
Utilization of Primary Healthcare Services and Incidence of Child Killer Disease in Akwa Ibom State, Nigeria

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ABSTRACT

The study examined the status of Primary Healthcare Services utilization in urban/rural localities in Akwa Ibom State, as well as the extent to which it mediates the incidence of child killer Disease in the area. Three hundred and sixty (360) registered users of Primary Healthcare Services were drawn from twelve (12) Rural-Based and nine (9) Urban-Based Health Centres via a multi-stage random sampling. The Primary Healthcare Services Utilization Questionnaire (PUQ) was used to collect data on utilization of primary healthcare in the area, while the Daily/Weekly/Monthly Disease Reporting Chart was used to collect data on the incidence of Child Killer Disease. The mean utilization score/index was used to determine the status of primary healthcare utilization (good/poor) for each sampled locality, while the Least Squares Regression was employed to examine the effect Utilization of Primary Healthcare Service had on the incidence of child killer disease in the area. While findings confirmed a low level of Primary Healthcare Service utilization for 75% of the rural locations and a high level Primary Healthcare Service Utilization for 100% of the urban communities, Pneumonia, Malaria and Diarrhea were designated as the “top three” reported Child Killer Diseases, constituting 90% of the disease burden among children under five in the study area. Findings also confirmed a significant effect of Primary Healthcare Service Utilization on the incidence of Child Killer Disease, as 78.9% of occurrences of these Diseases were linked to non-utilization of Primary Healthcare Service. These findings reinforced the debate on the disparity in Primary Healthcare Service utilization and placed a demand on policy-makers and Healthcare planners to offer local incentives to mothers to encourage Primary Healthcare Service utilization as a proactive means of curbing the incidence of Child Killer Disease in Nigeria.

Keywords: *Primary Health Care, child killer disease, urban areas, rural areas, primary healthcare utilization*

1. INTRODUCTION

The fight against child killer disease and its attendant impact on child health has been on the front burner of global health concerns for decades. Child killer diseases are the infectious diseases and other common childhood illnesses that are responsible for high rate of deaths, particularly in children under the five (UNICEF, 2022). Although the World Health Organization (WHO) may not have distinctly categorized certain diseases as “child killer diseases,” it has officially recognized key childhood illnesses such as Pneumonia, Diarrhea, Malaria, Measles, Tuberculosis, Polio-Meningitis, Tetanus, Whooping Cough, Diphtheria, and Preterm birth complications as the leading cause of death among children under five (WHO, 2022). Most importantly, the incidence of child killer diseases has been characterized by significant spatial differentiation between the developed and developing nations (Okafor, Opara and Nwafor 2021, Eze 2023 & Okonjo 2024). The marked spatial differentiation in the incidence of child killer disease has been duly documented by global health organizations. For instance, the WHO (2024) report on incidence of child killer diseases for 2023 indicated that out of the global mortality of 4.8 million children under five (from preventable and treatable diseases such as Pneumonia, Diarrhea and Malaria) 70% occurred in sub-Saharan Africa. This is why the UNICEF (2022) described the child killer diseases as a “Spatially segregated disease” having its epicenter in Sub-Saharan Africa. The region has therefore been marked as the region with the greatest morbidity burden regarding the child killer diseases.

Despite the advances in combating childhood illnesses, infectious diseases remain highly prevalent in Sub-Saharan Africa (World Bank, 2023). It has been well documented by the World Health Organization (WHO, 2024) that Sub-Saharan Africa recorded the highest under-five mortality in the world, with 68 deaths/1000 live births in 2023. According to the report, 1 in 15 children in Sub-Saharan Africa died before reaching age 5, which is 14 times higher than the risk for children born in developed countries. The report showed that Pneumonia, diarrhea and malaria remain the top three child killer diseases in Sub-Saharan Africa, accounting for approximately 30% of deaths of children under the age of 5. The statistics show that Pneumonia kills about 950,000 children under 5; diarrhea kills about 480,000, accounting for 9% of child mortality; while malaria accounts for the death of about 619,000, of which 77% occurred in children under 5 years (UNICEF, 2022; WHO, 2023; Mehran and Saeed, 2023).

Nigeria is ranked 10th in the global rate of child mortality with 52.608% child mortality rate which is by far the greatest in the World (WHO, 2025). There is no disputing the fact that two-thirds of Nigeria’s childhood death is attributable to four child killer diseases. These include: Pneumonia, diarrhea, malaria and meningitis (UNICEF, 2022). These diseases which are preventable and treatable accounts for more than 70% of the estimated 1 million under five deaths in Nigeria which occurred between 2015 and 2023

according to UNICEF (2024). It is also important to note that Nigeria's incidence of child killer diseases are spatially segregated between its geo-political regions as well as in the rural/urban differentials (Juel and Ravi, 2022). Whereas, the North-West/North East geopolitical region are the highest sufferers of child killer diseases; the rural communities compared to the urban remains the epicenter of child killer diseases in Nigeria (Nsofor and Ukaegbu, 2022). The North/South and rural/urban dichotomy in the spread of child killer diseases in Nigeria has been largely attributed to the people's primordial belief system, poverty and a weak primary healthcare service (Essien and Udo, 2023).

