

## Substance use disorder and crime among prison population in north-central Nigeria

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### Abstract

**Background:** The association between substance use and criminality can be discerned through the acknowledgement of the increase of what are commonly called drug defined offences. These include those having to do with violation of drug laws and the illicit nature of drug industry, or drug related offences, and those offences committed while under the influence of drug and/or alcohol.

**Aim:** To determine the prevalence of substance use disorder and assess the relationship between offence committed and presence of substance use disorder among awaiting trial inmates.

**Methodology:** A cross-sectional descriptive study was carried out among 366 male inmates awaiting trial in Jos maximum security prison, Plateau state. They were screened with self-administered General Health Questionnaire item 28 (GHQ-28) and interviewed with the Composite International Diagnostic Interview (CIDI).

**Result:** Prevalence of substance use disorder was 32.8% (120) among subjects. Statistical significant association was found between type of offence committed and the use of substance ( $P < 0.01$ ).

**Conclusion:** Substance use disorder was statistically associated with the type of offence committed, with the crime of murder more related to substance use disorder than the other offences.

**Keywords:** Substance use disorder, Crime, Prison, Awaiting trial, Prevalence.

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### Introduction

High rates of morbidity and mortality has been associated with illicit substance use and/or alcohol bingeing.<sup>1</sup> Such morbidity or mortality can result from alcohol intoxication associated with violence and/or from cannabis that often produce altered sensorium, disinhibition, paranoid ideation, mood changes and hallucinatory experiences.<sup>1</sup> Other substances like cocaine,

stimulants (e.g. amphetamines) and inhalants do contribute to these negative effects by producing acute behavioural changes and when chronic often from resultant severe organ damage that can seriously affect the brain.<sup>1</sup> Hence, substance use is not only linked to multiple health problems but also increases the potential for violent and criminal behaviours.<sup>2</sup>

Studies from developed countries had linked criminal activity more closely with use of alcohol than to any other drug of abuse.<sup>3-8</sup> The 2007 National Crime Victimization Survey found that 21.6% of victims of violent crimes thought or knew the offender involved had consumed alcohol alone or together with other drugs.<sup>3</sup> Moreover, about 70% of offenders on probation reported that they had been using drugs few weeks before their offence.<sup>4</sup> Although these studies<sup>3-8</sup> reported alcohol as the commonest substance of abuse among prisoners, many other studies have reported higher use of other substances, or a combination of other substances than alcohol.<sup>9-13</sup> These other substances include cannabis and benzodiazepines, morphine and benzodiazepines, cannabis, heroin/ intravenous drugs, and intravenous drugs.<sup>9-13</sup> The consolidated rates of substance use by prisoners vary considerably with a range of 12% to 95% reported in some studies.<sup>13,14</sup>

Studies in developing countries also reported high rate of substance use among prison population.<sup>15-17</sup> In a prison study in Durban South-Africa, the rate of substance use was 42.0%<sup>15</sup> and in two Nigerian studies, alcohol was the most used life-time drug of abuse among the prison inmates (range from 34.6% - 80.3%).<sup>16,17</sup> The first

Nigerian study was among general prison inmates<sup>16</sup> while the later was among homicide offenders.<sup>17</sup> Both studies did not report identifying any intravenous drug user. However, the first Nigerian study was able to established a change in pattern of most drug use from alcohol before imprisonment to cannabis afterwards.<sup>16</sup> This same pattern was not reported in the second Nigerian study where cannabis use dropped from the second most used drug of abuse to third and the third (i.e. stimulants) raised to bracket with the first drug of abuse, alcohol.<sup>18</sup> However, while the second study concluded that no relationship was found between arrest for homicide offense and drug use, both Nigerian studies did show that alcohol and cannabis were the substances more likely to be used by the prisoners.<sup>16,17</sup> Such observations were noted in similar studies from south east and north east Nigeria.<sup>18,19</sup> Following the observations from these studies in Nigeria, the present study hoped to contribute to such by specifically providing the prevalence and pattern of substance use among prison population in a maximum security prison located in Jos, a major city in north-central Nigeria. It also provided the type of offence committed and its relationship to substance use.

