure. Retrospective data on income and expenditure were collected using interviewer-administered questionnaires over a five-month period (May – September 2017) when study participants were recruited. This study took place in Ibadan, the state capital of Oyo State. It is in the southwest geo-political zone of Nigeria with a landmass of 28,246.264 km^2 and a population

of approximately 6,190,000[23]. Oyo State consists of 33 local government areas (LGAs) that function as administrative units, out of which 5 LGAs make up the State capital (Ibadan). There are 47 private secondary health facilities (hospitals) and 93 public health facilities across the 5 local government areas. Among the public facilities, 79 are primary health care centers while 13 are secondary health facilities and there is only one tertiary facility.

The participants were identified by first choosing the areas in Ibadan where there are large urban slums. The five local government areas (Ibadan North, Ibadan North-East, Ibadan North-West, Ibadan South-West, and Ibadan South East), that make up the metropolis (Ibadan), were purposively chosen as the study location[24]. Across the five LGAs, a total of 16 hospitals were sampled which included the only tertiary facility in the metropolis, 6 public secondary and 9 private secondary facilities[25]. The secondary level hospitals were randomly chosen, while the tertiary hospital was purposively selected. A researcher was stationed in each hospital, sequentially, on chosen days and any patient (representing a household) that presented for an emergency surgery was invited to participate. Details of sampling and how participants were selected is presented elsewhere[26].

It was estimated that a sample size of 150 slum dwellers and 150 non-slum dwellers would give 80% power to detect an absolute difference of 15% in the proportion of participants who incur catastrophic health expenditure as being statistically significant at the 5% level. To allow for a loss of precision due to clustering effects, a total of 500 participants were approached. Fifty participants declined yielding a response rate (RR) of 90%. The majority of the families that declined were respondents that could not confirm the availability of old receipts to back up the recall of amounts incurred on household expenditure one month prior to surgery. A few households declined because the payer was not psychologically fit to answer the survey since the payer was also the patient scheduled for the surgery. At presentation in the hospital and at the point of obtaining consent, location of residence as provided by the respondent was used to classify respondents as either slum or non-slum dwellers. To do this we referred to the list of all communities within slum areas and non-slum areas obtained from the Department of Planning Research and Statistics, Ministry of Health, Oyo State.

Study participants were those responsible for paying the hospital bills (referred to as payers in this study) of a household member that was admitted for emergency surgery. Participants had to be

above the age of 18 years and resident for at least 12 months prior to the study in either a slum or a non-slums area. They had to be legally able to consent to participation. Study participants also had to provide consent at the recruitment phase for a 1-month follow-up interview. as the longitudinal study from which these baseline data come aimed to document coping strategies post discharge. Non-financial incentives in the form of household items, useful to patients in hospital (such as detergents and towels), were provided for families that opted to participate in the study. In addition to the household items that were presented to the families, assistance with transport was also offered for hospital related errands such as visits to pharmacies or laboratory services located outside the vicinity of the hospital. This was offered to both slum and non-slum dwellers.

The content validity of the instrument was established through review by a panel of 5 content experts with professional expertise in cost analysis. The process ensured that the tool was adequately able to measure the constructs that it was designed to measure. It was then translated into Yoruba and back-translated to verify that the original meaning was not lost. Three types of questions were utilized; binary questions (such as yes/no); multiple choice questions (in which the options were mutually exclusive and covered all possible answers); specific questions that do not specify options (for example, how old are you?).

A pre-test of the questionnaire was performed among 50 participants that sought emergency care from similar secondary and tertiary health institutions in slums outside the study area but within Oyo State. In this paper, weighted income and household expenditures prior to hospitalization as recounted by the study subjects were reported. An interviewer administered instrument, adapted from the world health survey – household questionnaire [27] consisting of a baseline survey and cost diary [28], was administered. The baseline data describes participants' age, marital status, ethnicity, educational status, religion, occupation, and income of payers while the cost diaries provide data on household expenditures prior to surgery. Data on household expenditures were collected based on how much was spent on eighteen items (food, utilities, education, transportation, entertainment, toiletries, communication, health care costs, voluntary insurance, all other goods & services, care requiring overnight stay, care by medical staff not requiring overnight stay, care by traditional healers, dentists, medication/drugs, healthcare products, diagnostic/laboratory care, any other healthcare products not listed above). Eight sub-items assessed under utilities include rent, construction, gas, electricity, heating fuel,

telephone, water and clothing. Food expenditure was sourced through a disaggregation of food items/groups and then summed up into a composite amount[29,30].

Explanatory variables for this study included place of residence (slum vs. non-slum), age, marital status, religion and ethnicity, while the response variable was the amount spent by each respondent on household expenditure, four weeks before surgery - actual household expenditure (AHE). The AHE was objectively estimated by requesting the provision of a comprehensive list of routine household expenditures from the respondents (approximate amounts for expenses they had incurred), four weeks before the surgery. The recall period of four weeks was chosen to manage the delicate balance between ample and quality data – a recall period has been used in similar studies [31].

In the analysis, the data was weighted (taking into consideration that within different hospitals, the probability of selecting a respondent may differ). Thus, we report weighted percentages in this study. Frequency tables were generated for relevant variables while descriptive statistics were used to summarize continuous variables. The results are presented as means and 95% confidence intervals, separately for the slum dwellers and the non-slum dwellers. The confidence intervals were calculated taking into account the clustering effects. The amounts were collected and estimated in the local currency (Naira). During this period (2017), a dollar was estimated to be equivalent to ₦360 (US $1 = ₦ 360).

Approvals to conduct the study were obtained from the Ethics Review Committees of University of Witwatersrand Johannesburg (M170284), University of Ibadan/University College Hospital (UI/UCH) Ethical committee (UI/EC/17/0006) and Oyo state Ministry of Health (AD13/479/123). Written informed consent was also obtained from the patients and payers prior to questionnaire administration and the anonymity of respondents was protected by ensuring that no individual identifiers existed in the instruments or in the electronic data set. Child assent in addition to written informed consent (from parent or guardian) was also obtained for patients who were less than 18 years of age. The four principles of good ethics - non-maleficence, beneficence, justice and respect for autonomy were observed and adhered to during the entire study [32]. To ensure confidentiality, anonymous identifiers were used and access to data restricted to only those directly involved in the study.

Results

A total of 450 participants were recruited for the study. Potential participants who were unable to provide household expenditure receipts were excluded, as were potential participants who were both the patient and the payer with limited ability to provide reliable data. Thirty-three respondents of those that declined were unable to provide household expenditure receipts while seventeen respondents doubled as both the patient and the payer with very limited ability to provide reliable data.

Sociodemographic Characteristics of Respondents

The mean age for the payers from the slum dwellers was 38 years (95% CI: 35 – 42 years) while non-slum dwellers had a mean age of 39 years (95% CI: 36 - 41) (Table 1). The mean age for patients from the slums was 34 years (95%CI: 32 - 36) while non-slum patients had a mean of 32 years (95% CI: 30 – 34 years). With regards to ethnicity, slum dwellers had more of non-Yorubas amongst them (34.5%) compared to the non-slum dwellers with only 21.1% of their population made up of non-Yorubas. (Table 1).

Just over half (52.9%) of the non-slum dwellers had formal occupations, compared to only 31.3% of the slum dwellers, with about half (50.3%) of the slum dwellers having informal occupations. Fewer participants (0.8%) were unemployed among non-slum dwellers compared to slum dwellers (18.4%) (Table 1). With respect to educational status, more non-slum dwellers (48.2%) had tertiary education compared to slum dwellers (16.0%) (Table 1).

A good proportion (72.2%) of payers from the slum earned less than ₦50,000 per month. As for the non-slum dwellers, only 33.6% earned less than ₦ 50,000 monthly. Correspondingly, a larger proportion of the non-slum dwellers (45.5%) earned between ₦ 100,000 – ₦ 499,999 compared to the slum dwellers (18.6%). Likewise, for those earning more than ₦ 500,000 per month, a larger proportion of payers from non-slum areas (12.4%) earned more than ₦ 500,000 compared to their slum dweller counterparts (5.1%) (Table 1).

Majority of the patients were aged between 30 - 39 years from both slums and non-slum areas (48.4% and 51.2% respectively) (Table 1). They were mostly spouses of the payers (71.7% and 72.8% of patients were spouses of payers from the slum and non-slum areas respectively). Unlike

the gender distribution observed in the payers, females constituted the main gender among the patients for both slum dwellers (90.3%) and non-slum dwellers (89.2%) (Table 1).

Distribution of household expenditure

The mean AHE for slum dwellers was $358 (95%CI = $317.7 - $398.3) while that of non-slum dwellers was $450.8 (95%CI = $216.8 - $684.8). Majority (59.2%) of slum dwellers and non-slum payers (50.8%) incurred a mean AHE of $278 - $1,388 (₦ 100, 000 – ₦ 499,999). This was followed by mean AHE of less than $278 (< ₦ 100,000) amongst the 2 parties (39.8% of slum payers and 44.6% of non-slum payers) (Table 1).

The estimated mean monthly income for slum dwellers was $258.6 ($183.6 - $333.7) while that of non-slum dwellers was $749.2 ($581.4 - $917.3) (Table 1).

Mean monthly household expenditure patterns

Analysis shows that both parties incurred their largest expenditure on food. In a month, slum dwellers spent ₦21,335 ($59.3); 95%CI: ₦ 19,232 – ₦ 23,437, while non-slum dwellers spent ₦ 25,131 ($69.8); 95%CI: ₦ 19,843 – ₦ 30,420 on food (Table 2). Other than food, the other major household items that consumed sizeable proportions of income of the slum dwellers were rent (7.5% of their average monthly income), education (7.3% of their average monthly income), transportation (6.7% of their average monthly income) and health care costs (5.9% of their average monthly income). The items that mattered more, next to food expenditure, for non-slum dwellers (9.3% of mean monthly income) included health care costs (3.8%), followed by rent (2.6%), transportation (2.5%) and clothing (2.5%), before education (2.1%) (Table 3). Slum dwellers spent more of their income on construction repair 3.3% compared to the non-slum dwellers (1.1%). This trend was also observed with telephone bills where slum dwellers spent more (3.7%) compared to non-slum dwellers (1.1%) and on entertainment (3.6%) among slum dwellers compared to non-slum dwellers (1.3%).

With respect to utilities alone, other than rent and clothing, both slum and non-slum dwellers spent about the same proportion of their income across all other utilities. These utilities include gas (1.0% Vs 0.63%), electricity (2.1% Vs 1.2%), heating fuel (1.8% Vs 0.9%) and water (1.3% Vs 0.95%). Other non-utility household expenditures with fairly similar average monthly expenditures included toiletries (2.2% Vs 0.63%), communication (1.8% Vs 0.7%), all other goods and services (0.3% Vs 0.2%), care by traditional healers (0.3% Vs 0.1%), dental care (0.2%

Vs 0.01%), medication (0.7% Vs 0.4%), health care products (0.3% Vs 0.14%), diagnostic/ laboratory care (1.5% Vs 0.3%) (Figure 1).

Slum dwellers spent a smaller proportion of their monthly income on voluntary insurance (0.8% Vs 1.2%), care requiring overnight stay in a health facility (1.08% Vs 1.12%), and any other healthcare products not listed above (0.14% Vs 1.11%) (Figure 2).

Discussion

This study sought to describe the patterns of household expenditure among urban slum dwellers and non-slum dwellers in a southwestern state of Nigeria. Expenditure patterns for a four-week duration prior to hospital admission for emergency surgical care, is described. Food expenditure constituted a major share of expenses for both slum and non-slum dwellers. As expected, with reference to the relative income of each group, the proportion of food expenditure was larger among the slum dwellers compared to the non-slum dwellers.

Majority of both groups were Christian and of Yoruba ethnicity – consistent with the characteristics of the inhabitants of the geographical location of the study area. Ethnic predominance differs by area and is largely determined by the major regions of the country - northern, eastern and western parts of the country. The predominance of Yorubas in our study, is an expected finding since the research was conducted in the southwestern region of the country that is mainly inhabited by this ethnic group [33]. While the majority of participants were Yoruba in both slums and non-slum areas, the slum areas had a higher proportion of non-Yoruba participants which could imply that some might be migrants which may have a direct influence on their respective ability to access social support when needed.

An interesting observation in this study was that despite their lower educational status, slum dwellers spent more on education fees and supplies than non-slum dwellers. Studies have established that a major contributor to the low educational attainment among slum dwellers might be as a result of poor or limited access to educational facilities in slum areas. Since the majority of slum areas are not government-approved, there is poor attention to provision of standard educational facilities within them [34], often complicated by disabling home environments and child labor [35]. Another important factor that has been implicated in this observation is the average family size of respondents. In literature, higher family sizes have been consistently

reported among slum dwellers, indicating that they have more children than non-slum dwellers [36,37]. This, in turn, leads to more spending in order to cater for the educational needs of their children.

Nevertheless, as direct links have been established between educational levels and income[13,38], underlying and plausible reasons are provided for the low earning capacity experienced by slum dwellers. Literature has emphasized that discontinuation of children's education is a major coping strategy when faced with financial catastrophe from health costs among slum dwellers [39,40], which explains the higher rates of drop out despite the genuine interest and motivation to achieve literacy for children[35]. Thus, higher expenditures on education may not necessarily translate into improved educational attainment.

The low earning capacity of slum dwellers as demonstrated in this study, accompanied by a predominance of informal jobs, is consistent with other research findings [41,42]. A body of literature attests to this evidence, demonstrating that slum dwellers usually suffer from fewer employment opportunities, under-employment and other factors that contribute to their low earning power [4,7,12,14]. In another study, Pramanik and Mukherjee (2013) were able to establish high wage rates and greater employment opportunities as important economic pull factors for migration that often results in the growth and proliferation of urban slums[43]. In the same study, income differential was significantly higher in the inner city compared to the periphery – a finding that refutes the income pattern in our study. This is because our slums are located within the inner core of the metropolis while the regions inhabited by non-slum counterparts are in the periphery. According to a United Nations report, slum dwellers rate lower on human development indicators than other urban households due to income inequalities, resultant health problems, less access to education, social services and poor employment [44].

Food was found to take the highest proportion of household expenditure amongst both slum and non-slum dwellers. This is consistent with findings in literature [45] that showed that respondents on average spent more of their income on food. In another study, '*food was the single most important component of household spending*', consuming up to 42.8% of total household expenditure[46]. Other than food expenditure, this study observed that slum dwellers spent a considerably higher proportion of their mean monthly income on utilities (rent, telephone and construction repair), education and transportation, and health care costs - consistent with findings

in studies done in Asia, Africa and Latin America [20] and there may be several reasons for this disparity. First, as discussed earlier, is the issue of income. The low earning capacity (income) of slum dwellers relative to the non-slum dwellers seemingly portrays the assumption that slum dwellers spend more on these household items. A second possibility is the poor living condition associated with slums. Non-governmental approved infrastructure in slums, probably associated with poorer quality, will promote larger expenditures as observed in this study on construction repairs for slum dwellers. Lack of access to basic amenities such as potable drinking water and waste disposal services, conditions which characterize slum areas, have been associated with increased morbidity among different population segments[3,47,48] that could explain the relatively large health expenditures incurred by the slum dwellers.

Two theories are proposed for why the non-slum dwellers consistently incurred larger proportions of their mean monthly income on voluntary insurance, health care costs requiring overnight stay and all other health care products not listed; and these are income and access. Better income (ability to pay for care) combined with improved physical access to health care may translate to a higher demand by non-slum dwellers for available health care services and vice versa for the slum dwellers. The consequent better health enjoyed as a result of increased demand and access has led to a wider gap in health disparities that has been an underlying factor why the rich are healthier while the poor are sicker. These disparities have been a major concern in literature[49]. Disparities in health care access have ranged between need and demand; in other instances, consumer related. Consumer directed healthcare has also promoted health care disparities with wealth dimensions (promoting disparities), age dimensions (disparities occurring when the young and healthy pay less compared to middle aged) and gender related dimensions (disparities occurring when women spend more than men) [50]. Conversely, the reduced demand for allopathic health care services also alludes to why the slum dwellers incurred more on herbal (traditional) care which is presumably more available in the slums and at more affordable rates. Herbal (traditional) care was found to be the first treatment choice for infertility in slums of Bangladesh[51].

As discussed above, it is not surprising also that non-slum dwellers spent more on voluntary insurance. The popular and widely known form of insurance currently in Nigeria; the National Health Insurance Scheme (NHIS) is a government regulated social scheme that was launched in 2005 [38]. The coverage of the scheme today is still largely limited and mandatory for employees

within the public and organized private sectors. As noted in the socio-demographic distribution of the respondents, non-slum dwellers are more likely to be in formal employment than slum dwellers, thus explaining the higher amounts spent by non-slum dwellers on health insurance premiums. Other studies among slum dwellers in similar sub-Saharan Africa settings show that slum dwellers are less likely to participate in health insurance schemes due to poor earning power, the need to prioritize immediate expenses and affordability of premiums [37,52]. According to Eboreieme and colleagues, implementation fidelity that assists to bridge gaps in health care systems will not only improve policy execution but also help national policy makers identify more effective ways of supporting lower tiers of governance towards the improvement of health systems and outcomes[53].

Our study must be interpreted bearing in mind a few limitations. Firstly, the amounts provided by the respondents are subject to varying degrees of recall bias. However, this was minimized by requesting that participants provide receipts or recall of events that assisted with more accurate recalls. Secondly, our study could not substantiate that this was the steady pattern of expenditure over several months before the study for both slum and non-slum dwellers. For instance, in the four weeks prior to the surgical emergency when the study was conducted, the influence of major life events that would have influenced spending patterns could not be eliminated nor accounted for during the recall process. Thirdly, the effects of economies of scale that are largely influenced by family settings (nuclear or extended) and marriage types (monogamy or polygamy), on total income was also not investigated nor accounted for. Lastly, considering that the research was carried out in the southwestern region of the country, findings from this study should be cautiously applied to slum regions in other areas of the country. Nonetheless, despite these limitations, our study provides empirical and preliminary findings that document the spending patterns of slum and non-slum households in southwestern Nigeria.

Conclusion

This study described and compared the one-month retrospective spending patterns of slum dwellers with non-slum dwellers. The earning capacity of respondents from the slums establishes them as urban poor due to their low income. Food expenditure consumed a substantial amount of income amongst both slum and non-slum dwellers.

Unlike the non-slum dwellers, slum dwellers apportioned a greater percentage of their income to other household items whereas non-slum dwellers apportioned health expenditure second to food. This suggested that slum-dwellers may have fewer resources available for health-related needs as well as placing them at greater risk if they were required to cope with consequences of ill-health care, in particular emergency care. Concerted efforts are urgently needed not only to improve the living conditions in the slums with provision of jobs and empowerment schemes, that can alleviate the burden of poverty in the slums, but also increase the accessibility and affordability of quality health care to reduce the current disparities.

This was a baseline study to assess the impact of unavoidable health care expenditure. The findings from this study establish the objective of the next paper that will examine the proportion of households from slums and non-slums that incur catastrophic expenditure in a recent hospitalization for an emergency surgical care.

Declarations

Ethics approval and Consent to participate

Ethical approval for the conduct of the study was obtained from the Ethics Review Committees of University of Witwatersrand Johannesburg (M170284), UI/UCH Ethical committee (UI/EC/17/0006) and Oyo state Ministry of Health (AD13/479/123). Written informed consent was also obtained from the patients and payers prior to questionnaire administration and respondents' anonymity was protected by ensuring that no individual identifiers existed in the instruments or in the electronic data set. Data collection process was performed according to standard ethical guidelines. Consent was also obtained from doctors and matrons of respective and selected wards. Both written and oral consents were obtained from the payers' prior to questionnaire administration and respondents' anonymity was protected by ensuring that no individual identifiers existed in the instrument or in the electronic data set. In situations where the patient was less than 18years, an additional assent was obtained from the patient in addition to the written consent provided by the guardian or payer in charge of the patient.

Consent to publish

Not Applicable

Competing Interests

No competing interests were disclosed

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Authors' contributions

SF, JL and TO conceptualized the study. TO wrote out the study protocol and supervised data collection. All authors jointly analysed the data. TO wrote out the initial draft manuscript. All authors read and approved the final version for submission.

Authors' Affiliations

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Availability of data and materials

The data that supports the findings of this study are available on request.

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Figure Legends

Figure 1: Proportion of income spent on food, utilities and non-food household items

