



## Major Diseases among Underserved Population of Ogun State, Nigeria

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### Authors' contributions

This work was carried out in collaboration between all authors. Authors AKA, BA, AZM, MAM and IAOU contributed to conceptualization of the study/study design. Authors AKA, BA, AZM, EEA, SMCE, JY, TYR, DOA, AOA and OAR contributed to data collection. Authors AKA, BA, AZM, EEA, SMCE, JY, TYR and DOA contributed to data analysis. Authors AKA, MAM, EEA, TYR, OOA and MAS contributed to manuscript development and review. All authors read and approved the final manuscript.

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### ABSTRACT

**Aim:** To assess major health challenges of underserved communities.

**Study Design:** This descriptive cross-sectional study conducted in May 2014 probed into major health challenges of underserved communities where community-based health insurance scheme (CBHIS) was to be implemented.

**Methodology:** Semi-structured questionnaires were administered in two Local Government Areas of Ogun State selected using multi-stage sampling technique on consented 419 out of 442 randomly selected household heads from 10 communities. In-depth interviews and focus group discussions were also held with community members, community and opinion leaders, to complement the quantitative data. The quantitative and qualitative data were analysed using

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Statistical Package for Social Sciences (SPSS) version 20 and Textbase Beta software respectively.

**Results:** A total of 419 household heads were interviewed, of whom 50.4% were males and 49.6% females with ages ranging from 20 to 87 years and with an average age of 51 years (SD  $\pm$ 16.75 years). Trading (37.5%) and artisanship (23.9%) accounted for the major occupations of the respondents. Two hundred and twenty-five (53.7%) had a minimum of secondary education. At the household level, the major health challenges mentioned were communicable diseases (CDs) that included malaria (58.0%) and vaccine-preventable diseases such as typhoid (4.1%), measles (2.4%), chicken pox (1.9%) and cholera (1.0%) while non-communicable diseases (NCDs) mentioned included rheumatism/arthritis (6.2%) and hypertension (2.9%). Similar result were obtained for the community level [malaria (58.2%), typhoid (17.4%) and measles (6.7%) and NCDs included hypertension (7.9%) and rheumatism/arthritis (7.2%)]. A cumulative of diseases mentioned showed that 45.5% of the diseases mentioned in the study were NCDs.

**Conclusions:** The findings from this study provide useful policy insights for the improvement of health service provision to these rural populations. The CBHIS if effectively implemented will ensure access by the underserved to quality and affordable health care.

*Keywords: Underserved population; diseases; community; household head; Nigeria.*

## 1. INTRODUCTION

Globally, the underserved comprise the vulnerable in terms of economic disadvantage, the uninsured persons, people of low income, the elderly, the homeless, and rural residents who often encounter barriers to accessing health care services [1]. The bulk of this underserved population lives in the rural areas of developing countries in diverse terrains [2]. In Nigeria, a country with the largest human population in Africa, the underserved are to be found almost in all geographical terrains but most especially in the rural and hard to reach areas where over 70% of the population reside [3-6]. Coincidentally, this population lives on less than US\$2.00 a day, suffer from inequity in access to quality health services as well as basic needs of good water, roads, housing and sanitation [2].

The Government in its efforts at addressing these challenges set up several programmes, as captured in the National Economic Empowerment Development Strategy (NEEDS), a national development programme [7]. The health sector responded to NEEDS through the health sector reform [8] which introduce the National Health Insurance Scheme to provide quality health care at affordable cost, pulling and sharing financial risks on health care [9]. The NHIS introduced different health insurance schemes, an effort that is expected to be jointly implemented by the three tiers of governance (Federal, State and Local Government). Given that health is on the concurrent list [10,11], the State is expected to cater for the health of its people [11]. Ogun State, one of the 36 States of

Nigeria, in line with the national vision of ensuring universal access to quality health care, rolled out community based health insurance scheme (CBHIS) in May, 2014 starting with a pilot scheme in 6 Local Government Areas of the State [12]. The scheme, which has some international support, aims at providing efficient and affordable health care services to improve access to quality health care with provision for the vulnerable group. It is to be managed by the people through the Board of Trustees (BOTs) made up of community members and, the premium of ₦4,000.00 (US\$22.22) per annum per person to be paid by an enrollee (following a subsidy provision of ₦3,000.00 (US\$16.67) to be contributed by both the State and Local Government) [12].

