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Morbidity pattern of patients at a free rural medical outreach in a resource-constrained community of Benue state, north-central Nigeria

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Abstract
Background: Medical outreach is one of the strategies to enhance access to healthcare services in rural communities considering that most health facilities and workers are concentrated in urban areas. Studies on morbidity pattern in underserved communities will provide information that could guide allocation of scarce resources and planning for health services. This study aimed to assess the morbidity profile of patients at a free rural medical outreach in a resourced-constrained community of Benue state.

Method: This was a cross-sectional descriptive study conducted among 566 consecutive participants who gave consent, over a period of two days at a free rural medical outreach clinic of St. Mary Catholic hospital, Okpoga, Benue state. Data on socio-demographics, clinical complaints, examination findings, investigations and diagnoses were collected using a predesigned semi-structured interviewer administered questionnaire. Data were analysed with Python programming language version 3.8.

Results: A total of 566 patients were seen. 218 (38.5%) were aged 26-50 years, while 387 (68.3%) were females. Peptic ulcer disease was the most prevalent disease condition 83 (12.7%) followed by cataract 54 (8.2%), malaria 52 (7.9%), hernia 46 (7.0%) and allergic conjunctivitis 41 (6.3%) respectively.

Conclusion: Peptic ulcer disease, cataract and malaria were the predominant medical conditions. This finding underscores the significance and impact of these health issues in a rural resource-constrained community. It thus, highlights the need for a strategic approach to resource allocation and planning.

Keywords: Medical outreach, morbidity profile, rural community, Benue state

Introduction
Medical outreach is defined as the practice of health workers travelling to provide health services away from their usual practice location. [1] Worldwide, it has been recommended as an evidence-based strategy to improve universal access to health care especially in rural resource-constrained communities. [1] In recent times, as a result of globalization and the attendant changes in lifestyle, people living in rural communities are now exposed to risk factors for diseases as those in urban communities.[2,3] However, in rural communities in Nigeria, as in most sub-Saharan African countries, access to health care remains a huge challenge due to inadequate health workers, poor health infrastructure, lack of social health insurance, poor socio-economic status and poor resource allocation among others. [4] Therefore, a free medical outreach where free or subsidized promotive, preventive, curative, rehabilitative and referral services are offered to the people living in remote areas will ensure improved access to healthcare. [1, 5, 6] It will also serve to bring together the different levels of the health system and foster cooperation between them.[7] These services can be provided by voluntary services or with financial incentives by stakeholders such as health institutions, governmental and non-governmental organisations, private companies and individuals, politicians or professional bodies.[6]

Globally, the proportion of rural dwellers is still high though on a downward trend. It has been estimated that in the less developed countries and sub-Saharan Africa, about 49.1% and 60.2% of the populations live in rural areas in 2015 and 2020 respectively.[6,8] In Nigerian, those living in rural areas constitute 49.7% of the total population in 2018 down from 51.4% in 2016. [9, 10] This shows that there is still a large population of people still residing in rural areas with little or no access to quality health care except at huge expense to urban areas. Furthermore, there is wide disparity between rural areas and urban areas in terms of access to healthcare with inequitable distribution of healthcare resources. Also, it is a well-known fact that most of the healthcare facilities and workers in Nigeria are found in the urban areas while the rural dwellers have to travel long distances even for minor disease conditions. In Enugu, South-East Nigeria, about 63% of the rural dwellers have been found not to have access to healthcare largely due to dysfunctional primary healthcare centres, inadequate health workers and poor infrastructure occasioned by poor funding and mismanagement. [11, 13]

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity [14]. Morbidity on the other hand, is any deviation from the state of normal physical and mental well-being. [15] Nigeria is one of the many developing countries with high levels of morbidity especially in rural areas. This has a direct relationship with human and economic development of the nation. Despite the opportunities that a free medical outreach offers with regard to access to healthcare, which is usually limited by financial and geographical factors in rural communities, there has been very few studies with focus on medical outreach and morbidity profile in rural communities. [7, 15]

In Benue state, North Central Nigeria, where this study was conducted, to the best of the author's knowledge, the morbidity profile of patients at a free medical outreach in a rural community has not been examined. Therefore, this study was undertaken to assess the morbidity pattern in a rural resource-constrained community during a free medical

outreach. Understanding the morbidity pattern of rural communities could help in advocacy for intervention and policies in terms of allocation of resources. This will invariably lead to improved well-being and quality of life of the inhabitants and the country at large.