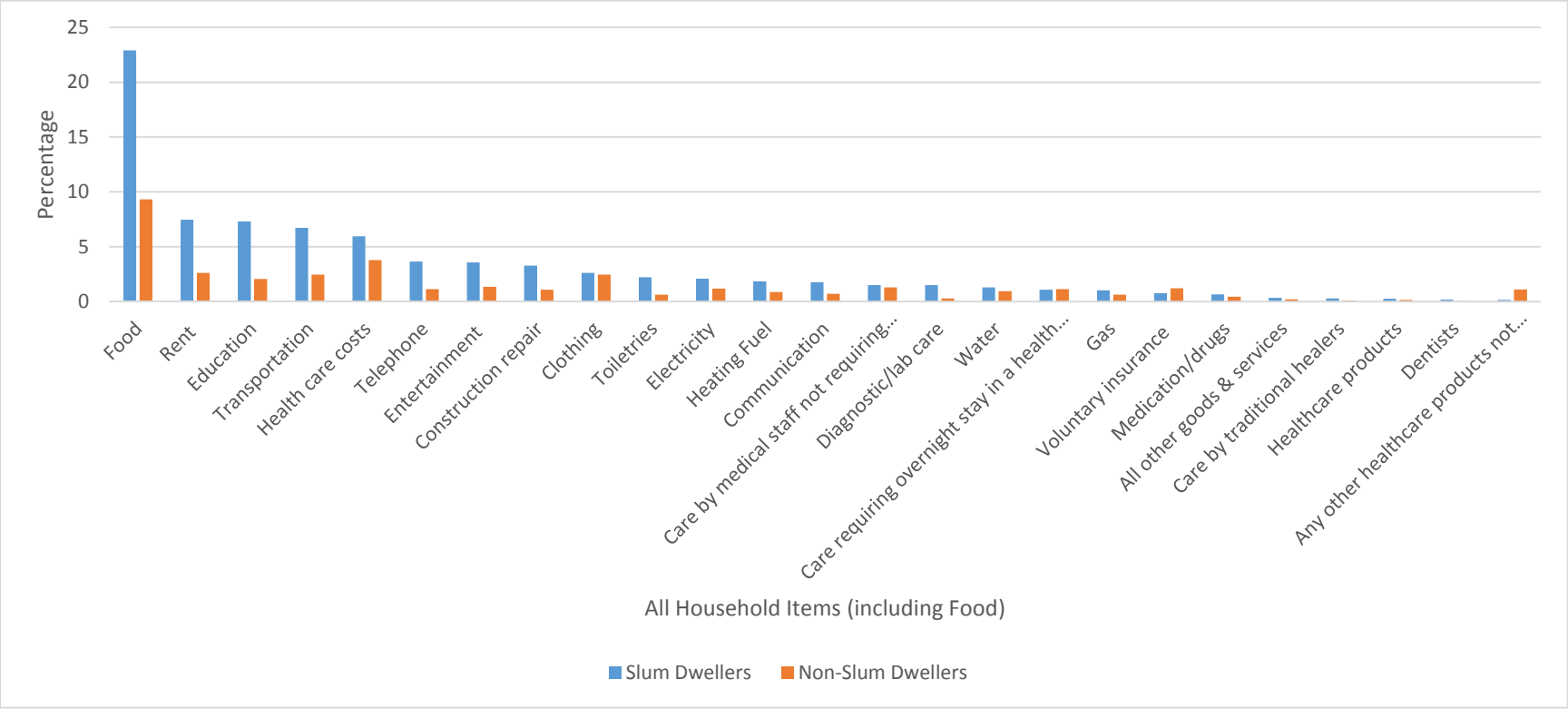


Figure 2: Proportion of income spent on utilities and non-food expenditure

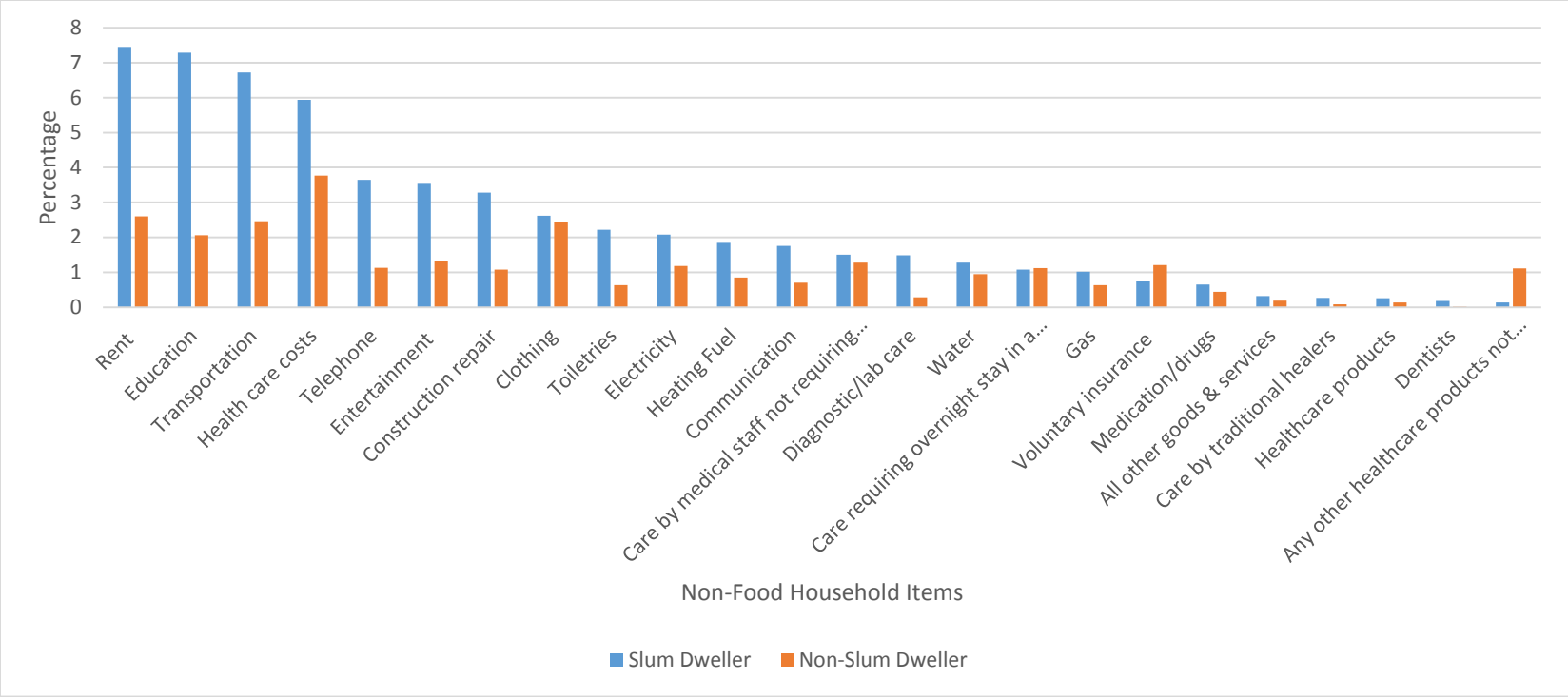


Table 1 Socio-demographic characteristics of respondents

	Slum dwellers (N=239)		Non-slum dwellers (N=211)	
A. Payer Characteristics				
Mean Age of Payer (95% CI)	38.1 (34.7 - 41.6)		38.6 (36.3 - 40.8)	
Age of Payer (Grouped)	**Freq. (n)**	**Weighted %**	**Freq. (n)**	**Weighted %**
<30years	24	4.4	14	6.0
30 - 39 years	120	61.1	95	57.9
40 - 49years	66	24.6	65	31.5
50+ years	29	9.8	37	4.7
Gender of Payer				
Male	171	78.2	135	73.8
Female	68	21.8	76	26.2
Marital Status of Payer				
Not currently married	38	14.9	21	6.6
Currently married	201	85.1	190	93.4
Ethnicity of Payer				
Yoruba	155	65.5	161	78.9
Others	84	34.5	50	21.1
Education of Payer				
No formal schooling/ Primary	72	40.4	17	12.5
Secondary school education	100	43.6	62	39.3
Tertiary Education & above	67	16.0	132	48.2
Religion of Payer				
Christianity	156	64.4	141	68.1
Islam	83	35.6	70	31.9
Occupation of Payer				
Formal sector worker	76	31.3	120	52.9
Informal Sector	120	50.3	86	46.3
Unemployed	43	18.4	5	0.8
Mean Monthly Income of Payer (95% CI) ₦	₦ 93,118 (₦ 66,106 - ₦ 120,130)		₦ 269,700 (₦ 209,312- ₦ 330,227)	
Mean Monthly Income of Payer (95% CI) $	$258.6 ($183.6 - $333.7)		$749.2 ($581.4 - $917.3)	
Income bracket (per month of Payer)				
< ₦ 50,000 (< $138.8)	209	72.2	70	33.6
₦ 50,000 - ₦ 99,999 ($138.8 - $277.8)	4	4.1	35	8.5
₦ 100,000 - N499,999 ($278 - $1,388)	21	18.6	77	45.5
> ₦ 500,000 (>$1,388)	5	5.1	29	12.4
B. Patient Characteristics				
Relationship to patient				
Self	58	20.2	38	15.3
Spouse	156	71.4	144	72.8

Others		25	8.4	29	12.0
Mean Age of Patient (95% CI)		34.2 (32.1 - 36.4)		31.9 (29.9 - 33.8)	
Age of Patient (Grouped)					
<30years		90	32.4	60	38.7
30 - 39 years		90	48.4	102	51.2
40 - 49years		37	13.0	31	8.2
50+ years		22	6.2	18	2.0
Gender of Patient					
Male		43	9.7	38	10.8
Female		196	90.3	173	89.2
C. Household Expenditure Pattern 4 weeks prior to surgery in Naira and USD*					
Mean AHE** (for both SD&NSD) in Naira		₦139, 688	(95%CI = ₦ 114, 098 - N165, 277)		
Mean AHE** (for both SD&NSD) in USD		$388	(95%CI = $316.9 - $459.1)		
Mean AHE** for ⍊SD in Naira		₦128,895	(95%CI = ₦ 114,391 - ₦ 143,399)		
Mean AHE** for ⍊SD in $ (USD)		$358	(95%CI = $317.7 - $398.3)		
Mean AHE** for ⍊NSD in Naira		₦162,315	(95%CI = ₦ 78,073 - ₦ 246,556)		
Mean AHE** for ⍊NSD in $ (USD)		$450.8	(95%CI = $216.8 - $684.8)		
Mean AHE					
< ₦ 100,000	(< $278)	91	39.8	53	44.6
₦ 100,000 - ₦ 499,999	($278 - $1,388)	135	59.2	136	50.8
₦ 500,000 - N1m	($1,389 - $2,777)	10	0.9	17	4.1
> ₦ 1m	(>$2,778)	2	0.2	5	0.5

**$1 = ₦360; ⍊SD= Slum dwellers, ⍊NSD= Non-slum dwellers; **AHE = Actual Household Expenditures*

Table 2: Mean monthly expenditures of Household items by slum/non-slum dweller (in Naira)

		Slum Dweller		*Non-Slum*	
	Household Items	***Mean (USD)***	***95% CI.***	***Mean (USD)***	***95% CI***
1	Food	21,335 ($59.3)	19232 -23437	25,131 ($69.8)	19843 - 30420
2	Utilities				
2a	*Rent*	6,933 ($19.3)	4936 – 8929	7,006 ($19.5)	-1018 – 15030
2b	*Construction repair*	3,053 ($8.5)	1992 – 4113	2,927 ($8.1)	1937 – 3917
2c	*Gas*	951 ($2.6)	822 - 1080	1,710 ($4.8)	136 – 3283
2d	*Electricity*	1,935 ($5.4)	1496 – 2374	3,194 ($8.9)	1609 - 4780
2e	*Heating Fuel*	1,716 ($4.8)	1303 - 2130	2,304 ($6.4)	1677 – 2931
2f	*Telephone*	3,396 ($9.4)	3182 – 3609	3,052 ($8.5)	1809 – 4294
2g	*Water*	1,195 ($3.3)	1083 - 1307	2,575 ($7.2)	1162 – 3988
2h	*Clothing*	2,442 ($6.8)	1562 – 3323	6,618 ($18.4)	-8931 - 22167
3	Education	6,791 ($18.9)	4611 - 8972	5,555 ($15.4)	2658 – 8452
4	Transportation	6,254 ($17.4)	4834 – 7674	6,630 ($18.4)	4208 - 9052
5	Entertainment	3,311 ($9.2)	2133 - 4489	3,582 ($9.9)	2145 – 5019
6	Toiletries	2,069 ($5.7)	445 – 3694	1,698 ($4.7)	398 - 2998
7	Communication	1,636 ($4.5)	1,093 - 2179	1,896 ($5.3)	1246 - 2545
8	Health care costs	5,531 ($15.4)	2170 – 8892	10,178 ($28.3)	-110 - 20466
9	Voluntary insurance	700 ($1.9)	-114 – 1514	3,262 ($9.1)	-3041 – 9566
10	All other goods & services	297 ($0.8)	-19 – 612	510 ($1.4)	-451 – 1471
11	Care requiring overnight stay in a health facility	1,005 ($2.8)	588 – 1422	3,032 ($8.4)	-1058 – 7123
12	Care by medical staff not requiring overnight stay that did not require overnight stay	1,398 ($3.9)	171 – 2625	3,440 ($9.6)	-2979 – 9859

13	Care by traditional healers	254 ($0.7)	125 - 384	227 ($0.6)	90 – 363
14	Dentists	164 ($0.5)	-73 – 400	35 ($0.1)	-42 - 112
15	Medication/drugs	608 ($1.7)	263 - 953	1,195 ($3.3)	-1179 – 3568
16	Healthcare products	239 ($0.7)	94 – 383	378 ($1.1)	-208 - 965
17	Diagnostic/lab care	1,387 ($3.9)	-133 – 2906	763 ($2.1)	-617 – 2144
18	Any other healthcare products not listed above	132 ($0.4)	27 – 238	2,985 ($8.3)	-3327 – 9297

Table 3 Proportion of income spent on household items by slum/non-slum dweller (in Naira)

		Slum Dwellers Mean Monthly Income: N 93,118		*Non-Slum Dweller* Mean Monthly Income: N 269,770	
	Household Items	***Mean***	***Proportion (95% CI)***	***Mean***	***Proportion (95% CI.)***
1	Food	21,335	0.229 (0.21-0.25)	25,131	0.09 (0.07-0.11)
2	Utilities				
2a	*Rent*	6,933	0.075 (0.053 – 0.096)	7,006	0.025 (-0.003 – 0.056)
2b	*Construction repair*	3,053	0.033 (0.021 – 0.044)	2,927	0.011 (0.007 – 0.015)
2c	*Gas*	951	0.010 (0.009 – 0.012)	1,710	0.006 (0.0005 – 0.012)
2d	*Electricity*	1,935	0.021 (0.016 – 0.026)	3,194	0.118 (0.006 – 0.018)
2e	*Heating Fuel*	1,716	0.018 (0.014 - 0.023)	2,304	0.009 (0.006 - 0.011)
2f	*Telephone*	3,396	0.037 (0.034 – 0.039)	3,052	0.011 (0.007 – 0.016)
2g	*Water*	1,195	0.013 (0.012 – 0.014)	2,575	0.010 (0.004 – 0.015)
2h	*Clothing*	2,442	0.026 (0.017 – 0.036)	6,618	0.025 (-0.033 – 0.082)
3	Education	6,791	0.073 (0.050 – 0.096)	5,555	0.021 (0.010 – 0.031)
4	Transportation	6,254	0.067 (0.052 – 0.082)	6,630	0.025 (0.016 – 0.034)
5	Entertainment	3,311	0.036 (0.022 – 0.048)	3,582	0.013 (0.008 – 0.019)
6	Toiletries	2,069	0.022 (0.005 – 0.040)	1,698	0.006 (0.002 – 0.011)
7	Communication	1,636	0.018 (0.012 - 0.023)	1,896	0.007 (0.005 – 0.009)
8	Health care costs	5,531	0.059 (0.023 – 0.095)	10,178	0.038 (-0.0004 – 0.076)
9	Voluntary insurance	700	0.008 (-0.001 – 0.016)	3,262	0.012 (-0.011 – 0.036)
10	All other goods & services	297	0.003 (-0.0002 -0.007)	510	0.002 (-0.002 – 0.006)
11	Care requiring overnight stay in a health facility	1,005	0.011 (0.006 - 0.015)	3,032	0.011 (-0.004 – 0.026)
12	Care by medical staff not requiring overnight stay	1,398	0.015 (0.002 – 0.028)	3,440	0.013 (-0.011 – 0.037)

113	Care by traditional healers	254	0.003 (0.001 – 0.004)	227	0.0008 (0.0003 - 0.001)
114	Dentists	164	0.002 (-0.008 – 0.004)	35	0.0001 (-0.0002 – 0.0004)
115	Medication/drugs	608	0.007 (0.003 – 0.010)	1,195	0.004 (-0.004 – 0.013)
116	Healthcare products	239	0.003 (0.001 - 0.004)	378	0.001 (-0.0008 – 0.004)
117	Diagnostic/lab care	1,387	0.014 (-0.001 – 0.031)	763	0.003 (-0.002 – 0.008)
118	Any other healthcare products not listed above	132	0.001 (0.0003 – 0.0025)	2,985	0.011 (-0.012 – 0.035)

**Prop = Proportion of income spent on Household item*

PLOS ONE

RESEARCH ARTICLE

Prevalence and factors associated with catastrophic health expenditure among slum and non-slum dwellers undergoing emergency surgery in a metropolitan area of South Western Nigeria

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Data Availability Statement: The data underlying the results presented in the study are available from Figshare repository. (https://figshare.com/articles/dataset/Patterns_of_Expenditure_Quant_Data/12611162).

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Abstract

Background

Out of Pocket (OOP) payment continues to persist as the major mode of payment for healthcare in Nigeria despite the introduction of the National Health Insurance Scheme (NHIS). Although the burden of health expenditure has been examined in some populations, the impact of OOP among slum dwellers in Nigeria when undergoing emergencies, is underresearched. This study sought to examine the prevalence, factors and predictors of catastrophic health expenditure amongst selected slum and non-slum communities undergoing emergency surgery in Southwestern Nigeria.

Methods

The study utilised a descriptive cross-sectional survey design to recruit 450 households through a multistage sampling technique. Data were collected using pre-tested semi-structured questionnaires in 2017. Factors considered for analysis relating to the payer were age, sex, relationship of payer to patient, educational status, marital status, ethnicity, occupation, income and health insurance coverage. Variables factored into analysis for the patient were indication for surgery, grade of hospital, and type of hospital. Households were classified as incurring catastrophic health expenditure (CHE), if their OOP expenditure exceeded 5% of payers' household budget. Analysis of the data took into account the multistage sampling design.

Results

Overall, 65.6% (95% CI: 55.6–74.5) of the total population that were admitted for emergency surgery, experienced catastrophic expenditure. The prevalence of catastrophic expenditure at 5% threshold, among the population scheduled for emergency surgeries, was

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Abbreviations: CARTA, Consortium for Advanced Research Training in Africa; CHE, Catastrophic Health Expenditure; FSSHIP, Formal Sector Social Health Insurance; LGA, Local Government Areas; LOS, Length of Stay; OOP, Out of Pocket; OOPE, Out of Pocket Expenditure; NHIS, National Health Insurance Scheme; WHO, World Health Organization.

significantly higher for slum dwellers (74.1%) than for non-slum dwellers (47.7%) (F = 8.59; p = 0.019). Multiple logistic regression models revealed the significant independent factors of catastrophic expenditure at the 5% CHE threshold to include setting of the payer (whether slum or non-slum dweller) (p = 0.019), and health insurance coverage of the payer (p = 0.012). Other variables were nonetheless significant in the bivariate analysis were age of the payer (p = 0.017), income (p<0.001) and marital status of the payer (p = 0.022).

Conclusion

Although catastrophic health expenditure was higher among the slum dwellers, substantial proportions of respondents incurred catastrophic health expenditure irrespective of whether they were slum or non-slum dwellers. Concerted efforts are required to implement protective measures against catastrophic health expenditure in Nigeria that also cater to slum dwellers.

Introduction

Catastrophic health expenditure (CHE) has been defined as spending on health care that exceeds a certain proportion of the patient's income [1, 2]. It has been observed to be real and sizeable in both rich and poor countries [3]. This, in turn, leads to a continuation in the chain of urban slum-dweller poverty and ill health, a situation almost always linked to worse health outcomes [4]. During illness episodes, families may opt for less costly traditional, sub-optimal care, or altogether forgo healthcare services they need [5, 6]. Having to meet health care costs can pose substantial threats to the provision of basic household necessities such as food, clothing and shelter [7]. In extreme conditions, the need to pay for medical care can make education unaffordable [8]. Having to make these kinds of choices has led to the coining of the term catastrophic health care expenditure. Catastrophic health expenditure has been evaluated in several studies and also at different thresholds, at 5%, 10%, 25% and 40% of household budget [9, 10]. Others advocate the use of 10% of all household expenditure [11, 12] or 40% of non-food consumption expenditure [13, 14]. The range of CHE differs greatly among many low- and middle-income countries (LMIC). Proportion of CHE ranges from as low as 9.1% in India [15] to as high as 25.0% in Nigeria [10]. The risk and occurrence of exorbitant (otherwise catastrophic) expenditures when a health need arises defies the concept of universal health coverage (UHC) [16, 17].

Universal health coverage (UHC) remains an important component for positive health outcomes and a right to access quality health care is a basic human right throughout the world today [16]. Nigeria appears to support the view that health care should be accessible and affordable for all. Nonetheless, disparities in access to health care continue to persist despite promising national health policies. The current health insurance scheme in Nigeria, the National Health Insurance Scheme (NHIS), was implemented in 2005 to offer financial protection for its citizens [18, 19]. Despite this, the NHIS to date only covers the formal [through the Formal Sector Social Health Insurance (FSSHIP)] and organized private sectors which comprise 4.0% of the Nigerian population, and excludes the informal sector [20]. One group, "*urban slum dwellers*", constitute an important part of the informal sector and may be more vulnerable to illnesses.

Worldwide, it is estimated that between 2000 and 2010, the number of slum dwellers has increased by over 50 million [21]. Slums are rapidly forming in many cities today due to

urbanization and population growth that attracts migrants in search of economic opportunities. Currently, approximations show that one out of three urban dwellers (one out of every six people worldwide) live in a slum [22]. Residents of slums are subjected to a reduced access of basic sanitation and poor urban or regional planning facilities, which may lead to unprecedented health problems compared to non-slum dwellers. This increased risk of ill-health also places slum dwellers at greater risk of catastrophic payments when they fall ill, as they are left to pay for hospital bills via out-of-pocket (OOP) payments.

In Nigeria, OOP expenditure as a percentage of private expenditure on health was reported to be higher than 90% in 2002 and it increased to 95.7% in 2012 [23]. The Nigerian health care system is typically structured in three tiers–tertiary, secondary and primary (Ward Health System operating at the local government level). At the secondary level of care, there is a wider array of private and public hospitals. Public hospitals are not-for-profit, usually multidisciplinary, bigger in terms of size and built to serve larger populations. They have a wider array of human resources (core medical team and allied health workers such as radiographers, pharmacists together) and offer both general and specialist services. Private hospitals, on the other hand are usually set up as specialist hospitals in which the services rendered have expertise in a certain field/specialty of medicine [24, 25]. They are usually for-profit, smaller (thus have fewer allied staff) and built to attend to fewer patients.

General factors that have been identified to influence a preferred choice of facility to access healthcare range from availability of essential drugs, user fees, proximity of facility, cleanliness of the environment, to the reputation of the facilities (quality of services) [26]. From literature, we observe that perceptions of shorter waiting times, flexible access and greater confidentiality are factors that might draw consumers to private facilities compared to public health care facilities [25]. Hospitals that are for-profit (private) or not-for-profit (public) have different approaches to payments and flexibility of payment. This influences preferences, satisfaction, access to care and their ability to pay [19, 27].

A particularly acute example is that of an event that requires emergency surgical care [28]. Such events are usually sudden and unplanned [29]. Certain factors interact with the individual's circumstances that either favour or hinder the ability of a household to afford the hospital costs. Sometimes, one or more of these factors can influence the household's ability to pay [30–32]. They include socioeconomic status (such as the income of the household) and influencing/interacting factors (that maybe predisposing, enabling or need factors) (Fig 1).

An individual with a decent income will probably be able to afford the payment, thus increasing the likelihood of enjoying favourable outcomes. Conversely, a household with poor income is more likely to experience some difficulty with payment or affordability of health care costs. Detention and incarceration of patients within the hospital premises until payments have been paid is a common practice in many sub-Saharan African hospitals [33–35]. The inability to pay on time invariably predisposes the individual to unfavourable or unpleasant outcomes.

Many studies have explored the risks of catastrophic expenditures and impoverishment in emergencies among several population [20, 36–39] in different populations. However, a paucity of data exists with respect to the impact of OOP health care expenditure on slum dwellers in emergency conditions. A research conducted in Nigeria explored the influence of OOP healthcare payment on Caesarian Section (CS) [40], however, neither the residence (whether slum/non-slum) nor catastrophic nature of the health care expenses were explored. Furthermore, there is a dearth of information on a comparative assessment of catastrophic health spending among slum and non-slum dwellers in the sub-Saharan Africa. Given an increased exposure to catastrophic payments when the medical need is financed on an out-of-pocket basis and the fact that urban slum dwellers constitute a population that is exposed to a higher risk of illness, it thus becomes imperative to study this micro-unit's experience of CHE. This study

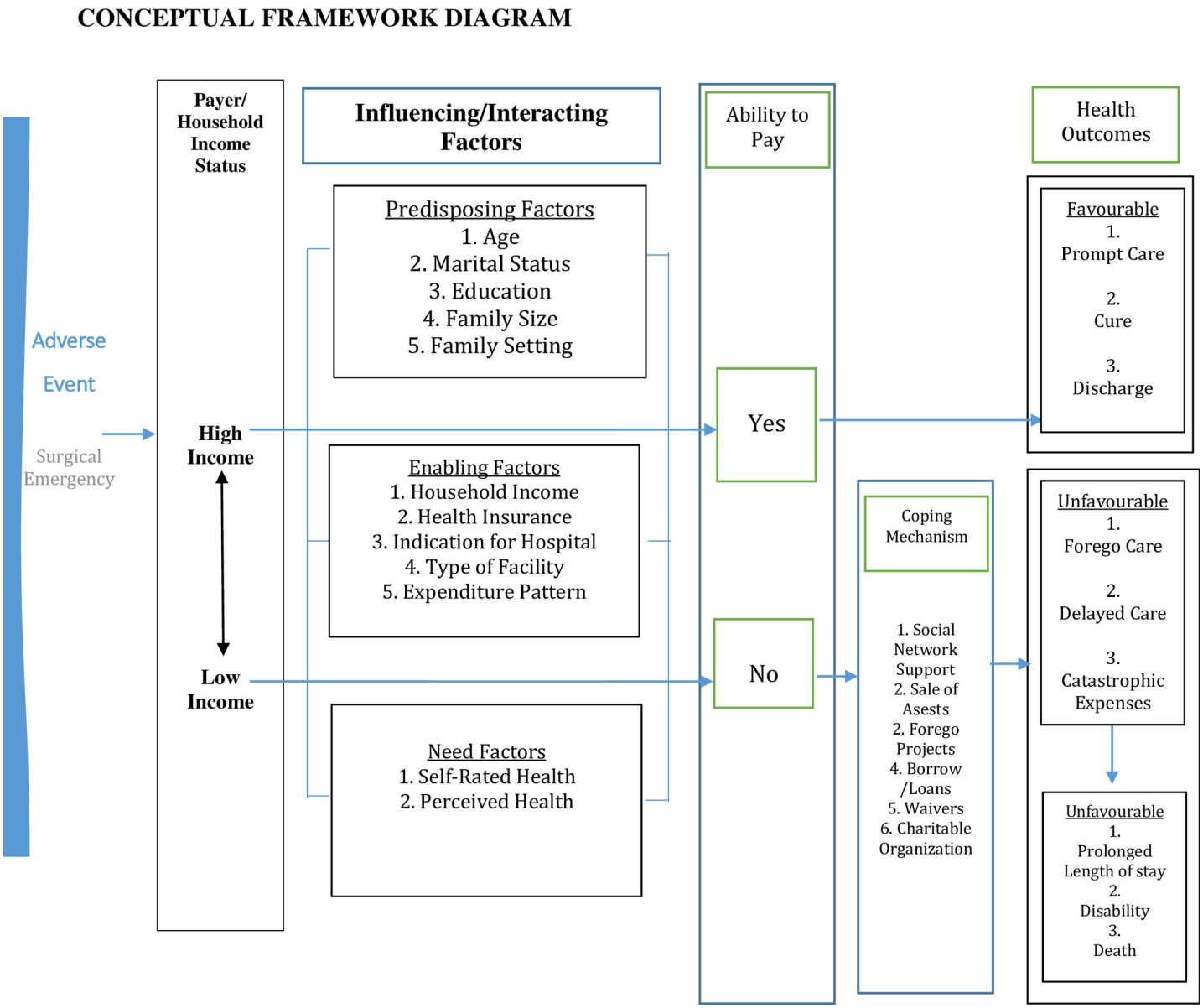


Fig 1. Conceptual framework for patterns of expenditure, coping mechanism among households admitted for emergency surgeries in Ibadan, Nigeria. Adapted from Wilkes et al. (1997) [30] pp3; Tseng & Khan 2015 [31] pp3 and Wild & Hanes (1976) [32].

