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Household Primary Healthcare Expenditure and Its Effect on Under-5 Child Health Outcomes in Lagos State (A Case Study of Lagos Mainland and Badagry LGA)

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Abstract
Healthcare in Nigeria is predominantly funded through out-of-pocket spending by households. Providing financial protection from exorbitant out-of-pocket expenses is an important tool for a country's health system to ensure equitable access to care. A household without such protection may be forced to pay huge medical bills to treat an ailing family member, exposing it to financial catastrophe and impoverishment. This study assessed household's health expenditure patterns and its effect on under-5 child outcomes, the study adopted a cross-sectional design approach, a combined sum of 548 households (Lagos Mainland 363 and Badagry 221) was surveyed. Data obtained were subjected to descriptive and Kaplan-Meier Survival analyses. The results indicated that malaria (52.1%) was endemic among households, in terms of household healthcare expenditure; out-of pocket (84%) had the highest coverage in comparison with National Health Insurance (7%).Furthermore, out-of pocket health expenditure burden was concentrated among the poorest (20.6%) socio-economic class. Finally, the probability of a child reaching his 5th birthday was a function of location of household residency and its socio-economic status, (Lagos mainland) 0.00 Sig $_{value}$<P$_{value}$0.05<0.22 Sig $_{value}$(Badagry), given an estimated 18.8% of sample households would experience under-5 child mortality .High levels of catastrophic health care expenditure exist in Lagos State, thus in a bid to improve universal health coverage and reduce the prevalence of catastrophic health expenditure, this study recommend the need for a policy development focused on the restructuring of the National Health Insurance Scheme (NHIS), Introduction of community based health insurance scheme and massive reduction in households income disparities.

Keywords: Primary Healthcare, Under-five child, Mortality, Out-of pocket expenditure incidence, Lagos

1. Introduction
Health is one the most important and paramount criteria for improved livelihood. This can be achieved mostly when access to good healthcare is guaranteed, thus, adequate funding for health care by government is essential for access to quality

national healthcare delivery for all, especially the vulnerable sub-population groups.

In the past decade, national budgetary allocation to the health sector has substantially stagnated below the recommended fifteen percent (15%)threshold as stated in the Abuja declaration of 2001 (NDHS, 2013). Thus, the national health sector is riddled with gross shortage of needed funds and medical supplies (Fig. 1).

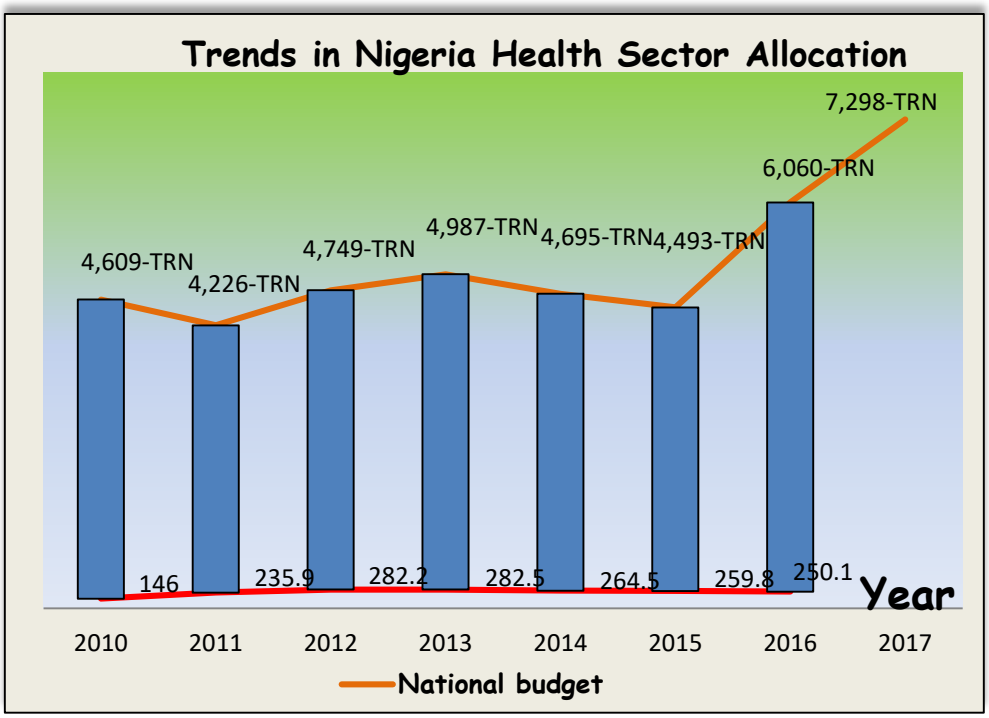

Figure 1: Under-5 child Mortality Rate Trend in Nigeria
Source: Adopted from NDHS (2013)

In the year 2016, Nigeria had an annual health per capita profile of about ₦ 1,688 per citizen when compared to the ₦ 6,908 per Nigerian as recommended by the World Health Organization (WHO, 2016).

