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Morbidity pattern among national health insurance enrollees attending the primary care clinic of a tertiary hospital in northwestern Nigeria

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Abstract

Implementing the National Health Insurance Authority (NHIA) Act promises to increase the enrolment of legal Nigerian residents and utilization of NHIA-accredited healthcare facilities. Therefore, investigating the morbidity pattern of its enrollees would provide information for strategic planning for the anticipated increase in healthcare demand. The objective of this study was to analyse the morbidity profile of NHIA enrollees attending a tertiary health facility in Kano, Nigeria This was a retrospective cross-sectional study involving 380 randomly selected primary care patients attending the NHIA Clinic of a tertiary hospital in Kano, northwestern Nigeria. A standardized data collection sheet was used to collect data from January 2018 to December 2019 from their case files. Data were analysed using the Statistical Package for Social Sciences (SPSS) (version 24.0). The mean age of the participants was 37.5 years (Standard Deviation, SD±16.0). Females predominated, comprising 238 (62.6%). The median clinic visit was 8 (IQR 6-11). Only 62 (16.3%) participants were referred to secondary or tertiary care levels. A majority had Non-Communicable Diseases (NCDs), accounting for 288 (75.8%), while 259 (68.2%) presented with communicable diseases. The most common morbidities were malaria (22.0%), hypertension (16.0%), and dyspepsia (13.0%). A statistically significant association was found between age group, sex, and the morbidity patterns of the enrollees (p=0.001). This study demonstrates the dual burden of diseases among NHIA enrollees, with malaria, hypertension, and dyspepsia emerging as the most common morbidities. These findings provide insights for developing targeted care models and serve as a baseline for effective drug procurement strategies in this and similar NHIA clinics in the region.

Key words: morbidity, health insurance, Nigeria, NHIA, outpatients, primary care.

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Introduction

Universal Health Coverage (UHC) is a central objective of the United Nations and a priority that every African country, including Nigeria, is striving to achieve.[1] This objective aligns with the third Sustainable Development Goal (SDG), recommending the utilization of healthcare-financing mechanisms that avoid payments for services at the point of need.[2] Health insurance is a social security system that ensures that people receive the necessary medical care based on pre-payment or other forms of strategic financing systems.[3] The Federal Government of Nigeria created the National Health Insurance Scheme (NHIS) as a body corporate under Act 35 of 1999 with the goal of enhancing everyone's health at a reasonable cost.[3] The main aim of the NHIS was to ensure that every Nigerian has access to good healthcare services, protecting families from the financial hardship of huge medical bills especially during emergencies.[4]

However, after over two decades of operations, the achievement of UHC via the NHIA is still a mirage, largely due to setbacks such as high illness loads, lack of human resources, poor health care financing and allocation, and a weak healthcare system.[5] For instance, a study in Enugu, Southeastern Nigeria, reported that nearly half (47.6%) of the respondents reported that essential drugs were not readily available at most NHIA-accredited facilities.[6] To overcome some of the bureaucratic bottlenecks besetting the Scheme, the NHIS was given improved authority in the National Health Insurance Authority Act, which took effect in 2022.[7] One major inclusion in the NHIA Act was making health insurance mandatory for all legal residents in Nigeria. This good intention of the government to achieve UHC will not be without challenges.[3] As the number of enrollees increases, it is crucial for healthcare facilities to scale up their capacity to meet the growing healthcare demand. This includes ensuring adequate procurement of essential drugs and staffing in order to address the primary health concerns of the enrollees.[7] Achieving this requires an understanding of the morbidity pattern among enrollees at the facility level so as to tailor services to what is needed. Morbidity data aids in understanding the disease burden of the populace,[8] and guides planning, policy formulation, and designing appropriate models of care at every level.[9] It can also help in reducing the out-of-stock syndrome of

medications and guide physicians in designing protocols of care in the NHIA clinics.

In Nigeria, few studies have described the morbidity pattern of the NHIS enrollees. A study in Bayelsa state, South-south Nigeria, reported that the most common morbidities were communicable diseases (57.7%), with malaria and respiratory tract infection being the most common, while hypertension (17.7%) was the most common Non-Communicable Disease (NCD).[8] Another study in south-western Nigeria also showed that malaria (45.5%) was the most common morbidity, followed by refractive error (8.7%) and hypertension (6.7%).[9] However, a majority of these studies were done in the southern geopolitical zones of Nigeria, and many focused only on the adult population without considering children, an important vulnerable population.[9]

Therefore, this study aims to describe the morbidity pattern of the NHIA enrollees (both adults and children) attending the NHIA Clinic of a teaching hospital in Northwestern Nigeria, with one of the highest numbers of client enrolments in the country, to assist in policy formulation and improve resource procurement and allocation, as the facility anticipates future increases in number of enrollees.