## Methodology

The study was cross-sectional and descriptive carried out among 366 male inmates in Jos maximum security prison. A self-administered socio-demographic and forensic questionnaires designed by the authors and General Health Questionnaire item 28 (GHQ-28) a screening questionnaire were administered to the inmates at the first stage. A clinical interview using the Composite International Diagnostic Interview (CIDI) was conducted on 120 inmates at the second stage.

Data was analysed using the Statistical Package for Social Sciences (SPSS) version 20.0. Frequency counts and chi square were used for categorical variables. Continuous variables were analysed by mean, and a probability of 5% was regarded as statistically significant.

## Results

All the subjects studied were male, with 52% within the age group of 25-34years and a mean age of  $32.1 \pm 10.6$  years (Table 1). Two hundred and three (55.5%) were single,

33.9% married while 0.5% were widowed. Almost half of the studied subjects (46%) had some form of secondary education with 23% having no formal education and 56.8% were unemployed (Table 1). More than half (56.8%) of the studied subjects were unemployed before incarceration. Table 1 also shows that 38.0% were imprisoned for armed robbery, 11.5% for murder offence and 0.5% for manslaughter. The remaining half (50%) of the study subjects were arrested for others offences like mutiny, breach of trust, theft, conspiracy, cheating, assault, rape, fighting, drugs and rioting.

The prevalence of substance use disorder was 32.8% (120) among study subjects. Table 2 reported the patterns of substance use disorder. Almost half of the subjects 43% (52) were abusing alcohol, 38 (31%) abused cannabis, 22 (18%) abused tobacco, 2 (2%) abused cocaine and caffeine respectively, 3 (3%) abused solvent, and 1 (1%) was abusing heroin. Majority [82 (68%)] of those abusing drugs used multiple substances.

**Table 1.** Sociodemographic and forensic characteristics of studied subjects (N = 366)

Variables	Frequency	Percentage
<b>Age Group (years)</b>		
15 – 24	97	27
25 – 34	189	52
35 – 44	54	15
Mean + SD	32.1±10.6	
45 – 54	15	4
55 – 64	8	2
>65	3	0.8
<b>Religion</b>		
Christianity	245	67
Islam	115	31.4
Traditional	4	1.1
No religion	2	0.5
<b>Nationality</b>		
Nigerian	366	100
<b>Marital status</b>		
Married	124	34
Separated	24	6.6
Widowed	2	0.5
Divorced	13	3.6
Single	203	55.5
<b>Educational status</b>		
No formal education	45	12
Primary	83	23
Secondary	168	46
Tertiary	70	19
<b>Employment status</b>		
Unemployed	208	56.8
Employed	59	16.1
Students	60	16.4
Apprentice	39	10.7
<b>Offence charged</b>		
Murder	42	11.5
Manslaughter	2	0.5
Armed Robbery	139	38.0
Others	183	50.0

**Table 2:** Pattern of substance used disorder among subjects (N = 120)

Type	Frequency	Percentages (%)
Alcohol	52	43
Marijuana	38	31
Tobacco	22	18
Cocaine	2	2
Heroin	1	1
Solvent	3	3
Caffeine	2	2
Multiple substance use	82	68

Table 3 reported the relationship between type of offence committed and the use of substance. The observed pattern showed that

the use of substance is related more to murder and then armed robbery and less with other types of offence committed.