This study sought to assess the major health challenges at both household and community levels in urban and rural communities of Ogun State to inform provision of responsive healthcare, given the State's commitment to rolling out the CBHIS scheme.

## 2. METHODS

### 2.1 Study Areas

The study was carried out in two selected urban local government areas (LGAs) Abeokuta North and Ijebu Ode of Ogun State, South West Nigeria where CBHIS was about to be rolled out. The study was carried out in the two LGAs where the State was to commence the operation of the CBHIS. These are two of the twenty LGAs in the State for the state-wide phased roll-out of the

scheme. Abeokuta North LGA has its headquarters in Akomoje and lies between latitude 7°12'N and longitude 3°12'E. It covers an area of 808 square kilometres with a 2014 projected population of 261,772 people based on the 2006 National Population Census at 3.5% growth rate [13] while Ijebu Ode LGA lies between latitude 6°49'15"N and longitude 3°55'15"E, and has its headquarters in Ijebu Ode. Ijebu Ode has a 2014 projected population of 206,951 people based on the 2006 National Population Census at 3.5% growth rate [13], and covers an area of 192 square kilometres. The two LGAs are located about 100 km north of Lagos and the Atlantic Ocean (Fig. 1).

The people of the two LGAs have striking similarities in tradition, culture and economic activities primarily based on farming and trading. Basic social amenities like roads, health facilities and educational institutions are present in the two LGAs. Both LGAs lack adequate water supply and good sanitation, while a number of houses have in-built pit latrines and open defecation is a major option.

## 2.2 Study Design

This descriptive study, carried out in May 2014, probed into the major health challenges at household and community levels to inform provision of responsive healthcare in Abeokuta

North and Ijebu Ode local government areas (LGAs) of Ogun State, Nigeria.

## 2.3 Study Population

Household heads were the target population for the study from the view point that they repository of knowledge of all that concerns their household members; such the health challenges household members and the significant others around them in the community.

## 2.4 Data Collection Procedure

Multi-stage sampling technique was adopted in sample selection for the study. The sampling frame included all the six LGAs identified for the pilot scheme by the State namely: Abeokuta North; Abeokuta South; Ado-Odo/Ota; Ijebu Ode; Sagamu; and Yewa North where community-based health insurance scheme (CBHIS) was planned to become operational. Of these, two LGAs (Abeokuta North and Ijebu Ode) were selected by random sampling. In each selected LGA, the only 5 wards comprising communities where CBHIS was planned to be flagged off as a pilot scheme were purposively [14] selected for the study. Communities served by the Primary Health Care (PHC) facilities designated as health care providers for the CBHIS, were selected in these wards for the study.

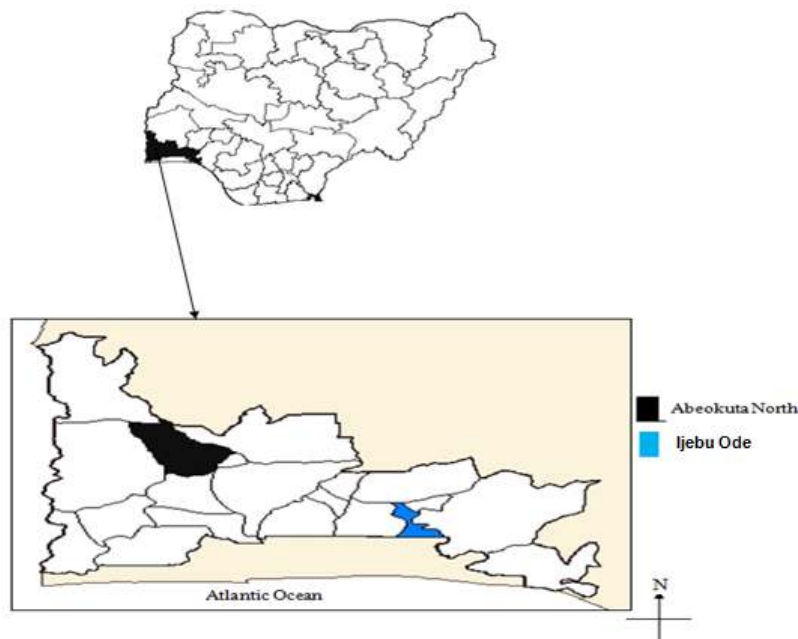


Fig. 1. Map of Ogun State projected from Nigeria, highlighting Abeokuta North and Ijebu Ode LGAs