Materials and Methods

Study design and setting

The study was retrospective, cross-sectional, and part of the objectives of a larger study on primary care use among patients attending the NHIA clinic of Aminu Kano Teaching Hospital (AKTH), Kano, conducted between January and June 2022, but focusing on their 2018 and 2019 clinic visits. AKTH is a tertiary hospital located in Kano, North-Western Nigeria, and serves the people of Kano and the neighbouring states. The NHIA clinic is manned by consultants, resident doctors, and medical officers of the family medicine department. The clinic had over 40,000 and 51,000 enrollees in 2022 and 2024, respectively. An average of 275 enrollees receive care at the clinic daily during the data collection period. The NHIA clinic offers primary care services, whereas specialised services (secondary/tertiary) are provided through referrals to the specialty clinics based on the NHIA operational guidelines.

Study population and eligibility criteria

The study population comprised children and adult enrollees attending the NHIA clinic during the period of data collection. However, enrollees (principal or dependent) who chose AKTH as their primary care facility, with evidence of clinic attendance in 2018 and 2019 in their medical records, were included. Enrollees with temporary folders, grossly missing data in their records were excluded.

Sample size estimation, sampling technique, and study procedure

A sample size of 380 was used for the study. The participants were selected using a systematic sampling method. The description of the sample size calculation, sampling technique, and study procedure has been previously published.[10]

Data collection

Data were collected using a standardized data collection sheet. The information collected included patients' biodata, Health Maintenance Organization (HMO), diagnosis/diagnoses, and referral status, and detailed information on their morbidities.

Data analysis

The diseases diagnosed were categorized into Communicable Diseases (CDs) and NCDs. The morbidities were further categorized using the International Classification of Primary Care (ICPC-2). Data was analysed using the Statistical Package for Social Sciences (SPSS) software (version 23). Sociodemographic data and the morbidity pattern were described using tables and charts. Inferential statistics was done using chi-square to determine the association between morbidity pattern and selected sociodemographic characteristics (age and sex). A p-value of <0.05 was considered statistically significant.

Ethical approval

Ethical approval was granted by the AKTH Research Ethics Committee (NREC/28/01/2020/AKTH/EC/2799). The principles of medical ethics were observed in this study. Respect for the patient's autonomy and confidentiality were strictly observed.

Results

The mean age of the participants was 37.5 (Standard Deviation, SD±16.0) (range: 1-81) years. Table 1 showed that the majority of the participants were of the middle age group (40-59 years), 42.6%, with under-fives having the least proportion of 3.9% (Figure 1). Most of the participants were females (62.6%), and the majority of them were married (82.1%). A higher proportion (61.3%) are dependents of the principal enrollees. The HMO whose enrollees had the highest representation in this study was Zuma HMO (code 028) (26.8%), followed by the Nigeria Police Force HMO (code 073) (11.3%) (Figure 2). Most of the participants were from AKTH (28.2%) followed by the Nigerian Police Force (16.8%). The mean number of visits was 8 (Interquartile Range, IQR 6-11) with a range of 1-30 visits. Among the participants that accessed care, only 62 (16.3%) were referred to secondary/tertiary level of care.

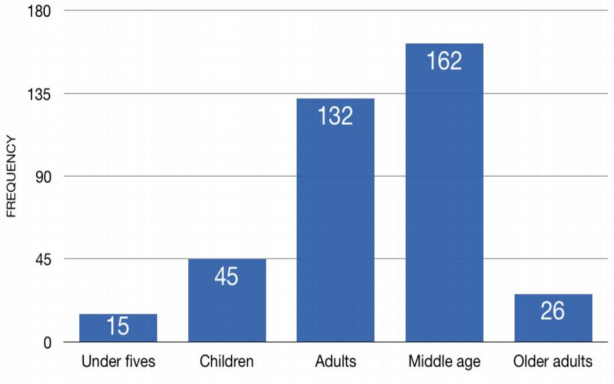

Figure 1. Barchart showing age distribution of the study participants.

Among the participants majority had NCD 288 (75.8%), while 259 (68.2%) presented with communicable diseases during the study period (Figure 3).

The mean number of morbidities was 2.0 (SD±1.0) with a range between 0-6. Among the most common morbidities, malaria was the most common condition, affecting 22% of the enrollees, followed by hypertension (16%) and dyspepsia (13%). The most common morbidities are shown in Figure 4.