**Table 3:** Relationship between type of offence committed and the use of substance among subjects studied

Type of offence charged [n (%)]	Substance use disorder	
	Present (%)	Absent (%)
Murder [42 (100)]	25 (60.0)	17 (40.0)
Armed robbery [139 (100)]	81 (58.0)	58 (42.0)
Others [185 (100)]	14 (8.0)	171 (92.0)
<b>Total [366 (100)]</b>	<b>120 (32.8)</b>	<b>246 (67.2)</b>

Chi-square = 107.99; p-value = <0.01

**Discussion**

Majority of the subjects in this study were young males, single, having low educational achievement and were within the age bracket of 25-34 years. This is similar to the findings of a study in Iraq where more than half of the sample composed of male prisoners were within the ages of 25-35years.<sup>20</sup> Such preponderance of single young adults was also found among studies' subjects in both United States of America<sup>21</sup> and Nigeria.<sup>16-19</sup> That this study mean age

group and educational status is similar to previous Nigerian studies did make room for speculation that poor parenting and societal bias towards such subgroup are part of the variables contributing to this observation. Furthermore, that fewer study subjects had tertiary education seemed to counter such speculation. This is because good education can provide an enhanced and legitimate source of income and/or influence a sense of reason to be a good citizen in a society.

Only 16.1% of the study subjects were employed as at the time of offence compared to the rest who were either unemployed or dependents (i.e. students and apprentice). The study findings concurred with a study in Nigeria and Kenya.<sup>18,22</sup> All suggesting the status of being unemployed as a variable that may be contributing to carrying out criminal offence. However, the present study findings were not similar to the study in Iran where 20% were unemployed and remaining were in some form of employment i.e. either as self-employed (66.6%) or as employees (18%). The later observation may be contradicting the role of unemployment in the conduct of criminal offence.

The overall rate of substance use in this study was 32.8% among the subjects. The finding is in conformity with some studies from western countries.<sup>23,24</sup> However, the study overall prevalence was lower than in previous Nigerian<sup>16-19,25</sup> and Lithuanian<sup>26</sup> studies.

Less than half of the study subjects (43%) had alcohol use disorder. This rate was higher than in studies from south west Nigeria<sup>16,17</sup> (6.1% - 34.6%) and lower than studies from south east Nigeria<sup>25</sup> (77.5%). Such pattern was also noted from some western countries with rate higher than in a study from France (30%)<sup>27</sup> and lower than in a Lithuanian study (92.1%).<sup>26</sup> This might be suggesting that alcohol use is more prevalent in these communities. It was also noteworthy of the change in the pattern of most abused drug among inmates in this study (i.e. alcohol) compared to a south west Nigeria study reporting cannabis as the most

abused substance.<sup>16</sup> The latter observation has been ascribed to affordability rather than to the community availability and tolerance.

Previous studies in Nigeria on rate of tobacco use were rare. Reporting such in this study was one of the strength of the study. However, that the rate of tobacco use/abuse (18%) in this study was lower compared to previous Nigerian study from south east (22.9%)<sup>25</sup> do need further study. This is due to the popular belief that people smoke more in the north compared to southern Nigeria.

There was a statistically significant association between type of offence committed and substance use disorder ( $P < 0.01$ ). This was in agreement with the findings in an Iranian study ( $P = 0.002$ ).<sup>18</sup> This observation seemed to be emphasizing the relationship of violence with use of substance.<sup>2-4</sup> Also, that alcohol is the most used substance among the study subjects further seemed to be supporting its linking to violent crimes.

A major limitation of this study was the non-inclusion of inmates on admission outside the prison and the difficulty to get information on those that did not participate in the study. This limitation might however be due to the poor record keeping in the prison system.

## Conclusion

A moderate rate of substance use disorder was revealed among awaiting trials inmates in this study. Also reported was the finding that substance use disorder was significantly associated with type of offence committed, and particularly for murder and of armed

robbery. These observations indicated that a large number of people in the criminal justice system have alcohol-use/drug-use problems that should be addressed to prevent recidivism. Therefore improving the alcohol and drug treatment services offered to clients in the criminal justice system is of paramount importance.

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## Free Medical Services as a means of improving Health care delivery: The role of a Charity Organization

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### Abstract

**Introduction:** Health is a dire need of any community and its absence will lead to the decline in the community's productivity. Many people cannot afford to pay for the cost of Health care services in developing countries. Due to such constraints, charity organizations complement government efforts by providing free health services in such communities. Islamic Medical Association of Nigeria (IMAN) is one of such organizations.