Materials and Methods

This study was conducted between 29th and 30th of July 2022 as part of a free medical outreach at St. Mary Catholic (comprehensive) hospital Okpoga in Okpokwu local government area of Benue state. The community is about 110km from Makurdi the state capital, and mostly inhabited by farmers. Reliable data on the population of the village could not be obtained. The outreach was organized and sponsored by the leadership of Holistic Care Educational and Health Care Foundation (HEHCF), which is a private foundation. It was carried out by consultants, resident doctors, laboratory scientists, nurses and other health/religious workers drawn mainly from Benue State University Teaching Hospital, Makurdi and Jos University Teaching Hospital, Plateau state. The outreach covered General and specialist out- patient consultation with referral of cases, Dental, Ear, Nose and Throat consultation, primary care surgeries, comprehensive eye examination and prescription of glasses, basic laboratory tests (RDT for malaria, HIV, hepatitis B and C, Urinalysis, Widal test and blood glucose check), as well as health promotion and disease prevention counselling.

Morbidity was considered when a participant is already diagnosed of having any known disease or the investigators diagnose a disease based on clinical features, examination and/or investigation. Blood pressure was measured using OMRON Arm-type automatic digital blood pressure monitors and an average of three readings was recorded as the blood pressure. Blood glucose was measured with Accu-check active test strip and glucometer (Roche Diagnostic GmbH, Mannheim, Germany).

Study Design and Recruitment of Participants

This was a two-phase cross-sectional descriptive study to assess the morbidity pattern among residents of the village and surrounding communities. The first phase of the study was sensitization of the inhabitants through announcements/meetings with community leaders, churches and town crier a week before the outreach. The second phase was done in the hospital where medical history, examination, investigations and treatment were done depending on the health needs of the participants. During this phase, 566 consecutive participants who gave consent were recruited.

Ethical clearance was sought and obtained from the Health Research Ethics Committee of the Benue State University Teaching Hospital, Makurdi (BSUTH/CMAC/HREC/101/V.III/XX). Written informed consent was obtained from all adult participants and guardians of children. They were assured of confidentiality. Data on age, gender, clinical complaints, examination, diagnosis and date of consultation were collected using a predesigned semi-structured interviewer-administered questionnaire. The data were collated, cleaned, entered and analysed with Python programming language version 3.8. Descriptive statistics was used to summarise the data in tables.

Results

A total of 566 patients were seen during the outreach. The mean age of the participants was 44.2years with majority of them aged 26 years and above (80.6%). A higher proportion of the participants were females (68.3%) with female to male ratio of 2.2:1. Peptic ulcer disease was the leading cause of morbidity in the participants 83 (12.7%) followed by cataract 54 (8.2%), malaria 52 (7.9%), inguinal hernia 46 (7.0%) and allergic conjunctivitis 41 (6.3%). Hypertension and diabetes mellitus represented 5.2% and 0.9% of cases respectively. Many of the participants had multiple diseases at the time of this study.

Table 1: Demographic Summary (N=566).

Variables	Frequency	Percent (%)
Age (years)		
≤12	33	5.8
13-25	77	13.6
26-50	218	38.5
>50	238	42.1
Mean = 44.2		
Gender		
Female	387	68.3
Male	179	31.7

Table 2: Distribution of different diseases.

Clinical Diagnosis	Frequency	Percent (%)
Acute Appendicitis	5	0.8
Age Related Macular Degeneration	2	0.3
Allergic Conjunctivitis	41	6.3
Anterior Staphyloma	3	0.5
Aphakia	2	0.3
Bell's Palsy	1	0.2
Breast Cancer	1	0.2
Cancer Head of Pancreas	1	0.2
Cataract	54	8.2
Cerebral Palsy	1	0.2
Cerumen Impaction	1	0.2
Chronic Kidney Disease	2	0.3
Chronic Liver Disease	1	0.2
Chronic Osteomyelitis	3	0.5
Community Acquired Pneumonia	2	0.3
Congestive Cardiac Failure	3	0.5

Corneal Opacity	7	1.1
Coronary Artery Disease	1	0.2
Cortical Blindness	1	0.2
Dental Caries	11	1.7
Diabetes Mellitus	6	0.9
Diabetic Retinopathy	1	0.2
Diarrhoea Disease	3	0.5
Enteric Fever	7	1.1
External Haemorrhoids	1	0.2
Glaucoma	25	3.8
Goiter	3	0.5
Hydrocoele	1	0.2
Hypertension	34	5.2
Hypertrophic Scar	1	0.2
Impetigo	2	0.3
Inguinal Hernia	46	7.0
Lipoma	13	1.6
Low Back Pain	23	3.5
Malaria	52	7.9
Myasis	1	0.2
Nephrotic syndrome	1	0.2
Non-Specific Abdominal Pain	16	2.1
Obstructive Adenotonsillar Enlargement	1	0.2
Ocular Toxoplasmosis	1	0.2
Orchitis	1	0.2
Osteoarthritis	34	5.2
Otitis Media	13	1.6
Otomycosis	5	0.6
Panophthalmitis	1	0.2
Pelvic Inflammatory Disease	21	3.2
Peptic Ulcer Disease	83	12.7
Presbycusis	2	0.3
Pseudophakia	1	0.2
Psychosis	1	0.2
Pterygium	15	2.3
Refractive Error	28	4.3
Seizure Disorder	1	0.2
Sensorineural Hearing Loss	4	0.6
Sickle Cell Anaemia	2	0.3
Somatization	2	0.3
Temporomandibular Joint Subluxation	1	0.2
Tinea Pedis	4	0.6
Tinnitus	2	0.3
Upper Respiratory Tract Infection	14	2.1
Urinary Tract Infection	27	4.1
Uterovaginal Prolapse	3	0.5
Vertigo	1	0.2
Vitiligo	2	0.3
Vulvovaginal Candidiasis	6	0.9
TOTAL	655	100