Primary healthcare remains the foundation upon which the war against child killer diseases can be prosecuted (WHO, 2022). Primary healthcare refers to essential healthcare that is accessible to individuals, families and communities, in ways that are acceptable to them, through their full participation and at an affordable cost (WHO, 2022). Scaling up access to Primary healthcare services and interventions especially in communities could curb the high incidence of child killer diseases and reduce child mortality rates. Primary health care services are a set of services designed to meet people's health needs. It includes promotive, protective, prevention, curative, rehabilitative and palliative services/care. The World Bank report (2023) underscore the need for an effective primary health care service to boost the process of achieving the Sustainable Development Goals -especially the key health challenges that focuses on reproduction and child health communicable and child killer diseases.

Akwa Ibom State where this study is based occupies a strategic position, geographically, politically and economically in the Nigeria State. It is a littoral state-opening to the Gulf of Guinea and a major oil producer in Nigeria. However, the State is characterized by a dismal performance in healthcare, particularly in the provision of primary healthcare services (NDHS, 2023). In spite of the existence of a State Primary Healthcare Development Agency in the State, Akwa Ibom State was ranked as the least performing States with regards to progress made in primary healthcare delivery (National Bureau Of Statistics, NBS, 2021). The report showed that the State was by far left behind in maternal health outcome (21st), child health (19th), child mortality (30/1000 live births) and the prevalence of child killer diseases, particularly in her rural back lands (Ben and Daniel, 2023). It is against this backdrop that the present study seeks to examine the utilization of Primary Healthcare service in the area; as well as the extent to which it mediate on the incidence of child killer disease in Akwa Ibom State.

2. LITERATURE REVIEW

One of the goals of primary healthcare is to provide accessible and culturally acceptable care to users in the community. By far, the level of utilization of primary healthcare is a key indicator for assessing the strength of the primary healthcare system (Essien, James and Effiong 2019). In the literature, discussion largely revolves around the level of utilization,

pattern of utilization as well as factors mediating against utilization. Scholars believe that utilization of primary healthcare hinges on six main dimensions including accessibility, availability, acceptability, affordability, accommodation and awareness (Tirunah, 2024; Mohammad, 2023). Studies in Indonesia by Dew et al. (2024), highlighted factors such as poorly provided services, low awareness and accessibility to be responsible for irregular pattern of primary healthcare utilization. Sampled Health Districts were rated based on the level of utilization as high, moderate and lowly utilized primary health centers. Similar findings in Ekiti, Nigeria, based on a multi-stage sample of 361 healthcare users reveals a disproportionate pattern of utilization where more than 47.7% of the respondents utilized primary healthcare service less than two times every six months.

Nwokoro (2020) used a sampled of 335 adults to examine the pattern of primary healthcare services utilization in Enugu, findings showed that only 46.2% reported regular use of primary healthcare services. The high level of non-utilization were attributed to poor quality of service, unavailability of health personnel/drugs and long waiting time. Other studies have highlighted lopsided utilization of primary healthcare due to poor awareness and affordability. According to Oluwadare (2023), poor utilization of primary healthcare in parts of South Western Nigeria was reported in areas where knowledge and awareness level was abysmally low. This assertion has been corroborated by Essien, Ekong & Etteh (2019) who highlighted low awareness, poor funding, and mismanagement as the major setback to primary healthcare utilization in Nigeria. Findings in Lagun community, Oyo State based on a cross-sectional design and multi-stage sampling of 80 respondents confirmed that awareness, availability and affordability were the major prediction of primary healthcare utilization. Further findings in Adamawa Showed that of the 382 participants, only 17.3% used primary healthcare services regularly owing to three key factors – low awareness, poor accessibility and quality of service (Nafui, 2023).

There is a growing debate regarding the role of healthcare utilization on maternal and child health. The WHO (2024) believed that the underutilization of Primary healthcare services is a significant barrier to reducing child mortality. For instance, Adebawale and Udio (2022) examined the utilization of Primary healthcare services by mothers and the extent to which the outcome relate with child mortality in Nigeria. Findings revealed that child death was least experienced among women who had utilized maternal/child healthcare services. To this end, UNICEF (2022) asserted that if women optimize utilization of health facility for children under five regularly, child death will be significantly curbed in developing countries. In South Asia, socio-cultural beliefs and mistrust in health systems were identified as key factors hindering the utilization of maternal and child health services Najafi, Ali & Arab (2023). Similarly, in Latin America, a study by Mazzula & Carlos (2024) demonstrated that improving health education and community outreach programs significantly increased health service uptake, leading to a reduction in neonatal and child mortality rates.