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thus sought to answer the research question, "Is there a significant difference in catastrophic health spending between slum and non-slum dwellers when faced with a surgical emergency?"

Using emergency surgery as a lens, because of its peculiar characteristics of being unplanned, sudden and often unavoidable, this study examined the relationship between emergency surgery and catastrophic health expenditure among the urban slum and non-slum dwellers in a metropolis of Southwestern Nigeria.

Methods

The study utilized a cross-sectional design involving 450 respondents from both slum and non-slum areas. Data were collected using validated interviewer-administered questionnaires.

This study took place in Ibadan, the state capital of Oyo State. It is situated in the southwest geo-political zone of Nigeria with a landmass of 28,246.264 km^2 and a population of approximately 6,182,000 [41]. Oyo State consists of 33 local government areas (LGAs) that function as administrative units out of which 5 of the 33 local government areas make up the State capital (Ibadan). At the time of data collection, there were a total of 79 primary health care centres, 197 secondary health facilities and one tertiary facility (University College Hospital) [35] across the 5 local government areas.

A multistage sampling technique was employed for the recruitment of study respondents. The urban slums are located within these 5 local government areas (Ibadan North, Ibadan North-East, Ibadan North-West, Ibadan South-West, and Ibadan South East) [42]. Within these LGAs the main unit of selection was the hospitals that served the population of the chosen LGA. A list of all health care facilities located within the metropolis was obtained. All primary health care were removed based on the fact that they could not offer surgical services. The remaining health facilities on the list were stratified as secondary/tertiary (grade of hospital), public/private (type of hospital), thus an equal representation of the different types of facilities were selected.

In the tertiary stratum, the only tertiary facility within the 5 LGAs was purposively selected [43]. After an arrangement of all secondary facilities were listed out, a sample of six public and nine private secondary facilities were randomly sampled across the five LGAs. In each of the selected secondary health facilities, four departments that could offer emergency surgical services were identified (Departments of Surgery, Casualty, Obstetrics and Gynaecology) per facility. The register of patients from each of these departments was used to estimate the sample frame per facility one month prior to the start of our data collection. (The patients were however, merely a proxy for identifying the payers that constituted the study population). Using proportional allocation, the maximum number of patients to be recruited per facility was calculated. This number was divided into four to ensure that an equal number of patients were recruited equally from the four departments above. Thereafter, recruitment was carried out systematically after the patients were screened for eligibility (such as had met the inclusion criteria for the study). In order to ensure randomization, every other patient (representing a household) that met the inclusion criteria were approached to participate in the study. If a patient declined to participate, the next eligible patient was approached and this continued systematically until the estimated sample per department and facility was cumulatively attained. Patients that were admitted with an anticipated hospital admission duration exceeding one month (such as orthopedic and neurological surgeries) were excluded from the study. The surgeries that were qualified for enrollment into the study were analysed under two main categories—emergency caesarian section and others (appendectomies, hemorrhoidectomies, cholecystectomies, herniorrhaphies, hernioplasties, herniotomies, and minor gynecological surgeries as itemized in Fig 2).

In order to ensure that payer's income was captured without any ambiguity, payers had to confirm that they were solely and exclusively responsible for payment of hospital bills for the patient and that hospital costs were not shared with any other family member.

It was estimated that a sample of 300 respondents (150 slum dwellers and 150 non-slum dwellers) would give 80% power to detect an absolute difference of 15% in the proportion of respondents that incur CHE between slum dwellers and non-slum dwellers at the 5% significance level. This was calculated assuming that approximately 23% of the non-slum dwellers would experience CHE as found in a Kenyan study [8]. (Finite population correction was applied to the sample size estimation). Recruitment for both the slum and non-slum dwellers was based on having a family member scheduled for emergency surgery. In this study, we defined emergency surgery as any 'surgical procedure that cannot be delayed, for which there is no alternative therapy, and for which a delay could result in death or permanent impairment of health' [44]. We also defined slum as a compact area with 300 residents or which had 60–

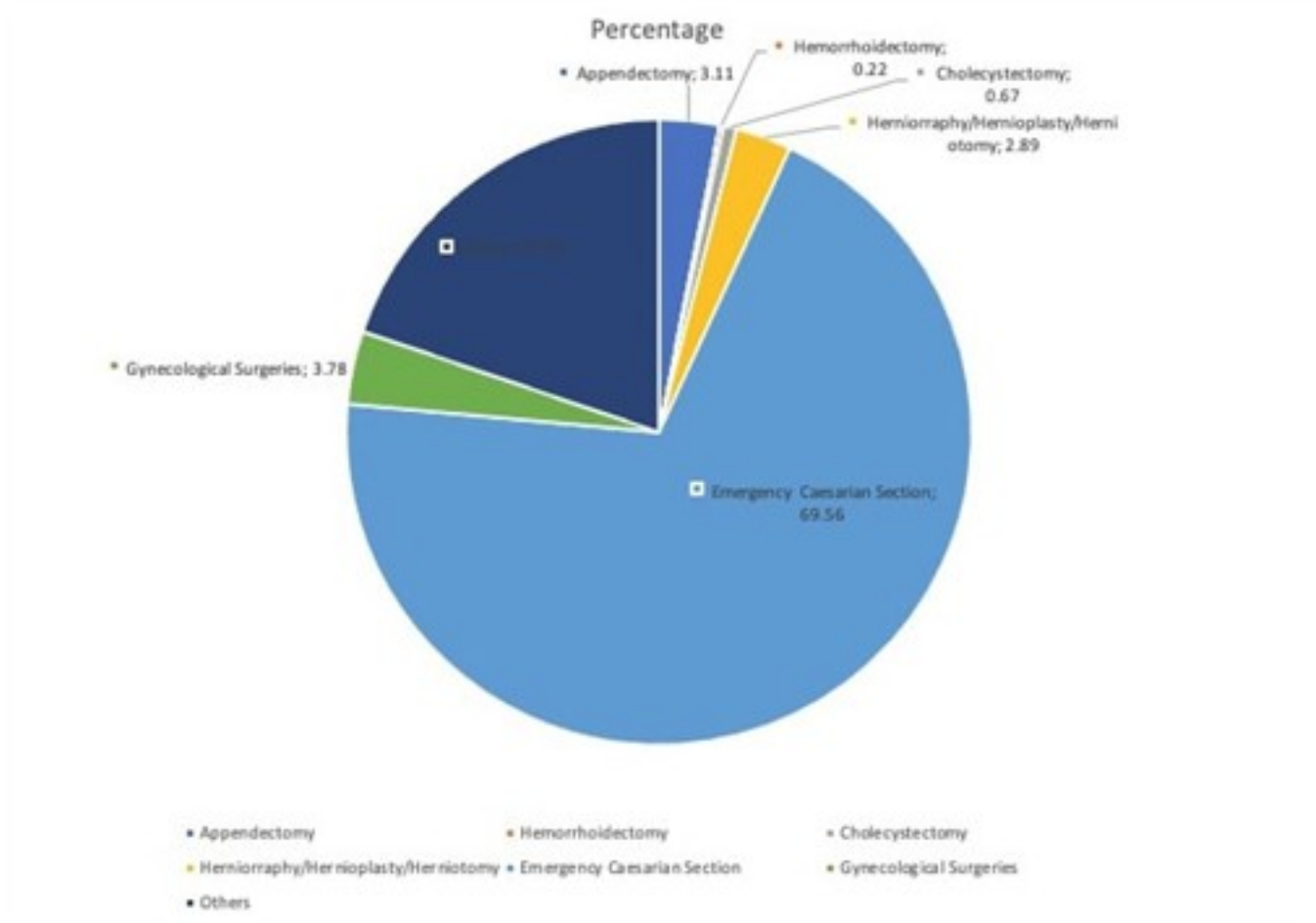


Fig 2. Indications for surgery. ǂOthers: Lumpectomy, Orchidectomy, Lipomas, Splenectomy, Hydrocelectomy, Fistulectomy, Cystectomy.

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70% of the households having poorly congested rooms with inadequate infrastructure, lack of proper sanitation and drinking water facilities [45]. Study respondents were those responsible for paying the hospital bills (referred to as payers in this study) of a household member (patient) admitted for emergency surgery. The respondents (payers) had to be above 18years and resident for at least 12 months before the study in either the slum or non-slum areas respectively. In addition to being able to legally consent to participate in the study, payers also had to provide consent for a 1-month follow-up at the recruitment phase. To allow for a loss of precision due to clustering effects, a total of 500 respondents were approached.

Fifty respondents declined, yielding a response rate (RR) of 90%. Those that declined included households without a definitive payer. Others that declined to participate included those that were psychologically assessed as unfit to provide consent or credible responses. Thus, a total of 450 respondents were eventually recruited for the study. Families with a household member (patient) admitted for emergency surgery were approached and the recruitment was carried out sequentially as patients presented for emergency surgery until the sample size requirement was met for each group. Non-financial incentives were provided for all respondents that were successfully recruited to participate in the study. The incentives included basic items that were considered to be useful while on admissions such as face towels and detergents. Also, a vehicle was made available to facilitate hospital-related errands for families that requested the service.

An interviewer-administered instrument adapted from the World Health Survey household questionnaire [46], consisting of a baseline survey and cost diary, was utilised to estimate sociodemographic and baseline data as well as health costs during admission. Three types of questions were utilised; binary questions (such as yes/no); multiple-choice questions (in which the options were mutually exclusive and covered all possible answers); specific open-ended questions (for example how old are you?) [47]. The Gunning Fog ease score of 9.4 and the Coleman-Liau index of 9 (indicating that it was fairly easy to read) were used to ensure proper comprehension of the instrument [48, 49]. A pre-test of the questionnaire was carried out among 50 respondents from similar secondary and tertiary health facilities located in slums outside the study area before the actual data collection. All income and expenditure data were collected in Naira (N) between May 2017 and August 2017.

Main variable construction

Our explanatory variables included setting (whether slum or non-slum dweller), gender (of payers), age (of payers), indication for surgery (for patients), educational status (of the payer), marital status (of the payer), ethnicity (of the payer), religion (of the payer), occupation (of the payer), income (of the payer), type of hospital (private or public), grade of hospital (secondary or tertiary) and health insurance coverage (of the payer) while the outcome variable was the "presence or absence of CHE". The "*proportionality of income"* approach was used to examine for catastrophic expenditure [8]. A respondent was deemed to have incurred CHE if OOP expenditure on health as a fraction of payer's annual income exceeded the specified threshold which was set at 5% for the main analysis [50]. The threshold of 5% was chosen for two main reasons. Firstly, this threshold has been used for some studies exploring catastrophic expenditure. Secondly, it was also chosen to examine the prevalence of CHE at the lowest possible threshold possible to allow for comparison of findings across a wide range of thresholds that have been documented in literature [51, 52]. A sensitivity analysis was thereafter carried out in which predictors of CHE were assessed at three other cut-offs (10%, 25% and 40%).

To calculate the health costs, information was collected for hospital registration, hospital consultation, investigations, drugs, in-patient hospital stays, transportation costs directly related to admission and other costs related to admission. All costs related to the index admission whether they were on the hospital premises were all captured and added together. For instance, drugs purchased from pharmacies outside the hospital premises were considered and added together as total costs spent on drugs. These were added to make up the total health expenditure (*Ti*) incurred for the admission. To estimate the annual household income (x_i), the monthly income over the past 3 months was requested from all income earners within the household (cumulatively summed up as the income of the payer). An average was estimated for those respondents without a steady or formal source of income. Daily and weekly paid respondents were converted to monthly income using an appropriate multiplier (26 days or 4 weeks respectively, to exclude Sundays). The annual income was calculated by multiplying the estimated monthly income by 12. Catastrophic health expenditure was constructed as *'not catastrophic = 0*"; *"catastrophic = 1"* for the bivariate analysis and the logistic regression.

Associations between the outcome variable (categorized presence or absence of CHE) and the explanatory variables were investigated at the 5% level of significance. Due to the multi-stage sampling design, the analysis accounted for both the clustering of respondents within a hospital and the differential probabilities of selection for different respondents through the use of probability weights. In the bivariate analysis, clustering of respondents within a hospital was accounted for using the Rao Scott adjustment to the Pearson chi-square test to investigate the associations between the outcome and the explanatory variables. Frequency tables were generated for relevant variables while

descriptive statistics were used to summarize categorical variables. Logistic regression models that accounted for the survey design were fitted to identify the independent predictors of CHE. All variables in the bivariate analysis were fitted into the logistic regression model and presented as unadjusted and adjusted odd ratios. For this study, we report the model where CHE was based on payer's income. At the time when data was collected, the sum of N360 was equivalent to $1.

Approvals to conduct the study were obtained from the Human Ethics Review Committee of University of Witwatersrand Johannesburg (M170284), University of Ibadan/University College Hospital (UI/UCH) Ethical committee (UI/EC/17/0006) and Oyo State Ministry of Health (AD13/479/123). Written informed consent was obtained from all patients and payers (above 18 years of age) before questionnaire administration while assent was also obtained from patients below 18 years. Respondents' anonymity was protected by ensuring that no individual identifiers existed in the instruments or the electronic data set.

Results

Table 1 summarizes the characteristics of the study participants that constituted the slum and non-slum populations. Among slum dwellers, over two-thirds (78.2%) of the payers are male. The same was observed among the non-slum dwellers where 73.8% of the payers were male compared to 26.2% female. For both slum and non-slum dwellers, most of our payers were aged less than 40 years (65.6% among slum dwellers and 63.9% among non-slum dwellers); currently married (85.1% among slum dwellers and 93.4% among non-slum dwellers); Yoruba (65.5% among slum dwellers and 78.9% among non-slum dwellers) and Christians (64.4% among slum dwellers and 68.1% among the non-slum dwellers). Significantly more (48.2%) of the non-slum dwellers, attained a level of education that was higher than secondary level compared to the slum dwellers, where only 16.0% had education above the secondary level ($p<0.001$). Emergency CS accounted for the commonest indication why patients were hospitalised for both slum (82.0%) and non-slum dwellers (83.5%) (Table 1). A breakdown of the indications as presented in Fig 2. More payers from the slums were employed in the informal sector (50.3%) while payers from non-slum dwellers were employed in the formal sector (53.0%) and this was observed to be significant ($p = 0.0025$). Earning capacity between slum and non-slum dwellers was also found to be very significant ($p<0.001$). Income greater than $1,389 (N500,000) per annum was found to be common among the non-slum dwellers (71.0%) compared to slum dwellers whose income was less than $1,389 (N500,000) (71.1%). The proportion of respondents with health insurance coverage was low among the slum dwellers (11.3%) and non-slum dwellers (9.3%) (Table 1).

Bivariate results

The bivariate analysis (Table 2) presents results that shows relationships between the explanatory variables and the outcome variables [(occurrence of catastrophic expenditure CHE+) or no occurrence CHE-)]. Overall, 65.6% (95% CI: 55.6–74.5) of participants experienced CHE among both slum and non-slum populations combined. The prevalence of catastrophic expenditure observed at the 5% threshold was significantly higher among slum dwellers (74.1%) than for non-slum dwellers (47.7%) (Rao-Scott $F = 8.59$; $p = 0.019$). Variables that were significantly related to CHE at the 5% threshold were setting of residence of the participant (whether slum or non-slum) (Rao-Scott $F = 8.59$, $p = 0.019$), age of payer ($F = 8.95$, $p = 0.017$), marital status ($F = 8.048$, $p = 0.022$), income ($F = 105.39$, $p<0.001$) and health insurance coverage ($F = 10.41$, $p = 0.012$). Among those with health insurance coverage, only 21.1% experienced CHE whereas 70.9% among those without any form of coverage experienced catastrophic expenditure (Table 2).

Table 1. Selected characteristics of respondents and patterns of healthcare access.

	Variable N = 450	Slum n (%)	Non-Slum n (%)	ǂRS F	p-value
1	**Sex of Payer**				
	Male	171 (78.2)	135 (73.8)	0.4208	0.5347
	Female	68 (21.8)	76 (26.2)		
2.	**Age of payer**				
	<39 years	144 (65.6)	109 (63.9)	0.0246	0.8792
	≥40 years	95 (34.4)	102 (36.1)		
3.	**Indication for surgery(patient)**				
	Emergency CS‡	170 (82.0)	143 (83.5)	0.0638	0.8069
	Abdominal surgeries & Others	69 (18.0)	68 (16.5)		
4.	**Educational status of the payer**				
	Above secondary	67 (16.0)	132(48.2)	51.6718	0.0001*
	Below Secondary	172 (84.0)	79 (51.8)		
5.	**Marital Status of the payer**				
	Not currently married	38 (14.9)	21 (6.6)	18.0639	0.0028*
	Currently married	201 (85.1)	190 (93.4)		
6.	**Ethnicity of the payer**				
	Yoruba	155 (65.5)	161 (78.9)	2.9678	0.1232
	Others#	84 (34.5)	50 (21.1)		
7.	**Religion of the payer**				
	Christianity	156 (64.4)	141 (68.1)	1.3155	0.2845
	Islam	83 (35.6)	70 (31.9)		
8.	**Occupation of the payer**				
	Formal	76 (31.3)	120 (53.0)	12.8024	0.0025*
	Informal	120 (50.3)	86 (46.3)		
	Unemployed	43 (18.4)	5 (0.7)		
9.	**Income of the payer**				
	≤ $1,389 (N500,000)	206 (71.1)	50 (29.0)	51.8795	0.0001*
	>$1,389 (N500,000)	33 (28.9)	161 (71.0)		
10.	**Type of hospital**				
	Private	94 (89.2)	48 (77.1)	0.4248	0.5328
	Public	145 (10.8)	163 (22.9)		
11.	**Grade of Hospital**				
	Secondary	162 (96.2)	93 (87.8)	1.4024	0.2703
	Tertiary	77 (3.8)	118 (12.2)		
12.	**Health Insurance**				
	Yes	27 (11.3)	25 (9.3)	0.5854	0.4662
	No	212 (88.7)	186 (90.7)		

= Igbo, Hausa

‡ CS = Caesarian Section.

ǂRS F= Rao Scott Statistic

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Predictors of CHE (unadjusted and adjusted results of logistic regression model)

Tables 3 and 4 presents the unadjusted and adjusted results of fitting multiple logistic regression models to the outcome of catastrophic expenditure (accounting for the two-stage survey design). Predictors found to be significant at all four thresholds in the unadjusted analysis

Table 2. Cross tabulation of selected characteristics and proportion of CHE at 5%, 10%, 25% and 40%.

S/No	Variable (N = 450)	CHE+ 5%	ǂRS F	p-value	CHE+ 10%	ǂRS F	p-value	CHE+ 25%	ǂRS F	p-value	CHE+ 40%	ǂRS F	p-value
1	Setting												
	Slum	208(74.11)	8.593	0.019*	201(71.73)	65.688	<0.001*	182(66.47)	109.01	<0.001*	159 (57.89)	44.009	<0.001*
	Non-Slum	103(47.67)			79 (36.32)			42(21.56)			27 (15.37)		
2	Sex of payer												
	Male	208(65.21)	0.042	0.842	194(60.08)	0.017	0.898	158(51.29)	0.188	0.676	133 (44.57)	0.136	0.721
	Female	103(67.05)			86(61.34)			66(54.62)			53 (43.21)		
3	Age of payer												
	<39 years	184(72.13)	8.95	0.017*	165(65.82)	3.24	0.109	142(59.31)	7.142	0.029*	119 (49.54)	4.706	0.062
	≥40 years	127(53.56)			115(50.25)			82 (38.6)			67 (34.43)		
4	Indication for surgery(patient)												
	Emergency CS‡	209 (63.22)	1.697	0.229	191(58.33)	2.249	0.172	154(50.78)	0.765	0.407	125 (41.92)	1.429	0.266
	Abdominal surgeries & Others	102 (76.98)			89(69.99)			70(58.10)			61 (55.26)		
5	Educational status of the payer												
	Above secondary	121(59.30)	0.393	0.548	105(52.01)	0.9144	0.367	75(42.33)	1.309	0.286	61 (32.28)	3.734	0.089
	Below Secondary	190 (67.9)			175(63.36)			149(55.55)			125 (48.54)		
6	Marital Status of the payer												
	Not currently married	40 (45.97)	8.048	0.022*	36(44.89)	3.016	0.121	30(37.04)	10.263	0.013*	24 (34.33)	7.687	0.024*
	Currently married	271(68.38)			244(62.53)			194(54.16)			162 (45.64)		
7	Ethnicity of the payer												
	Yoruba	218(69.29)	2.984	0.122	193(62.08)	0.861	0.381	150(52.84)	0.471	0.512	125 (47.29)	3.706	0.090
	Others#	93(57.19)			87(56.42)			74(50.28)			61 (37.25)		
8	Religion of the payer												
	Christianity	198(63.22)	2.286	0.169	181(57.07)	1.754	0.222	139(50.3)	0.337	0.578	116 (42.68)	0.526	0.489
	Islam	113(70.23)			99(66.67)			85(55.43)			70 (47.26)		
9	Occupation of the payer												
	Formal	126(60.87)	2.433	0.145	117(58.18)	5.109	0.030*	86(47.96)	4.534	0.036*	71 (37.49)	11.628	0.007*
	Informal	142(62.18)			122(53.68)			98(46.12)			83 (42.01)		
	Unemployed	43(93.24)			41(92.72)			40(87.27)			32 (73.24)		
10	Income of the payer												
	≤ $1,389 (N500,000)	243 (97.99)	105.39	<0.001*	234 (96.2)	136.55	<0.001*	209 (88.33)	673.60	<0.001*	178(76.43)	417.99	<0.001*
	>$1,389 (N500,000)	68 (21.76)			46 (11.78)			15 (2.89)			8 (0.63)		
11	Type of hospital												
	Private	91(64.72)	0.198	0.668	82(59.72)	0.074	0.793	71(52.32)	0.009	0.927	61 (44.96)	0.080	0.785
	Public	220(70.98)			198(64.17)			153(50.57)			125 (40.14)		
12	Grade of Hospital												
	Secondary	172 (65.24)	0.919	0.366	158(60.22)	0.082	0.783	134(52.48)	0.262	0.623	107 (44.52)	0.087	0.776
	Tertiary	139 (71.28)			122(62.56)			90(46.15)			79 (40.51)		
13	Health Insurance												
	Yes	23 (21.1)	10.407	0.012*	16 (12.8)	18.27	0.003*	12 (11.5)	10.194	0.013*	9 (9.64)	8.483	0.020*
	No	288 (70.9)			264 (66.1)			212 (56.9)			177 (48.4)		

**Proportions are weighted row percentages

ǂRS F: Rao Scott Statistic

= Igbo, Hausa, CHE-: Not Catastrophic; CHE+: Catastrophic.

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Table 3. Unadjusted Odds Ratios (UOR) for respondents at all thresholds.