The distribution of morbidities based on age and sex (Table 2) showed that the most prevalent morbidity, malaria, was seen most among the adults, 71 (37.2%), and middle-aged 75 (39.3%) individuals. Whereas hypertension was seen more in the middle-aged individuals, 85 (68.5). The difference between age groups and morbidity patterns was statistically significant (p=0.0001).

Based on gender, malaria was common among females, 122 (63.9%), and hypertension, 66 (53.2%). Notably, all the Sexually-Transmitted Infections (STIs) were only seen in the female participants, 28 (100%). The difference between the gender and morbidity pattern was also statistically significant (p<0.05).

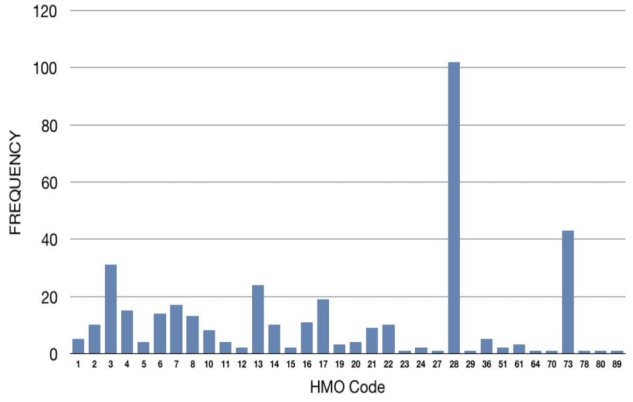

Figure 2. Health Maintenance Organizations (HMO) of participants.

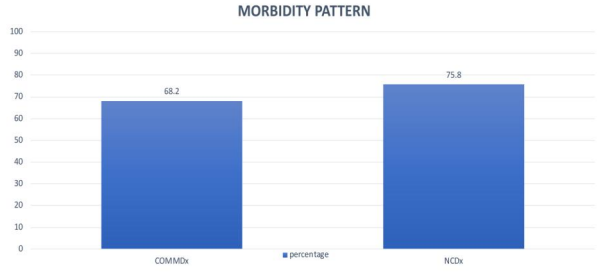

Figure 3. Morbidity pattern based on communicability of diseases.

Discussion

This study was carried out to observe the morbidity pattern among the patients attending the NHIS clinic of AKTH from January 2018 to December 2019. Regarding the sociodemographic characteristics, we found that the mean age of participants was 37.5±16 years, representing a major segment of Nigeria's adult population.[11] Also, the majority of the participants were females (62.6%), which could be because females have a better health-

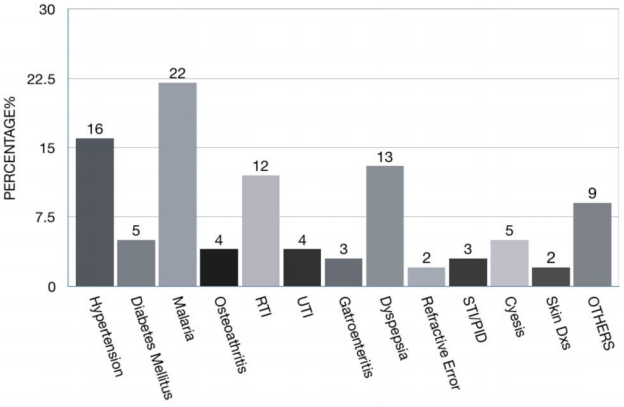

Figure 4. Most common morbidities among participants.

Table 1. Sociodemographic characteristics of the study participants (n=380).

Variable	Frequency	Percentage
Age		
<5	15	3.9
Children	45	11.8
Adults	132	34.7
Middle age	162	42.6
Older adults	26	6.8
Sex		
Male	142	37.4
Female	238	62.6
Marital status		
Married	312	82.1
Single	63	16.6
Divorced	5	1.3
Type of enrolment		
Principal	147	38.7
Dependent	233	61.3
Religion		
Islam	360	94.7
Christianity	20	5.3
Tribe		
Hausa	308	81.1
Fulani	31	8.2
Igbo	6	1.6
Yoruba	9	2.4
Others	26	6.8
Referral		
No	318	83.7
Yes	62	16.3

seeking behaviour and are more conscious of their health.[12] Moreover, the Centre for Disease Control and Prevention in the US reports that women are 33% more likely to visit the doctor than men.[13] Additionally, women often accompany children to the clinic and take advantage of the opportunity to consult with doctors for their own health concerns. This finding has similarly been reported in other studies.[8,9,14] In addition, the majority of the participants were married (82.1%); this could be because the NHIA service package includes civil servants, who are mostly married, with their dependents.[10] Furthermore, the dependents (61.3%) in this study outnumbered the principal enrolees; this could be because each principal enrolee is entitled to at least five dependants (a spouse and four biological children) with the opportunity to add extra dependants in the NHIS program.[15] We also observed that most of the participants (83.7%) were not referred to other levels of care; this could be because the NHIA Clinic in AKTH is managed by consultants and resident doctors in the family medicine department, who are trained to provide comprehensive care to a majority of patients at this level of care. This finding was similarly reported in a study in Southwestern Nigeria, where most health problems enrolees presented with were general and non-specific complaints that can be managed at the primary care level.[9]