The financing structure of a healthcare system can be associated with multiple adverse effects on households' living standard; which severely threaten their

income sufficiency, disrupt their status in the socio-economic hierarchy, thus, deepening overall inequalities in the distribution of income (Van Doorslaer *et al*., 2006). The principal challenges bedeviling healthcare financing in Nigeria as in most Sub-Saharan African (SSA) countries lies not primarily in the acute scarcity of resources, but in the absence of intermediation and insurance mechanisms to manage risk (Onwujekwe *et al*., 2010).

Out-of-pocket expenditure is therefore the major source of financing healthcare in Nigeria. The National Health Insurance Scheme (NHIS) is one medium of reducing the financial burden of paying for healthcare directly out-of-pocket. According to Odeyemi and Nixon (2013), the establishment of the NHIS in Nigeria was to ensure 'universal coverage' and access to adequate and affordable healthcare services, so as to improve the health status of Nigerians. NHIS came into full operation in 2005 in Nigeria, while in Ghana full operation commenced in 2004, however, comparing Nigeria and Ghana, in terms of each country's NHIS membership reveals that Nigeria has 3.5% of her population covered by the scheme while Ghana has 65% of her population covered by her health insurance scheme. In Nigeria, the NHIS mirrors the colonial healthcare model where mainly federal civil servants, political elites are covered, the larger informal sector is largely left uncovered as Community Base Health Insurance (CBHI) is still at its infancy. According to Nwali and Egunjobi (2006) CBHI which was targeted at the larger informal sector is yet to gather momentum. Even though pilot schemes were launched, these have not been scaled up to significant levels, there is minimal participation by the private financing agents (micro-finance institutions and insurance outlets). In that case, the vulnerable members of the society; the poor, may not be able to access health needs through pre-payment mechanism of health insurance since they are mostly found in the informal sector of the economy. The have-nots who cannot afford to remit the premiums are not covered by CBHI and this is a source of concern, and even though some schemes try to provide exemptions to the very poor and indigent, these exemptions are often not only difficult to implement but constrained by limited resources available to the schemes themselves. Out-of-pocket payments for healthcare at point of service dominate healthcare financing in Nigeria.

According to the World Health Organization (WHO) (2015), public health expenditure in Nigeria accounts for 20-30% of total health expenditure, while private health expenditure accounts for 70% to 80% of total health expenditure and the proportion of private health expenditure provided by households' out- of-pocket expenditure is estimated to be 95% (Ichoku, Fonta & Araar, 2011). Despite

increased funding to the health sector averaging over 6% of the total budget since 2003; government health expenditure still lag behind the 15% of commitment to the Abuja declaration 2001 and the Gaborone declaration 2005 (Ichoku *et al*., 2011).

Nigeria is still not close to achieving the requirements of these declarations for which she is a signatory. Ichoku *et al*., (2011) also observed that in Nigeria, most households pay for every healthcare cost directly on a 'cash and carry' basis as a result of lack of health insurance cover for the majority of the population. Hence, the domination of the Nigerian health system by 'for-profit-providers' who could escalate the inequity and impoverishing effects of healthcare delivery system in the society. Olaniyan *et al*.,(2013) using the Nigerian Living Standard Survey NLSS 2003/2004 data reports that the poor spent seven times more than the better-off on total per-capital health expenditure. This raises concern for the poor as some may avoid seeking healthcare because they cannot pay the cost, others maybe seeking health services at great 'displacement effects' of other essential household needs (Ichoku, 2005). This implies that the poor seek healthcare at greater opportunity cost than the better-off.

In Nigeria, the major sources of primary health care financing have been identified as the tax-based public sector, households, external financing from donor organization and health insurance (social and community).Despite the numerous health financing options so identified in Nigeria, there still exists inequalities and disparities in primary health care system financing(Riman and Akpan,2012). Nigeria has experienced an exponential population growth, with its population structure dominated by the age cohorts of under-5 children (Oyibo, 2011). For instance, Olaniyan and Lawanson (2010) observed severe budgetary constraints and uneven distribution of resources among the urban and rural areas with the rural areas mostly affected by inequitable budgetary health expenditure allocation. Ichoku and Fonta (2009) had also noticed a catastrophic health care financing status in Nigeria which eventually has led to further wide spread poverty. According to Ichoku and Fonta (2006):

> Nigeria's health financial arrangement has shifted from health services that are provided by ability to pay through out of pocket expenses reduces health care consumption, exacerbates the already inequitable access to quality health care, and exposes households to financial risk of expensive

> illness at a time when there are both unaffordable and ineffective health financing instruments to address such problems in low income settings.

One of the major factors behind the high rates of children's death in Nigeria is the prevalence of gross income inequalities. Despite the enormous amount of national revenue inflow from crude oil over the past 40 years and the high economic growth rate recorded in year 2013 as a direct result of the GDP rebasing programme executed as directed by the Central Bank of Nigeria (CBN) in close conjunction with the Federal Ministry of Finance (FMOH, 2013b), and despite these vast amount of supposed national wealth, people still pay for health care needs from their pockets at the point where they are being treated. Many of them cannot pay because they do not have sufficient financial resource or any form of health insurance and so many disadvantaged household's children are unable to receive the health care they so desire even though they are the ones with high morbidity rates (Oyibo, 2012). This raises the question of rethinking the effect of primary health care financing on child health (under-5) and its resultant effects on national health indicators.