In Africa, low levels of primary healthcare utilization are influenced by socio-economic and cultural barriers. For example, in Kenya, Mwangi, (2024) found that community health worker programs improved the uptake of antenatal and postnatal services in rural areas. In Nigeria, Adebayo, Adekunle, and Ojo, (2023) noted that the lack of awareness about available health services and fear of high costs deterred many mothers from accessing health care facilities. Underutilization of primary health services is a persistent issue in low-resource settings. In Bangladesh, Najafi, Ali & Arab (2023) found that trust in community health workers improved service uptake, particularly for immunization and child treatment. Similar trends were observed in Kenya, where maternal empowerment programs enhanced the utilization of child care and postnatal services (Mwangi, 2024). Utilization of healthcare services is influenced by both supply-side factors, such as availability and quality of services, and demand-side factors, including cultural beliefs, socioeconomic status, and education (Okonkwo, and Okolo, 2023). A study by Chukwu, Nwankwo, and Amadi, (2022) highlights that low levels of maternal education are strongly associated with poor utilization of child care services in rural Nigeria.

3. DESCRIPTION OF THE STUDY AREA

Akwa Ibom State is located in the Niger-Delta region of Nigeria. It lies between latitudes $4^{\circ}32'$ and $5^{\circ}33'$ North of the Equator, and Longitudes $7^{\circ}25'$ and $8^{\circ}32'$ East of Greenwich Meridian. The State is bounded on the North by Abia State, on the East by Cross River State, on the West by Rivers State and on the South by the Atlantic Ocean which gives its status as a littoral State (Figure 1). It has a landmass of 8412km^2 and a shoreline of 129km long. The rich maritime environment of the State can only be second to Lagos. Stretching from the estuary of Imo River in the West to that of the Cross River in the East, the Atlantic Ocean shoreline and surf beach exhibit a beautiful and smooth sandy beach of above 200 meters wide (Akpan and Udofia, 2021). This scenario designates the State as one of the potential ecotourism and maritime tourism hubs in Nigeria.

In terms of population, Akwa Ibom State is the 15th most populous State in Nigeria. According to the NBS (2023) population projection, Akwa Ibom State has a population of 4,979,400 inhabitants occupying a land area of 8.412km^2 . The population density of the State is put at 726.0 persons per square kilometer. This indicates a highly densely populated area giving the State its compact nature. The annual population change rate between 2006 (when the last official census was conducted) and 2023 is put at 1.5%. The population structure shows a youthful and male dominated population structure (Ben and Daniel 2024). The implication of the State's youthful population for ecotourism development needs no stressing as the creation of more employment opportunities through ecotourism for the teeming youth is at stake.