Regarding the morbidity pattern among the enrolees, this study revealed that most participants had higher rates of NCDs (75.8%) compared to communicable diseases (68.2%). This finding highlights the coexistence of both communicable and NCDs among NHIS enrolees in this setting, and aligns with the observed paradigm shift in developing countries, where there is a double burden of both diseases.[16,17] The rising prevalence of NCDs has been attributed to factors such as sedentary lifestyles, obesity, and the westernization of diets.[17,18] Also, the preponderance of NCDs had similarly been reported in some studies.[18] In contrast, a study in Bayelsa, South-south, Nigeria, revealed a higher rate of communicable diseases than NCDs.[8] This difference could be because of the higher number of children in that study, given that children tend to present more with communicable diseases.

Furthermore, we found that the enrollees in this study had an average of two morbidities. This can be explained by the coexistence of communicable and NCDs among the participants, alluded to above. This finding indicates the presence of multimorbidity among the NHIA clients and provides insight into how to design an appropriate model of care in the NHIS clinic. This has been similarly reported by Sule *et al* in a primary care setting in North-central Nigeria, where they showed that most of their participants had more than one morbidity.[14] Another study among older adults attending a general outpatient clinic in Kano, North-west Nigeria, similarly reported the presence of multimorbidity among the participants, although this finding is not surprising among this age group.[19] Further evaluation of the enrolee morbidities in this study showed that malaria (22%) was the most common. This is not surprising because Nigeria is a malaria-endemic country and has the highest burden globally, as it accounts for 27% of the global burden of malaria.[20] In Africa, malaria accounts for approximately 20–40% of outpatient visits and 10–15% of hospital admissions.[21] Our

Table 2. Morbidity distribution based on age and sex.

Morbidities	Count/%	Age category					Sex	
		<5	Children	Adults	Middle age	Older adults	Male	Female
Hypertension	Count	0	0	19	85	20	58	66
	%	0.0%	0.0%	15.3%	68.5%	16.1%	46.8%	53.2%
Diabetes mellitus	Count	0	0	3	29	6	22	16
	%	0.0%	0.0%	7.9%	76.3%	15.8%	57.9%	42.1%
Malaria	Count	9	28	71	75	8	69	122
	%	4.7%	14.7%	37.2%	39.3%	4.2%	36.1%	63.9%
Osteoarthritis	Count	0	2	4	15	6	14	13
	%	0.0%	7.4%	14.8%	55.6%	22.2%	51.9%	48.1%
RTI	Count	6	17	36	38	1	31	67
	%	6.1%	17.3%	36.7%	38.8%	1.0%	31.6%	68.4%
UTI	Count	0	2	18	13	0	10	23
	%	0.0%	6.1%	54.5%	39.4%	0.0%	30.3%	69.7%
GE	Count	2	4	5	2	1	6	8
	%	14.3%	28.6%	35.7%	14.3%	7.1%	42.9%	57.1%
Dyspepsia	Count	0	5	54	46	2	32	75
	%	0.0%	4.7%	50.5%	43.0%	1.9%	29.9%	70.1%
Refractive error	Count	1	1	4	8	2	7	9
	%	6.3%	6.3%	25.0%	50.0%	12.5%	43.8%	56.3%
STI/PID	Count	0	1	20	7	0	0	28
	%	0.0%	3.6%	71.4%	25.0%	0.0%	0.0%	100.0%
Cyesis	Count	0	0	31	6	0	1	36
	%	0.0%	0.0%	83.8%	16.2%	0.0%	2.7%	97.3%
Skin diseases	Count	1	3	8	5	0	3	14
	%	5.9%	17.6%	47.1%	29.4%	0.0%	17.6%	82.4%
Statistical indices				x^2=336.2* p=0.0001			x^2=87.3* p=0.0001	

RTI, Respiratory Tract Infection; UTI, Urinary Tract Infection; GE, Gastroenteritis; STI, Sexually-Transmitted Infections; PID, Pelvic Inflammatory Disease.