Health indicators for Under-5 children in Nigeria are among the worst globally. One in every eight (8) children do not survive to their fifth (5^{th}) year (Fig 2), and only about 28% of the under-five sleep under Insecticide Treated Nets (ITNs) (NDHS, 2013).

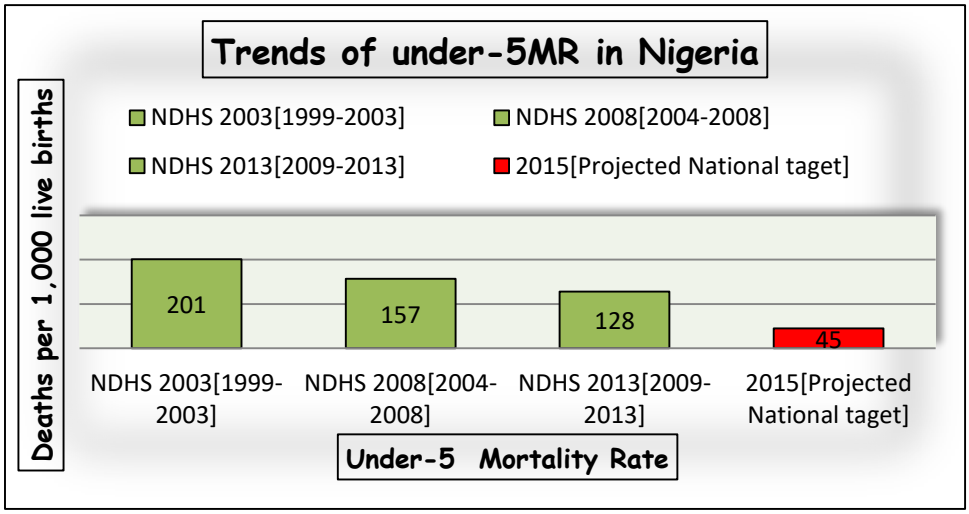

Figure 2: Under-5 child Mortality Rate Trend in Nigeria
Source: Adopted from NDHS (2013)

During these same five-year periods, the neonatal mortality rate was 37 deaths per 1,000 live births, and the post neonatal mortality rate was 31 deaths per 1,000 live births. Immunization coverage in Nigeria is poor and varies with geographical zones. Nationwide about 25% of the under-five (under-5) are fully immunized. Nationally, the proportion of fully immunized children aged 12 to 23 months ranges from 4.7% in the North-Western zone to 40.7 % in the South-Western zone. Coverage in rural areas was 13.4% as compared with 32.6% in the urban areas (Omotosho *et al.*, 2016). Nigeria is responsible for 29% of the global gap in reaching 90% of women living with HIV who need antiretroviral therapy for prevention of mother to child transmission (WHO, 2013).These poor health indicators are attributed to poor public funding of the health system (Olaniyan *et al*., 2013).

This study seeks to assess the problem of household primary healthcare expenditure burden and its effect on under-five children health outcomes given the excessive reliance on out-of-pocket expenditure for financing healthcare by households in Nigeria.

Limitations: The cross-sectional household survey instrument did not take into account inpatient and outpatient distinctions in the economic cost of seeking care. It also did not factor in the peculiarities of polygamous households which arguably have implications on access to resources and decision making.

2.0 Method and Data

2.1 Study Setting

Two (2) Local Government Areas were selected for this study namely Lagos Mainland Local Government Area (urban) and Badagry Local Government Area (rural) of Lagos state. Lagos Mainland L.G.A lies approximately within latitude 6.31'N and 6.49'N of the equator and latitude 3.22'E and 3.56'E of the Greenwich meridian covering a total land mass area of 19.62 $Sqkm^2$ with an estimated population size of about 835,779 persons (NPC, 2014).

Badagry Local Government Area is predominantly a coastal area in Lagos state, it is situated between metropolitan Lagos and the Trans national border with Benin Republic at Seme. Badagry LGA lies approximately within latitude 6.25'N and 6.42'N of the equator and longitude 2.53'E and 2.82'E of the Greenwich Meridian, covering a total land mass area of 443$Sqkm^2$ with an estimated population size of about 505,104 persons (NPC, 2014).

In terms of demographic change, Lagos State is now densely populated, given its Total Fertility Rate (TFR) of 4.1 live births/ woman, although this growth rate is significantly lower in relation to the National rate of 5.5 births/woman, this reproductive growth rate far exceeds the Total wanted fertility rate of 3.6 live births/woman, which in-turn places massive pressure on limited social utilities and resources such as accessible healthcare provision and dwindling household income, having a dire effect on child healthcare status like the under-5mortality rate of 128 deaths/1,000 live births in Nigeria and 31 deaths/1,000 live births in the South western part of Nigeria (NDHS, 2013).