**Methodology:** This is a report of the experience of an IMAN Chapter in providing free medical services to a community in Sokoto-State over a period of 4<sup>1</sup>/<sub>2</sub> years (December 2010 to May 2015). It also provides analysis of the role of IMAN Sokoto-State Chapter in improving Health care delivery.

**Results:** Nine thousand five hundred and thirty (9530) people benefitted from the free medical services provided by IMAN Sokoto-State. Age ranges of beneficiaries are from 1month to 70years, with mean age group of 15-59years. Female constituted 72.3% and male 27.7%. Malaria was found to be the most prevalent disease followed by upper respiratory tract infections. Other common diseases treated include systemic hypertension, skin rashes, diarrheal diseases and measles. In addition, women with normal pregnancy were also monitored.

**Conclusion:** It was therefore concluded that charity organizations can play important roles in improving health care delivery through provision of free medical services especially in low-income communities. We recommend that health care workers, government and individuals should embrace the spirit of free Medical services and partner with charity organizations in order to meet the challenges of health care delivery in the 21<sup>st</sup> century.

**Keywords:** Free Medical Services, Healthcare delivery, Charity organization,

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### Introduction

Health is a requisite in human survival without which life is unbearable. Different means of improving access to health care services exist; they include increasing health

awareness, improving the literacy level of the population, establishment of health facilities at places where people live and work as well as provision of free or subsidized Medical services. Due to the

high level of poverty in most developing countries of the world especially those of sub-Saharan Africa, provision of free or subsidized Medical care is one of the effective means of achieving the goals of health care delivery.

Malaria is one of the endemic diseases in tropical Africa, it ranks first among the three commonest causes of morbidity in children under the age of five years (80.3%), followed by acute respiratory infections (32.0%) and then skin infections (29.1%).<sup>1</sup>

Studies have also shown that agricultural sector bears about 75 per cent of the direct economic burden of malaria in Nigeria.<sup>2</sup>

Worldwide, measles ranks first with 38% disease burden. In developing countries, measles is a major cause of childhood morbidity and mortality due to associated malnutrition and overcrowding. It was also found that Measles accounted for 3.1% of all pediatric admissions in Benin City Nigeria.<sup>3</sup> IMAN is a charity organization that is involved in the provision of free Medical and Health services to individuals and communities through concerted efforts by its members and other philanthropists.

The provision of health facilities in our communities is not adequate. In addition, poverty prevents people from accessing health care services at these facilities, hence the high prevalence of preventable and curable diseases and worsening health indices in such

communities. Improving access to health care delivery through any means will go a long way in reducing the burden of diseases and improving the health indices and productivity of such communities. This was a report of our experience in providing free health care services in Gwiwa community, Sokoto. The study aimed at evaluating the outcome of free Medical care given by a charity organization (i.e. IMAN) and assesses its effect toward improving health care delivery and reduction in the burden of diseases.

### Methodology

This was a prospective study conducted over 4<sup>1</sup>/<sub>2</sub> years, between December 2010 and May 2015. Data was obtained from a prospectively maintained database; fields extracted included age, gender, address, occupation, marital status, diagnosis and treatment. The clinic takes place once in a week with an average number of 60 to 80 patients per clinic and an average of 15 health workers in attendance. Both consultation and drugs were free of charge. Investigations such as urinalysis, pregnancy test, malaria parasite test, and random blood sugar were also free. For all other tests than the above mentioned ones, patients were requested to seek the service of nearby diagnostic centers or hospitals.