Discussion

The mean age of the participants was 44.2 years. The mean age could be attributed to the study location which was a rural community with younger people migrating to the cities for higher education and job opportunities. This could also account for the predominance of the age group of >50 years (42.1%) in this study as was also seen in Enugu, Nigeria. [3] The mean age was similar to the mean age of 42.1 years observed by Mbadiwe *et al* in Enugu Southeast Nigeria. [2] Both studies assessed morbidity profiles in rural communities using same study designs. This could have accounted for the similar findings. However, this was lower than the mean age of 54.9 years and 56.4 years reported by Chukwukasi *et al* and Isara *et al* in Enugu and Edo states of Nigeria, respectively.[3,6] Even though the studies had similar designs and locations, the difference could have resulted from the different age groups assessed. There were more females (68.3%) in this study with a female to male ratio of 2.1:1. The female preponderance could be due to their better health-seeking behaviour compared to males. This conforms to findings from other states in Nigeria, India and Bangladesh. [2, 5, 6, 16, 17] In contrast, Igbudu *et al* found more males than females in a ratio of 3.2:1 in a study of rural dwellers in some communities in Benue state, Nigeria. [18] They however, studied only patients with surgical needs in the communities.

Peptic ulcer disease (12.7%) and cataract (8.2%) were the most prevalent morbidities in this study in keeping with reports from other studies in Nigeria, India and Bangladesh. [4, 5, 16] These are communities and countries with similar demographic characteristics as the studied population which could account for the similar findings. However, this is

different from other studies which found upper respiratory tract infections and musculoskeletal pain to be more prevalent. [2, 17] These studies were done among adult patients.

Malaria was also a leading morbidity in this study (7.9%). This is not unexpected because despite efforts to prevent and treat malaria, it still remains a major cause of morbidity especially in sub-Saharan Africa. This is in consonance with other local studies in Bayelsa and Enugu states.[2,4] The current study identified Inguinal hernia as a common problem among the participants (7%). This is consistent with the findings by Igbudu *et al* across six rural local government areas of Benue state, as well as findings in Rivers and Taraba states. [18, 20] This is possibly due to manual farming methods used in rural areas which can predispose them to hernia.

In this study, non-communicable diseases of hypertension and diabetes constituted 5.2% and 0.9% of all morbidities respectively. These would probably have been higher if only adults were recruited. Thus, this could suggest presence of undiagnosed hypertension and diabetes in the area. However, these align with the current national prevalence of 2.1% to 47.2% and 0.8% to 11% for hypertension and diabetes respectively. [21, 23] The finding with regard to diabetes is also comparable to other local reports in Enugu (0.9%), but differs with that in Edo (4.6%).[2,3] While that for hypertension differs with other studies in Enugu (24.6%), Bayelsa (17.7%) and India (11.2%) where higher rates were found. [4, 15, 24] These studies were done among adult patients which could be responsible for the higher rates.

Conclusion

This study revealed high burden of peptic ulcer disease, cataract, malaria and hernia in this rural community. Hence, any effort directed at improving the health status of this community should give priority to these diseases. Also, through the provision of free health care services to neglected, rural and hard-to-reach communities, medical outreach could serve as an important platform for meeting the unmet health care needs of these communities thereby promoting the achievement of universal access to health care.

Recommendations: Considering the high burden of diseases and inadequate health resources in rural communities, periodic medical outreach should be adopted by countries especially low and middle income countries as a veritable means of bridging the gap in access to health care between urban and rural areas. Furthermore, philanthropic and good-spirited co-operate bodies and individuals should be encouraged to undertake medical outreaches to underserved-communities as part of cooperate social responsibility.

Limitations: The method used for diagnosis was basically clinical with minimal or no confirmatory investigations. This could potentially lead to bias in estimation of the burden of disease.

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