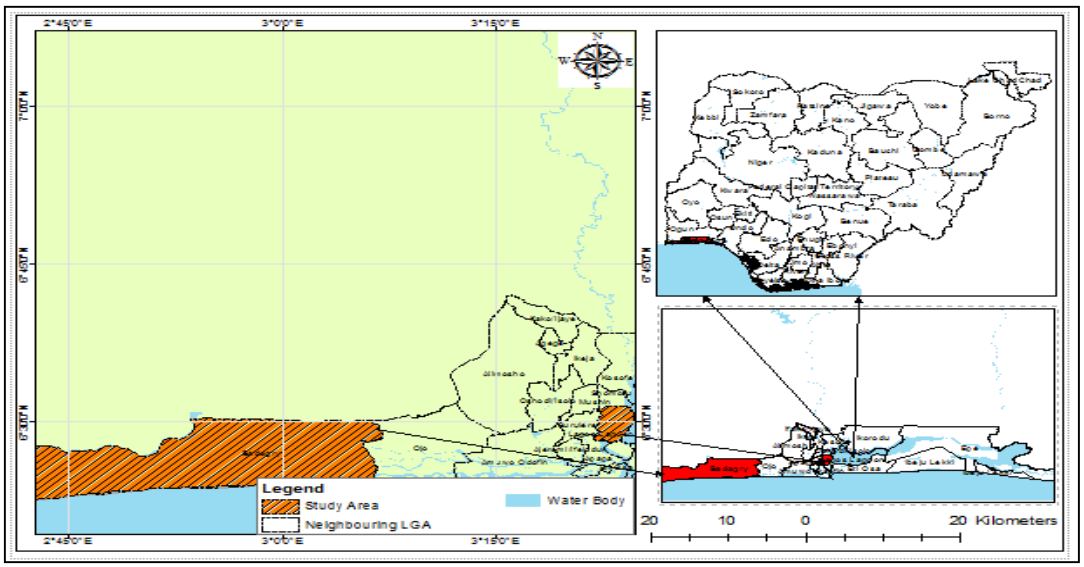

Figure 1.0: Lagos State Highlighting Study Area

2.2 Study Location and Justification

This study was conducted in Lagos State, and it included two Local Government Areas namely Badagry (predominantly rural) and Lagos Mainland (Predominantly urban). According to the Lagos State Poverty survey of 2014, these two locales have divergent household's poverty rate when aggregated along Local Government Areas line. Thus, these two areas were selected in order to provide a better understanding of the distribution of under-five child healthcare expenditure state-wide.

2.3 Study Hypothesis

This study verifies the null and the alternative hypothesis stated below:

H_0: There is no significant relationship between household's socio-economic status and under-5 child mortality status in Lagos State.

H_1: There is a significant relationship between household's socio-economic status and under-5 child mortality status in Lagos State.

2.4 Study Design/Population

This study adopted a descriptive cross-sectional design approach. The population of Lagos Mainland Local Government Area was forty-one (41%) percent greater than those of Badagry Local Government Area, the provision for this demographic differential was factored into our sampled population. This sample population was determined using Cochran (1977) Formula, while the sample size and confidence interval were calculated via the use of an online resource software platform (Creative Research System), Cochran formula is depicted below;

$$N=\frac{z^2Pq}{e^2} \quad \text{.....[1]}$$

Where:

z = standard normal deviation (1.96)

p = population in the target population estimated to have a particular characteristic (in this case prevalence = 0.59)

q = 1.0 -p

e = level of precision or margin of error (0.05)

Thus, a total of 600 (Lagos Mainland-370 and Badagry-230) women (aged 15-49) were interviewed in this study.

2.5 Inclusion criteria

Six hundred (600) households with women of reproductive age (15-49) who have given birth to at least one live child during the total reproductive life time (number of children ever born (NCEB) and with at least one of the household child or children falling within the age group of the study cohort (under-5).

2.6 Sample Size

A multistage sampling technique was utilized; in the first stage two (2) Local Government Areas, three (3) wards were also selected based on availability of primary health centers. In the third stage, a sample of women proportionate to the

population size was systematically selected from the sampled Local Government Areas the sample size was attained using Cochran (1979) technique.

2.7 Data Collection and Instruments used

Health and expenditure pictorial diaries were used for data collection to reduce the impact of recall on primary healthcare expenditure data (Wiseman *et al*., 2005). Data collection was performed over a 3-month period (January to March 2017). Diaries were placed in households, and populated bi-monthly by trained household members under the supervision of the male or female household head. Diaries were pretested to ensure that the pictures were easily identifiable by individuals from various backgrounds and corresponded with the items also described in text format. Information on under-5child illness, expenditure on health (including outpatient and inpatient costs), transportation, entertainment, food, education, clothing and cooking fuel were recorded.

2.8 Ethics Committee Approval

Necessary Ethics Committee approval of the Department of Geography and Planning, University of Lagos was secured before carrying out this study. Informed consent was obtained from care-givers where feasible or from representatives of the subjects of the study.

3. Results and Discussion

3.1 Household Characteristics

Majority of the sampled women were aged 20-29(54.3%), while respondents aged between 30-39 were 32% with those within the 30 and above age cohort constituted about 5.1%. Most were educated (93.4%), while about 4.6% of the respondent had no formal education.