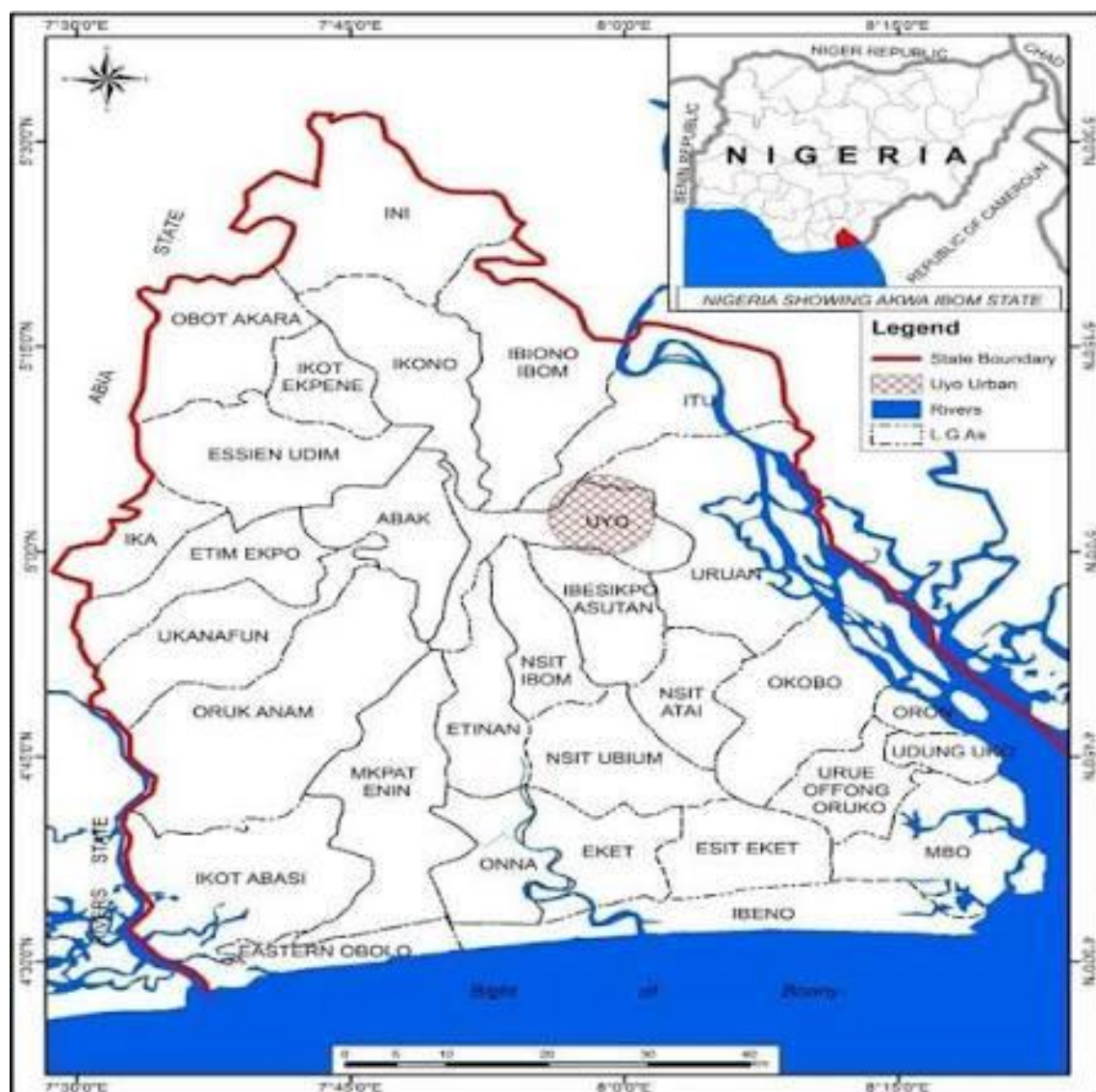


Figure 1: Akwa Ibom State of Nigeria, the Study Area

In terms of settlement structure, Akwa Ibom State is largely rural with just a few urban settlements. In Nigeria, a settlement with population less than 20,000 is classified as rural (NBS, 2021). Currently, Akwa Ibom State has over 2,000 gazetted villages which represent the rural settlements and 5 settlements of urban status including Abak, Eket, Ikot Ekpene, Ikot Abasi, and Uyo the capital city. Of the five million people living in the State, more than 80% live in rural settlements (NBS, 2021).

Regarding health care services, Akwa Ibom operates a 3 - tier level of health care delivery. These are the primary, Secondary and Tertiary. Of the three, the Primary Health care is the most ubiquitous. Primary Health care services are provided at Health Centers, comprehensive Health Centers, Health Post and Clinics, Secondary Health Care services are provided in General and Cottage Hospital, while Teaching Hospitals provides Tertiary Health Care services. Within this hierarchical enforcement, higher order Centers are expected to receive referral from the lower - order centres. As at December 2025, Akwa Ibom State had four Hundred and three Primary Health Facilities, which are spread across the 31 Local Government Area of the State. In the case of Secondary Health Facilities, Akwa Ibom State had more than Forty Secondary Health facilities which include the General Hospitals in all the LGAs, Cottage Hospitals, Infectious Diseases Health Centres (IDH) in Ikot Ekpene and Covid-19 Isolated Centre at Itu Mbang, Uruan LGA.

4. MATERIALS AND METHOD

i. Data Requirement

Two sets of data – largely quantitative were used for the study. These data sets include: data for assessing the utilization of primary healthcare services and data for assessing the incidence of child killer disease.

The measure of utilization of primary healthcare service is presented in Table I. They represent those health decisions taken by mothers to lower the incidence of child killer disease. A dichotomous measure of 1 and 0 was used to score affirmative and non-affirmative responses respectively.

Table 1: Primary Healthcare Service Utilization

S/N	Type of PHC Service	Unit of Measurement	
1.	Obtain complete vaccination	Yes (1)	No (0)
2.	Obtain prompt and regular treatment	Yes (1)	No (0)
3.	Receive regular health counseling	Yes (1)	No (0)
4.	Attend regular health screening	Yes (1)	No (0)
5.	Attend health awareness programme	Yes (1)	No (0)

The measures of incidence of child killer disease (CKD) are presented in Table 2. The units of measuring the incidence are the number of reported cases of the disease for the previous year (2025).

Table 2: Incidence of Child Killer Disease (CKD)

S/N	Type of Child Killer Disease	Unit of Measurement
1.	Pneumonia	Number of reported case
2.	Diarrhea	Number of reported case
3.	Malaria	Number of reported case
4.	Measles	Number of reported case
5.	Tuberculosis	Number of reported case
6.	Meningitis	Number of reported case

ii. Population/Sampling

The study population is the primary health centers in rural/urban areas of Akwa Ibom State as well as the users, particularly the mother who are registered at the health center for their children/family health needs. The study used a sample of 21 health centers (12 from rural areas and 9 from urban) as well as sampled respondents of 360 mothers who are registered and attend health care at the health center. The total population of primary health centers and the registered users from which sample were drawn are presented in Table 3

iii. Sampling Procedure

The multi-stage sampling technique was employed to select the sample for the study. The procedures are as follows: The study area (that is, the local government areas in Akwa Ibom State were grouped into 2 - rural and urban local government areas (26 rural and 5 urban totaling 31 local government areas). From the group of rural local government areas, 6 local government areas was randomly selected – 2 from each senatorial district that make up the State whereas 3 local government areas were selected from the group of urban local government area – one from each Senatorial district. This give a total of 9 local government areas selected from the 31 local government areas. The sampling fraction therefore is 21% which is by far greater than the 10% approved for generalizing research findings.

