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Full Length Research Paper

Short term medical mission: Serving the underserved patients in south southern Nigeria

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Medical missions focus on assessing the medical needs of the population encountered and providing medical opinions/ consultation, medications and surgeries. These missions are necessary due to a lack of sustainability principles and limited capacity building opportunities and institutional development in developing nations. These mission have led to increased volunteerism of highly skilled medical practitioners from the diaspora collaborating with medical professionals based in the local communities where these mission occur. The mission reported here assessed the medical needs and provided health care to 14 communities in Cross River State Nigeria concretely documenting demographic data and prevalence of medical conditions among the population managed. Two thousand eight hundred and fifty five (2855) patients were evaluated during the medical mission. The predominant complaints by clients/patients presenting during the medical mission were arthritis (28.43% ± 0.62), malaria (28.32% ± 0.91), hypertension (34.78% ± 0.22) and body pains/headaches (34.57% ± 1.06). The presentation of varying ailments varied within the communities with Igonigoni having the highest incidence of arthritis and hypertension for new and established patients at 39.53 and 29.45% respectively. Provision of medications though not sustainable was usefully for immediate care and monitoring of those living with chronic diseases like hypertension and diabetes promoting the United Nations Development Program's sixth and eighth millennium development goal, that is, combating HIV, malaria and other diseases and developing global partnerships for development.

Key words: Medical mission, Cross River State, hypertension, diabetes

INTRODUCTION

There are many non-governmental organizations that have been involved in provision of critically needed services to fill gaps normally occupied by the public sector. In Nigeria, 70% of the population still live below the poverty line with 31% living in extreme poverty. The United Nations Development Program (UNDP) sixth and

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eighth millennium development goal i.e. combating HIV, malaria and other diseases and developing global partnerships for development (UNDP 2015) address the primary need for short term medical missions in developing countries. In the past three decades, medical mission trips to low and middle income countries have been on the increase (Maki et al*.,* 2008), organized by non-profit organization in partnership with medical establishments (Mulvaney and McBeth 2009; Vastag 2002).

Varying evaluation methods have been used to assess the impact of these missions on morbidity and mortality rates, however there exists paucity of data as to the impact of these missions in sub-Saharan Africa including Nigeria. This is usually due to under reporting of the data obtained from such undertakings (Maki et al*.,* 2008). Varying organizations undertaking these medical missions incorporate health care workers, that is, doctors, pharmacist, nurses, occupational/physical therapists and health educators. These organizations usually have different goals but primarily share a singular desire to make an impact in the communities they visit. These organizations range from faith based organizations, medical associations, alumni associations, as well as individuals living in the diaspora away from their home countries (Yeow et al*.,* 2002; Joffe and Mindell 2002; The Efik National Association USA Inc. 2015).

The motivation of the missions, are usually to overcome barriers to health care delivery in local settings including among others; Finance (payment before treatment is rendered); Accessibility to Healthcare Facility (most healthcare facilities are in urban areas); Transportation (from rural to urban areas); Service Quality (unfriendly staff attitudes to patients, inadequate skills, shortage of essential drugs and decaying infrastructure); Brain Drain; Lack of Equipment; Lack of Electricity and Water Supply. Those mostly and highly affected are the people in the rural areas (Brown et al*.,* 2012; Snyder et al*.,* 2011).

The objective of this project is to assess the medical needs/health status and provide health care to 14 communities in Cross river state Nigeria concretely documenting demographic data and prevalence of medical conditions among the population served.