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Mainland Frequency|Percentage		Badagry Frequency|Percentage		Combined Frequency| Percentage	
Age						
15-19	21	5.8%	9	4.1%	30	5.1%
20-29	194	53.4%	123	55.7%	317	54.3%
30-39	114	31.4%	73	33.0%	187	32.0%
40-49	34	9.3%	16	7.2%	50	8.6%

Educational Attainment						
No formal education	12	3.3%	15	6.8%	27	4.6%
Primary						
Secondary	24	6.6%	64	29%	88	15.1%
Tertiary	199	54.%	97	44%	296	50.7%
	128	35.2%	45	20.2%	173	29.7%
Total	363	100	221	100	584	100

Source: Author's Computation (2017)

3.1.2 Illness episodes that households had in the 3-month period

The most commonly reported illness suffered amongst households is malaria which accounted for 52.1% of illnesses; this is followed by Fever (23%) and Diarrhea (20.8%).Given the high rate of malaria morbidity, it is worth noting that about 38% of the households do not possess insecticide-treated net (ITN), while utilization rate among households who do possess insecticide-treated net was low ((21%)) (Table 2).

Table 2: Monthly Frequency Percentage Distribution of Households by level of Mosquito Net Ownership and Optimization

Attributes	Mainland Glover	Salami	Harvey	Badagry Ajara	Awhanjigoh	Ikoga	Mainland	Badagry	Combined
Diarrhea	8.3	11.1	-	20.0	33.3	33.3	7.3	30.9	20.8
Fever	25.0	16.7	27.3	40.0	19.0	19.0	21.9	25.5	23.9
Malaria	50.0	66.7	72.7	40.0	47.6	47.6	63.5	43.6	52.1
Don't know	16.7	5.5	-	-	-	-	7.3	-	3.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mosquito net ownership									
Have net	**34 68%	**28 56%	**40 80%	**28 56%	**28 56%	**34 68%	**102 68%	**84 56%	**186 62%
Don't have	**16 32%	**22 44%	**10 20%	**22 44%	**22 44%	**16 32%	**48 32%	**66 44%	**114 38%
Total	**121 100.0	**121 100%	**121 100%	**74 100%	**74 100%	**73 100%	**363 100%	**221 100%	**584 100%
Net utilization rate									
Use net	**6 18%	**6 21%	**12 30%	**2 7%	**7 32%	**7 21%	**24 23%	**16 19%	**40 21%
Don't use	**28 82%	**22 79%	**28 70%	**26 93%	**15 68%	**27 79%	**78 77%	**68 81%	**146 79%
Total	**34 100%	**28 100%	**40 100%	**28 100%	**22 100%	**34 100%	**102 100%	**84 100%	**186 100%
Sub-population	121	121	121	74	74	73	363	221	584

*****Frequency / % Percentage***

Source: Author's Computation (2017)

3.1.3 Socio-Economic Status

In terms of socio-economic classification, majority of the households in Lagos mainland were situated in the top wealth quintile (70.6%) in relation to those resident in Badagry (9.3%) consequently most households in Badagry (69.4%) fall within the poorest wealth quintiles. (Fig3)

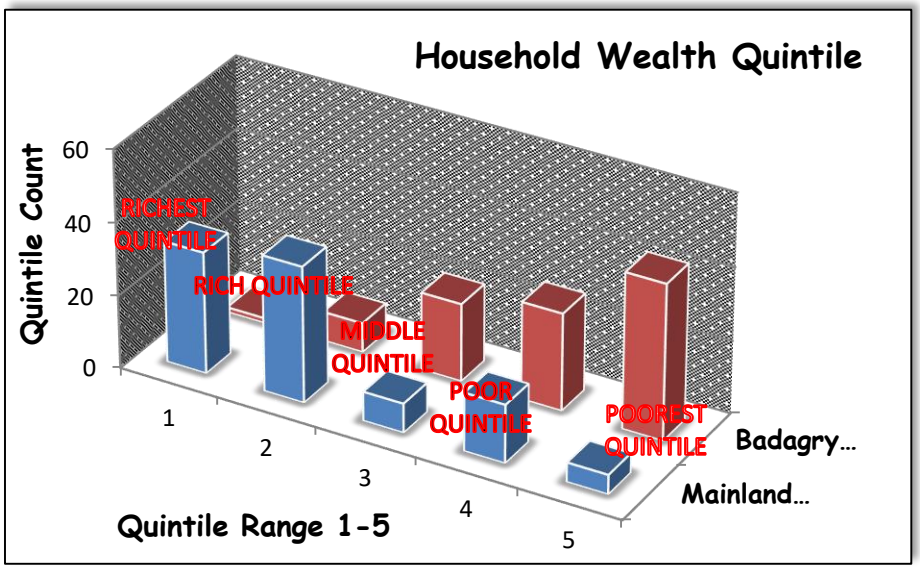

Fig 3: Socio-Economic Status Distribution

3.2 Households under-5 healthcare expenditure

The result (Table 3) suggests that the lower the amount of income earned by the population, the worse will be the health status of the population. Out-of-pocket expenditure (which measures the payment made by individuals in other to obtain health services) was observed to be higher in both Badagry (87%) and Lagos mainland (81%), the result suggests that OPE has continued to be a major determinants of under-5 child health status in Lagos State, given the very poor coverage of National Health Insurance Scheme, Lagos Mainland (9%) > Badagry (2%). The number of insured households varied between locations, Lagos Mainland (9%), Badagry (2%) and combined (7%) (Table 3).This indicates that a large number of the population (93%) is yet to be covered by the national health insurance scheme.