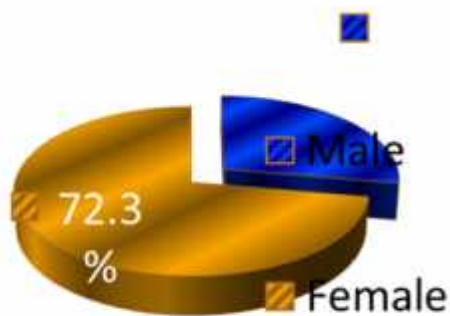
### Results

Nine thousand five hundred and thirty (9530) patients were seen over the study period and all benefited from this project. Age range of participants was 1month to

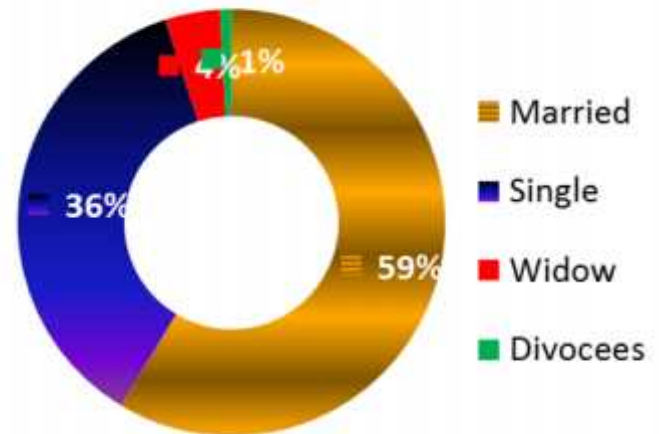
70years and the mean age group of 15-59years (see Table 1). Most patients (98.7%) were living within Sokoto metropolis and the remaining live in nearby villages. Female gender constituted 72.3% while males were 27.7% (Female to Male ratio of 2.6:1). Figure 2 summarizes the marital status of the patients. Specialties covered shown in figure 3 include General medicine (73%), Pediatrics (15%), Obstetric & Gynaecology (4%), General surgery (3%), Ophthalmology (3%) and ENT (2%). Malaria is the most common disease treated (32.6%) among the participants. This was followed by upper respiratory tract infection (12.7%) and hypertension (8.1%). Figures 4, 5 and 6 highlighted various disease conditions treated according to specialty.

**Table 1:** Age distribution of the patients seen at Gwiwa Clinic (N=9530)

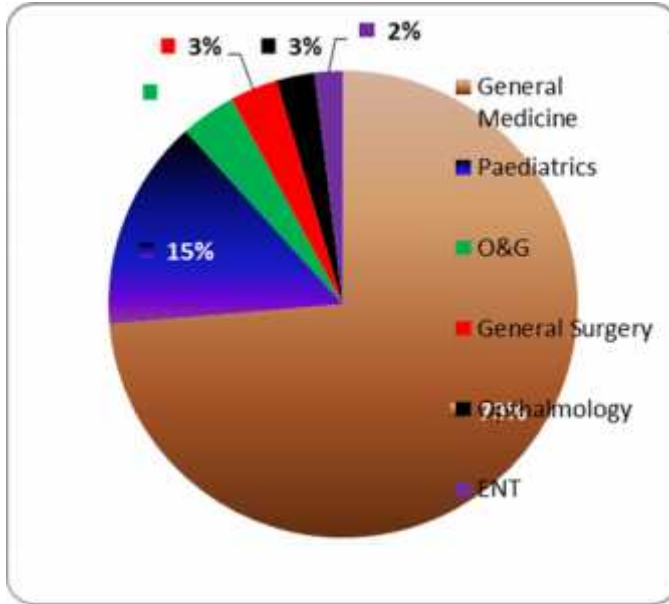
Age Group (years)	Number (%)
Below 1	1048 (11)
1 - 4.9	2001 (21)
5.0 – 14.9	1811 (19)
15.0 – 59.9	4288 (45)
60	382 (4)
Mean age = 37.45years	



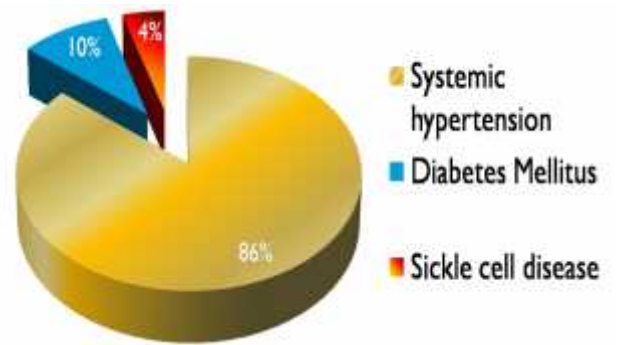
**Figure1:** Gender distribution.