METHODS

Study setting

The localities to be visited were identified under their respective local government administration. Cross River State is a coastal state in South Eastern Nigeria, named after the Cross River, which passes through the state. Located in the Niger Delta, Cross River State occupies 20,156 km^2. It shares boundaries with Benue State to the north, Enugu and Abia States to the west, to the east by Cameroon Republic and to the south by Akwa-Ibom and the Atlantic Ocean as shown in Figure 1. The medical mission was carried out in the medically underserved towns of Adiabo Ikot Otu, Akamkpa, Boki, Crutech Calabar South, Igonigoni, Ikot Ansa, Ikot Anwatim, Ikot Eneobong, Itigidi, Oban, Nsidung, Ogudu, Okoyong,St. Mary's Efut, Nsidung, and Efut Abua all located within the 5°45′N by 8°30′E geographical location of the Cross River State in southern Nigeria (Cross River State Nigeria/Encyclopaedia Britannica 2015). The major occupations of the locals is farming and so were highly involved in physically demanding occupations (Cross River State Nigeria/Wikipedia 2015; Atu 2013; TWTB/CIA 2016) Approval for the mission work was obtained from the Cross River State Health Research Ethics Committee, Cross River State Ministry of Health.

Volunteers/Local participation

Volunteers were recruited from the local community as well as from the United States under the auspices of Milestone Medical Outreach USA Inc. and the Efik National Association USA Inc. The volunteers (and members of the association) were placed in four categories, Physicians, Pharmacists, Nurses, and Logistics staff. From the nearby cities point of contact individuals were identified through the help of non- governmental agencies. Professionals in different areas of medical specialties such as Surgeons, Cardiologist, Pediatricians, and Ophthalmologists working in the state also volunteered their services where referrals to these specialists were necessary.

Publicity and community awareness

Most of the local communities targeted for the mission do not have mass media in terms of television broadcast or daily newspapers. However, some individuals have cell phones but with very poor reception due to inadequate telecommunication services in the remote areas. As a result of this paid town criers were engaged to make three announcements, the first was made two weeks before the clinic day, the second made a week to clinic day , and the last made early in the morning on the day of the clinic.

Pre-clinic symposium and mission implementation

The Workshop/Symposium was well attended with 250 registered participants. It consisted of healthcare providers, doctors, nurses, students and other healthcare workers. Presentations were made on patient care and follow up. This was to promote new ways of handling the sick patient from the American perspective and to dialogue with local medical professionals in the Cross River State. Hands-on demonstration with multiple manikins and resuscitative equipment including the use of automated electric defibrillator (AED)/cardiopulmonary resuscitation for healthcare providers as per the American heart association 2011 guidelines.

The mission implementation started with the formation of the medical mission team of five as follows; medical director, pharmacist, mission administrator, secretary, and travel coordinator. The clinic days Monday through Fridays ran from 9:00 am to 6 pm daily. The medication and supplies are loaded onto buses that will carry the team and the volunteers to the clinic site. Patients were typically always seated prior to the arrival of the medical team. The volunteers set up tables and chairs for the clinic to begin. The arrangement was set up to facilitate smooth flow of activities without bottle necks in delivering the medical services to the patients.

Data collection and statistical analysis

Semi structured Questionnaires/Encounter forms were administered to all the people who came to the varying centers where the medical mission held in varying communities. These patients were