The study involved the use of semi-structured questionnaires, designed to capture information on the background characteristics of the respondents such as age, religion, level of education, marital status and occupation. Other sections of the tools probed into major health problems at both the household and community levels. Four hundred and forty-two household heads, randomly selected, were targeted for the administration of the questionnaires. However, 419 of these household heads who consented, from 10 communities in the two selected LGAs, participated in the study. Focus group discussions (FGDs) and in-depth interviews (IDIs) were also conducted to complement the quantitative method. The content of the FGD and IDI guides are focused on the same issues as addressed in the questionnaire.

The data collection tools and procedures were pretested to test the adequacy and consistency of the research design and tools prior to the main study through interviewing of household heads and conduct of FGDs and IDIs with adult males, and females and other members of the communities including community and opinion leaders.

A total of six FGD sessions were conducted in the study LGAs. Each FGD session was held in a comfortable neutral setting, and consisted of a moderator, a note taker and 7 to 10 participants of the same sex with similar social background. A total of 61 participants comprising of 33 males and 28 females participated in the discussions. The FGD sessions were recorded on tape and moderated in the local language. Complementary to the FGD sessions were a total of 13 IDIs conducted with community leaders. The respondents were engaged in local and English languages as appropriate.

The details of the services to be offered through the CBHIS "Araya" package were also assessed. Both public and private health facilities serving the communities were also visited to gain insights on the type and quality of services rendered.

## 2.5 Data Analysis

Data from the household survey was coded and entered into the computer. The quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) version 20.0 software. In addition to the analysis of the diseases mentioned as health challenges, these were

further categorised as either communicable or non-communicable. The data were further analysed to generate frequency tables as well as cross-tabulation of the health challenges mentioned by LGA. The qualitative data from the FGDs and IDIs were analysed using the textual analysis programme, Textbase Beta, developed by Bo Summerlund and distributed by Qualitative Research Management of Desert Hot Springs, California, Textbase Beta software [15,16]. First, the tape recorded discussions in local language were transcribed and back-translated into English language. Second, the transcripts were subsequently typed, summarised, categorised, coded and sorted into text segments according to similarities and differences in individual opinions and views based on themes arising from the discussion guides.

## 2.6 Limitations of the Study

The questions asked in the study which focused on major health challenges, at both the household and, the community levels, were not individual and age-specific.

## 3. RESULTS

### 3.1 Socio-demographic Characteristics of Participants

A response rate of 94.8% was recorded in the household survey. A total of 419 respondents from 10 communities were interviewed, 208 in Abeokuta North and 211 in Ijebu-Ode. Of these, 49.6% were females and 50.4% were males. Their ages ranged from 20 to 87 years with an average of 51 years (SD  $\pm$ 16.75 years). It is not surprising that over 90.0% of the respondents above 24 years old and the age structure as tabulated in the analysis followed the age distribution of the working and non-working population in the country. Two hundred and twenty-five (53.7%) had a minimum of secondary education, and most were traders (37.5%) and artisans (23.9%). The respondents' monthly income ranged from ₦1,000.00 (US\$5.56) to ₦350,000.00 (US\$1,944.44) with an average monthly income of ₦20,558.64 (US\$114.21). Table 1 shows the socio-demographic characteristics of the respondents.

### 3.2 Major Health Challenges of Households

The most recurring major health challenges at the household level, as mentioned by the

household heads, fall into communicable diseases (CDs) category. These included malaria (58.0%), diarrhoea (8.6%) and vaccine-preventable diseases such as typhoid (4.1%), measles (2.4%), chicken pox (1.9%) and cholera (1.0%). The non communicable diseases (NCDs) mentioned included rheumatism/arthritis (6.2%), hypertension (2.9%), ulcer (1.9%), asthma (1.2%) and diabetes (0.5%) [Table 2].