In stage two, the selection of the specific health centers was done such that 2 health centers were selected from each rural local government area (totaling 12) while 3 health centers were selected from each urban local government area (totaling 9). The two groups combined gave a sample size of 21 health centers. This represents 22% of the population of health center in the 9 sampled local government areas. Again 22% sampling fraction for the health center are by far greater than the 10% lower limit for research generalization.

In stage three, the respondents' sample of 360 registered mothers was done by proportionally selecting respondents in relation to the total number of registered mothers in each health center. The sampled size of 360 respondents represents 10.9% of total registered mothers in the sampled health centers (Table 3).

Table 3: The Study Sample

Location Status	Sampled LGA	No of PHC in the LGA	No. Sample	Location of sampled PHC	No. of Reg. Mothers	No. of Sampled Mothers
RURAL	Esit Eket	9	2	Etebi	136	17
				Uquo	150	19
	Nsit Ibom	9	2	Afaha Offiong	145	18
				Obotim	120	15
	Ika	9	2	Ikot Osukpong	120	14
				Nto Uzor	96	9
	Udung Uko	9	2	Ekim	104	11
				Eyofin	72	8
	Ukanafun	12	2	Nsekhe	105	12
				Nkek	66	7
	Ibesikpo	9	2	Nung Udoo	104	12
	Asutan			Ikot Inyang	102	10
	Abak	13	3	Ediene	212	22
				Ukpom	217	24
URBAN				Ebom Avenue	271	27
	Eket	14	3	Idua	217	24
				Mkpok	126	16
				Ikot Abia	119	21
	Uyo	10	3	Mbiaobong	292	28
				Ikot Ebido	226	24
				Oku		
				Ikot Okubo	201	22
TOTAL	9 (21% of 31LGA)	94	21(22% of 94)		3281	360 (10.9% of 3281)

iv. Data Collection

A well-structured questionnaire designated as the Primary Healthcare Services Utilization Questionnaire (PHQ) was designed and deployed to generate data on utilization of primary healthcare services in the study area. The questionnaire was divided into two sections, each measuring a particular parameter as follows: Section A was devoted to questions that elicit information on respondent's socio demographic attributes. Section B was designed for eliciting information regarding respondents' utilization of primary healthcare services. Considering the fact that the respondents were contacted at the health center, it was incumbent on the researchers, with the assistance of the health officials to administer the questionnaire face to face and record the responses by themselves. After each question were well explained to the respondents and the purpose of the research well conveyed their consent to participate in the interview/questionnaire administration were duly obtained. At the end of the exercise 351 respondents participated and the questionnaires were completely retrieved yielding a 97.5% returned rate. Data on the incidence of child killer Disease was extracted directly from the daily/weekly disease reporting Chart at the Health Centre.

v. Data Analysis

The Ordinary Least Square Regression Analysis was employed to estimate and model the relationship effect of utilization of primary healthcare services on the incidence of Child Killer Disease in the study area. Specifically, the independent variable for the regression analysis was the level of primary healthcare utilization (X); while the dependent variable was the incidence of child killer disease (CKD) (Y). The result of the analysis was used to test the null hypothesis which states that “there is no significant effect of primary healthcare services utilization on the incidence of child killer disease in the study area.” For the input data, the healthcare services utilization level represented the independent variable (X) while the number of reported cases of Child Killer Disease represented the dependent variable (Y). For the avoidance of doubt, the OLS Regression estimates the relationship between dependent variable and the independent by minimizing the sum of squares in the difference between the observed and the predicted value of the dependent variable configured as a straight line. The OLS Regression Model is expressed as follows:

$$Y_1 \text{ ---- } Y_n = B_0 + B_1 X_1 + B_2 X_2 \text{ ---- } B_n X_n + e$$

Where:

$Y_1 \text{ ---- } Y_n$ represent the dependent variables.

B_0 represent the intercept (constant).

$B_1 \text{ ---- } B_n$ are the regression Co-efficient.

$X_1 \text{ ---- } X_n$ are the independent variable while e represents standard error of the estimate.

5. RESULTS

i. Respondents' Socio-economic/Demographic Characteristics

The study respondents were mothers having children below age 5. Table 5 shows that majority of the respondents (61%) were in their biologically most productive age ranged between 31 and 40 years, while (28%) were in their twilight of reproductive age (41-50 years). The age distribution of the respondents has implications for increased healthcare facilities to cater for the health of children expected from the increasing number of women of reproductive age.