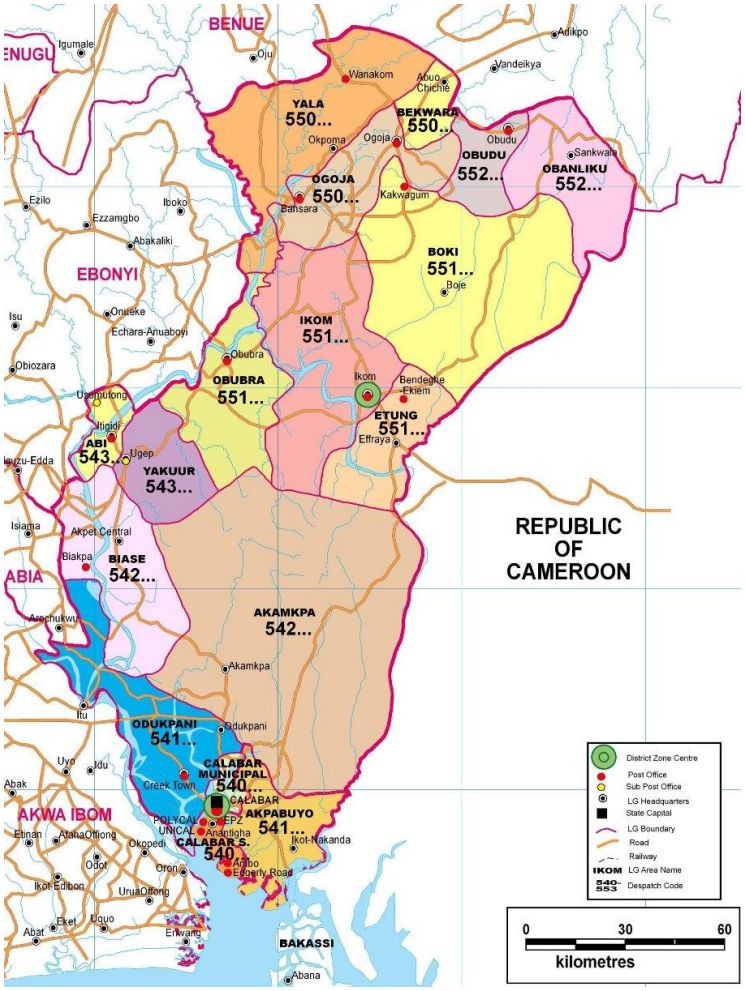

Figure 1. Map of Cross River State showing the varying Local government areas culled from Pinterest maps https://www.pinterest.com

receiving treatment at the varying sites visited, following informed consent from the participants' information regarding demographic and social data, previous, prevailing and current disease conditions were documented. At the start of the medical mission a randomized sample of 20 respondents underwent a test-retest procedure to assess the reliability of questionnaire responses. An 8-day time interval was given for the re-test to ascertain the reliability of the questionnaires. This was deemed adequate before the questionnaires/encounter forms were used to collect data. With the aid of an interpreter verified by another translator, individuals who did not speak English or Efik language were attended to in the dialect they felt most comfortable with. After the data collection, the questionnaires were screened, edited for clarity, completeness and uniformity of the responses, and imputed into Microsoft excel spread sheet 2010 and SPSS version 15.0, SPSS Inc. Chicago Illinois which was utilized to analyze the data.

RESULTS

2855 patients were seen in total in all communities visited with the highest number of patient turn out occurring in the town of Efut Abua. The average age of patients seen generally was 43.72 ± 1.11 as shown in Table 1. Headaches/body pains accounted for 34.57% ± 2.32 of the complaints that were treated by the medical personnel, Hypertension accounted for 34.78% ± 1.92 of complaints. This chronic disease, as shown in Figure 2 was predominant in clients who were in the 41-60 age bracket which also represented the working age group of the community. Age of the patients and their sex were statistically significant determinants of the category of individuals who were likely to attend health medical missions. Males had an odds ratio 2.01 (95% CI 1.96-2.21) that was almost twice that of females (odds ratio 1.43 (95% CI 1.33-1.54). The average age of the patients also was a significant determinant as the age group 41-60 had an odds ratio of 2.78 (95% 2.54 - 3.99) which was much higher than other age groups as shown in Table 2. This age group were most likely to suffer from chronic disease conditions which were also a determinant of the likelihood to attend health medical missions.

Table 1. Demography of patients seen during the medical mission in varying towns in Cross River State, Nigeria.