**Table 1. Socio-demographic characteristics of respondents**

<b>Socio-demographic characteristics</b>	<b>Abeokuta North n=208 (%)</b>	<b>Ijebu Ode n=211 (%)</b>	<b>Total n=419 (%)</b>
<b>Age (in years)</b>			
15-24	11 (5.3)	6 (2.8)	17 (4.1)
25-54	115 (55.3)	121 (57.3)	236 (56.3)
55-64	30 (14.4)	27 (12.8)	57 (13.6)
65+	52 (2.5)	57 (27.0)	109 (26.0)
Total	208 (49.6)	211 (50.4)	419 (100.0)
<b>Sex</b>			
Male	105 (50.5)	106 (50.2)	211 (50.4)
Female	103 (49.5)	105 (49.8)	208 (49.6)
Total	208 (49.6)	211 (50.4)	419 (100.0)
<b>Religion</b>			
No religion	1 (0.5)	0 (0.0)	1 (0.2)
Christianity	74 (35.6)	88 (41.7)	162 (38.7)
Islam	122 (58.7)	123 (58.3)	245 (58.5)
Traditional	9 (4.3)	0 (0.0)	9 (2.1)
No response	2 (1.0)	0 (0.0)	2 (0.5)
Total	208 (49.6)	211 (50.4)	419 (100.0)
<b>Marital status</b>			
Single/Never married	3 (1.4)	1 (0.5)	4 (1.0)
Married	159 (76.4)	176 (83.4)	335 (80.0)
Separated	8 (3.8)	2 (0.9)	10 (2.4)
Divorced	8 (3.8)	8 (3.8)	16 (3.8)
Widowed	30 (14.4)	24 (11.4)	54 (12.9)
Total	208 (49.6)	211 (50.4)	419 (100.0)
<b>Education</b>			
None	35 (16.8)	21 (10.0)	56 (13.4)
Primary	66 (31.7)	64 (30.3)	130 (31.0)
Secondary	77 (37.0)	71 (16.9)	148 (35.3)
Post-Secondary	24 (11.5)	53 (12.6)	77 (18.4)
Quoranic	3 (1.4)	0 (0.0)	3 (0.7)
No response	3 (1.4)	2 (0.9)	5 (1.2)
Total	208 (49.6)	211 (50.4)	419 (100.0)
<b>Occupation</b>			
Unemployed	5 (2.4)	9 (4.3)	14 (3.3)
Retired	13 (6.3)	20 (9.5)	33 (7.9)
Artisan	52 (25.0)	48 (22.7)	100 (23.9)
Civil servant	11 (5.3)	17 (8.1)	28 (6.7)
Formally employed in private sector	6 (2.9)	5 (2.4)	11 (2.6)
Trading	90 (43.3)	67 (31.8)	157 (37.5)
Farming	3 (1.4)	8 (3.8)	11 (2.6)
Housewife	1 (0.5)	4 (1.9)	5 (1.2)
Other e.g. Church worker	26 (12.5)	30 (14.2)	56 (13.4)
No response	14 (6.7)	23 (10.9)	37 (8.8)
Total	208 (49.6)	211 (50.4)	419 (100.0)

**Table 2. Major household health challenges by LGA**

Diseases	Abeokuta North n=208 (%)	Ijebu Ode n=211 (%)	Total n=419 (%)
Malaria	121 (58.2)	122 (57.8)	243 (58.0)
Diarrhoea	17 (8.2)	19 (9.0)	36 (8.6)
Typhoid	10 (4.8)	7 (3.3)	17 (4.1)
Measles	4 (1.9)	6 (2.8)	10 (2.4)
Chicken Pox	3 (1.4)	5 (2.4)	8 (1.9)
Cholera	2 (1.0)	2 (0.9)	4 (1.0)
Rheumatism/Arthritis	19 (9.1)	7 (3.3)	26 (6.2)
Hypertension/Stroke	4 (1.9)	8 (3.8)	12 (2.9)
Ulcer	3 (1.4)	5 (2.4)	8 (1.9)
Asthma	3 (1.4)	2 (0.9)	5 (1.2)
Diabetes	2 (1.0)	0 (0.0)	2 (0.5)

Categorization of the major health challenges of the households shows CDs to be more than the NCDs in both the aggregated and disaggregated data, for each LGA as illustrated in Fig. 2. Aggregating the multiple responses elicited, shows that 45.5% of the diseases mentioned were NCDs.