For the respondents' marital status, majority of the respondents (65%) were married while 20% were widowed. This means that the consensus factor between husband and wife could interfere in the healthcare utilization for the mothers, whereas the widows are likely to face financial difficulties in their quest to access healthcare since their husband's support is gone. The low number of single respondents (11%) is a reflection of the cultural taboo against unmarried women having children in their parents' home. Regarding the number of children under age 5 bore by the respondents, results in Table 4 show that 72% of the

respondents had 3 or less children under age 5. The result affirms the fact that children makes up a huge proportion of the Nigeria demographics as reported by the National Demographic and Health Survey (NDHS, 2023). Table 4 also revealed that majority of the respondents had only a secondary education (65%) as their highest educational attainment. Only 20% of them had acquired tertiary education. Their educational exposures are likely to interfere positively with their healthcare behaviour. Furthermore, the occupational structure and income status of the respondents taken together revealed a preponderant of traders (41%) and low-income earners less than 70,000 per month (55%) respectively. This of course is a reflection of the deep poverty and petty trading activities prevalent in the rural/urban areas in Nigeria.

Table 4: Socio-demographic Characteristics of the Respondents (n=360)

S/N	Variable	No. of Respondents	Percent of Total
1.	Age		
	20 – 30 years	40	11
	31 – 40 years	220	61
	41 – 50 years	100	28
2.	Marital Status		
	Single	40	11
	Married	235	65
	Divorced	15	4
	Widow	70	20
3.	Number of Children below 5 age		
	≤3	260	72
	>3	100	28
4.	Highest Level of Education		
	No formal education	25	7
	Primary	30	8
	Secondary	235	65
	Tertiary	70	20
5.	Occupation		
	Farming	110	31
	Trading	150	41
	Public servant	70	20
	Others	30	8
6.	Monthly Income		
	<70,000 Naira	200	55
	70,000 Naira	100	28
	>70,000 Naira	60	17

Source: Data Analysis

ii. Utilization of Primary Health Care Services in the Study Areas

In the rural and urban areas the utilization of Primary Healthcare services for improved health outcomes has been a matter of continuous campaign in the rural and urban areas. One of the objectives of this study was to assess the levels of PHC services utilization in localities in the study area. The respondents (mothers who were contacted) at the Primary health centers were asked to indicate whether or not they had fully utilized the specific preventive, promotive and curative healthcare service for controlling the incidence of child killer diseases in their domain. Their responses were to be supplied in two options, Affirmative (yes) and non-affirmative (No) answers. Data generated from the questionnaire was organized into frequencies/percentages for both rural and urban localities as shown in Table 5.

Table 5: Respondents Profile on Utilization of PHC services

S/N	Variables	Rural		Urban	
		Yes	No	Yes	No
1.	Obtained completed dose of vaccines/immunization	75 (49%)	77 (51%)	174 (84%)	34 (16%)
2.	Attend regular screening for CKD	51(34%)	101 (66%)	159 (76%)	49 (24%)
3.	Participate in health promotion/awareness campaign	54 (36%)	98 (64%)	151 (73%)	57 (27%)
4.	Seek health counseling regularly	60 (39%)	92 (61%)	151 (73%)	57 (27%)
5.	Get prompt treatment for common CKD	74 (48%)	78 (52%)	169 (81%)	39 (19%)

Source: Data Analysis

Table 5 indicated vaccines utilization were greater among urban respondents (84%) than rural (49%). There was a remarkable disparity in health screening attendance against child killer diseases between rural and urban localities. Whereas, 76% of respondents attended regular health screening, only 34% of rural respondents did same.

Regarding attendance of health promotion/awareness campaign, 73% of urban based mothers responded in affirmative compared to 36% of the rural. Furthermore, the percent of urban respondents who sought regular health counseling against child killer disease were 73% for urban and 39% for rural. Whereas those who obtained prompt treatment for common child killer diseases (Pneumonia, Malaria and Diarrhea) were 81% for urban and 48% for rural.

Further analysis was to determine the status of primary healthcare service (PHCs) utilization for the localities. To achieve this purpose, localities' level data were computed

using a dichotomous measure where a non-affirmative response (No) was scored 0 and an affirmative scored 1. These scores were multiplied by the frequencies and summed up (Rank-Sum). The rank-Sum was further divided by the total number of obtainable scores to yield an index ranging 0-1, designated as index of utilization. Furthermore, a cut-off point of 0.5 was used to group the localities into two:

Low utilization localities (with index of < 0.5) and High utilization localities (with index of ≥ 0.5).

The summaries are presented in Tables 6 and 7.