Towns \ Age range	0-11 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-69 yrs	70 yrs and above	Total number of patients seen
Adiabo Ikot Otu	9	13	45	48	54	40	209
Akamkpa	11	41	31	78	101	38	300
Boki	0	0	0	100	100	0	200
Crutech	3	9	15	53	121	22	223
Igonigoni	0	0	5	16	47	32	196
Ikot Ansa	0	15	36	33	51	11	146
Ikot Awatim	11	2	43	56	95	21	228
Ikot Eneobong	5	16	43	78	99	30	271
Itigidi	0	0	0	44	38	3	85
Oban	21	32	42	44	118	43	300
Nsidung	0	0	22	58	33	19	132
Ogudu	1	3	12	29	54	16	115
Okoyong	3	8	27	42	59	9	148
Efut Abua	16	32	37	68	129	20	302
Total number of patients seen	80	171	358	747	1099	304	2855

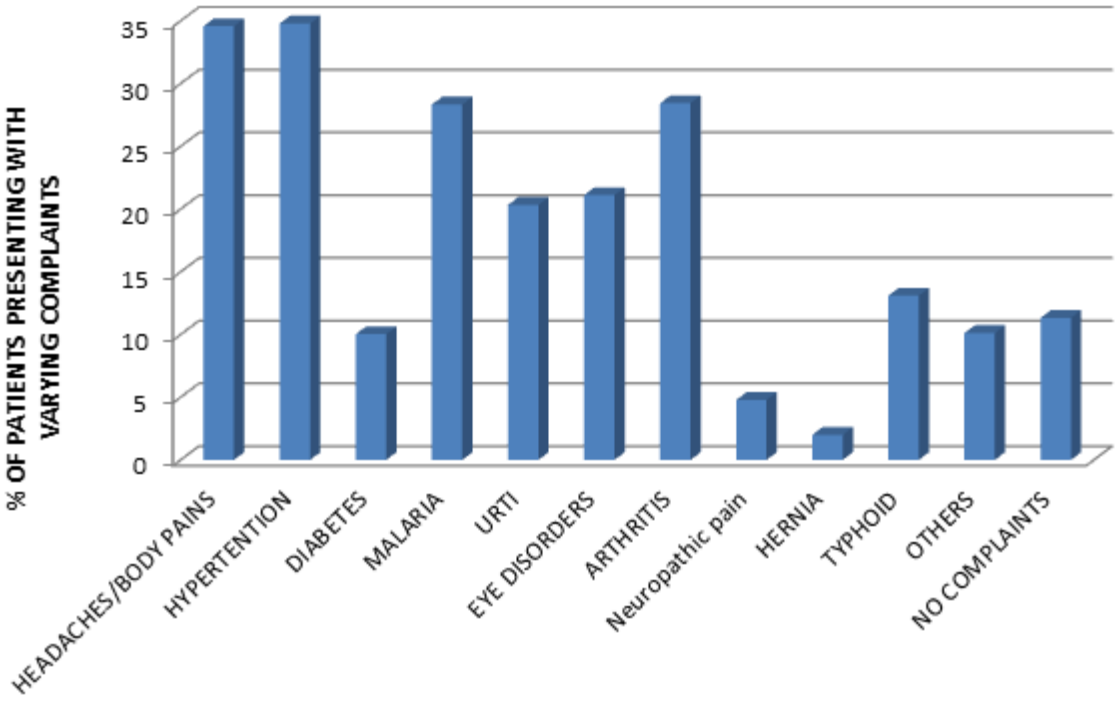

Figure 2. Predominance of varying conditions diagnosed and treated by medical staff during the medical mission in 2015.

Respondents who already suffered from chronic diseases (odds ratio 2.34 (95% CI 2.01-2.49) had an odds ratio twice that of patients that did not currently suffer from a chronic disease as reflected in Table 2. Figure 3 shows the redistribution of the varying complaints presented by patients in some of the towns. The town of Akampka had an incidence of 43.32% for hypertension cases, with Igonigoni showing a relatively healthy population with most complaints falling below the state average indices for hypertensive patients 2.34% ± 0.64; Diabetes 6.34 ± 0.82 as shown in Figure 3. Incidence of Malaria in this region was 30.23%± 0.68 due to the endemic nature of

Table 2. Predictors of the need for medical mission by rural population in varying towns in Cross River State, Nigeria.