finding has similarly been reported in other studies.[8,9] In contrast, a study in South Africa showed that respiratory tract infection was the commonest morbidity.[18] Furthermore, hypertension is the most common NCD (16%) seen in this study, with a prevalence of 16%. This finding is lower than the findings in plateau state Nigeria which reported a prevalence of 56.8%. This was probably because our study included all ages from children to older adults, in contrast to plateau study which included only adults.[14] The prevalence of hypertension was highest in studies that considered only older adults.[15,23,24] These findings are not surprising, as studies have shown that increasing age is a strong risk factor for having hypertension.[25]

Similarly, dyspepsia was another common condition observed among the study participants, with a prevalence of 13%. Similar findings by Solomon *et al.* and Egbi *et al.* in southern Nigeria reported a prevalence of peptic ulcer disease as 5% and 6.6% respectively.[8,9] This finding is consistent with the fact that functional dyspepsia is one of the most prevalent gastrointestinal disorders globally.[26] Moreover, our finding falls within the global range of 10-30%.[18] The high prevalence in Nigeria has been attributed to the widespread incidence of *Helicobacter pylori* infection in the population.[27] Other morbidities, like mental disorders, were not well recognised or diagnosed in this study, as they did not appear in the top 15 diagnoses. The most common mental diseases were depression (1%) and anxiety disorders (0.2%). The World Health Organization (WHO) estimates that up to 24% of consultations in primary care include a mental disorder.[25] This low prevalence of mental diseases in this study could be because the NHIA guideline provides for the treatment of only mild mental health conditions at this level; otherwise, they should be identified and referred to the secondary or tertiary level of care.[15]

In contrast to our study, where malaria (22%) and hypertension (16%) were the most common diseases, a study in India revealed that respiratory disorders were the most common (20%), followed by musculoskeletal disorders (8.6%) and urinary tract infections (8.1%).[28] This could be due to differences in the environmental factors, such as the weather. Likewise, in South Africa, the commonest morbidities apart from hypertension were Respiratory Tract Infections (RTI), Human Immunodeficiency Virus (HIV), and Tuberculosis (TB), among others. Their finding is not surprising as South Africa is one of the hotspots for HIV/TB infection in Africa. [22,29]

Interestingly, we found that malaria was more common among adults than children, while RTIs were more prevalent in children. This finding contrasts with existing evidence that children under five years of age are highly susceptible to malaria and account for 76% of global malaria cases.[30] However, a study by Michael *et al*. among uninsured febrile general and paediatric outpatients in Birnin Kudu, North-west Nigeria similarly found a higher incidence of malaria among participants who were ≥15 years of age.[31] This difference may be attributed to increased awareness and adherence to preventive measures, such as the use of insecticide-treated bed nets, among children, compared to adults are less likely to utilize these measures, leaving them more exposed to malaria. Furthermore, we found a statistically significant association between middle age and older adults and having NCDs like hypertension and diabetes mellitus. This finding could be because hypertension and diabetes mellitus often start to appear in middle age and continue up to older age. This has been similarly reported in other studies.[8,9,14,22]

This study also found that morbidities such as skin diseases and Pelvic Inflammatory Disease (PID)/Sexually-Transmitted Infections (STIs) were more prevalent among females than males. This is unsurprising, as females are often more conscious of their appearance and may be more likely to seek medical attention for skin-related conditions. Additionally, certain skin diseases are influenced by hormonal factors, which are more common in females.[32] Similarly, the higher prevalence of PID/STIs in women can be attributed to their greater anatomical susceptibility compared to men. Furthermore, some genital conditions like vaginal atrophy and candidiasis are also hormonally influenced.[33] Social and economic factors, such as increased vulnerability to unsafe sexual practices, may further contribute to the higher burden of these conditions among women.[34]

Limitations of the study

This study had some limitations that should be acknowledged. First, it is a retrospective analysis of hospital-based data, which may not fully represent what obtains today. As a result, findings should be generalized to the community with caution. Second, the study was single-centred, in a tertiary hospital setting. Therefore, findings from other NHIA clinics in other parts of the country and those overseen by non-doctors might exhibit different disease patterns. Lastly, the reliance on patient folders as our data source posed challenges, as some records may have been incomplete or had important information missing. These limitations underscore the need for further studies incorporating diverse settings and more robust data collection methods to provide a comprehensive understanding of the morbidity pattern of NHIA enrollees in this and similar settings.

Conclusions

This study demonstrates the dual burden of diseases among NHIA enrollees, with more NCDs than communicable diseases. The commonest morbidities were malaria, hypertension, and dyspepsia. These findings provide insights for planning, policy development, generating models of care, and serve as a guide for effective resource procurement and allocation strategies in the NHIA clinics.

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