		5% Threshold			10% Threshold			25% Threshold			40% Threshold		
S/No	Variable (N = 450)	UOR	P-value	CI	UOR	P-value	CI	UOR	P-value	CI	UOR	P-value	CI
1	Setting												
	Slum	1			1			1			1		
	Non-Slum	0.32	0.021*	0.13–0.79	0.23	<0.001*	0.15–0.35	1.39	<0.001*	0.087–0.221	0.13	<0.001*	0.06–0.28
2	Sex of payer												
	Male	0.92	0.84	0.37–2.32	0.95	0.89	0.38–2.39	0.88	0.676	0.43–1.78	1.06	0.721	0.75–1.49
	Female	1			1			1			1		
3	Age of payer												
	<39 years	2.24	0.018*	1.20–4.21	1.91	0.11	0.83–4.38	2.31	0.029*	1.12–4.82	1.87	0.063	0.96–3.65
	≥40 years	1			1			1			1		
4	Indication for surgery (patient)												
	Emergency CS‡	1			1			1			1		
	Abdominal surgeries & Others	1.95	0.234	0.59–6.41	1.67	0.18	0.76–3.67	1.34	0.41	0.62–2.94	1.71	0.27	0.60–4.86
5	Educational status of the payer												
	Above secondary	1			1			1			1		
	Below Secondary	1.45	0.55	0.37–5.75	1.59	0.37	0.52–4.95	1.70	0.29	0.58–5.00	1.98	0.092	0.87–4.50
6	Marital Status of the payer												
	Not currently married	1			1			1			1		
	Currently married	2.54	0.024*	1.17–5.52	2.05	0.13	0.78–5.39	2.01	0.013*	1.21–3.34	1.61	0.025*	1.08–2.39
7	Ethnicity of the payer												
	Yoruba	1.69	0.124	0.84–3.41	1.27	0.38	0.71–2.27	1.11	0.512	0.79–1.56	1.51	0.091	0.92–2.48
	Others#	1			1			1			1		
8	Religion of the payer												
	Christianity	1			1			1			1		
	Islam	1.37	0.17	0.85–2.23	1.51	0.22	0.74–3.07	1.23	0.58	0.54–2.79	1.2	0.489	0.67–2.17
9	Occupation of the payer												
	Formal	0.11	0.013*	0.02–0.55	0.11	0.009*	0.03–0.49	0.13	0.012*	0.03–0.56	0.22	0.005*	0.09–0.55
	Informal	0.12	0.064	0.01–1.17	0.09	0.018*	0.014–0.58	0.125	0.016*	0.02–0.60	0.27	<0.001*	0.17–0.42
	Unemployed	1			1			1			1		
10	Type of hospital												
	Private	1			1			1			1		
	Public	1.33	0.67	0.30–5.94	1.21	0.79	0.24–6.01	0.93	0.92	0.17–5.14	0.82	0.785	0.16–4.14
11	Grade of Hospital												
	Secondary	1			1			1			1		
	Tertiary	1.32	0.37	0.67–2.59	1.10	0.78	0.49–2.45	0.78	0.62	0.25–2.44	0.85	0.776	0.24–3.07
12	Health Insurance												
	Yes	0.11	0.023*	0.02–0.68	0.075	0.008*	0.14–0.42	0.09	0.028*	0.13–0.72	0.11	0.038*	0.02–0.86
	No	1			1			1			1		
13	Income of the payer⊥												
	≤ $1,389 (N500,000)	174.96	<0.001*	28.97–1056.94	189.75	<0.001*	46.29–777.86	254.39	<0.001*	119.67–540.86	514.4	<0.001*	96.23–2749.85
	>$1,389 (N500,000)	1			1			1			1		

UOR: Unadjusted Odds Ratios; CI = 95%Confidence Intervals

*Significant Associations, ⊥-Income UOR have wide CI due to the skewed distribution (Fig 3).

‡CS = Caesarian Section; # = Igbo, Hausa

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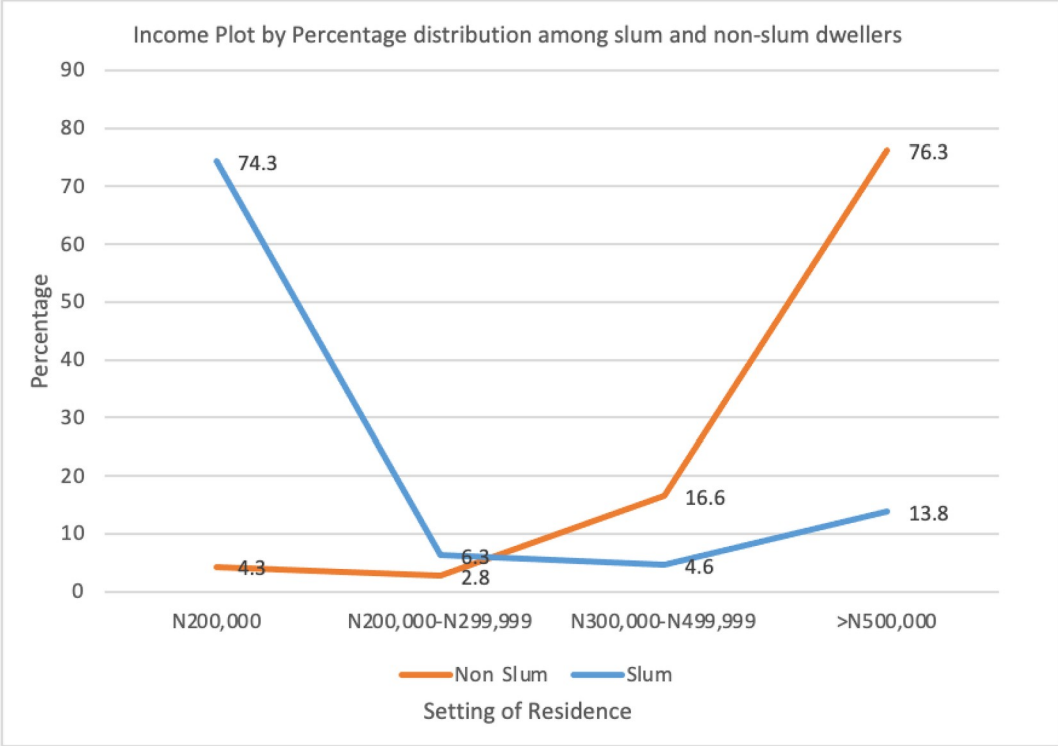


Fig 3. Income plot by percentage distribution among slum and non-slum dwellers.

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(Table 3) were setting of residence (SD/NSD), occupation of the payer, income of the payer and health insurance coverage of the payer. Age of payer was significant at 5% and 25% thresholds only while marital status was significant at 5%, 25% and 40%. However, in the adjusted analysis (Table 4), only income was a significant predictor across the four thresholds that was examined. Other predictor variables found to be significant at one or more thresholds were setting of residence (at 25% and 40% thresholds only), sex of payer (at 25% threshold only), age of payer (at 5% and 25% thresholds only), occupation of payer (at 10% threshold only), grade of hospital (at 10% threshold only), health insurance (at 10% and 25% thresholds only).

At 5% threshold in the unadjusted analysis (Table 3), six variables were found to be significant. Non-slum dwellers were less likely to experience catastrophic expenditure compared to slum dwellers (UOR = 0.32, p = 0.021; 95%CI: 0.13–0.79). Younger payers aged 39 years and below were more likely to experience CHE compared to payers in the age group of above 40 years (UOR = 2.24, p = 0.018; 95%CI: 1.20–4.21) (Table 3). Payers that were currently married were more likely to experience CHE compared to those that were not currently married (UOR = 2.54, p = 0.024; 95%CI: 1.17–5.52) (Table 3). Payers with formal (UOR = 0.11, p = 0.013; 95%CI: 0.02–0.55) and informal jobs (UOR = 0.12, p = 0.064; 95%CI: 0.01–1.17) were less likely to experience CHE compared to unemployed payers. Payers with health insurance coverage were about 9 times less likely to experience CHE compared to payers without any form of health insurance coverage (UOR = 0.11, p = 0.023; 95%CI: 0.02–0.68). Payer's income when less than N500,000 were more likely to experience CHE compared to income over N500,000 (UOR = 174.96, $p < 0.001$; 95%CI: 28.97–1056.94). This result was found to be statistically significant.

In the adjusted analysis (Table 4), only age of payer (AOR = 3.51, $p < 0.005$; 95%CI: 1.63–7.54) and income (AOR = 289.3, $p < 0.001$; 95%CI: 29.03–3064.2) were the signifcant predictors at 5% threshold.

Table 4. Adjusted Odds Ratios (AOR) for respondents at all thresholds.

		5% Threshold			10% Threshold			25% Threshold			40% Threshold		
S/No	Variable (N = 450)	AOR	P-value	CI	AOR	P-value	CI	AOR	P-value	CI	AOR	P-value	CI
1	Setting												
	Slum (ref)	1			1			1			1		
	Non-Slum	2.82	0.42	0.17–47.96	1.03	0.97	0.18–5.88	0.16	0.001*	0.07–0.39	0.15	0.002*	0.06–0.40
2	Sex of payer												
	Male	0.87	0.91	0.07–11.49	0.65	0.69	0.06–7.14	0.22	0.009*	0.08–0.61	1.12	0.859	0.28–4.55
	Female (ref)	1			1			1			1		
3	Age of payer												
	<39 years	3.51	0.005*	1.63–7.54	1.79	0.36	0.45–7.20	2.98	0.017*	1.29–6.86	1.39	0.381	0.61–3.16
	≥40 years (ref)	1			1			1			1		
4	Indication for surgery(patient)												
	Emergency CS‡ (ref)	1			1			1			1		
	Abdominal surgeries & Others	1.55	0.649	0.18–13.12	1.24	0.83	0.13–11.82	0.52	0.40	0.96–2.84	1.26	0.718	0.30–5.22
5	Educational status of the payer												
	Above secondary (ref)	1			1			1			1		
	Below Secondary	2.78	0.197	0.52–14.92	2.00	0.43	0.29–13.39	1.50	0.60	0.27–8.43	2.13	0.356	0.36–12.74
6	Marital Status of the payer												
	Not currently married (ref)	1			1			1			1		
	Currently married	1.63	0.46	0.38–7.06	0.63	0.74	0.03–14.35	1.60	0.43	0.43–5.95	0.38	0.114	0.11–1.34
7	Ethnicity of the payer												
	Yoruba	2.02	0.23	0.58–6.99	0.83	0.78	0.19–3.67	0.82	0.70	0.25–2.67	1.98	0.239	0.57–6.91
	Others# (ref)	1			1			1			1		
8	Religion of the payer												
	Christianity (ref)	1			1			1			1		
	Islam	1.82	0.49	0.27–12.13	2.59	0.19	0.54–12.42	1.53	0.66	0.18–13.05	1.68	0.318	0.55–5.19
9	Occupation of the payer												
	Formal	0.09	0.164	0.002–3.48	0.26	0.22	0.023–2.65	0.30	0.41	0.01–7.78	0.74	0.685	0.14–3.88
	Informal	0.13	0.117	0.009–1.92	0.16	0.007*	0.05–0.51	0.24	0.42	0.005–11.71	1.21	0.775	0.27–5.58
	Unemployed(ref)	1			1			1			1		
10	Income of the payer⊥												
	≤ $1,389 (N500,000)	289.3	<0.001*	29.03–3064.2	313.3	<0.001*	44.24–2218.6	277.22	<0.001*	49.89–1540.28	621.19	0.001*	35.00–11023.3
	>$1,389 (N500,000) (ref)	1			1			1			1		
11	Type of hospital												
	Private(ref)	1			1			1			1		
	Public	0.94	0.904	0.29–3.06	1.38	0.53	0.45–4.24	0.82	0.761	0.19–3.53	0.51	0.013*	0.312–0.833
12	Grade of Hospital												
	Secondary(ref)	1			1			1			1		
	Tertiary	3.69	0.033	0.0005–25.18	3.19	0.05*	1.00–10.16	2.92	0.226	0.44–19.20	3.74	0.113	0.68–20.65
13	Health Insurance												
	Yes	0.11	0.378	0.0005–25.2	0.17	0.001*	0.003–0.12	0.05	0.032*	0.003–0.71	0.12	0.080	0.011–1.37
	No (ref)	1			1			1			1		

AOR = Adjusted Odds Ratio; CI = 95%Confidence Intervals

*Significant Associations

⊥-Income UOR have wide CI due to the skewed distribution (Fig 3)

‡CS = Caesarian Section; # = Igbo, Hausa

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Sensitivity analyses were carried out at cut-offs for CHE of 10%, 25% and 40%. At 10%, the proportion of slum dwellers and non-slum dwellers who experienced CHE was 71.7% and 36.3% respectively. At 25% the proportion of slum dwellers who experienced CHE were 66.5% and 21.6% for non-slum dwellers and at the 40% cut-off, 57.9% of slum dwellers experienced CHE compared to 15.4% for non-slum dwellers.

Discussion

The study sought to compare the prevalence and characteristics of people that experienced CHE among urban slum dwellers and non-slum dwellers within a Nigerian metropolis. Findings from the study demonstrate that the burden of OOP payment for emergency surgery was substantial among both slum and non-slum dwellers, thus reflecting limited financial protection available for both groups. Notably though, CHE was found to be significantly higher among slum dwellers compared to non-slum dwellers. It has been reported in literature [35, 53] that access to social networks and social solidarity schemes which are often used to mitigate CHE are less available in the slums and have been documented as reasons for the level of CHE in the slum population. In addition to the lack of social solidarity schemes [54] to support households during emergency care, slums offer poor or no employment opportunities, amenities or earning capacity (income) [22, 55, 56]. The slum dwellers are not only disadvantaged in terms of an inadequate physical environment, but may not be able to save for health-related needs, thus rendering them ill-equipped to handle sudden health emergencies. In a recent study, this ad hoc savings culture was an occurrence reported by both slum and non-slum dwellers who experienced emergency surgery, however, as that was a qualitative study, the prevalence of not saving is not known [35].

The prevalence of CHE among slum dwellers (74.1%) and non-slum dwellers (47.7%) was quite high compared to other studies reported in the literature [8, 10, 15, 57]. Amakon and Ezenekwe (2012) found a 24% prevalence of CHE among the richest income quintiles in Nigeria while another study conducted in Kenya estimated the prevalence of CHE amongst its non-slum dwellers to be 23% [8, 10]. The higher prevalence observed in this study could be due to the fact that respondents in this study were patients scheduled for emergency surgery (which is not only a sudden occurrence but also financially demanding), differing considerably in terms of nature of care sought by the respondents in the Kenyan study that explored care related to seizures, difficult breathing, measles and injury. Considering also that this was a hospital-based study (in which the population recruited for this study are households that were scheduled for surgery) instead of community-based households and by virtue of their status being hospital-based respondents, the vulnerability to CHE is much higher already and as such the plausible explanation for why proportion of CHE was this high in our study. Extrapolation of study findings in comparison with other studies needs to be done bearing this difference in mind. The increased risk and vulnerability to CHE with hospitalization as seen in this study has important policy implications and has been also brought to the fore in a prior study [58]. An urgent need for innovative social or welfare packages for households faced with emergencies is urgently needed.

The significant statistical association between the setting of the respondents (whether slum or non-slum) and occurrence of CHE in this study is a contributory factor to earning disparities between the urban slum dwellers and their non-slum counterparts. The increased likelihood of slum dwellers to suffer CHE can be attributed to their relatively limited earning capacity. Slum-dwellers, in general, have lower income earning capacities [59], which in turn increases their susceptibility to CHE during illness episodes. The reduced income of slum dwellers also limits considerably the ability to raise funds through alternative sources as they

cannot prove that they can pay back [60, 61]. Thus, the reduced earning capacity of slum dwellers increases the chances and risks of suffering CHE. The correlation between income and vulnerability to CHE is validated in this study. Health insurance is yet another factor that is very significant in reducing CHE in literature [62] and which is also observed in this study. The higher coverage of insurance seen among the slum dwellers compared to non-slum dwellers was an intriguing yet unsurprising finding. Popular local savings clubs [35] or community based health insurance schemes (CBHIS) [63, 64] that are commoner among slum regions might be accountable for this increase. In recent studies, a scale up of community based health insurance schemes has been stepped up to cater for health needs of informal populations–an innovation that has witnessed differing levels of acceptance and coverage in different settings [65, 66]. The functionality of these schemes is still in doubt with respect to the effectiveness of coverage, as we observe that CHE is still much lower among non-slum dwellers compared to the slum dwellers. The protective effect of health insurance from incurring CHE as observed in our study findings validates what is obtainable in literature [38, 67].

The indications for emergency surgery establish that pregnancy is a high-risk period when patients are at a much higher risk of experiencing CHE especially if they have to undergo a caesarian section that was initially unplanned. The continuous rise in the trend of CS at delivery, observed in the past 30 years, has been attributed to many factors such as improved screening abilities, bad medical histories [68] and physician-driven incentives to perform more CS, which is a perverse outcome of the pay for performance initiative [69, 70]. The mode of delivery is however, not the sole factor or period when CHE likelihood is higher but also the type of residence (slum or not, urban or rural). In a study conducted in Enugu Nigeria, a significantly lower odds of having CS was observed among women living in rural settings compared to residents living in urban settings [71]. These observed differences have been attributed to socio-cultural issues that influence variation and ultimately the acceptance of the procedure across Africa [72]. Despite these socio-cultural issues, CS has been pronounced key to reducing maternal mortality in Africa regardless, coupled with a massive scale-up of health systems [73]. Musgrove and colleagues (2000) further argue that the overall utilization and access to emergency obstetric care are not only dependent on perceived patient need but also the responsiveness of the system [74].

The involvement of spouses as payers for many of the CS surgeries is not only borne from the fact that Nigeria is patriarchal but equally emphasizes the role of men and their involvement in supporting the reproductive health of women that has been reported in the literature [75]. Our study illustrates that men take responsibility for the reproductive health of their spouses which corroborates the literature that has also been shown in mother to child transmission of HIV research [76]. Correlation between a higher incidence of CHE with female gender, private facility utilization in this study is supported by findings from Okedo-Alex et al. (2019) [77]. Although Cleopatra and Eunice (2018) found a reduced incidence of CHE with utilization of private facilities [58], a key driver why clients are more likely to experience CHE in private facilities is the relative higher cost at which healthcare services are provided in the quest to provide quality care [78].

As supported by the literature, the finding of an increased odds of catastrophic expenditure in those aged less than 40 years amongst both payers and patients can be explained by this being the childbearing years [79]. The increased odds of impoverishment associated with the unemployment rate is not surprising–as observed in higher thresholds of CHE. Finding that unemployment is linked to CHE in our study confirms what has been documented in the literature [80, 81]. Being the patient and also the payer greatly reduces the ability to seek assistance from social networks to assist with hospital bills in form of loans or monetary gifts. This may well explain the increased susceptibility to CHE that was established in this study.

The findings of this study must be interpreted bearing the following limitations in mind. Firstly, the effect of household sizes was not considered [51]. The approach that was used to estimate CHE, was that of proportionality of income [8] instead of estimating based on household expenditure. The proportionality of income was preferred in this study based on result findings from the pre-test; that showed a poor recall of household expenditure by respondents. Thus, findings from this study should be applied cautiously to studies in which CHE was calculated based on household expenditure that is equally an acceptable method of estimation [82–85].

However, our data collection period was at the point of admission that is before the payer had experienced CHE and so it is not likely that the degree of CHE was influenced by recall bias. This study was conducted in the southwestern part of the country alone where the dominant ethnicity is Yoruba and these findings may not apply to all of Nigeria. Invariably, comparison of study findings with other parts of the country such as the Northern and Southeastern parts of the country should be done cautiously, where the dynamics of socio-cultural beliefs and practices play out and interact differently from the southwest [86, 87]. The cross-sectional design of the study means that we cannot establish causality in this study [88]. The possibility of an underestimation of CHE cannot be ruled out because we excluded some payers that were also patients. The prevalence of CHE among payers who are also patients might differ from those where the payer is not the patient. We also excluded household payers that were not exclusively responsible for payment of the hospital bills. The study also could not ascertain what proportion of the participants were pushed into deeper poverty nor were we able to provide immiserization figures because this was outside the scope of the study. It would be desirable to explore this in further studies.

Nevertheless, our study brought to light important findings such as providing baseline information on the prevalence of catastrophic expenses among both slums and non-slum dwellers in a systematic analytic manner and illustrating a greater burden of CHE among the slum-dwellers. This study also provided extensive detail of the prevalence of CHE at four thresholds that have been suggested in literature. Furthermore, the study demonstrated that there were more significant factors at 25% threshold of CHE compared to other threshold levels and offers baseline data on further research among slum dwellers facing emergencies.

Conclusion

Evidence from this study establishes a higher prevalence of catastrophic health expenditure among slum dwellers compared to non-slum dwellers when they undergo emergency care admissions that require surgery in health facilities. Reducing the effect of catastrophic health expenditure requires a feasible policy reform that focusses resources on mechanisms that increase financial protection for health care consumers of emergency services regardless of whether they are slum or non-slum dwellers. This reform is also required to address the unaffordability of emergency care that is common in the secondary and tertiary facilities of low- and middle-income countries.

A review of the current National Health Insurance Scheme (NHIS) to bridge gaps and strengthen the existing health insurance structure is also necessary to protect families and households from exorbitant and catastrophic health care costs–a common consequence of seeking emergency surgical attention in slum and non-slum areas. Increased funding to the health sector and poverty alleviation schemes, in slums, in particular, are equally desirable to achieve a positive impact on the burden of paying for emergency surgeries and on the general health of the populace going forward.

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PLOS ONE

RESEARCH ARTICLE

Affording unavoidable emergency surgical care – The lived experiences and payment coping strategies of households in Ibadan metropolis, Southwestern Nigeria

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Abstract

Background

Pre-payment and risk pooling schemes, central to the idea of universal health coverage, should protect households from catastrophic health expenditure and impoverishment; particularly when emergency care is required. Inadequate financial protection consequent on surgical emergencies occurs despite the existence of risk-pooling schemes. This study documented the experiences and coping strategies of slum and non-slum dwellers in a southwestern metropolis of Nigeria who had undergone emergency surgery.

Methods

In-depth interviews were conducted with 31 participants (13 slums dwellers, 18 non-slum dwellers) who had recently paid for emergency surgical care in Ibadan. Patients who had experienced catastrophic health expenditure from the use of emergency surgical care were identified and people who paid for the care were purposively selected for the interviews. Using an in-depth interview guide, information on the experiences and overall coping strategies during and after the hospitalization was collected. Data were analyzed inductively using the thematic approach.

Results

The mean age of the 31 participants (consisting of 7 men and 24 women) was 31 ± 5.6years. Apathy to savings limited the preparation for unplanned healthcare needs. Choice of hospital was determined by word of mouth, perceptions of good quality or prompt care and availability of staff. Social networks were relied on widely as a coping mechanism before and during the admission. Patients that were unable to pay experienced poor and humiliating treatment (in severe cases, incarceration). Inability to afford care was exacerbated by double billing and extraneous charges. It was opined that health care should be more affordable for all and that the current National Health Insurance Scheme, that was operating suboptimally, should be strengthened appropriately for all to benefit.

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Abbreviations: *R15_F_NSD_32years_public*, Fifteenth participant; Female, Non-Slum dweller, 32years and sought care in a public secondary facility; *R24_F_SD_37years_private*, Twenty-fourth participant; Female, Slum dweller, 37years and sought care in a private secondary facility.; *R16_M_SD_27yrs_public*, Sixteenth participant; Male, Slum dweller, 27years and sought care in a public secondary facility.

Conclusion

The study highlights households' poor attitude to health-related savings and pre-payment into a social solidarity fund to cover the costs of emergency surgical care. It also highlights the factors influencing costs of emergency surgical care and the role of social networks in mitigating the high costs of care. Improving financial protection from emergency surgical care would entail promoting a positive attitude to health-related savings, social solidarity and extending the benefits of social health insurance.

Background

Emergency care is an essential component of health systems. Needed sudden care may be medical [1] or surgical [2] and is often critically urgent to avoid aggravated morbidity or mortality. Emergency surgery is defined as '*surgical procedures that cannot be delayed*, *for which there is no alternative therapy*, *and for which a delay could result in death or permanent impairment of health*' [2]. Globally, emergency surgical procedures totaled over 230 million cases about a decade ago [2] and emergency cesarean section (CS), comprises a significant proportion of the 18.5 million CS cases worldwide [3]. Sub-Saharan Africa has the highest proportion of disability-adjusted life years (DALYs) due to surgical conditions estimated at 38 DALYs per 1,000 population [4]. The high burden of emergency care in low- and middle income countries (LMIC) has been attributed to factors such as lack of adequate health care resources, unorganized systems [5], that are complicated by the migration of health care professionals [6] and cost factors [7–9]. Despite evidence of the cost-effectiveness of surgery [10], many LMIC households are still unable to afford it.

The readiness and ability to afford care for sudden health challenges have been variably evaluated across many populations [11,12]. Ability of households to afford the cost of health care is important because affordability issues can totally truncate access [13] and depends primarily on household income [14]. Delays in care are related to financial costs [15,16], that is usually borne out of lack of preparedness[14]. Other factors affecting choice of a service range from home initiated interventions to patronage of drug shops for convenience[17], knowledge and perceived severity of the ailment [18], cleanliness and structure (aesthetics) of hospitals and availability of specialists or proficient staff. Also, health seeking behaviours influence the accessibility and affordability to emergency care. Care-seeking factors include delays arising from ignorance, cost of care and lack of adequate means of transportation [19,20]. The resulting delay has important implications for outcome of surgical procedures [21]. When health care is not affordable, patients resort to extreme coping strategies that range from selling off household assets to borrowing, which leads to further impoverishment [22–26].