### 3.3 Major Health Challenges of Communities

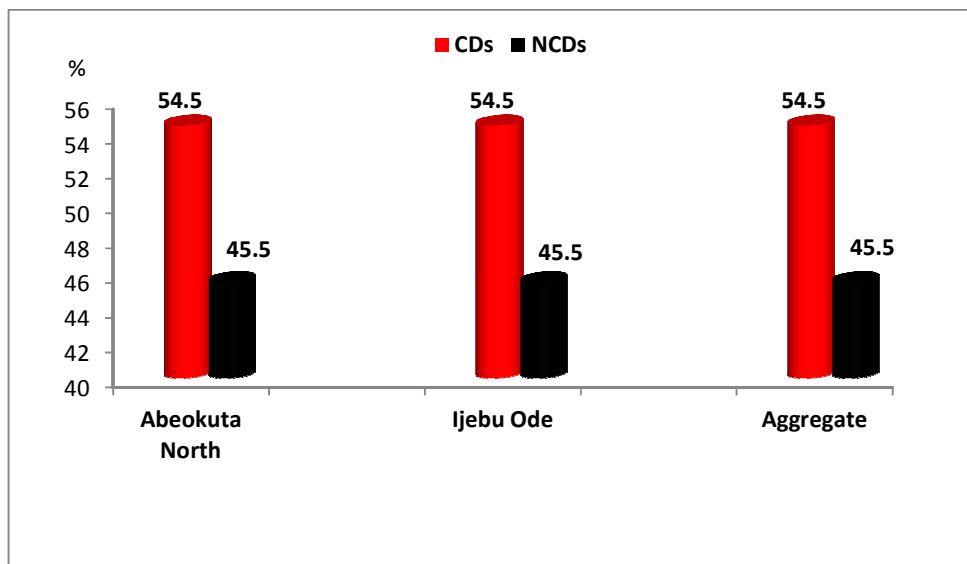
When the household heads were prompted on the major health challenges of the community, the responses mirrored those health challenges mentioned for the household level. These included malaria (58.2%), and vaccine-preventable diseases that included typhoid (17.4%), measles (6.7%) and cholera (4.1%), chicken pox (3.6%) and tuberculosis (1.2%). The NCDs mentioned were hypertension (7.9%),

rheumatism/arthritis (7.2%), diabetes (3.3%) and asthma (1.7%) [Table 3].

The classification of the health challenges at community level shows CDs to be more than the NCDs in both the LGAs studied as illustrated in Fig. 3.

### 3.4 Services Rendered by the Health Facilities

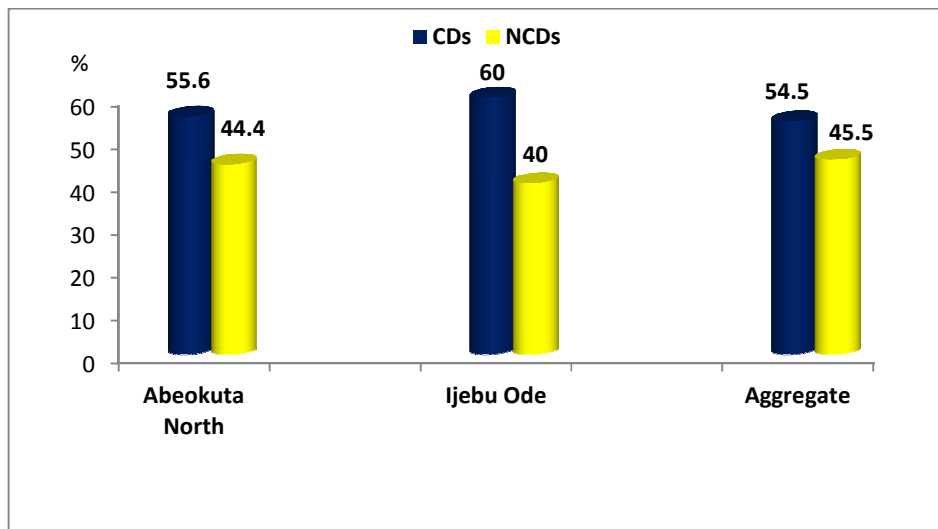
The health facilities visited offered ante-natal, perinatal and post-natal services. Other services rendered were general nursing care, immunization, health education, limited laboratory diagnosis, drug prescriptions and treatments, family planning, nutrition counseling, and HIV Counseling and Testing (HCT). The defined CBHIS (“Araya”) scheme to be offered the enrollees through the health facilities serving the health communities presented in Table 4.