Table 6: Primary Health Care Service Utilization Profile for sampled localities

S/N	PHC Localities	Utilization Index	Remarks
1.	Etebi (Rural)	0.40	Low
2.	Uquo (Rural)	0.63	High
3.	Afaha Offiong (Rural)	0.55	High
4.	Oboetim (Rural)	0.44	Low
5.	Ikot Osukpong (Rural)	0.30	Low
6.	Nto Uzor (Rural)	0.13	Low
7.	Ekim (Rural)	0.27	Low
8.	Eyofin (Rural)	0.47	Low
9.	Nsekhe (Rural)	0.30	Low
10.	Nkek (Rural)	0.45	Low
11.	Nung Udoe (Rural)	0.83	High
12.	Ikot Iyan (Rural)	0.24	Low
13.	Ediene-Abak (Urban)	0.78	High
14.	Ndot (Urban)	0.83	High
15.	Ebom Avenue (Urban)	0.68	High
16.	Idua(Urban)	0.75	High
17.	Mkpok(Urban)	0.62	High
18.	Ikot Abia (Urban)	0.77	High
19.	Mbiabong (Urban)	0.76	High
20.	Ikot Ebido oku(Urban)	0.81	High
21.	Ikot Okubo(Urban)	0.90	High

Source: Data Analysis

Index < 0.50 . = Low; ≥ 0.50 = High

Table 7: Summary of Utilization Profile for the Localities

S/N	Utilization Status	Number of Localities	Remarks
1.	Rural Localities		
	Low Level of Utilization	9 (75%)	The group is characterized by low vaccine uptake, low health screening and health counseling
	High Level of Utilization	3 (25%)	
2.	Urban Localities	Nil (0%)	Greater participation in all health promotion and awareness campaign
	Low Level of Utilization	9 (100%)	
	High Level of Utilization		

Source: Data Analysis

As data in Table 7 indicated, all the localities (100%) within the urban areas recorded high level of primary healthcare service utilization (index ≥ 0.50) whereas only 25% of those in rural area had high level of PHC service utilization. The levels of PHC service utilization in rural localities were undermined by low vaccine uptake and poor compliance with health screening services. The ramifications of these findings are well discussed in section 6.

iii. Incidence of Child Killer Disease (CKD) in the Study Area

The fight against the child killer disease (CKD) and child death among children under five requires a deeper insight and verifiable data at the community levels. In this study the incidence of child killer disease was examined for rural and urban localities. The common child killer disease – Pneumonia, Diarrhea and Malaria alongside Tuberculosis (TB), Measles and Meningitis which are preventable by vaccination were examined. Data on the number of reported cases for each disease (for the previous year - 2025) was obtained from the monthly charts/records of the primary health centers. The summaries are presented in Table 8.

Table 8: Reported cases of Child Killer Disease (CKD) in the study area for 2025

SN	Child Killer Disease (CKD)	Rural		Urban	
		Number	% of total	No. of Case	% of total
1.	Pneumonia	213	31	443	32
2.	Malaria	321	47	595	42
3.	Diarrhea	148	21	351	25
4.	Tuberculosis (TB)	5	0.7	6	0.6
5.	Measles	3	0.3	5	0.4
6.	Meningitis	Nil	Nil	Nil	Nil
	Total	690	100	1400	100

Source: Data Analysis

As data in Table 8 indicated, the top three most reported child killer disease were malaria (47% for rural; 42% for urban) Pneumonia (31% for rural, 32% for urban) and Diarrhea (21% for rural, 25% for urban). These three common child diseases constitute over 90% of disease burden among children under five in the study area – rural and urban. There was zero reported case for meningitis in both rural and urban localities and a near zero incidence for measles and Tuberculosis (0.3%/0.4% and 0.7%/0.6% respectively). This of course can be attributed to the aggressive vaccination programmes and awareness campaigns.

iv. Effect of Utilization of Primary Healthcare Services on Incidence of Child Killer Disease

The utilization of primary healthcare services has been theoretically linked to different aspects of health outcome including low morbidity and mortality rates in low income countries. In this study, attempt was made to verify the effect that utilization of primary healthcare service would have on the incidence of child killer disease. Essentially therefore, the ordinary Least Square Regression (OLS) was conducted to test the null hypothesis that the utilization of primary healthcare services does not significantly affect the incidence of child killer disease in the study area. The input data were as follows:

Independent variable (x): utilization index

Dependent variable (y): total number of reported case of the child killer disease.

The result of the Regression Analysis is presented in Table 9.

Table 9: Relationship effect of PHC Services Utilization on incidence of CKD

Parameter	Values
R	.888
R ²	.789
Standard Error of the Estimate	26.109
Df	20
F-Statistics	71.163
Sig.	.000
Beta Coefficient	.888
Constant	-20.227
Decision	Reject the Null hypothesis

Source: Data Analysis

As data in Table 9 indicated, the correlation co-efficient obtained as R= .888 show that primary healthcare services utilization relates strongly and positively with the incidence of child killer disease in the study area. The R² value obtained as .789 implies that non-utilization of primary healthcare service determines up to 78.9% of the incidence of child killer disease in the study area. Accordingly, the F-statistics obtained as 71.163 with 20

degrees of freedom was significant at .000 levels. Since the p – value obtained as .000 is less than 0.05 significant level, the null hypothesis is rejected and the alternative hypothesis is affirmed. This means that primary healthcare services utilization significantly affect the incidence of child killer disease in the study area. Given the above regression results therefore, the model for estimating the incidence of child killer disease using primary healthcare utilization as the single predictor will be: $y = -20.227 + 888x + .26.109$. The implications of this finding has been discussed in section 6 of this paper.