Universal Health Coverage (UHC) defined, by World Health Organization (WHO), as "access to key promotive, preventive, curative, and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access"[27], is a notable intervention to address readiness of health care end-users and improve affordability of emergency surgical care. UHC schemes, including social insurance schemes [28,29], health savings account initiative [14], and free healthcare programmes supported by citizen participation and realistic and informed budgets [30,31], are initiatives that have been used to improve financial access to emergency care. Financing UHC, either through taxation or contributory insurance scheme, involves revenue collection, pooling of resources, and purchasing services. Where the tax base cannot sustain health financing, UHC has advocated pre-payment schemes to help reduce

impoverishment, consequent on catastrophic health expenditure[27,32]. Such pre-paid schemes rely on social solidarity (where premiums or subsidies are exerted on all, irrespective of health/wealth status) to make health care accessible and affordable when needed [33].

Despite global call to embrace universal health coverage, UHC service coverage index in Nigeria is estimated at 39% [34]. Nigeria's premier UHC scheme, the National Health Insurance Scheme (NHIS) was officially signed into law in 1999 but not fully operational until 2005. The scheme consists of an obligatory system to enroll people in formal employment, a voluntary system and a system to cover designated vulnerable groups [35]. Total enrolment, nonetheless, has been sub-optimal as only about 5 million people (approximately 3% of the population) are covered by the scheme today [36]. Since its inception, the formal sector social health insurance programme (FSSHIP) that covers organised private sector and federal government employees [36], is the most functional program under the scheme [37]. Enrolment is mandatory for all formal sector employees based on a 5% monthly contribution from every worker's salary and 10% of the worker's basic salary paid by the employer. Coverage extends to enrollee's spouse and four dependents under 18years of age [38].

About 70 percent of Nigerians live on less than $1 a day with approximately 35% of the 70 percent living in absolute poverty while over 90 percent live on less than $2 a day [39,40]. In Nigeria, just as in other regions of the world [41], the aspiration for a better life has also fueled urbanization promoting people to increasingly seek employment in urban areas. However, insufficient investment in infrastructure [42] combined with unplanned migration promotes proliferation of slums that are typically characterized by poor living conditions, absent infrastructure and poor access to health care [43]. As of 2014, 50.2% of Nigeria's urban population were living in slums [44]. The slum dwellers (poor and vulnerable groups) constitute a substantial proportion of the urban informal sector in Nigeria [32] and face considerable hardship when needing health care which may range from physical access to affordability issues.

Another characteristic of the Nigerian health care system is dependence on out-of-pocket payment as a major funding mechanism [45]. The resultant financial burden on families (particularly with poorer families) has been linked to varying difficulties in access to care and susceptibility to catastrophic expenditures, especially when paying out-of-pocket [46]. There has been some research on households' experiences and payment coping strategies for emergency health services in Nigeria [47,48]. This study set out to explore the lived experiences of people that were admitted for a recent emergency surgical procedure in selected hospitals of a southwestern metropolis of Nigeria with a specific focus on both slum and non-slum dwellers.

Methods

Study setting

Ibadan, the capital city of Oyo State, is a prominent transit point between the coastal region and the areas to the north [49]. Its population is estimated to be 3,720,643 people [50] and it is the third most populous city in Nigeria. Ibadan has five metropolitan local government areas and eight urban-rural local government areas [51] inhabited predominantly by the Yorubas. The metropolis is home to slums that are interspersed across the metropolitan local government areas. These core slums areas are usually heterogeneous ethnically and professionally [52]. Other slums areas found in Ibadan are smaller and are located on the periphery of the city [52].

Study design, sampling and participants

This is a qualitative descriptive study that is nested in a larger quantitative study. The 5 local government areas in Ibadan metropolis were selected purposively to capture the core slums

within the city core. Out of a total of 197 secondary facilities and one tertiary facility (University College Hospital) situated across the region, 16 facilities were selected (consisting of six public facilities, nine private secondary facilities and the only tertiary facility in the metropolis) using simple random sampling. Index cases–people who required emergency care—were identified in these sites. To be eligible, surgical emergencies had to be a general surgical or an emergency caesarian section (from obstetric wards). Emergency surgical needs in children (below 18 years), neurological or orthopedic surgeries (requiring extended hospital stays of over one month period) were not eligible.

People who were identified as being responsible for paying the costs of the hospitalization were enrolled as participants in the study–this could have also been the person who was hospitalized. Those found to have incurred catastrophic health expenditure (CHE), in a larger study, were invited to participate in this qualitative study as the study cases. CHE, which is defined as spending on healthcare exceeding a certain income threshold [53], was set at 5% of the participant's annual income for the present hospitalization.

All the eligible participants were placed on an ordered list. Participants were contacted from the first payer on the list; these included payers that had confirmed willingness to be interviewed and had provided written consent at the recruitment phase. If a payer declined to participate or was not available to be interviewed, the next payer on the ordered list was contacted. Participants were recruited and enrolled one by one and the process was continued until the 31st interview when data saturation occurred. Thus, a total of 31 participants were interviewed.

Data collection

In-depth interviews were conducted with the aid of interview guides conducted in both English and Yoruba. The guide was developed based on the study objectives to capture in-hospital experiences, post-operative views and coping strategies guided by relevant literature. The interview guide was translated into Yoruba by a native Yoruba speaker who is also an English language expert and translated back to English. This was carried out to ensure that the constructs, which questions aimed to explore, were not lost in both English and Yoruba versions of the interview guide. The interview guide was tested on selected participants that had recently undergone emergency surgery in hospital facilities outside the study setting in order to achieve face validation. All interviews were carried out by two persons–the facilitator (who moderated the sessions) and a research assistant (that acted as both the note taker and time keeper). Face to face interviews were conducted in locations and at times suggested by the participants in order to accommodate their personal schedules. Fifteen of the interviews were conducted in local language (Yoruba) while sixteen interviews were conducted in English. Information on recent hospitalization and experiences related to payment for health care was obtained using funneling and probing as the main interview strategies [54,55]. Credibility of data was ensured through respondent validation (member check). Respondent validation was carried out by obtaining feedback from the participants concerning the accuracy of the data they had supplied and also the researcher's interpretation of the data [56].

Data analysis

All interviews were transcribed verbatim and then translated into English if required. The transcribed data were imported into Atlas.Ti vs 7.5.21 [57]. Interview texts were coded into themes using an inductive approach [58]. In this approach, transcripts were read through and familiarization was established. Codes were subsequently assigned to emergent themes and subthemes to explain the social phenomenon [59]. Three analysts reviewed the data and then

agreed on what codes and themes had emerged from the data. One of the researchers was an independent researcher who did not participate in the interviews. Themes were constructed so that there were no overlaps and so that the themes were robust enough to capture the data. The demographic characteristics that describe the participants are reported as counts and percentages.

Ethical consideration

Approval to conduct this study was obtained from the Human Ethics Review Committee of the University of Witwatersrand (M170284), University of Ibadan /University College Hospital Ethical committee (UI/EC/17/0006) and Oyo State Ministry of Health (AD13/479/123). Written, informed consent was obtained from every participant for participation, audio-recording of interviews and note taking. To ensure confidentiality, anonymous identifiers were used and access to data restricted to only those directly involved in the study.

Results

The findings of this study are presented according to four major themes namely preparing for unplanned healthcare needs, pre-surgical experience, post-surgical experience, and strategies to improve affordability. Whereas two sub-themes emerged from the pre-surgical experience–choosing a service and getting a service; post-surgical experience comprised three sub-themes including payment for service, helping with paying for service, and feelings about service. Strategies to improve affordability are summarized under two main themes: federal level policy or program reform and individual/social level intervention. While the study was set up to compare experiences between slum and non-slum dwellers, we did not find differences between these two groups and we have not presented the data by dwelling status. Table 1 shows the socio-demographic characteristics of participants.

Sociodemographic characteristics of participants

Thirteen of the participants were slum dwellers and 18 were non-slum dwellers. The participants ranged in age from 21–46 years with a mean age of 31 ± 5.6 years. (Table 1). Majority of the participants were aged 26–35 years for slum (69.2%) and non-slum dwellers (72.2%). Males constituted a minority among the slum dwellers (30.8%) and even fewer among the non-slum dwellers (16.7%). Christianity was the predominant religion practiced by participants who did not live in slums (94.4%), while a mix of Islamic and Christian worshippers was reported among the slum dwellers. More of the non-slum dwelling payers (66.7%) attained a minimum of tertiary education while primary and secondary education was the highest level of education attained among the slum dwelling payers. Non-slum payers were predominantly formally employed (61.1%) unlike the slum dwellers where the majority were informally employed (92.3%) (Table 1)

Preparing for unplanned health care needs

Majority of the participants had no money, savings or health insurance to fall back on during the admission; saving for care was anathema to them. It was found that apathy to savings limited the preparation for unplanned healthcare needs or anticipation for a hospital admission with phrases such as, "***who would want to save to pay a doctor"*?** A 31year-old slum dweller opined:

Table 1. Socio-demographic characteristics of the participants.

		Slum		Non-Slum	
		Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
1	Age-group (N = 31)				
	0–25 years	2	15.4	3	16.7
	26-35years	9	69.2	13	72.2
	>36 years	2	15.4	2	11.1
2	Gender (N = 31)				
	Male	4	30.8	3	16.7
	Female	9	69.2	15	83.3
3	Religion (N = 31)				
	Christianity	7	53.8	17	94.4
	Islam	6	46.2	1	5.6
4	Educational Status (N = 31)				
	Primary	5	38.5	1	5.6
	Secondary	5	38.5	2	11.1
	Tertiary	3	23.1	12	66.7
	Post-grad	0	0.0	3	16.7
5	Marital Status (N = 31)				
	Single	2	15.4	5	27.8
	Married	11	94.6	12	66.7
	Separated	0	0.0	1	5.6
6	Ethnicity (N = 31)				
	Yoruba	13	100	18	100
7	Type of Hospital (N = 31)				
	Private	10	76.9	3	16.7
	Public	3	23.1	15	83.3
8	Occupation (N = 31)				
	Formal	1	7.7	11	61.1
	Informal	12	92.3	6	33.3
	Unemployed	0	0.0	1	5.6
9	Grade of Hospital (N = 31)				
	Secondary	11	84.6	3	16.7
	Tertiary	2	15.4	15	83.3

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. . .Well, the person involved in savings would have in mind what he intends or wants his savings for. And he would have also made plans for how he will invest the proceeds of the contribution into his business to make gains. No one would want to save just for the purpose of spending it in the hospital you know. . .

- R1_F_SD_31years_private

Furthermore, it was also perceived that one could be inviting a health challenge (medical ailment) for oneself when saving for such.

Choosing a service

The choice of a hospital was largely determined by the structure, organisation of hospital services and human resources for many of the participants. This varied from hospital to hospital. Broadly speaking, the choice of a hospital was dependent on aesthetics, perceptions about human resources available and type of facility (private or public). On probing for the choice of

facility with respect to human resources, choices with regards to skilled staff were determined by the reputation of the facility, which was gleaned by word of mouth.

". . ...I asked for the hospital that was good and it was recommended to me that it is a good place to give birth and for medical attention. . .. . ."

R9_F_SD_28years_private

Many of the participants were satisfied with the service delivery received in private facilities compared to public facilities. The expertise of the service rendered with respect to timeliness, competence and professionalism was rated excellent. A 31-year-old slum dweller that sought care in a private facility opined:

"When it comes to care here, they are excellent. And when we talk about timeliness, they are also good. Their competence and professionalism are also very good. I was rest-assured with all these qualities. . .." ***R1_F_SD_31years_private***

Of interest is that while the cost of services was expected to be a determinant of how people chose services, this did not come up during the interviews despite a probing question to explore this. This was however an important feature of post admission experiences.

Experience of the service

Emerging themes with regards to aesthetics revealed that patients who were admitted in private facilities were satisfied with the cleanliness of the environment while many participants that sought treatment in the public facilities were not satisfied.

*"Inside and outside, toilet and bathroom and everything, the cleaners are cleaning and working every minute. After some have finished and have gone, another set of people will resume and come forth. The place is neat". . ...**R17_F_SD_46years_private***

"That one na error (laughs) like the first time I came in, there were no bed sheets; I used my wrapper (cover cloth) for a long time before they changed it. When you even ask for a bedsheet, it would seem as if they are doing you a favour. They said that laundry section did not have bed sheets. Maybe they were not dried or something".

*. . .**..R12_F_NSD_28years_public***

Once admitted, participants experienced variations in hospital payment procedures and options with initiation of care. Some private hospitals operated the ***"treat first-pay later***" policy. However, for the hospitals that operated this "*treat first-pay later*" policy, patients had to provide a guarantor (prominent family member in the patient's social network) that was required to sign an undertaking to pay full complete costs later on in the admission or before discharge. Other hospitals (public facilities) allowed patients to pay piecemeal subject to the availability of funds. Both private and public facilities provided some initial care (first aid) if a down payment of the total estimated bill could not be paid upfront. However, treatment would be stopped after the patient had been stabilized and would not resume until payment was completed.

". . ..I told them to please help me that they should do everything that they need to do for the mother and the baby to be alive that I will pay but the doctor on duty then said that they won't do anything if I don't bring the money". ***R17_F_SD_46years_private***

Payment for the service and consequences for inability to pay

Both slum and non-slum dwellers experienced some difficulty paying hospital bills that had to be paid for during their hospital admission. Participants (particularly at public facilities) reported double billing while those using private facilities were billed for what they had been asked to buy out of pocket before the surgery, such as consumables. Some, at private facilities, were charged for items that they considered to be the responsibility of the facility to provide. For example one participant reported having to pay for the fuel needed for the facility's generator.

*"They said at the time they wanted to do the operation that there was no light so the money for petrol to put in the generator equals ₦35,000"—**R17_F_SD_46years_private***

Post-surgery, many facilities employed a '*detention policy*' which meant that if no payment was received, patients were not discharged. Though commoner among the private facilities, some public facilities also operated a detention policy. For many of the participants, this was neither acceptable nor convenient.

". . .Yes, I was delayed because of money problem so I was a bit delayed".
R3_F_NSD_42years_public

*". . .Like if I get ₦ 5000, I will pay it, even there was a time I was owing their pharmacy ₦3,000+ but I had to pay all before allowed to go—**R16_M_SD_27yrs_public***

The participants attested to unfavorable experiences while being kept in the hospitals until payment was completed in full. Dehumanizing practices and maltreatment were reported in some hospitals. Some payers described feeling humiliated when they were unable to pay or failed to obtain needed support from social networks. There were cases where patients had been incarcerated in the hospital for a prolonged period of time.

"I noticed there that when you don't pay there is syringe they pass through you, they passed almost two on my hand I had to be shouting that they should come and remove one that is already aching me but they refused that if I didn't pay, they wouldn't remove the syringe. . ...
R9_F_SD_28years_private

Some hospitals had systems in place to support selected households that experienced difficulty paying hospital bills. These ranged from total waivers to partial waivers (discounts). This approach was more common in the tertiary hospital and was only granted to patients based on the severity of the surgical emergency and the age of the patient. Children and pregnant women were more likely to be granted opportunities of total or partial waivers if they could convince the hospital management of a genuine inability to pay.

Help with paying for services

The option that payers used most when they could not pay was to rely on social networks for financial assistance. Social networks and the need to maintain good social relations with those networks was considered to be important. Maintaining excellent interpersonal relations was considered crucial to securing and receiving financial assistance from families and friends when in dire financial emergencies. For instance, worthiness to be lent money was a validation

that the borrower was a person with integrity (who can be trusted) and that he/she can pay back easily after the surgery. Many normalized the act of borrowing from stable social networks (family and friends) when in financial crisis. Nonetheless, it was also the case that some families and networks could fail when turned to for financial assistance, irrespective of excellent inter-personal relationships as illustrated by the report:

> *"it helps a lot if you have been good to the family and if the families like to help, but you know some family will not help you since they want you dead; they will say "**too ba le ku koku**"(if you want to die, please go ahead).**—R16_M_SD_27yrs_public***

In instances, when close social networks including families and friends disappoint, wider and more distal social networks (such as those related to religious affiliations/bodies), are explored. According to a 42-year old, non-slum participant, her immediate family did not assist her in any way during her admission. However, some members of her religious affiliation provided support:

> *. . .all my family ran away because of expenses but thank God I go to church so people in my church really helped me.**—R3_F_NSD_42yrs_public***

Feelings about the service (post-surgical experience)

When we explored how interviewees coped with the payment issues, they initially said they felt fine about it. There was a tendency to minimize the burden and also to place it out of their control as an inevitable event. In order to feel comfortable with these catastrophic consequences, they normalized their experiences and behaviours to justify that they had or were coping well. For many, it was only on further probing that it was observed that their experiences were not as manageable as they initially suggested. Responses typically included phrases such as, "***thank God it is fine, though we now eat just once daily; thank God we're coping fine though we withdrew some children from school***". A 33year old participant explicitly stated this in her interview:

> *"I thank God for the surgery though part of the money that we were supposed to use to pay school fees of the children, was among the money used for the payment of the bill".*
> ***R30_F_NSD_33years_private***

In addition to normalization of adverse experiences, it was observed that consequences of catastrophic expenditure were attributed to fate or God. A participant said during an interview: "***Amu wa Olorun ni***" (meaning–"*whatever happens to an individual in life only happens with God's knowledge and approval*").

With regards to participants' ideas on how experiences in the hospital might have been made easier, their responses were summarized under two main themes: "federal level policy or program reforms" and "Individual/Social level interventions".

Federal level policy or program reforms

(i) National Health Insurance Scheme (NHIS). The current social health insurance scheme was believed by many of the participants to be operating sub-optimally. Interviewees described it as bureaucratic and inaccessible to many people. According to the participants, problems with NHIS were three-fold.

First, the issue of inadequate coverage; that NHIS is limited to public sector employees and the organised private sector only. This leaves too many households uncovered and with

unpleasant experiences that could have been averted if freely available NHIS benefits were extended and available to everyone irrespective of class of work.

*"It is supposed to be available for everybody, not government workers alone. We are all Nigerians, so NHIS should be available for everybody—**R18_F_NSD_29years_public***

Secondly, for those that had coverage, it was unclear what medical/surgical issues were covered and which were not. Some participants paid for healthcare services and drugs themselves without knowing that the services were covered by the scheme.

*Even some of the drugs that we paid for, we were not supposed to because we are under NHIS but we ended up paying for them. . .. . . It was at end that we realized that we were not supposed to pay. . .. . **R12_F_NSD_28years_public***

Thirdly, participants were not certain of the mechanism of reimbursements, if they were to pay for services out of pocket and apply for refunds after discharge or if their assigned Health Management Organizations (HMO) were to take care of all medical expenses right from the period of admission. For those who were entitled to reimbursements after the services had been rendered, it was unclear how to process the refunds later.

(ii) Government subsidy on health and access to soft loans. Another option offered was the need for government to either subsidize the costs of emergency surgical care and or facilitate and the provision of soft loans to households undergoing emergency surgery. Three main suggestions were provided by participants:

Firstly, according to some of them, subsidization of hospital costs would be beneficial for families in need of financial assistance.

"*. . .I mean by drugs, money (subsidization of hospital costs). . .do you understand? For instance you know a surgical cost of N150, 000 that's now subsidized to N80, 000 will go a long way.. . .." **R24_F_SD_37years_private***

"*What I am trying to explain is that for a federal hospital, it is a government hospital, so they should reduce the money, it is too much. We too we are managing. You can see the economic situation, how much are we earning that we are paying such huge amount of money? It is too much, they should reduce the cost or subsidize it".*

R20_F_NSD_29years_public

Secondly, in addition to subsidization of hospital bills, participants also opined that the provision of soft loans through a dedicated fund scheme for families experiencing financial difficulty would suffice.

"*Organizations where access to quick or soft loans should be available for patients in such conditions" **"R23_M_SD_35years_private***

Thirdly, salary deductions that allow for flexible and spread out payments over a period of time after having required emergency care was another suggestion offered by the participants. According to the participants, steady monthly deductions from salaries will lessen the impact of hospital bills.

"*One can use some amount of money out of the monthly salary but they can also be deducting it from the person's salary bit by bit" **R17_F_SD_46years_private***

(iii) Upgrade of existing structures. Some participants recommended that publicly funded and managed laboratories should be upgraded to provide subsidized laboratory services to the general public. In this way, not just the hospital bills will be subsidized but also the laboratory services that are also perceived to be expensive.

"*Let them work more on improving the laboratories so that we can pay for investigations in the lab and get it at the time we should get it because not everybody can afford the PPP lab. Even if I can afford it, of course, I want something cheaper and get quality*".

- ***R15_F_NSD_32years_public***

Individual/Social level interventions. *Pre-informing*. Participants suggested that usual practice should change so that prior to hospitalization people should be informed about the cost and how hospitals will charge. They also wanted hospital bills to be standardized.

"*I think that during antenatal, they should tell people things to get in case of surgery. The same way they give list of things to buy for deliveries, they should also give list of things to buy for surgeries. So that we can know the cost of things we are going for*".

R12_F_NSD_28years_public

Appropriate billing. In addition to recommending being pre-informed about bills, double and unsubstantiated bills were criticized by some participants:

"*Let them stop bringing out unsubstantiated bills. I got a bill that included things like my anesthesia, my IV fluids, things I bought myself, I feel cheated that I had to pay for those things when I have already provided them, it's unfair. . ..*".

R15_F_NSD_32years_public

Discussion

Even though, slum dwellers are in general poorer than non-slum dwellers, we did not find differences in the experiences reported by slum and non-slum dwellers. This is perhaps explained by the fact that only those who experienced CHE were included in the study.

Our data indicated that prior to the advent of an emergency health care need, the idea of saving for a possible health-related need was unacceptable to participants. The notion of savings or any form of involvement in pre-payment schemes was not a predominant feature. Despite the fact that local savings clubs (such as "Esusu", "Adashi", "Otataje" or "Ajo" are popular within social networks [60], antipathy towards saving for a health related expenditure was observed. Local savings clubs essentially pool money through regular contributions and permit a one-time lump-sum collection at the end of a cycle [61]. However, these lump-sum payments are utilized preferably for capital projects such as purchase of land or erection of buildings rather than for health or health care purposes, again reinforcing that expenditure on health care is not prioritized. Also, these clubs operate within known social networks that differ from the idea of pre-payment into an anonymous fund, over which members feel they have no control. Although, evidence abounds in literature that the principle of solidarity found with mutual associations, cooperative societies [62] and microcredit organizations[63] have enormous potential to facilitate participation in health insurance schemes such as the community based health insurance schemes [64], our data does not corroborate this. As such, participation

in initiatives such as the community based health insurance schemes continue to show low participation rates and ultimately the national solidarity programs like the NHIS [65].

After a health care need is established, the choice of a service was largely determined by word of mouth. Pertinent issues for participants were aesthetics and the human resource availability. None of our informants reported inquiring about costs when deciding which facility to seek care from. However, when we explored their suggestions to improve the system, cost issues were preeminent–recommending that adequate information on hospital costs and clear billing procedures should be made available upfront prior to commencement of care. Cost of health care has always been a very strong predictor of affordability of care. Contrary to findings from literature [7,66], pre-informed inquiries for cost of procedure was not sought or considered important to our study participants. The possibility for this variance could be due to the fact that our respondents were under some degree of pressure as their cases were surgical emergencies requiring urgent attention unlike the study participants in another study who were full time local government staff within a secretariat [7]. Urgency associated with surgical emergencies are usually associated with unusual dynamics that often influence decision making process or bargaining power among the end-users [67]. In a study conducted in East Midlands, patients scheduled for emergency surgery were significantly less likely to read or understand the consent form for surgery (nor felt they had a choice whether to sign or not), compared to their counterparts scheduled for elective surgeries [68].

Paying for services identified the central role of family and social support for many households in this study which confirms findings from the literature [69,70]. Though numerous studies have documented the positive influence of social support and social networks to relieve the payment of health care, evidence also exists that the high costs of care can negatively impact social networks. In a study conducted in Burkina Faso, it was seen that the challenge of meeting health care costs had led to the dissolution of relationships and breakdown of social links, leaving affected individuals in a state of heightened social and economic vulnerability [71].

The findings of this study revealed that there are three consequences of an inability to pay: delayed or poor quality care [72], humiliation of patients and incarceration. Delay in care by health workers to those unable to pay validates findings that has been described by others [72,73]. Humiliation as documented in this study has also been reported elsewhere in literature [74]. Inability to pay has been shown to prolong hospital stay (patients are not discharged but are incarcerated until they can pay). Surgical patients in rural Nigeria that experienced some difficulty with payments stayed in hospital seven days longer than those who could pay [75]. This phenomenon, is increasingly common [76] and has even resulted in the demand for sex in exchange for inability to pay for health care costs [77]. While this is accepted as a common practice that seems to result in little public protest, it is nonetheless increasingly being recognized as a human right violation [74].