**Fig. 2. The distribution of CDs and NCDs at household level mentioned by respondents according to LGA**

**Table 3. Major health challenges of communities by LGA**

Diseases	Abeokuta North n=208 (%)	Ijebu Ode n=211 (%)	Total n=419 (%)
Malaria	126 (60.6)	118 (55.9)	244 (58.2)
Typhoid	31 (14.9)	42 (19.9)	73 (17.4)
Measles	11 (5.3)	17 (8.1)	28 (6.7)
Cholera	13 (6.3)	4 (1.9)	17 (4.1)
Chicken Pox	2 (15.4)	13 (6.2)	15 (3.6)
Tuberculosis	0 (0)	5 (2.4)	5 (1.2)
Hypertension/Stroke	10 (4.8)	23 (10.9)	33 (7.9)
Rheumatism/Arthritis	20 (9.6)	10 (4.7)	30 (7.2)
Diabetes	4 (1.9)	10 (4.7)	14 (3.3)
Asthma	1 (0.5)	6 (2.8)	7 (1.7)

**Fig. 3. The distribution of CDs and NCDs at community level mentioned by respondents according to LGA****Table 4. ARAYA scheme (CBHIS) benefit package**

- Consultation
- Management of common ailments e.g. malaria, upper & lower respiratory tract infections, sexually transmitted infections, typhoid fever, tuberculosis and diarrhoeal diseases etc.
- Management of non-communicable diseases including uncomplicated hypertension and diabetes.
- Maternal and child health including antenatal booking, antenatal care, normal delivery, postnatal care a, family planning, emergency obstetric care, ectopic pregnancy, routine immunization, growth monitoring, nutrition services, treatment of diarrhoeal diseases in children, integrated management of childhood illnesses and prevention of mother-to-child transmission (PMTCT).
- Diagnostic tests that include malaria parasite, widals, PCV, pregnancy test, urinalysis, blood sugar, ultrasound scan for pregnant women, full blood count and AFB for tuberculosis diagnosis.
- Health education and promotion
- Disease surveillance
- Referral and coverage for caesarean sections
- Medical emergencies
- Preventive oral care
- Surgeries (appendicectomy and herniorraphy)
- Accident and emergency

#### 4. DISCUSSION

The population studied had a low earning power with an average monthly income of ₦20,558.64 (US\$114.21). A sum that is a little above the national minimum monthly wage of ₦18,000.00 (US\$100.00). However, the premium put at US\$22.22 per year is a one-off yearly payment which is far cheaper compared to cost at either public or private health facilities. Such enrollee is protected from unexpected high (catastrophic) health expenses during the year for which the premium of US\$22.22 has been paid. This would reduce out-of-pocket health expenses of people in the communities given that globally, Nigeria has one of the highest out-of-pocket health expenditure of over 60% [17].

In India where 80% out-of-pocket expenses has been recorded, the poor have been shown to be ready to pay for better health services where monthly family income was stated as US\$200.00 and insurance yearly premium fixed at US\$25.00 [18]. By contrast however, low socio-economic status has been shown to be a significant factor for lack of support and poor enrolment in social health insurance in Ghana [19] and Malaysia [20].

It is not surprising that malaria tops the list among the diseases cited by the respondents especially given the poor environmental conditions and the natural conducive tropical climate of the study communities. This disease has been mainly responsible for Nigeria's poor health performance because of its toll on maternal and child morbidity rates [21] although there are ongoing interventions that range from use of repellants, indoor residual spraying, long lasting insecticide-treated nets, preventing chemotherapy (including pregnant women), case management and some efforts at environmental modifications and laticiding through the National Malaria Elimination Programme [21].

Diarrhea, typhoid and cholera are diseases resulting from poor hygiene practices and contamination of water supply through poor sanitation. Although vaccines are available for these three diseases, they are sometimes in short supply and, where available, they are usually inadequate in supply. Furthermore, they are not often administered as required, for example the cholera vaccine [22].