Table 3: Distribution of under-5 Households Primary Healthcare Expenditure

Variables	Lagos Mainland	Badagry	Combined
Out-of pocket Expenditure (OOP)	294 (81%)	197(87%)	491 (84%)
National Health Insurance (NHIS)	33 (9%)	4 (2%)	40 (7%)
Donors, private & public firms	36 (10%)	25 (11%)	53 (9%)
Community-Based Insurance (CBHS)	-	-	-
Total	363(100%)	221(100%)	584(100%)

Source: Author's Computation (2017)

Household's incidence of catastrophic health expenditures by quintiles for different thresholds shows that, the poorest quintile (20.6) had the most households experiencing catastrophic health expenditures. When the threshold is set at 10 percent of total expenditure (Table 4), the richest quintile (2.0) had the lowest incidence across locales. This confirms the assertion made by O'Donnell *et al*. (2008) that the non-food expenditure threshold may better detect catastrophic payments among the poor.

Table 4: Out -of -Pocket Healthcare Burden

Socio-Economic Quintile	Lagos Mainland	Badagry	Combined
Q_1-Richest	2.1	1.8	2.0
Q_2-Rich	7.3	6.4	6.9
Q_3-Middle	10.1	10.4	10.3
Q_4-Poor	12.2	15.1	13.7
Q_5-Poorest	18.4	22.7	20.6

N.B: Monthly health care costs as a percentage of household monthly expenditure
Source: Author's Computation (2017)

The concentration curve (Fig. 4) shows that for Lagos Mainland, out-of-pocket expenditure is regressive implying that poorer households' percentage share of total health expenditure was more than their percentage share of income or consumption expenditure and vice-versa for richer households. The concentration curve shows that under-5 mortality is proportionately concentrated across socio-economic group. Subsequently the other concentration curve (Fig. 5), indicates

that under-5 mortality rates are disproportionally concentrated (inequality) on the poor in Badagry.

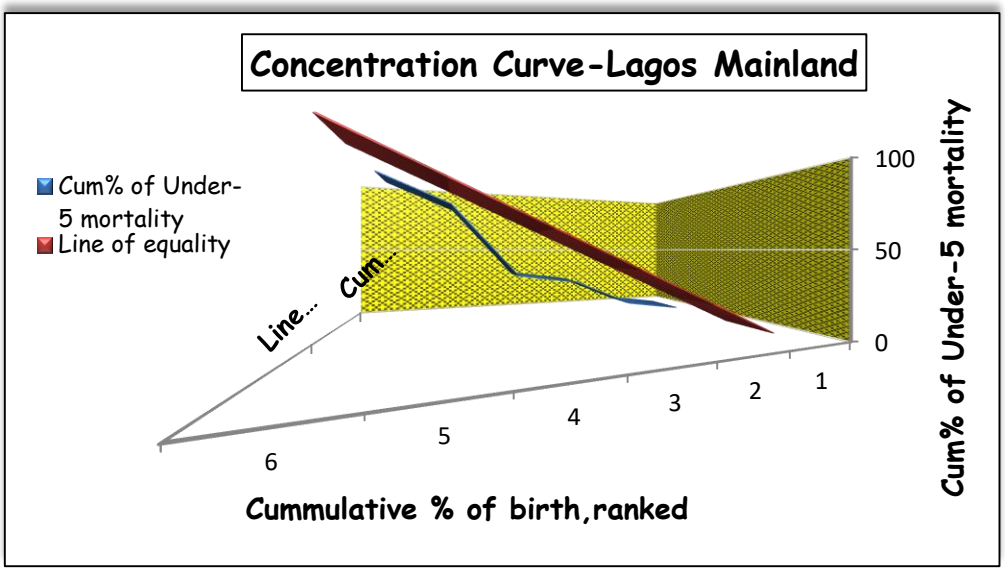

Fig. 4: Concentration curve for Lagos Mainland
Source: Author's Computation (2017)