6. Discussion of Findings

The utilization of primary healthcare services remains a lifeline for saving lives especially in the remote and isolated rural areas. However, the findings of this study reveal serious indictment on the rural people who are characterized by healthcare apathy. The significant difference observed in the level of PHC service utilization between rural and urban localities shows that there is policy summersault in effort to sensitize rural communities to patronize the primary healthcare services. The findings have shown that mothers in urban localities utilize PHC service more often and effectively than the rural mothers. This is particularly for vaccination and health screening services. For rural people, vaccinations against child killer diseases are often a matter of suspect that interferes with primordial and age-long traditional belief. These findings corroborate Nwokoro (2022) findings in rural communities in Enugu State, Nigeria where low utilization of PHC service was recorded due to attachment to traditional healthcare. Essien, James and Wilson (2026) reported that mothers in rural areas despised vaccination due to the erroneous claim that vaccines have dangerous side-effects which are harmful to the children. This study situates its findings with those of Adeboyo, Adekunle and Ojo (2023) who found that lack of awareness about available health services and fear of high cost of healthcare service deterred many mothers from utilizing primary healthcare services.

Regarding the effect of utilization of PHC services on the incidence of child killer diseases, the findings of this study have clearly shown that utilization of PHC service significantly influenced the incidence of CKD by 78.9%. This implies that encouraging mothers to religiously attend health screening at the primary health center; seek timely health advice/counseling; obtain complete dose of vaccination against the child killer diseases as well as sought prompt medical treatment for sick children can significantly curb the incidence of child killer diseases as well as reduce the rate of child deaths. This is so because, vaccines and regular immunization can wade off certain CKD that could have spread and cause child's death. At the moment, it was reported that the incidence of measles and meningitis have reduced to near zero due to aggressive immunization campaign. These findings are in consonant with those of Arome, Okau and Yunusa (2024) in Kogi State, Nigeria where significant effect of PHC services access and utilization were recorded on disease incidence and child mortality. Their findings clearly situate with the present studies

in that areas with high level of PHC utilization also recorded fewer incidence of child disease and death.

Although efforts have been made to curb and eradicate some child killer diseases, malaria, pneumonia and diarrhea continue to take its toll on the lives of children under five in Nigeria. This study examined the incidence of child killer diseases namely: Pneumonia, Malaria, Diarrhea, Measles, TB and Meningitis in rural and urban areas. Findings clearly show that over the past year, 2024, about 1400 cases of child killer disease and 690 cases were reported in urban and rural-based health centers respectively. This gives a total of 2090 reported cases with 66.9% occurring in the urban areas. The relatively high incidence of CKD in urban areas can be explained by two factors: high density of population in the urban and high reporting rate at the health center. This is so because, comparatively, the rural areas are sparsely populated and may not have reported the occurrence of CKD at the health center where data for this study was obtained.

The findings also indicated that malaria, pneumonia and diarrhea accounted for more than 70% of incidence of CKD in both rural and urban localities. This is largely attributed to lack of vaccines to fully immunize the children under five against it. At the moment, there is no vaccine against malaria, pneumonia and diarrhea in Nigeria. Furthermore, the low compliance by mothers on the preventive measures such as sleeping in mosquitoes treated net, adhering to high sanitation conditions and water helps to increase the disease burden in the study area. The progress recorded in the reduction of TB cases and near eradication of measles and Meningitis should be applauded and duplicated in the fight against Malaria, Pneumonia and Diarrhoea. These finding clearly confirms the WHO (2022) and UNICEF (2022) report which clearly indicated that Malaria, Pneumonia and Diarrhoea kill more children under five in sub – Saharan African more than any other child killer disease. Clearly the situation of child killer diseases in the study area is a reflection of the Nigeria story of high incidence of child killer disease especially in the North West and North East region as a documented by Nafui (2023). These findings aligned succinctly with the WHO (2024) report indicating that further aggressive campaign will be needed to encourage vaccination and other preventive measures against the child killer disease.

7. CONCLUSION

The study examines the key issues bordering primary health care utilization. This construct was analyzed and the outcome linked with the incidence of child killer disease in the study area. Additionally, rural/urban differentials in utilization provided the spatial perspective for the study. Although ample availability of PHC services exists in the study area, spatial differentiation in utilization between rural and urban localities continue to create concern for policy makers to address. Malaria, Pneumonia and Diarrhea continue to remain endemic, threatening the health of children under five. Statistically, the study has confirmed that utilization of PHC services can interfere significantly with the incidence of child killer

disease – particularly those that are preventable by vaccination. These findings serve as wake-up call for more focused and aggressive campaign on the utilization of PHC services as antidote for occurrence and spread of communicable/infectious diseases among children under five in Akwa Ibom State and Nigeria.

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