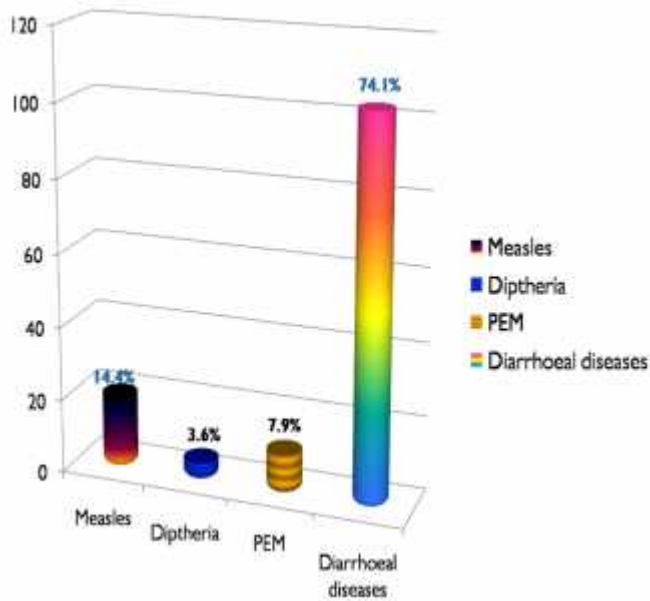
**Figure 2:** Marital status of the patients.



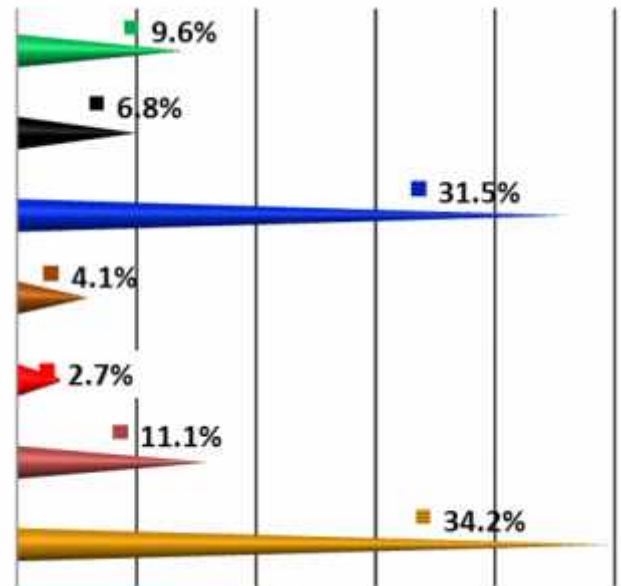
**Figure 3:** Specialties covered.



**Figure 5:** General Medical Conditions treated.



**Figure 4:** Disease Distribution among Paediatric age Groups.



**Figure 6:** Obstetrics and gynaecological conditions treated.

## Discussion

This study showed that free medical services could impact positively on the health-seeking behavior of our people, improve health care delivery and improve the health indices in our community. It showed that majority of the beneficiaries are women and children. This finding was not surprising because they are usually the less privileged and most populous group in most communities. However, while majority of the adult patients were unemployed, most of the young ones are under care of their parents. This explained why they are the most beneficiaries of such services. The burden of malaria was seen more in low income communities. In this study we found that malaria is the commonest disease treated constituting 32.6%. This will reduce the morbidity due to malaria especially among pregnant women and young children. Systemic hypertension is a common non-communicable disease in developing countries.<sup>4</sup> This study demonstrated higher incidence of systemic hypertension in this community compared to what was reported by Oghagbon *et. al.* in Ilorin.<sup>4</sup> This difference could be related to poor awareness and high poverty level that prevent the subjects from accessing health facilities. The study demonstrated that by

managing this portion of patients, the complications resulting from poorly managed hypertension will largely be reduced hence increasing life expectancy.