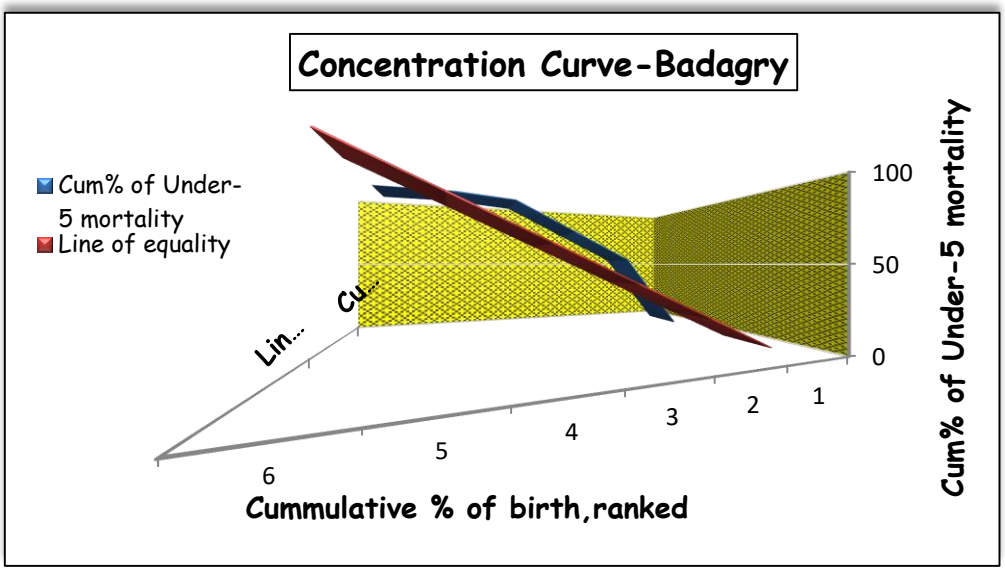

Fig. 5: Concentration curve for Badagry
Source: Author's Computation (2017)

3.3.1 Lagos Mainland under-5 Child Survival Estimation

The survival probability curve of under-5 children in Lagos Mainland was less skewed along socio-economic strata's, meaning that under-5 children in the locality stand a greater chance of survivorship (making it to their 5th birthday).The Kaplan-Meier child survivorship projections (Fig. 6) revealed that an estimate of 38 children which account for a ratio of one out of every 10 under-5 child in Lagos Mainland probably die before celebrating their fifth birthday (10.5% of the surveyed households).

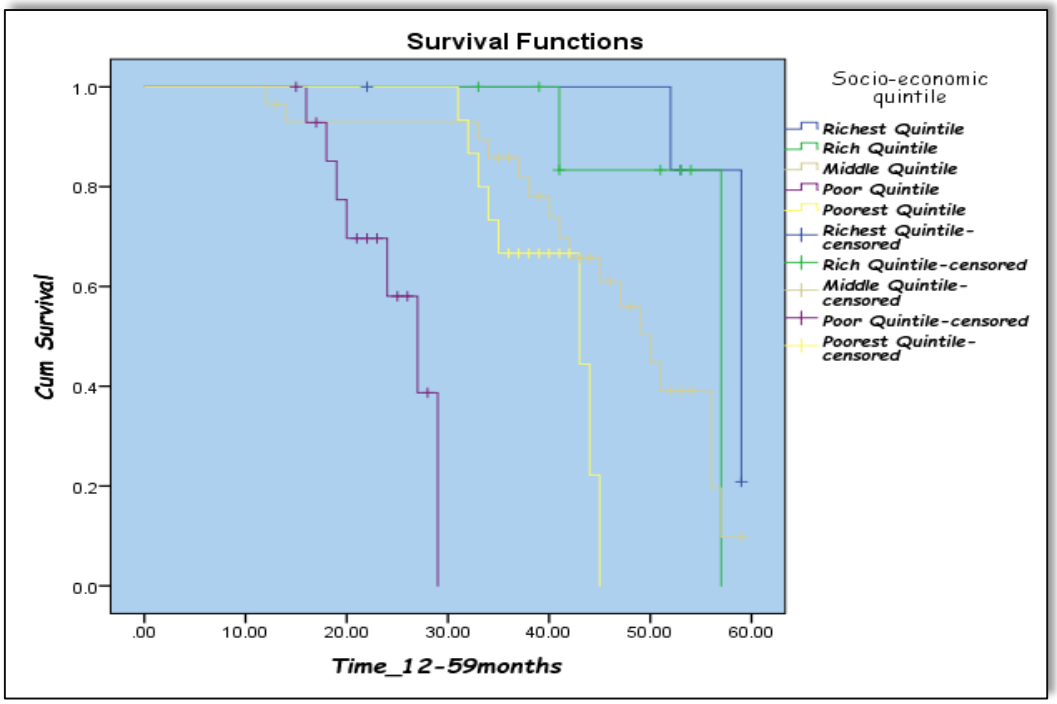

Fig 6: Lagos Mainland Under-five Kaplan-Meier survival Projections
Source: Author's Computation (2017)

The hypothesis that households Socio-economic status affects under-5child mortality outcomes in Lagos Mainland Local Government Area is not valid, given the P_{value}0.05>0.00 Sig_{value} (Log Rank (Mantel-Cox)) meaning that we rejected the null hypothesis and accepted the alternate hypothesis. Socio-economic status does not affect under-5child mortality outcomes in Lagos Mainland Local Government Area.

3.3.2 Badagry under-5 child survival Estimation

The survival probability of under-5 children in Badagry was visibly more skewed along socio-economic strata's, meaning that most under-5 children in the locality had the chance of making it to their 5th birthday is dependent on the households socio-economic status, the Kaplan-Meier projections (Fig. 7) revealed that an estimate of 72 children which accounts for a ratio of one out of every 3 under-5 child in Badagry would probably die before celebrating their fifth birthday (32.6% of the surveyed households).