Participants regardless of an ability to pay during admission complained about billing. Obscure billing procedures/discrepancies in the form of double billing and bureaucratic reimbursement systems were common experiences. Contrary to the widely accepted use of double billing in literature [78], (described as a process whereby a physician bills both the government and the patient for the same services), the use of the term, in this study, refers to billing the patient at least twice during the index admission for the same hospital services. Nonetheless, double billing in the context of this study, is not new and only serves to corroborate documented literature [79], which constitutes a type of fraud that undermines the trust of health care consumers and indicates lack of transparency of the system. With the exception of some kind of co-payment, that has a primary role to eliminate moral hazard [80], billing of patients could be eliminated if the existing social health insurance scheme was optimized.

Similar to other research, CHE that ensued, in this study, resulted in serious consequences such as going without food or taking children out of school [81]. The initial reaction when being questioned about unexpected and unaffordable charges was to appreciate being alive or to defer to the inevitability of the outcome. Participants normalized their experiences by attributing unforeseeable and unplanned circumstances to fate and thus rationalized key (positive and negative) life events–a common finding in this and other research [82,83].

The antipathy to save and willingness to pay for a health related expenditure only after it has occurred, as found in this study, contradicts the expressed desire to join the NHIS. The antipathy can be improved through federal level interventions and individual/social level interventions. At the federal level, there is a need for interventions that explain and encourage support for the principle of social solidarity (that is pre-payment, if care is sought or not, or whether any form of expenditure is incurred or not). Pooling of funds and social solidarity are essential preconditions for any sustainable health insurance system. If the people suggesting the extension of the existing NHIS as a solution are the same people who also resist pre-payment and health related savings, it suggests that they may not understand the principles underlying national health insurance schemes. This can limit uptake of NHIS and may explain why the prevalence of insurance cover is low in Nigeria.

At an individual level our findings revealed that "*soft loans*" (loans that can be paid back at one's convenience rather than at predetermined dates and rates) are an acceptable intervention to alleviate health related expenditure. In any formal system, paying back when convenient is not tolerated which may render the concept of soft loans un-implementable. Short term or flexible loans are often associated with exorbitant interest rates which limits its' use-value in offsetting CHE. The acceptability of a loan system to payback incurred expenditure again underlines that the notion of pooling of funds and cross subsidization is not understood or acceptable. It appears that the rudiments of health insurance are either poorly understood or participants are just not ready to "*walk the talk*". Buy-in is required from health care consumers to gain and enjoy full benefits of the existing health insurance program. Proper education is required to improve scale up and coverage of the scheme [84]. Our data suggests that this would have been likely if high quality care was provided or if the scheme was more user-friendly with clear reimbursement systems. In order to achieve active voluntary participation and better coverage by the NHIS, those who are covered must be well served and protected from CHE.

Limitations

The observed incidences where participants normalized their hospital experiences initially before probing may mean that they were influenced. Generally, interviewer bias is a bias that has repeatedly influenced such study designs [77]. It may also be the case that the participants only discussed the negative side of their experiences after probing because they initially did not trust the interviewers. There were also missed opportunities to probe further these themes. It may be argued that more themes might have emerged if probes were thorough or if other teams had conducted the interviews. Nonetheless, our study provided new insights on contextual factors that interact and influence the health-seeking choices, behaviours, and consequences of households facing emergency surgical care in sub-Saharan Africa.

Conclusion

Evidence from this study establishes that catastrophic health expenditure does exist and causes similar effects to that which has been described in the literature. Catastrophic health expenditure occurs even for those with health insurance cover and this has the potential to undermine

the perception and value of insurance. Patients have little to no knowledge of how much an emergency intervention will cost and there is no cost information available.

Recommendations

In the short term the charges per day or per intervention should be made public at all points of service. In particular, during antenatal care, information about the cost and required preparation for a potential emergency intervention should be shared with service users. It is one of the few emergency surgical events that allows for preparation. Even in situations where people do not routinely save for health related expenses, this knowledge may prompt some kind of preparation.

Members of the various NHIS structures must be provided with correct information about what is covered, and how to claim reimbursements. It is equally important to understand why, in spite of insurance cover, some people still experienced CHE. Research on this is warranted and urgent, this may lead to changes in payment policies if required.

In the longer term if Nigeria is to surpass the approximately 4% membership of the NHIS, then efforts must be stepped up to ensure that the NHIS is well understood and administered and does not lead to CHE so that it is attractive to non-enrollees.

Also, more research should be done to confirm if the antipathy towards prepayment and health-related savings found in this study are common. If so, methods to encourage health related saving and pre-payment, have to be found. Simply assuming that prepayment, and social solidarity will be embraced because a policy exists seems unwise.

Supporting information

S1 File. Patterns of expenditure qualitative data. [85].
(DOCX)

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CHAPTER 7 Discussion

7.1 Discussion of Key Findings

Emergency health care is unusual in all its ramifications: necessary, sudden and often physician rather than consumer-driven [233]. These characteristics compounded by poor access, affordability and related possible impoverishment highlight health related inequalities.

As expected, majority of both groups (i.e., slum and non-slum dwellers) belonged to Yoruba tribe and practiced Christianity. This is consistent with the features of the occupants of the geo-political zone of the study setting. People of various ethnicities (ethnic predominance) are equally distributed across three major geographical regions in Nigeria, with a majority of Hausa in the north, Yorubas in the Southwestern region and Igbos in the Southeastern region. The preponderance of Yorubas in this thesis is not surprising since the research was executed in southwestern region of the country that is primarily inhabited by this ethnic group [234].

A remarkable finding in this study was that slum dwellers spent more on education fees and supplies than non-slum dwellers despite their lower educational status. The average family size of both categories is a factor that might have played a crucial role in this finding. The linkage of household family size here in this paragraph is only an attempt to rationalize the higher expenditure on educational status being incurred by slum dwellers. Even though this research did not collect data on household size, the linkage of larger family sizes particularly amongst the slum dwellers has been reiterated in literature [235,236], indicating that they have more children than non-slum dwellers. Invariably, this results in more spending in an attempt to provide for the educational needs of the children.

Empirical facts from other slum settings suggests that slum dwellers are interested in their children's education which may serve as an inspiration to assign an ample part of their wages aside primarily for the purpose of financing the education of their offspring [235,237].

The preponderance of informal employment observed among slum dwellers coupled with their poor earning capacity is in agreement with previous research [238,239]. Evidence abounds in literature that validates the disproportionate disadvantage experienced by slum dwellers with respect to formal employments, and which further limits their earning capacities [9,240,241]. While Pramanik and colleague (2013) demonstrated that employment opportunities and high

wage rates acted as a pull factor drawing migrants into cities, they often resulted in the formation of slums in cities [242]. In this study, slum dwellers were predominantly involved in the informal wage sector and low earning capacity. According to a United Nations article, slum residents rate lower on human development indicators than urban households as a result of poor employment, social services, resultant health problems, income inequalities and less access to education [243].

Food expenditure being a major household expenditure among both non-slum and slum dwellers is consistent with findings in the literature [45] It has been reported that food accounted for 42.8% of total household expenses and was identified as the single most important constituent of household spending [121]. Apart from food expenditure that accounted for a significant proportion of income, other household items that took up large income budget shares included transportation, education, health care costs, utilities (rent, telephone and construction repair). This is also similar to findings reported from a study done in Africa, Latin America and Asia [244]. Several reasons may explain this difference. Poor living conditions are associated with slums in non-governmental approved infrastructure, thus, recurrent expenditure in an attempt to fix building defects could translate to significant construction expenditure. Lack of access to proper waste disposal or potable drinking water that typify slum areas, have culminated in an amplified morbidity among different population segments [237,245,246] that can explain the relatively large health expenditures incurred by the slum dwellers.

The issue of higher spending on voluntary insurance among non-slum dwellers is equally an interesting finding. A theory related to income and accessibility of health care services is proposed as plausible explanations for the increased spending on voluntary insurance and health care costs. The demand for health care services is less hindered by restricted income among non-slum dwellers compared to slum dwellers. While there may be some inaccuracies in the cost diaries, it seems reasonable to assume that non-slum dwellers have more disposable income. Slum dwellers on the contrary may delay or forego a visit to a health facility because of lack of funds/savings from a poor income.

The fact that non-slum dwellers spent a substantial portion of their income on health insurance is not surprising since the current health insurance scheme, the National Health Insurance Scheme (NHIS), launched in 2005, [247] is mandatory only for employees within the public or organized

private sectors. More of the non-slum population in this study are formally employed and will contribute to NHIS. However, the NHIS invariably leaves out many groups of individuals uncovered. The gap in coverage customarily forces many households to source for private and voluntary insurance as a veritable substitute to provide cover for health and assets. The high amounts recorded as incurred on voluntary insurance by non-slum dwellers is thus validated and justified. Literature conducted among slum dwellers in analogous sub-Saharan Africa communities show that the likelihood of slum dwellers to participate in health insurance schemes or voluntary insurance is low due to a relative unaffordability of premiums complicated by poor earning incomes [236,248].

In the event of an emergency surgery, findings from this study revealed that participants generally took a superficial approach in their assessment of quality for care obtained in hospital facilities. They were more impressed by cleanliness of facility (as a measure of quality) rather than more relevant and objective qualities such as promptness or adequacy of care. In the same line of reasoning, participants relied on word of mouth in selecting where to obtain care rather than employing objective assessments to inform where to seek care from. Even though, word of mouth communication has the potential to damage the reputation of healthcare organizations [249]. Martin (2017) argues for potential benefits that can be obtained from word-of-mouth communication considering the impact of networks and their relevance in influencing health behaviours [250].

Despite relying on word-of-mouth for hospital assessments, participants lacked practical knowledge or information on how to pay for health care in the likelihood of an emergency. Inadequate preparation for these sudden health care challenges in conjunction with appropriate savings or pre-payment schemes places households at risk of catastrophic health expenditure and consequences that are unavoidable and unpleasant. Such unpleasant experiences as reported by participants in this study included delayed treatment, poor care (humiliation) and in some circumstances incarceration within the hospital premises even when treatment or management plan has been completed until all hospital bills are paid. This is not uncommon and has been reported before [215] and has even included sex being demanded in exchange for an inability to reimburse or pay hospital bills [214], or abandonment [128] activities that some have argued are gross violations of fundamental human rights [214,215,251]. This study, particularly where par-

ticipants described experiences such as unpleasant attitudes and detention by health care workers corroborates the literature[214,215,252,253]. According to a recent study, detention is fast becoming a rampant occurrence – an outcome that violates some basic rights of patients [253]. In Calabar Nigeria, about twenty percent of children with Burkitts Lymphoma were denied chemotherapy because of their parent's inability to pay [254]. In Democratic Republic of Congo, women admitted to maternity wards were reportedly detained in the hospital for non-payment of medical fees [215]. This practice is not uncommon and is not perhaps sufficiently labeled as mistreatment or an abuse [255] but may serve as barriers to seeking healthcare. Inability to pay in other instances were noticed not only to incite poor treatment but also led to unnecessary and prolonged length of stays, in addition to denial of needed care. For instance, length of days for a hospital surgical procedure in Bethesda clinic of a rural Niger Delta community in South-South Nigeria extended to more than 7 days if the patient had difficulties with payment [256]. In many of the hospitals, this delayed discharge till payment is complete was a necessary measure to ensure sustainability. Balboni and colleagues argue that monetary motivated services are as a result of an incessant conflict of two most basic principles of morality: self-interest and altruism that has been complicated with commercialization and the intrusion of third-party institutions [257]. These adverse consequences (as reported by both payer and patients in this study) corroborates similar documentation in literature [258].

Health insurance cover was insufficient to protect some households from catastrophic consequences. In the quantitative component of this study, 21.1% of participants still experienced CHE despite health insurance coverage. In this study people who were insured were unclear about what was or was not covered by their insurance scheme, they also did not know if they should pay up front and be reimbursed and did not understand the reimbursement system. We did not collect data which would have indicated if the quantum of cover was sufficient as this study intended to compare slum with non-slum dwellers and not to understand the NHIS.

In this thesis, as in other literature, reliance on social networks was found to be an important cushion against impoverishment from health costs [118,146]. Even though, studies have validated the positive impact of social networks as a means to relieve hospital bills, evidence from this study also resonates the unreliability that is associated with these networks [259], since close family members can out rightly decline helping out sometimes [260]. Withdrawals of children

from schools, foregoing expenditure on essential items such as food subsistence were additional coping strategies observed in this study and validates what is documented in the literature [145]. Interviewees down played or normalized their response to having to meet hospital costs as long as it did not result in mortality, they were just thankful that the admitted household member (or themselves) were still alive. It was only on probing that they admitted to severe and unpleasant consequences. A deep-seated belief of a godly existence helped some payers not only to normalize the unpleasant hospital events but also to spiritualize them. This quick attribution of unforeseeable and unplanned circumstances to interferences from celestial bodies suggests that participants do not take any responsibility of key (particularly negative) life events [261,262]. Other households simply defer to a god-ordained nature and are fatalistic about it.

The findings of CHE and the negative consequences of coping with unplanned for OOP could be alleviated by pre-payment schemes for which a global call already exists [263]. Universal Health Coverage (UHC) is an important target of the Sustainable Development Goal (SDG) that aims to increase equity in access to quality healthcare services through sustainable health financing that maybe state-funded, employer-funded or community driven [264–266]. The process of pooling of funds allows for the young and healthy to cross-subsidize health costs of the sick and old. Formidable challenges nevertheless, oppose the successful implementation of this noble initiative, thus limiting its scope and coverage in Nigeria.

In the qualitative work undertaken in this study, it was noted also that limited insurance coverage within the Nigerian context may also be the result of a poor saving culture. Some participants in the in-depth-interviews, all of whom experienced CHE were unprepared and did not save for health-related needs. This was even the case where the emergency procedure was a caesarian section and it is reasonable to imagine this as a possible outcome of a pregnancy, so time to plan ahead was in theory possible. Poor saving culture for health is an observed and established way of life for many households in sub-Saharan Africa today [267]. A study conducted in Kogi state, Nigeria found that vendors would only save about 36% of their profit for daily needs [268]. Though the amount saved by vendors in this study pertains to daily needs rather than health care, it nevertheless, demonstrates the poor saving culture. Phrases such as, "***who would want to save to pay a doctor***", implied that the notion of saving in preparation for a health need was not acceptable.

At variance with the poor savings culture and aversion to saving for negative health outcomes, is the fact that some participants still appealed for health insurance and ear-marked funding for health care. The contradiction suggests a limited understanding of the mechanism of action and underlying principles of health insurance schemes or expectations required of them to contribute to the success of the National Health Insurance Scheme (NHIS), particularly the voluntary component of the scheme[269] that is readily available for those who can afford it. Some participants are comfortable with the idea of raising loans to payback health bills in spite of the high interest rates usually associated with short term loans. This may demonstrate their limited understanding of the consequences of utilizing loans to pay for health bills or the increased likelihood of a further plunge into poverty and impoverishment.

Beyond not having health related savings or insurance there were other factors about payment that frustrated interviewees. Double billing and bureaucracy around reimbursement made the existing insurance scheme less attractive to both enrollees and non-enrollees. The commercialism seen in hospitals, complicated by self-interest of health care workers, particularly aggravates the poor attitude to patients with financial hardship.

This brings to the fore the need to strengthen the existing health insurance scheme, paying close attention to the contextual factors from this and other studies that have demonstrated that households are plunged into financial hardship after paying for hospital bills [270]. Increased education of pooling of funds and its relevance to health care financing for health insurance is equally crucial to improve on poor saving culture that is observed amongst households. The most emphasized intervention to alleviate the burden of emergency costs on households found in this study is the strengthening of the national health insurance scheme. This implies that there is significant awareness of the existence of the scheme. However, there was also dissatisfaction with the NHIS. Four key domains of NHIS have been found to be problematic: registration, range of services provided, co-payment plans, and change of health care provider have been described [182]. In this thesis, co-payments and poor understanding of the reimbursement process was documented). Finally, this study indicates that it would be useful for all public and private health facilities to indicate the cost of services and the rules of payment clearly for health consumers. This would allow them to make informed choices and may promote saving for health care. In

addition, efforts to educate the population about pre-paid insurance is required if Nigeria is to achieve UHC.

7.2 Limitations

This thesis must be interpreted cautiously based on the following limitations. Proportionality of income approach (rather than an estimation using household expenditure) was chosen to estimate catastrophic health expenditure and so the results and discussion must all be interpreted based on the limitations of this approach. Findings might have led to an over estimation of CHE as participants in informal occupations would have recalled their sources of income at differing levels of accuracy. Furthermore, the quantitative component employed a cross-sectional study design which prevents the ability to establish causality in any investigation. The fact that annual income was estimated based on monthly income was another limitation which could have led to an over or underestimation of our study outcome considering that income might not be regular particularly for the slum dwellers.

With respect to the qualitative study, the observed incidences where patients normalized their hospital experiences initially before probing suggested some degree of interviewer bias in play. Interviewer bias is a bias that has repeatedly influenced such qualitative study designs [271]. It may be argued that different opinions might have been generated if other teams had conducted the interviews. Nonetheless, our study findings and conclusions were not invalidated by interviewer bias. There were also missed opportunities to probe some themes in detail.

Nevertheless, in the face of the limitations related to recall bias, interviewer biases and inability to establish causality, this thesis has been able to provide baseline statistics of household expenditures in a comparable fashion (between slum and non-slum dwellers) and has also been able to document the prevalence, factors and predictors of catastrophic health expenditures between two groups in a systematic approach and at four different CHE thresholds (5%, 10%, 25% and 40%). The thesis summarizes the findings in a succinct manner harnessing both quantitative and qualitative methods to provide answers to a range of health care gaps faced by slum dwellers, particularly when faced with emergency surgical care in sub-Saharan Africa.

7.3 Summary - Integration of findings

This section presents an integration of the study findings which are highlighted in line with the structure of the research objectives. Key findings for all three papers among slum dwellers and non-slum dwellers are discussed around emergent themes across the three papers. (See Table 7.1).

The baseline survey compared expenditure patterns between slum and non-slum households by collecting the one-month pre-hospitalisation expenditure in study participants. Slum dwellers spent more of their disposable income on rent, education and transportation. Non-slum dwellers on the other hand, prioritized health care as more important than rent and transportation.

With respect to the estimation of prevalence, factors and predictors of CHE, analysis also revealed expected and unexpected findings. Expected findings in this thesis revealed that catastrophic health expenditure was more prevalent among the slum dwellers. Unexpected findings for this paper, however, was that the non-slum dwellers were not as protected from catastrophic health expenditure as expected. In this thesis, almost 50% of the non-slum dwellers incurred CHE at 5% threshold, which was unexpectedly high. (At 10%, the proportion of slum dwellers and non-slum dwellers who experienced CHE was 71.7% and 36.3% respectively. At 25%, the proportion of slum dwellers and non-slum dwellers that experienced CHE were 66.5% and 21.6% respectively. At the 40% cut-off, 57.9% of slum dwellers experienced CHE compared to 15.4% for non-slum dwellers. The difference in the prevalence of CHE between slum dwellers and non-slum dwellers remained statistically significant across all the 3 CHE thresholds).

With respect to the qualitative research that evaluated the lived experiences of households, post-surgery, analysis also revealed expected and unexpected findings. Expected findings revealed a reliance of slum dwellers on social networks as opposed to non-slum dwellers that relied more on savings to handle emergency healthcare. Unexpected findings showed that savings set aside for health was not prioritized among either group of study participants. Participants, despite their desire for a functional health insurance system that covered them all, appeared not to understand what a pre-paid pooled fund entailed.

Table 7.1: Integration of key emerging themes across the three papers

	Paper 1	Paper 2	Paper 3
Title of Paper	Comparison of household expenditures between urban slum and non-slum dwellers with a surgical emergency in a Southwestern metropolis in Nigeria	Prevalence and factors associated with catastrophic health expenditure among slum and non-slum dwellers in a metropolitan area of South Western Nigeria- a Cross sectional study design	Affording unavoidable emergency surgical care – The lived experiences and payment coping strategies of households in Ibadan metropolis, Southwestern Nigeria
Emerging themes	-Lack of disposable income for slum dwellers (Debt Profile) -Availability of disposable income (savings) for non-slum dwellers -Prioritization of health care costs were top on the list of household expenditures for non-slum dwellers but fourth on the list for slum dwellers.	- Prevalence of CHE substantial among both slum and non-slum dwellers - CHE more pronounced among slum dwellers - Slum status and Health Insurance Coverage were significant factors and predictors across all thresholds of CHE	- Lack of saving culture for health-related needs - Unpleasant hospital policies such as detention and incarceration on many households that were unable to pay bills. - Reliance on social networks (most times unreliable) - Denial/Inability to take responsibility for health needs & consequences

Implication of findings on accessibility of care and poverty indices	Poor readiness of slum dwellers to handle any emergency surgery	Imminent impoverishment among both SD & NSD but more pronounced among the slum dwellers when an emergency surgical care is required.	-Human right violations as a result of unregulated and unfair hospital policies -Further impoverishment established for households with emergency needs
Implications (Recommendation) on Health Systems Strengthening	Empowerment of slum dwellers through improvement of job opportunities. Health systems strengthening in form of Government subsidies (for emergency situations) is desired	Health systems strengthening in form of expansion of NHIS is advocated for.	Health advocacy to improve the responsibility of community towards health care Strengthening of context specific (local) social support systems Review of existing hospital policies with regards to management of emergency surgery and billing is mandatory to facilitate transparency and fairness.

7.4 Conclusion and Recommendations

This research sought to systematically analyze the burden of out-of-pocket payments and its impact on slum dwellers in comparison with the non-slum dwellers during emergency conditions. The research however did not only uncover the susceptibility to catastrophic expenditure among the slum dwellers alone but among its non-slum counterparts. Research findings establish a need for stronger health system strategies that ensure coverage among all vulnerable populations. Vulnerable populations abound and must be considered specially when designing health programs that ensure or aim to promote health insurance coverage.

Furthermore, unsatisfactory practices that are common with delay or inability to pay for hospital costs are unacceptable and a gross violation of human rights that must be addressed firmly. Hospital management boards and regulatory agencies must review and proffer acceptable standards of practice for all hospital facilities providing emergency secondary care to limit dehumanization that is gradually becoming a norm in health care industry.

Finally, the government must not only desist from lip service – rather they must invest and pay more attention to health and health care gains by investing and committing the recommended minimum budget share of the gross domestic product to health.

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Appendix

Appendix I: Consent form for Payer

Confidentiality and Consent

Dear Sir/Ma,

My name is Taiwo A. Obembe. I am a doctoral candidate in the School of Public Health, University of Witwatersrand Johannesburg, South Africa. My doctoral research is trying to get information that can be used to improve access and affordability of health care. This study is aimed at determining the patterns of expenditure, coping mechanisms and health outcomes among residents living in the ghettos (urban slum dwellers) that are admitted for emergency surgeries in Ibadan, Nigeria. The objective of the study will help to understand what happens and how families cope when they are faced with health care emergencies that they are not prepared for. The information we gather will be used to influence policy makers so that they understand what problems people face in the hope that they will think about how to fund health care so that it is affordable.

As part of the survey, we would like to ask some questions about your household, who lives there, what you all earn, what you usually spend your money on and to see if this has to change because of this admission to hospital. All information supplied by you would be treated with strict confidence throughout the course of the study. Your participation in the research is completely voluntary. There will be no penalty for refusing to be part of the study. However if you will wish to participate in the study, I would like to explain to you everything that will be involved so that you are sure you are happy to be part of this research. We want to really understand how hospitalization affects families and households. So we intend to collect information at a few points in time. If you agree to be part of my research it will involve the following:

- Filling of questionnaires around the time of admission
- Filling in a dairy about how you spend your money, both now that a researcher can assist you with if you need help and then taking this home with you and continuing to fill it in for a few months
- Filling questionnaires at discharge from hospital

- A follow – up period about 3 months after to find out how you are coping

Completing the questionnaire will take about 40-60 minutes of your time. If you feel uncomfortable about answering any question, feel free to skip to the next question. You are also permitted to withdraw from the study at any time should you feel the need or urge not to do so. However, we hope you will participate fully in all of the questions since your views are very important. There will be no payment for participation in the study. However, there will be a car available to take you home upon your discharge from the hospital. You are kindly requested to answer the questions to the best of your knowledge and understanding. If there are issues that are not clear, you are free to clarify with the research assistants. Thank you for your anticipated co-operation and participation.

Should you have any queries during the course of the study, feel free to call:

Dr. Taiwo A Obembe: Email – tobembe@cartafrica.com; Phone number: +234-805-840-9495

Consent: I am interested in participating in the whole study (including the follow-up and for the interviews if required).