The leading causes of morbidity and mortality worldwide in children less than 5 years include pneumonia, malaria and diarrhoeal disease. However, in the developing countries malaria is the leading cause of morbidity and mortality in this agegroup.<sup>5</sup> Diarrhoeal disease constitute 5.4% of all the patients treated in this study and is the most common among the known paediatric killer diseases followed by measles with 1.1%. Skin rashes and malnutrition are other conditions treated with total prevalence of 6.8% and 0.6% respectively. This predicts the level of personal hygiene and socioeconomic status of the people in the study community.

Pregnancy and its associated complaints constituted 1.3% of the total conditions managed. These pregnant women were monitored through their antenatal period. Upper respiratory tract infection formed 12.7% of all the cases. With this intervention, some of its complications such as progression to lower respiratory tract infections were prevented.

Ezeoke OP. *et. al.*<sup>6</sup> analyzed the cost of illnesses to a house hold in different

socioeconomic status and reported that malaria is the most common disease treated and also noted that the average cost of treatment was 2,819.9 Naira (\$20 US). Out of this cost, drugs contributed more than 90%.<sup>6</sup> In this study, 32.5% of the patients (3050) were treated for malaria free. This implies that by projection, this number of patients could have spent 8.6million naira for drug treatment of malaria alone. One can imagine how this could be possible in a community where most of its inhabitant live below one US dollar (\$1 US) per day.

Some of the challenges encountered during this project included difficulty in mobilizing the medical team to the clinic weekly. This could perhaps be due to lack of enough incentive that should have been given to the medical team. This led to limiting the number of patients to sixty to eighty patients per clinic sitting. Another constraint was the lack of adequate funds to purchase enough drugs for the patients. This led to the option of prescribing some of the drugs for the patients to buy from commercial pharmacies.

### Conclusion

Free Medical service is found to be a good means of improving health care delivery. It is not without challenges some of which

have been outlined above. Malaria, upper respiratory tract infection, skin rashes, hypertension and normal pregnancy were the common conditions managed. We hereby recommend that health workers, government and policy makers as well as individuals should cooperate and partner with charity organizations to provide free medical and health services in order to avert and prevent recurrent and controllable endemic diseases that are especially presence in low-income communities.

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## Role of primary and adjuvant radiotherapy in the management of laryngeal paraganglioma: report of two cases and review of literature

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### Abstract

**Introduction:** We present the second reported case of a paraganglioma of the larynx treated with radiotherapy.

**Methodology:** We present two cases and a literature review of paraganglioma of the larynx.

**Case number one:** A 68-year-old woman, with hoarseness, dyspnoea and supraglottic mass. Biopsy showed laryngeal paraganglioma, excised by transhyoid approach with laryngofissure. Histopathology confirmed tumour completely excised with close margins (less than 5mm). 45 Gy of adjuvant radiotherapy was added. She is doing well on ninth year clinic follow up.

**Cases number two:** A 77-year-old woman with change in voice, progressive dyspnoea and supraglottic mass. Biopsy revealed a Laryngeal Paraganglioma. CT scan and carotid angiogram are in keeping with the histological diagnosis. She was offered primary radiotherapy giving her age and additional co-morbidities. Now on her seventh-year clinic follow up. Larynx stable and no concerns clinically.

**Conclusion:** There is very limited data on the role of radiotherapy. This is the second reported case of primary radiotherapy in the English literature. It is pertinent to appreciate the role and future of radiotherapy in the treatment of paraganglioma of the larynx.

**Keywords:** Paraganglioma; Larynx; Radiotherapy

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### Introduction

Head and Neck paragangliomas are rare, slow-growing, vascular, submucosal neuroendocrine tumours originating from the parasympathetic nervous system.<sup>1,2</sup>

Carotid body is the commonest site then jugulotympanic and vagal paragangliomas.<sup>3</sup> It rarely occurs in the larynx. Surgery has been the mainstay of treatment of laryngeal paragangliomas. Although external beam radiotherapy has been used as