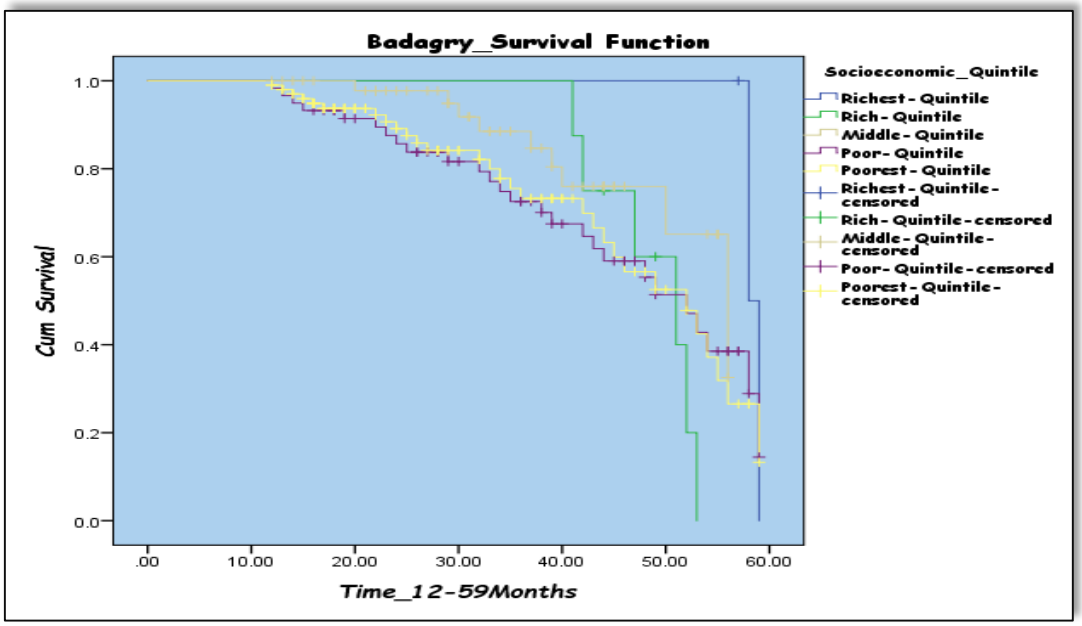

Fig 7: Badagry Under-Five Kaplan-Meier Survival Projections
Source: Author's Computation (2017)

The hypothesis that households Socio-economic status affects under-5child mortality outcomes in Badagry Local Government Area is valid, given that the $P_{value}0.05<0.22$ Sig_{value} (Log Rank (Mantel-Cox)) shows that we accepted the null hypothesis.

H_0: Socio-economic status affects under-5child mortality outcomes in Badagry Local Government Area.

4. Discussion and Conclusion

4.1. Discussion

The outcome of this research has a number of important implications for equity in under-5 child primary healthcare care among households in Lagos with emphasis on distributional analysis. For instance, the study by Kaplan-Meier Survival analysis showed that the relationship between households socio-economic status and the probability of under-5 child survival rates was dependent on the socio-economic realities of a household residence (rural or urban).This result correlates with the findings of NDHS (2003, 2008, 2013) which were health and demographic survey carried out across all the geo-political zones in Nigeria. These surveys found that "Childhood mortality rates are higher in rural areas than in urban areas".

Out-of-pocket child health care expenditure was found to be the dominant source of primary healthcare expenditure, although it was found to have a financial regressive effect on household irrespective of location, this finding is in line with a host of previous state-based studies (Ichoku 2005; Ichoku & Fonta 2006; Onoka et al 2008; Ataguba, Akazili, & Mclntyre, 2011; Chuma & Okugu, 2011; Mills et al., 2012; Riman& Akpan 2012).The concentration curve analysis revealed that healthcare inequalities was more concentrated among the lower socio-economic class in rural areas and it displayed an even distribution across socio-economic classes in urban settings, this study's finding also correlates with studies carried out by Wagstaff *et al* (2003) and O'donell et al (2008).The study has also confirmed that the vulnerabilities of households under-5 children in Lagos State, is exacerbated by a range of socio-economic factors such as household income and level of maternal educational attainment

4.2. Conclusion

This study had concluded that household income and out-of-pocket payment has continued to exert negative effect on theunder-5 child health status of the population in both the rural and urban areas of Lagos State. The situation is even worse for households that are resident in the rural areas where most of the population live below the threshold of $1 per day as dictated by the World Bank, 2008. Specifically, payment for health services has continued to threaten the consumption and livelihood patterns of the rural dwellers, this has led to catastrophic expenditure among households.

4.3. Recommendation

Given the high level of catastrophic expenditure in the study area, particularly in the poorest quintile of population, there is an urgent need to revisit the existing health financing strategy that places the burden of payment on households. The colonial healthcare model on which our national healthcare system is structured should be reviewed and localized. The coverage of National Health Insurance Scheme (Social program) should be national and more accessible (non-excludability) to all set Nigerians irrespective of their socio-economic class.

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