(1) Yes ☐ (2) No ☐

Signature of Respondent _____

Date: _____

Time: _____

Questionnaire Number: _____

Interviewer Name: _____

Signature of Interviewer: _____

Appendix II Consent Form for Patient

Confidentiality and Consent

Dear Sir/Ma,

My name is Taiwo A Obembe. I am a doctoral candidate in the School of Public Health, University of Witwatersrand Johannesburg, South Africa. My doctoral research is trying to get information that can be used to improve access and affordability of health care. This study is aimed at determining the patterns of expenditure, coping mechanisms and health outcomes among residents living in the ghettos (urban slum dwellers) that are admitted for emergency surgeries in Ibadan, Nigeria. The objective of the study will help to understand what happens and how families cope when they are faced with health care emergencies that they are not prepared for. The information we gather will be used to influence policy makers so that they understand what problems people face in the hope that they will think about how to fund health care so that it is affordable.

As part of the survey, we would like to ask some questions about your admission here at the hospital, treatment you have had so far, how long you have been in the hospital for and who is responsible for paying your hospital bills. We need your consent since most of the information we will be seeking will be related to you and your hospitalization. All information supplied by you would be treated with strict confidence throughout the course of the study. Your participation in the research is completely voluntary. There will be no penalty for refusing to be part of the study. However, if you will wish to participate in the study, I would like to explain to you everything that will be involved so that you are sure you are happy to be part of this research. We want to really understand how hospitalization affects families and households. So we intend to collect information at a few points in time. If you agree to be part of my research it will involve the member responsible for paying your hospital bills to:

- Fill questionnaires around the time of admission
- Fill in a dairy about how he/she spends money, both now that a researcher can assist him/her if help is needed and then taking this home and continuing to fill it in for a few months.
- Fill questionnaires at discharge from hospital

- Permit us to follow – up period in about 3 months after to find out how your family is coping

Completing the questionnaire will take about 40-60 minutes of the time of who will be paying your hospital bills. You are also permitted to withdraw from the study and stop your any member from continuing with the study at any time should you feel the need or urge not to do so. However, we hope you will participate fully since your views are very important. There will be no payment for participation in the study. However, there will be a car available to take you home upon your discharge from the hospital. You are kindly requested to encourage the member paying your bills to answer the questions to the best of his/her knowledge and understanding. If there are issues that are not clear, you are free to clarify with the research assistants. Thank you for your anticipated co-operation and participation.

Should you have any queries during the course of the study, feel free to call:

Dr. Taiwo A Obembe: Email – tobembe@cartafrica.com; Phone number: +234-805-840-9495

Consent: I am interested in participating in the whole study (including the follow-up and for the interviews if required).

(1) Yes ☐ (2) No ☐

Signature of Respondent _____

Date: _____

Time: _____

Questionnaire Number: _____

Interviewer Name: _____

Signature of Interviewer: _____

Appendix III. Child Assent Form

We are doing a study to understand how the spending patterns of families change and how the families cope with money issues when they suddenly have a family member that is scheduled for an emergency surgery. We are asking you to support our study because we do not have the answers to the questions we wish to answer.

If you agree to support our study, we will seek your permission to ask you some questions or to ask your parents or guardians some important information regarding your health and your current admission in the hospital.

You can stop to ask questions about this study at any time. If you decide not to finish the study, you can ask us to stop. The questions we will ask are only about you. There are no right or wrong answers because this is not a test.

If you sign on this paper, it means that you have read this and you wish to be in the study. If you don't want to be in the study, don't sign this paper. Being in the study is up to you, and no one will be upset if you don't sign this paper or if you change your mind later.

Signature: _____

Date: _____

Printed name of person obtaining consent: _____

Signature of person obtaining consent: _____

Date: _____

Appendix IV: Quantitative Tools

WORLD HEALTH SURVEY (Modified)

PATTERNS OF EXPENDITURE, COPING MECHANISMS AMONG URBAN SLUM DWELLERS ADMITTED FOR EMERGENCY SURGERIES IN IBADAN, NIGERIA

Tool 1: Baseline Survey & Household Health Expenditure in Urban Slum Communities of Oyo State

0000. Coversheet

Q0001	Research Centre Number	
Q0002	Household ID	
Q0003	Is this the initial test or retest interview?	1 – Initial 2 – Retest
Q0004	If re-test interview, indicate number of days between initial and re-test	
Q0005	Interviewer ID	
Q0006	Name of Interviewer	
Q0007	Date of Final Results	dd/mm/yy
Q0008	Signature of Supervisor	
Q0009	Date of Editing	
Q0010	Data Entry – 1st Data Entry	dd/mm/yy

Q0011	- 2nd Data Entry	dd/mm/yy
Q0012	Signature of Supervisor	

0100. Sampling Information (To be filled in by supervisor)

	Sampling		
Q0100	Primary Sampling Unit (PSU) Name/Code		
Q0101	Secondary Sampling Unit (PSU) Name/Code		
Q0102	Tertiary Sampling Unit (PSU) Name/Code		
Q0103	Quaternary Sampling Unit (PSU) Name/Code		
	Additional Information		
Q0104	Setting	Urban Slum Dweller 1	Non-urban slum dweller - 2

002: Identification Particulars:

		Enter Code Here:
2-001	Questionnaire Identification (Serial) Number:	
2-002	Name of Hospital:	
2-003	Type of Hospital: 1 = Private; 2 = Public	
2-004	Grade of Hospital 1= Secondary; 2 = Tertiary	
2-005	LGA (of residence):	
2-006	Ward Number (of residence):	

2-007	Phone number:		
2-008	Slum of Residence:		
2-009	Indication for hospitalization		
	1 =Appendectomy		
	2= Hemorrhoidectomies		
	3= Cholecystectomy		
	4= Herniorraphy/Hernioplasty/Herniotomy		
	5= Emergency Caesarian Section		
	6= Gynecological emergencies		
	7= Others (please specify)		
	Identification particulars of Interviewer		
2-010	Interviewer Name		
2-011	Date of Interview		
2-012	Checked by Supervisor:		
2-013	Start Time (GMT in Hours):		
2-014	End Time (GMT in Hours):		

0300. Re-contact Information

Q0300	What are your initials? **(Verify spelling and write clearly your initials- as these would be used**		

	to re-contact you in future)		
Q0301	What is your address?		
	Street		
	City		
	Postal Code		
Q0302	What is your telephone number? (If no telephone, leave blank)		
Q0303	Is your phone number listed in the telephone directory	Yes (1)	No (2)
Q0304	If we cannot contact you for whatever reason, could you tell us who we could contact, who will know how to get in touch with you?	Yes (1)	No (2)
Q0305	What is this person's relationship to you?		
	Name		
	Relationship		
	Address		

0400. Household roster **Time Begin __ __:__ __**

In order to determine whom to interview, I need to know who lives at your address. Let me assure you that any information you provide is strictly confidential.

I would like the age, sex, education, marital status and relationship to you of each of the members of this household who live here. Please include people who may presently be in an institution due to their health (hospital, nursing home etc.) for a short or long period.

All the males in the household should be entered first, from oldest to youngest. All the females should then be entered, from the oldest to the youngest female.

Don't forget to include yourself in the appropriate order.

Line Number	A Household member	B * Household	C Age	D** Education	E*** Marital	F**** Ever worked or	G Eligible	H Person	I Selected

		First and last name	member's relationship to Informant			status	trained in a health-related field	person	number	"R"
							1=Yes 5=No			
M	Q0400									
A	Q0401									
L	Q0402									
E	Q0403									
S	Q0404									
	Q0405									
	Q0406									
F	Q0407									
E	Q0408									
M	Q0409									
A	Q0410									
L	Q0411									
E	Q0412									
S	Q0413									

*Codes for B

01= himself /herself	02 = wife or husband	03 = son or daughter	04 = son or daughter -in-law	05 = grand child
06= parent	07 = parent-in-law	08 = brother or sister	09 = co-wife	10 = grandparent
11= other relative	12 = not related	13 = don't know		

**Codes for D

01= no formal schooling	02 = less than primary school	03= primary school completed	04 = secondary school completed
05= high school (or equivalent) completed	06 = college / pre-university / university completed	07= post graduate degree completed	

***Codes for E

01= never married	02 = currently married	03 = separated	04 = divorced	05 = widowed	06 = cohabiting

**** Specification for F

This column identifies any adult members of the household who have ever worked or been trained in a health-related field. Each household member who has ever worked/trained in a health-related field should be marked as "yes" in this column. The interviewer should prompt by giving examples of health workers: "This could be someone who has received a medical degree, or who worked in a hospital or health clinic (either caring for patients or doing anything else), or who dispenses medicines to people suffering from a health problem". The short questionnaire on Health Occupations (section 0900) should then be asked directly to each individual so identified, using additional copies of the questionnaire if more than one person has been identified here.

You have said there are (REPEAT LISTING); does that include everyone living here at the present time or who is in an institution because of their health?

IF NO, CORRECT LISTING Now, I will use a selection procedure - I am going to number the persons in household to determine whom we need to interview - (it will take a second)

0500. Household Questionnaire

Q500	Who is the person who provides the main economic support for the household? Record Line Number from Household Roster	
Q501	Note to Interviewer: Determine the 'Household Informant' (the payer) of the hospital bills. Record their Line Number from the Household Roster The "Household Informant" should be the person in the household who is most knowledgeable about the health, employment, financial condition, and responsible for financing Expenditures and health insurance of members of the household.	

The Household Questionnaire is to be administered to the "Household Informant-that is the payer" identified in Q0501.

0550. Household Informant Consent Form

Dear Participant,

You have been identified as the most knowledgeable respondent (payer) in your household. We would like to interview you. You have been selected for this study. This survey is conducted that will be carried out by professional interviewers from the University of Witwatersrand. This survey is currently taking place in several selected hospitals around Ibadan.

The interview will take approximately 20 minutes. I will ask you questions about:

- Details about members of your household,
- Insurance, expenditures and assets.

The information you provide will only be used to understand the main things that affect peoples' health in different countries.

The information you provide is totally confidential and will not be disclosed to anyone. It will only be used for research purposes. Your name, address, and other personal information will be removed from the questionnaire, and only a code will be used to connect your name and your answers without identifying you. The Survey Team may contact you again only if it is necessary

to complete the information on the survey or to collect additional information at a later point in time.

Your participation is voluntary and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have any questions about this survey you may ask me or contact (name of institution and contact details) or (Principal Investigator at site).

Signing this consent indicates that you understand what will be expected of you and are willing to participate in this survey.

Q0550. Who was the Household Consent Form read by? 1. Read by Respondent [ ]; 2 Read by Interviewer [ ]

Q0551. Was the Household Consent Form Agreed to and Signed / but Not Signed or Refused?

1. Agreed and Signed [ ]; 2 Agreed, but not signed [ ]; 7 Refused [ ]

Respondent: _____

Interviewer: _____ Date: _/__/__ (dd/mm/yy)

0600. Health Insurance

I would like to ask you some questions about health insurance. When we say someone is "covered by health insurance", we mean that he or she is enrolled with an organization that pays for health care costs if he or she gets sick or injured.

ASK THE QUESTIONS FOR EACH HOUSEHOLD MEMBER IN THE SAME ORDER AS THE HOUSEHOLD ROSTER, WITH ONE ROW PER HOUSEHOLD MEMBER

Line Number from Household Roster	A Is this person covered by any kind of health insurance plan? 1 = YES 5 = NO If No: Go	B Is this person covered by any mandatory health insurance plans? ENTER code (See be-	C Is this person covered by any voluntary health insurance plans? ENTER code (See be-	D How much does your household pay for this person's voluntary health insurance each year?	E Is this person covered by insurance only because of his/her relationship to someone else who has health insurance? 1 = YES	F Who is enrolled in the insurance plan that gives this person health insurance? INDICATE Line Number from Household Roster of	

	to next per-son	low)	low) If None: Go to E		5 = NO If No: Go to next person	Person if he/she is in the House-hold If Person not in House-hold ENTER "999"	
Q0600 (0400 in roster)							
Q0601 (0401 in roster)							
Q0602 (0402 in roster)							
Q0603 (0403 in roster)							
Q0604 (0404 in roster)							
Q0605 (0405 in roster)							
Q0606 (0406 in roster)							
Q0607 (0407 in roster)							
Q0608 (0408 in roster)							
Q0609 (0409 in							

roster)							
Q0610(0410 in roster)							
Q0611 (0411 in roster)							
Q0612 (0412 in roster)							
Q0613 (0413 in roster)							
Codes for B None = 0 Significant Mandatory Insurance Plans Other Mandatory Insurance				Codes for B None = 0 Significant Voluntary Insurance Plans Other Voluntary Insurance			

:

[USE CATEGORIES APPROPRIATE TO EACH COUNTRY]

0700. Permanent Income Indicators (Lower Income Countries)

I would like to quickly ask you a few questions about your home. Remember that any information you provide will be kept confidential.

Q0700	Can you please tell me how many rooms there are in your home?		
Q0701	How many chairs are their n your home? (If none enter "0")		
Q0702	How many tables are there in your home? (If none enter "0)		
Q0703	How many cars are there in your household? (If none enter "0)		
Q0704	Does your home have electricity?	1. Yes	5. No
Q0705	Does anyone in your household have:		

Q0706	A bicycle?	1. Yes	5. No
Q0707	A clock?	1. Yes	5. No
Q0708	A bucket?	1. Yes	5. No
Q0709	A washing machine for clothes?	1. Yes	5. No
Q0710	A washing machine for dishes?	1. Yes	5. No
Q0711	A refrigerator?	1. Yes	5. No
Q0712	A fixed line?	1. Yes	5. No
Q0713	A mobile /cellular telephone?	1. Yes	5. No
Q0714	A television?	1. Yes	5. No
Q0715	A computer?	1. Yes	5. No
Q0716	Country Specific	1. Yes	5. No

Q0800. Household Expenditure

I would like to ask you some questions about how much your household spends on health services and other things.

For all questions in this section report all values in local currency, whether paid in cash or in kind

Q0800	In the last 4 weeks, how much did your household spend in total?	
	In the last 4 weeks, how much did your household spend on:	
Q0801	Food, including such things as [rice], meat, fruits, vegetables, and cooking oils. Include the value of any food that was produced and consumed by the household, and exclude alcohol, tobacco and restaurant meals.	
Q0802	Utilities	
I	Housing (rent)	
Ii	Housing (Construction/Repair)	
Iii	Gas	

Iv	Electricity	
V	Heating fuel	
Vi	Telephone	
Vii	Water	
Viii	Clothing	
Q0803	Education fees and supplies	
Q0804	Transportation	
Q0805	Entertainment	
Q0806	Toiletries	
Q0807	Communication	
Q0808	Health care costs, excluding any insurance re-imbursements	
Q0809	Voluntary insurance premiums or prepaid health plans	
Q0810	All other goods and services	
	I would like to ask you more specific questions about how much your household spent on health services. When answering these questions, think about all of the times that any household member used a health service in the last 4 weeks. Please exclude costs to be reimbursed by insurance and any transportation costs In the last 4 weeks, how much did your household spend on:	
Q0811	Care that required staying overnight in a hospital or health facility	
Q0812	Care by doctors, nurses, or trained midwives that did not require an overnight stay	
Q0813	Care by traditional or alternative healers	
Q0814	Dentists	
Q0815	Medication or Drugs	
Q0816	Healthcare products such as prescription drugs, hearing aids, prosthetic devices etc.	
Q0817	Diagnostic and laboratory tests such as X-rays or Blood tests	

Q0818	Any other healthcare products or services that were not included above		
Q0819	In the last 12 months, how many times did members of your household go to a hospital and stay overnight? ENTER Number of times for all household members IN TOTAL. If None, enter "0"		(If None: Go to Q0817)
Q0820	In the last 12 months, how much did the household pay for all costs associated with overnight stays in a hospital? Please exclude any expenses in the last 4 weeks that you have already told me about, and exclude any reimbursements from insurance.		
Q0821	Current income of any household members	1. Yes	5. No
Q0822	Savings (e.g. bank account)	1. Yes	5. No
Q0823	Payment or reimbursement from a health insurance plan	1. Yes	5. No
Q0824	Sold items (e.g. furniture, animals, jewelry, furniture)	1. Yes	5. No
Q0825	Family members or friends from outside the household	1. Yes	5. No
Q0826	Borrowed from someone other than a friend or family	1. Yes	5. No
Q0827	Other	1. Yes	5. No

	Self-Rated Health/Perceived Need		
Q900.	How would you rate the health of _____ (put ID) 4weeks before admission?	1 = Excellent 2 = Fair 3 = Poor 88 = Don't know	

Q901	How would you rate the health of _____ (put ID) hours before admission?	1 = Excellent 2 = Fair 3 = Poor 88 = Don't know	
Q902.	How important do you rate the need for surgical procedure for _____ (Put ID) hours before admission?	1 = Important 2 = Not Important 88 = Don't know	

Time End: _____:_____

WE HAVE COME TO THE END OF THE INTERVIEW. THANK YOU VERY MUCH FOR TAKING YOUR TIME TO ANSWER THESE QUESTIONS. DO YOU HAVE ANY QUESTIONS?

ATI WA SI OPIN IFORO WANILENU WO NAN. ESE PUPO FUN DIDA HUN AWON IBERE NA PELU AKOKO YIN. NJE ENI IBEERE KANKAN?

Tool 2: Cost Diary

Instructions for filling out the cost diary

Please fill out this diary from four weeks before the admission to three months after your discharge from the hospital.

While filling out, please keep in mind that for this study, only expenditures and benefits related to your general household expenditure and health expenditures related only to your emergency admission are of importance to this study. Should you for example have visited a doctor due influenza and would have been prescribed medication, please do not enter this into the cost book.

Please go over the following pages step-by-step, unhurriedly. Even if our cost diary may seem bulky to you on a first glance, you will not need much time for answering the questions. It is very unlikely, that you will be able to answer all questions.

Please, answer each question. If "**No"** applies, you may directly move on to the next question. If "Yes" applies, please also fill out the associated table.

There you may put several statements one below the other, e.g. if you took several types of drugs.

Sometimes you will be asked for multiple statements about an issue. For example, if you accepted help from relatives, please enter the accrued time. Should there have also been expenses, please enter that into the table as well.

Example:

	Expense (Activity) (Type of Expense)	Overall expenditure per week
1.	Food stuff (Groceries)	N20,000
2.		

In this way, please go through every question, one after the other.

On the last page, you will find several answers to questions which may arise while filling out the cost diary.

If you completed the cost diary, please put it into the enclosed post-paid envelope and send it back.

We assure you, that we will handle your data confidentially.

• Please only make statements which are related to your last surgical emergency care.

• The cost diary will be collected back about the third month post discharge in the enclosed post-paid envelope to the clinic.

A. Dear participant, please note:

The following questions apply to the period of 4 weeks before the surgery.

1a. During the last 4 weeks, have you spent money on any of the items listed below?

		Yes	**No**
1.	Water		
2.	House Rent		
3.	House construction/ repairs		
4.	Clothing		
5.	Education		
6.	Transportation		
7.	Entertainment		
8.	Toiletries		
9.	Communication (Phone calls, etc)		
10.	Others (specify)		

1b. For those items you haven't spent money – please leave as blank spaces. If you have checked "yes", please complete the subsequent table in Naira, how much you spent on each item:

S/No		**Total cost per week (in Naira)**			
		Week 1	**Week 2**	**Week 3**	**Week 4**
1.	Water				
2.	House Rent				
3.	House construction/ repairs				
4.	Clothing				
5.	Education				
6.	Transportation				
7.	Entertainment				
8.	Toiletries				
9.	Communication (Phone calls, etc)				
10.	Others (specify)				

B. Dear participant, please note:

The following questions apply to this period while your household member is admitted for surgery. This section has 2 parts that requests you state how much spent on household items while the second part is for stating all total costs incurred while on admission (in-patient costs). (You will be provided with more diaries if your hospital stay is over the 4 weeks that is stipulated in this diary).

1a. Please tick what household expense you spend money on?

		Yes	**No**
1.	Water		
2.	House Rent		
3.	House construction/ repairs		
4.	Clothing		
5.	Education		
6.	Transportation		
7.	Entertainment		
8.	Toiletries		
9.	Communication (Phone calls, etc.)		
10.	Others (specify)		

1b. For those items you haven't spent money – please leave as blank spaces. If you have checked "yes", please complete the subsequent table in Naira, how much you spent on each item:

S/No		**Total cost per week (in Naira)**			
		Week 1	**Week 2**	**Week 3**	**Week 4**
1.	Water				
2.	House Rent				
3.	House construction/ repairs				
4.	Clothing				
5.	Education				
6.	Transportation				
7.	Entertainment				
8.	Toiletries				
9.	Communication (Phone calls, etc.)				
10.	Others (specify)				

2a. Please tick what you spend money on while your family member is admitted for surgery.

		Yes	**No**
1.	Hospital Registration		
2.	Hospital Consultation		
3.	Investigations		
4.	Drugs		
5.	Hospital Bed		
6.	Hospital Food		
7.	Transportation directly related to admission		
8.	Other costs (Please specify)		

2b. For those items you haven't spent money – please leave as blank spaces. If you have checked "yes", please complete the subsequent table in Naira, how much you spent on each item:

S/No		**Total cost per week (in Naira)**			
		Week 1	**Week 2**	**Week 3**	**Week 4**
1.	Hospital Registration				
2.	Hospital Consultation				
3.	Investigations				
4.	Drugs				
5.	Hospital Bed				
6.	Hospital Food				
7.	Transportation directly related to admission				
8.	Other costs (Please specify)				

C. Dear participant, please note:

The following questions apply to the period after discharge from the hospital. Please note that you will be provided with more diaries since you are to document these costs for a minimum of 8 weeks.

1a. Have you spent money on any of the items listed below?

		Yes	**No**
1.	Water		
2.	House Rent		
3.	House construction/ repairs		
4.	Clothing		
5.	Education		
6.	Transportation		
7.	Entertainment		
8.	Toiletries		
9.	Communication (Phone calls, etc.)		
10.	Others (specify)		

1b. For those items you haven't spent money – please leave as blank spaces. If you have checked "yes", please complete the subsequent table in Naira, how much you spent on each item:

S/No		**Total cost per week (in Naira)**			
		Week 1	**Week 2**	**Week 3**	**Week 4**
1.	Water				
2.	House Rent				
3.	House construction/ repairs				
4.	Clothing				
5.	Education				
6.	Transportation				
7.	Entertainment				
8.	Toiletries				
9.	Communication (Phone calls, etc.)				
10.	Others (specify)				

Appendix V: In-depth Interview Guide

Consent Form for IDI guide

Introduction

Good day Sir/Ma. My name is…….

I am from the University of the Witwatersrand (Wits) in Johannesburg. I would like to invite you to consider volunteering in this interview titled, "patterns of expenditure, coping mechanisms and health outcomes among urban slum dwellers admitted for emergency surgeries in Ibadan, Nigeria.".

Before volunteering to participate in this study, it is important that you read and understand the following explanation of the purpose of the study, the study procedures, benefits, risks, and your right to withdraw from the study at any time.

This information leaflet is to help you decide if you would like to volunteer. You should fully understand what is involved before you agree to take part in this study. If you have any questions, do not hesitate to ask me.

If there is anything in the form that you do not understand, please ask me to explain. If you want to take some time to think about or discuss your involvement in this study with your workplace, you may do so before making your decision.

If you agree to take part in this study, we will ask you to sign a form to show that you want to take part. We will give you a copy of this form to keep.

- Taking part in this study is completely voluntary.
- You may refuse to take part in this study or leave it at any time.

Purpose of Research

Your answers will help us to determine the effect and magnitude of paying for emergency surgeries and their consequences on patterns of expenditure of households from urban slums of Nigeria. I solicit your response to questions contained in this interview session. All the information provided shall be treated with utmost confidentiality and you have been purposively selected for this interview. Thank you.

Type and Duration of Research Intervention

This research will involve your participation in an interview that will take approximately 60 to 90 minutes of your time**.** The interview will take place in a private room and is a one-time event. No other interviews are required, though we may ask permission to contact you for clarification on points raised during the interview.

Participant Selection

You are being invited to take part in this research because we feel that your experience can contribute much to our understanding and knowledge of how households from urban slums cope with health care costs of emergency surgeries.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate, it will have no consequences on your job, or family or health care. You may change your mind later and withdraw your participation at any time during the interview.

Procedure:

During the interview, you will be asked some questions in English by a trained researcher/interviewer (provide name please) or myself.

With your permission, the interview will be audio-recorded so that the interview does not miss anything that you say. He/she will ask you a series of questions about the topics already mentioned earlier and interview will be scheduled to hold at any location that is convenient and comfortable for you. We will be requesting a written consent from you to record the interviews. No one else will be present during the interview except the interviewer and/or myself. Any other person that will be present during the interview would be someone you recommend to be there present during the interview.