The high proportion of non-communicable to communicable diseases reported in this study,

poses concern for urgent intervention. If the health package that goes with the CBHIS "Araya" scheme is effectively delivered, it will not only drastically reduce out-of-pocket expenses on health but also guarantee continuous patronage and thus sustainability of the scheme. In this wise, the economic and health status of this underserved population will improve in conformity with the global efforts at alleviating poverty and contribute to the attainment of the Sustainable Development Goals (SDGs).

Strong health education package should be incorporated in the CBHIS scheme for emphasis on preventive health care. For example, the level of awareness on symptoms and signs especially on the NCDs need to be raised to prevent emergence of new cases, enable early presentation and avert complications that may lead to death. It is noteworthy that the offered "Araya" package excludes management of complicated hypertension and diabetes although a referral system is in place to higher level health care facilities. Effective referrals and subsequent management of cases would be positively responsive to incidence of NCDs by 2030 given the projection that NCDs are more likely to double and overtake CDs by 2030 if adequate steps are not taken.

Findings from the study in Tables 2 and 3 show that these diseases share the same pattern at both household and community level as well as at the different LGAs.

Findings from the study showed the major health challenges at both the household and community levels to be predominantly CDs. The findings similarly showed that over 40% of the cumulative of diseases mentioned in the study were NCDs. These findings from the study, on acclaimed highly reported NCDs, are in consonance with the finding from The Gambia on high incidence of NCDs [23]. Non-communicable diseases (NCDs) were previously considered problem of developed countries, while CDs were tagged problems of developing countries. However, global and national evidences show that the burden of NCDs compared to CDs has increased over the years [24]. Non-communicable diseases (NCDs) are fast becoming leading cause of death globally particularly in developing countries including Nigeria. NCDs are estimated to kill 38 million people yearly globally with 75% of these reported for developing countries [25]. Such deaths increased from 60% in 2000 to 63% in 2008 and 68% in 2012 [26].



The observed poor environmental sanitation in the study communities lends credence to many of the CDs. The high percentage of diseases in this study indicates urgent need to raise the level of community awareness on signs and symptoms of these diseases to enable early presentation and management.

The capabilities of the health facilities need to be enhanced for effective management of diseases with in-built efforts at screening of patients on contact with the health facilities. These health facilities should be adequately equipped to cope with the emerging trend of increasing cases of NCDs as also observed by Armstrong and Kendall [26].

Major diseases among the NCDs reported by the respondents are chronic in nature and require long-term management with the associated financial implications. The impact of these diseases on the lives of people is enormous when measured in terms of economic outcomes.

Going by the low income of the people, health programmes such as community based insurance schemes (CBHIS) need to be effectively implemented to meet the health needs of the people. Such would increase access to quality and affordable health care services. The need for adequate provision of vaccines to combat vaccine-preventable diseases identified in the studied communities cannot also be overemphasized.

Almost all the healthcare facilities offered the standard PHC services, which are in line with the expected package of the Ogun State CBHIS (*Araya*) and cover the major health challenges the people alluded to at the household and community levels of the study LGAs.

## 5. CONCLUSIONS

The findings from this study provide useful policy insights for the improvement of health service provision to these rural populations who are already impoverished through inequity in access to quality health care and lack of basic amenities. Strengthening the health system for responsive health services that enables early detection and effective management of diseases especially the 'hidden' diseases as well as raising communities' awareness to the predisposing factors and signs and symptoms of NCDs are prerequisite for alleviating health challenges of the underserved populations. The CBHIS if effectively

implemented will ensure access by the underserved to quality and affordable health care.

## ETHICAL ISSUES

Administrative approval was obtained from the Ogun State Ministry of Health prior to the conduct of the study. Ethical approval for the research protocol for the study assigned number IRB/13/237 was obtained from the Institutional Review Board of the Nigerian Institute of Medical Research. The written informed consent of the participants was obtained to signify their willingness to participate in the study. Privacy of each participant in the in-depth interviews was ensured through individual interview to avoid interference and influence by other persons. The participants were assured of the confidentiality of the information provided for the purpose of the study and no personal identifiers were used in the collection, analysis or reporting of the data.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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