Risks

We would be asking you about some personal information which may make you feel uncomfortable. The interviewer may ask questions or raise issues that are of a sensitive nature that may make you feel uncomfortable. There are no wrong answers in this type of interview. We are interested in your experiences and thoughts. However, you may skip any questions that you don't want to answer or discontinue the interview at any point and you do not owe us any explanation as to why. There may be other risks and discomforts that are not known at this time.

Benefits

There will be no direct benefit to you but your participation will help us understand how the payers/household heads from urban slums can be assisted in future when faced with such health care conditions that require immediate and emergency care.

Reimbursements

You will not be provided any re-imbursements to take part in this research.

Rights as a Participant in this Study

Taking part in the study is your choice. If you decide to take part, you can always change your mind. You can stop taking part at any time.

Ethical Approval

This study protocol has been submitted to the University of the Witwatersrand, Human Research Ethics Committee (HREC) and written approval has been granted by that committee.

Confidentiality

Anything that you share in the interview will be kept confidential in the following ways:

- We will use a code instead of your name for any quotes, which will be transcribed directly from a translated transcription from the audio recording.
- Audio recordings and transcripts of the interview will be stored in locked and/or password protected files and destroyed three years after the study is complete.
- All information obtained during the course of this study, including personal data and research data will be kept strictly confidential. Data that may be reported in scientific journals will not include any information that identifies you as a participant in this study.
- This information will be reviewed by authorized representatives of the study team
- The information might also be inspected by the University of the Witwatersrand, Human Research Ethics Committee (HREC) and the Ministry of Health Ethical Research Committee.

Primary Contact/Source of Additional Information

If you have any questions pertaining to this study, you can ask them now or later. If you also wish, you may contact the primary investigator also on:

Taiwo A Obembe: Email – tobembe@cartafrica.com; Phone number: +234-805-840-9495

Should you have any questions about your rights, you may wish to contact the chair of the committee, University of Witwatersrand, Human Research Ethics Committee, Johannesburg.

This proposal has been reviewed and approved by [……] and [……] which are local and international review committees respectively. Their tasks are to ensure that research participants are protected from harm that may occur from research. If you want more information about the IRB, you may wish to contact Taiwo A. Obembe: Email – tobembe@cartafrica.com; Phone number: +234-805-840-9495.

Audio-recording Consent Form – In-depth Interviews

The reason for audio-recording the interview has been explained to me.

I am aware that I may choose whether to participate or not to participate in the interview and to be recorded.

I am aware that I may stop the interview at any point.

The researcher will take measures to make sure that the recording is kept confidential and safe.

I consent to having the interview audio recorded.

Interviewee:

Name: _____

Signature: _____

Date: _____

Researcher

Name: _____

Signature: _____

Date: _____

Tool 3: In-depth Interview Guide for payer/household heads

Age:

Sex:

Marital status:

Religion:

Education:

Occupation:

Sub-Ethnic Affiliation:

Name of Community of Residence:

Name of Hospital where interviewee was admitted:

A. HOSPITALIZATION

1. Can you tell me about the recent hospitalization of ID […….] in your family.

Probe: How is ID […….] doing?

2. Why did you come/choose this facility for the surgery?

Probe for:

- Cost of service
- Quality of Services
- Treatment
- Referral from other hospital
- Quality of health care staff

3. In terms of the care that you have received in this facility, what are your experiences and views concerning the care that you have received?

Probe for: Safety, Timeliness, Efficiency, professionalism of health care workers, competence of health care workers, and aesthetics of the hospital environment

B. EXPENITUTURE PATTERNS AND HOSPITAL RELATED COSTS

4. What were your spending patterns like (monthly) within your household before the hospitalization?

Probe: If you think of all the money you have every month, how much did you spend on school, food, housing, clothing, rent, etc.

5. Tell me about all the costs related to this recent hospitalization of ID […….] in your family while on admission.

Probe: for shifts in spending pattern from (4) above.

6. In terms of hospital costs in this facility, what are your views with regards to costs that you incurred?

Probe for: flexibility of payments without discontinuation of care

Probe for: Burden of hospital bills

7a. Where did you get the money from to pay the hospital bills?

7b. How were you able to pay for the health care services offered to you (payment-structure)?

Probe for: *Mode of payment*

- Part payment/Full payment
- In bits/At once

C. COPING MECHANISMS- IMPACT OF COSTS ON FAMILY FINANCES

8a. What would have made the hospitalization easier from a financial point of view?

8b. What options do you think will make payments for hospital services such as emergency surgeries affordable?

Probe for:

- Contribution/Savings (aka ajoo)
- National Health Insurance Scheme (NHIS)
- Salary
- Skipping care
- Self-Treatment
- Diversion of other expenses to cover health care
- Sales of valuable assets
- Borrowing
- Use of Informal Providers
- Family Contribution
- Community Health Insurance

9a. How are you coping financially now?

9b. What are the coping mechanisms available to you to reduce the impact of financial costs of Emergency surgery in this facility on similar families from your area?

Probe for: *Mechanism of Payment*

- Loan from Banks, cooperative societies, Family, Friends
- Diversion of other funds not ear-marked for health care
- Sale of Property such as Land, Houses etc.

10. How did any challenges you faced in this facility with paying of hospital bills affected you or your family?

Probe for:

- Change in expenditure patterns
- Stoppage of treatment or management plan
- Delays with discharge
- Co-morbidities

11. Is there anything else that you would like to share/tell me about this experience?

Thank you for your time – We have come to the end of the interview.

Appendix VI: Operational Definitions

For this proposed study:

Catastrophic Health Expenditure (CHE): A household would be considered to experience catastrophic health care expenditure if out of pocket expenditure exceeds 5 percent of average income [225].

Coping Mechanisms: Coping of stress is described as the successful management of problems and stressful situations. The coping strategy (coping mechanism) is defined as an innate or acquired response to a changing environment or to a specific problem or a situation [272].

Coping Strategies: is defined as how a person react to or response towards a stressor [273].

Emergency surgery: defined as 'surgical procedures that cannot be delayed, for which there is no alternative therapy, and for which a delay could result in death or permanent impairment of health' [47]. For this thesis, these will include appendectomy, hemorrhoidectomies, cholecystectomy, herniorraphy/hernioplasty/herniotomy, emergency caesarian section, gynecological emergencies.

Expenditure Patterns: is defined as the relative percent of a household's net income spent on consumption (food items, clothing, housing, taxes) and investment (health care) [274].

Food expenditure (food) "Household food expenditure is the amount spent on all foodstuffs by the household plus the value of family's own food production consumed within the household. However, it excludes expenditure on alcoholic beverages, tobacco, and food consumption outside the home (e.g. hotel and restaurants)" [275].

Household: A household will be any group of two or more individuals living in the same house and sharing common food or provisions for essential living [225,274,276].

Household ability to pay for health care: defined as effective income less subsistence expenditure of the household. It is also defined as household's non-subsistence expenditure [131].

Household consumption expenditure: "Household consumption expenditure comprises both monetary and in-kind payment on all goods and services, and the money value of the consumption of home-made products" [275].

Health Outcome: Health outcome is defined as the presence or absence of disease or, for more serious conditions. [277]. For this thesis, health outcomes include survival (discharge from hospital), death, and mental state after discharge.

Household subsistence spending: "The household subsistence spending is the minimum requirement to maintain basic life in a society"[275].

Older Adult – Older adult is defined as any person who is at least 65 years of age.

Out-of-pocket health expenditure (OOP): Out-of-pocket health payments refer to the payments made by households at the point they receive health services. Typically, these include doctor's consultation fees, purchases of medication and hospital bills. Although spending on alternative and/or traditional medicine is included in out of pocket payments, expenditure on health-related transportation and special nutrition are excluded. It is also important to note that out-of-pocket payments are net of any insurance reimbursement [275].

Payer: Any one responsible for reimbursing the health care provider of all hospital costs incurred by a patient on admission.

Slum: a compact area with 300 residents or which had 60-70% of the households having poorly congested rooms with inadequate infrastructure, lack of proper sanitation and drinking water facilities [278].

Urban poor: A percentage of the urban population that are resident within an urban population but are living with many challenges and deprivations including "limited access to employment coupled with income of the household head of less than $1 day [279].

Urban slum: An urban colony that has not been authorized by the government and that lacks basic amenities such as durable housing sufficient living area for inhabitants, access to improved water and sanitation facilities [280,281].

Appendix VII: Slum and Hospital Distribution

Table 3: Communities in 3 local government areas with largest slums

	Wards	**Part of the city**	**Officials**
1	Beere, Olorunsogo, Oje, Oke-Irefin	Core area	Ibadan North East Local Government official
2	Beere, Esu Awole, Eleka, Agban Gban, Bode part of Oke Ado	Core area, colonial town	Ibadan South East Local Government Chairman
3	Bere, Oja Oba, Orita Merin, part of Idi Arere	Core area	Ibadan Southwest Local Government, senior adminis-trator

Source: The case of Ibadan, Nigeria; Urban Slum Reports [213]

Appendix IX: Data Collection Supporting Documents

TELEGRAMS..... TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....

All communications should be addressed to the Honorable Commissioner quoting

Our Ref. No. AD 13/ 479/ 123

18th July, 2016

The Principal Investigator,
School of Public Health,
University of Witwatersrand,
South Africa.

Attention: Obembe Taiwo

ETHICAL APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "Patterns of Expenditure, Coping Mechanisms and Health Outcomes among Urban Slum Dwellers Admitted for Emergency Surgeries in Ibadan, Nigeria" has been reviewed by the Oyo State Ethical Review Committees.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.

Signature & Date

(Dr) Abbas Gbolahan,
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethical Review Committee

INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)
College of Medicine, University of Ibadan, Ibadan, Nigeria.

Director: **Prof. Catherine O. Falade,** *MBBS (Ib), M.Sc., FMCP, FWACP*
Tel: 0803 326 4593, 0802 360 9151
e-mail: cfalade@comui.edu.ng lillyfunke@yahoo.com

UI/UCH EC Registration Number: **NHREC/05/01/2008a**

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: Patterns of Expenditure, Coping Mechanisms among Urban Slum Dwellers admitted for Emergency Surgeries in Ibadan, Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/17/0006

Name of Principal Investigator:	**Dr. T. A. Obembe**
Address of Principal Investigator:	Department of Health Policy & Management, College of Medicine, University of Ibadan, Ibadan

Date of receipt of valid application: 11/01/2017

Date of meeting when final determination on ethical approval was made: N/A

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from **01/02/2017 to 31/01/2018.** If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC at least four weeks before the expiration of this approval in order to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.

UI/UCH EC
01 FEB 2017
APPROVED
COLLEGE OF MEDICINE, U.I.

Professor Catherine O. Falade
Director, IAMRAT
Chairperson, UI/UCH Ethics Committee
E-mail: uiuchec@gmail.com

R14/49 Dr Taiwo Akinyode Obembe

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170284

NAME: (Principal Investigator)	Dr Taiwo Akinyode Obembe
DEPARTMENT:	School of Public Health University of Ibadan, Oyo State, Nigeria Hospitals: Adeoyo State, Ring Road State, Jericho State and University College
PROJECT TITLE:	Patterns of Expenditure, Coping Mechanisms among Urban Slum Dwellers Admitted for Emergency Surgeries in Ibacan, Nigeria
DATE CONSIDERED:	24/02/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Prof Sharon Fonn and Prof Jonathan Levin
APPROVED BY:	Professor P Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	10/04/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301 Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193. University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I agree to submit a yearly progress report. The date for annual re certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in February and will therefore be due in the month of February each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Taiwo Obembe

Principal Investigator Signature

10-04-2017

Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

ADEOYO MATERNITY HOSPITAL, YEMETU, IBADAN

DEPARTMENT OF HEALTH POLICY AND MANAGEMENT
COLLEGE OF MEDICINE

NIVERSITY OF IBADAN, IBADAN,
IGERIA

'elephone: 8101100-8101119(20 Lines)
'ollege of Medicine Fax: 234-2-2411768

Mailing Address:
UNIVERSITY COLLEGE HOSPITAL,
IBADAN, NIGERIA
Telephone: 2410088, 2410270,
2411099,24113683
Direct Line: 2411590, Fax: 234-2-2413545
E-mail:com_medui@yahoo.com

Ag HEAD: Dr. K.O. Osungbade

27/12/17

13 December 2016

Noted for approval
Olusoga 27/12/17

\cademic / Consultant Staff:

)r. K.O. Osungbade
MBBS(Ib); MSc. (Ib); FMCPH (Nig.);
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'WACP (West Afr.)

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)LSHTM (Lond); FMCPH (Nig.)

)r. T.A. Obembe
MBBS (Ogbomosho); MPH (Boston)

Mr. F.I.P. Adeniji
BSc (Ib); MSc (Ib)

To whom it may concern

LETTER OF INTRODUCTION FOR DR TAIWO OBEMBE

Dear Sir,

The above named person is a lecturer in the Department of Health Policy and Management, Faculty of Medicine, University of Ibadan. He is also a doctoral candidate with the University of Witwatersrand Johannesburg, South Africa.

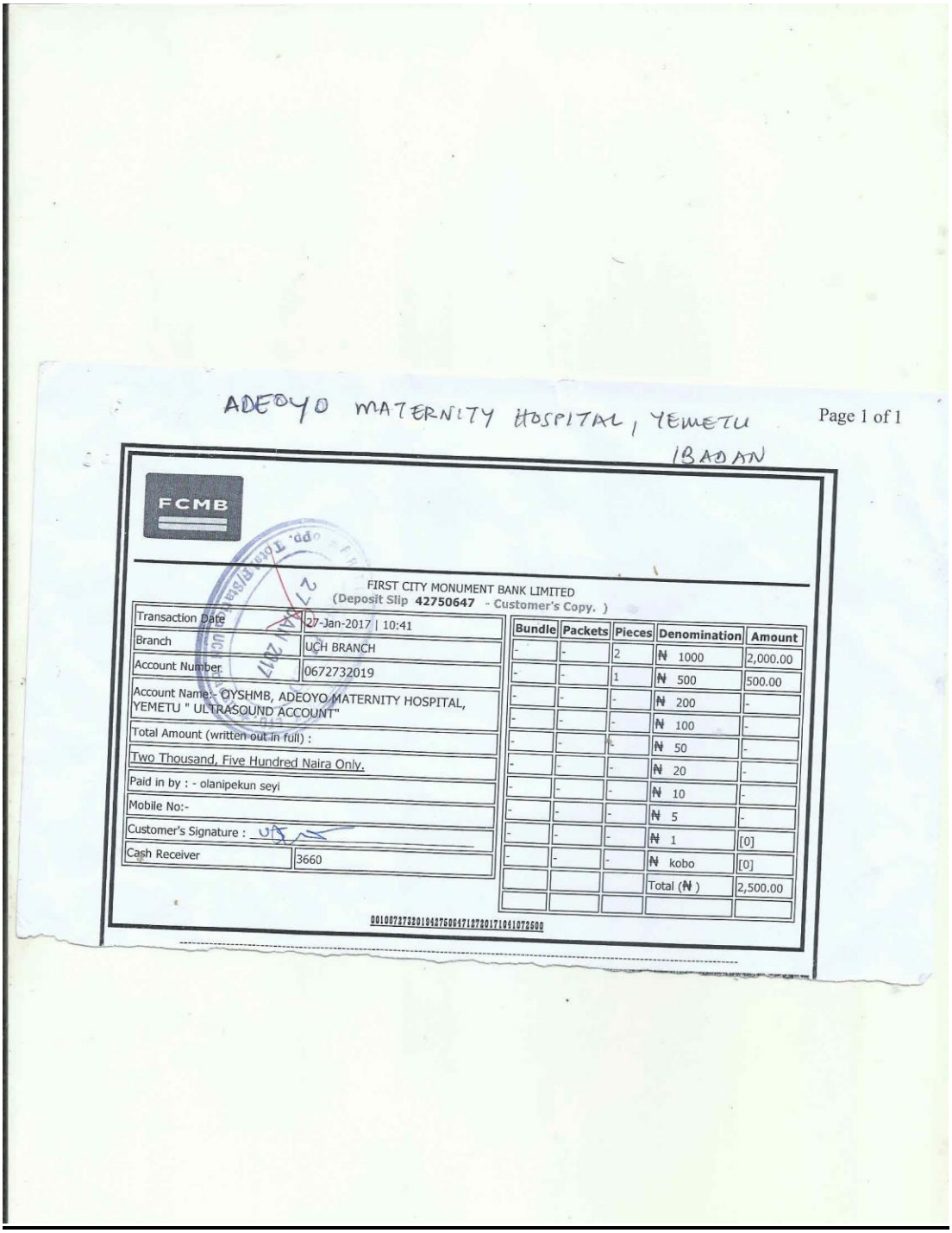
His doctoral program is titled, "Patterns of Expenditure, Coping Mechanisms among Urban Slum Dwellers among urban slum dwellers admitted for Emergency Surgeries in Southwestern Nigeria.

He will be conducting this research in some selected hospitals across Oyo State. Kindly accord him all necessary support in this regard.

Yours Sincerely,

Dr. K. O. Osungbade
+234-803-478-1208

Noted
Oladipo
07/02/17
HOD Lyn Wards



ADEOYO MATERNITY HOSPITAL, YEMETU IBADAN

Page 1 of 1

FCMB

FIRST CITY MONUMENT BANK LIMITED
(Deposit Slip **42750647** - Customer's Copy.)

Transaction Date	27-Jan-2017 | 10:41
Branch	UCH BRANCH
Account Number	0672732019
Account Name:- OYSHMB, ADEOYO MATERNITY HOSPITAL, YEMETU " ULTRASOUND ACCOUNT"	
Total Amount (written out in full) :	
Two Thousand, Five Hundred Naira Only.	
Paid in by : - olanipekun seyi	
Mobile No:-	
Customer's Signature :	
Cash Receiver	3660

Bundle	Packets	Pieces	Denomination	Amount
-	-	2	₦ 1000	2,000.00
-	-	1	₦ 500	500.00
-	-	-	₦ 200	-
-	-	-	₦ 100	-
-	-	-	₦ 50	-
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			Total (₦)	2,500.00

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JERICHO SPECIALIST HOSPITAL, JERICHO

DEPARTMENT OF HEALTH POLICY AND MANAGEMENT

COLLEGE OF MEDICINE

UNIVERSITY OF IBADAN, IBADAN, NIGERIA

Telephone: 8101100-8101119(20 Lines)
College of Medicine Fax: 234-2-2411768

Mailing Address:
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2411099,24113683
Direct Line: 2411590, Fax: 234-2-2413545
E-mail:com_medui@yahoo.com

Ag HEAD: Dr. K.O. Osungbade

13, December 2016

Academic / Consultant Staff:

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FWACP (West Afr.)

Dr. O. O. Akinyemi
MBBS (Il); MBA (Ife); MPH (Ib);
PTLLS (Lond); MIPH (Liverpool);
FWACP (West Afr.)

Dr. D. A. Adewole
MBChB (Ife); MPH (Ib); MSc (Lond)
DLSHTM (Lond); FMCPH (Nig.)

Dr. T.A. Obembe
MBBS (Ogbomosho); MPH (Boston)

Mr. F.I.P. Adeniji
BSc (Ib); MSc (Ib)

To whom it may concern

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His doctoral program is titled, "Patterns of Expenditure, Coping Mechanisms among Urban Slum Dwellers among urban slum dwellers admitted for Emergency Surgeries in Southwestern Nigeria.

He will be conducting this research in some selected hospitals across Oyo State. Kindly accord him all necessary support in this regard.

Yours Sincerely,

Dr. K. O. Osungbade
+234-803-478-1208

The CC'ic
kindly treat. See the attached

Noted and appr

Head Theatre

TELEGRAMS:

TELEPHONE: 08071090756
08071090750

OYO STATE MANAGEMENT HOSPITALS' BOARD

RING ROAD STATE HOSPITAL

P. M. B. 5189 •OFF BASORUN M.K.O ABIOLA WAY •IBADAN •OYO STATE OF NIGERIA

Your Ref No.....
All Correspondence to be addressed to the Chief Consultant i/c quoting
Our Ref No.....

27 - 1 .....20 17

TO WHOM IT MAY CONCERN

RE: DR Tejuosi Akande

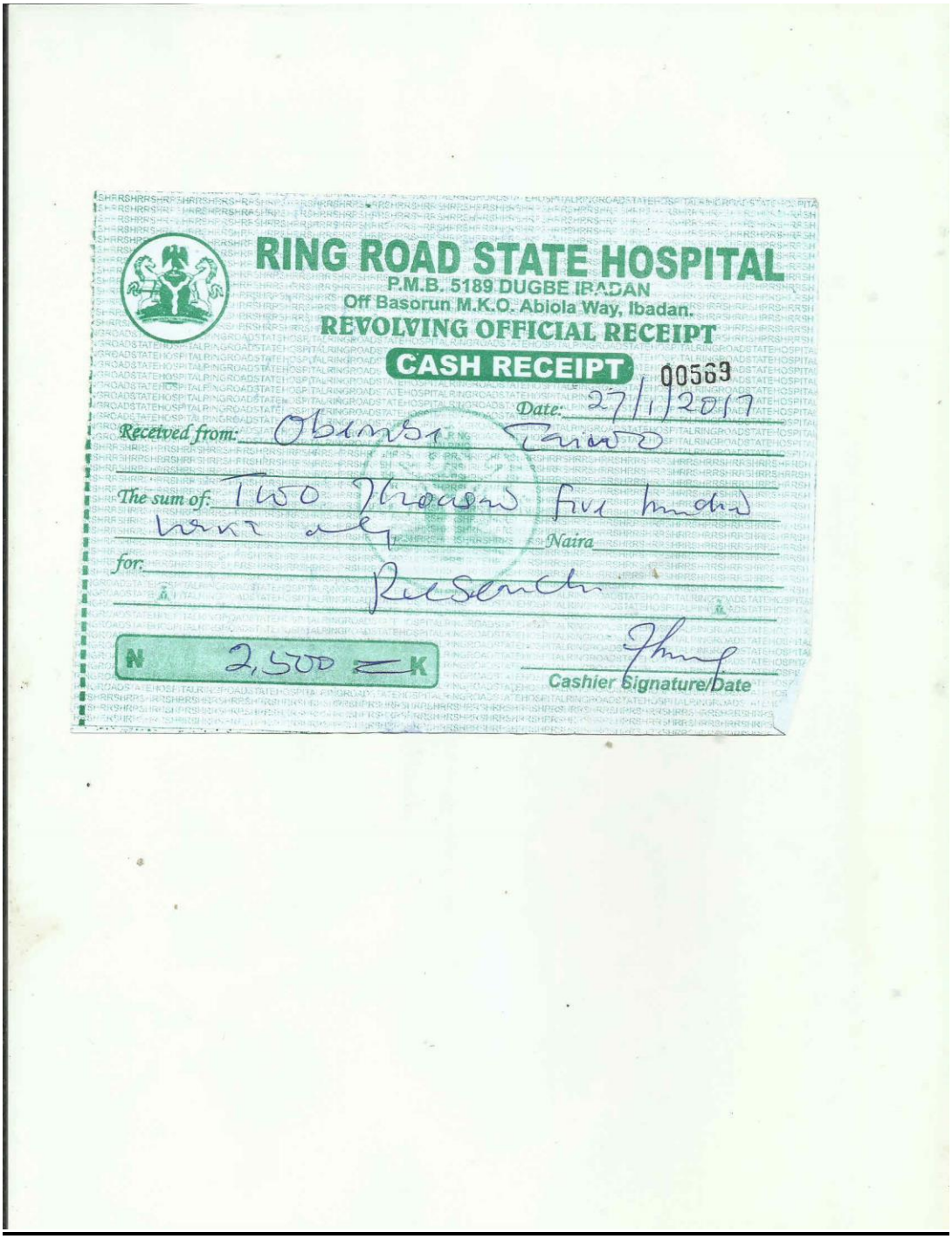
Allow the bearer to carry out his/ her research on our patients/ staff.

Thanks for your usual co-operation.

Yours Faithfully,

MANAGEMENT.

RING ROAD STATE HOSPITAL
ADMINISTRATION
P. M. B. 5189, IBADAN
DATE.....



RING ROAD STATE HOSPITAL
P.M.B. 5189 DUGBE IBADAN
Off Basorun M.K.O. Abiola Way, Ibadan.
REVOLVING OFFICIAL RECEIPT
CASH RECEIPT 00563
Date: 27/1/2017
Received from: Obunsi Taiwo
The sum of: Two Thousand Five Hundred
Naira
for: Research
N 2,500 =K
Cashier Signature/Date

Patterns of Expenditure and Coping Mechanisms among Urban Slum Dwellers Admitted for Emergency Surgeries in Ibadan, Nigeria

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Publication

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