Variable	Odds ratio	95% CI	P value
Sex			
Male	2.01	1.96-2.21	0.009
Female	1.43	1.33-1.54	0.05
Age (years)			
0-11	0.23	0.23-0.43	0.01
11-20	0.27	0.23-0.44	0.05
21-30	0.54	0.49-0.89	0.04
31-40	1.32	1.21-1.67	0.02
41-69	2.78	2.54 - 3.99	0.004
> 70	1.99	1.83-2.54	0.006
Presence of chronic disease			
Yes	2.34	2.01-2.49	0.003
No	0.97	0.89-1.54	0.008

P value > 0.05 being significant.

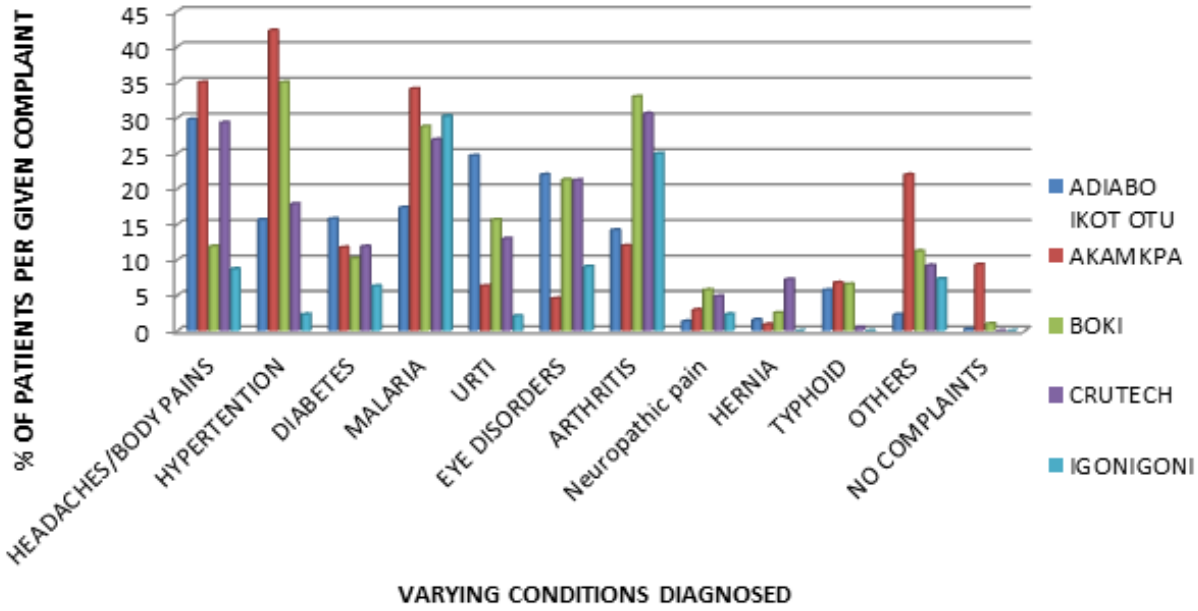

Figure 3. % of patients with varying medical conditions seen during the medical mission at select communities in Cross River State.

this disease in the tropics. The nature of the predominant occupation farming also played a role in another medical complaint arthritis which had an incidence of 28.43% ± 1.32 in the general population of clients at the medical mission examined. Other complaints that were treated included complaints grouped under others in Table 1 include spondylosis, epigastric pain, urinary tract infections, tinea corporis, breast pain, impotence, asthma, benign prostrate hyperplasia, uterine prolapse, hemorrhoids, lipomas, foot fungus, epilepsy/ grand mal seizures, pelvic inflammatory disease, obesity, parkinsonism, diarrhea, peptic ulcer disease, polyuria, polydipsia, anemia, fibroids, gastritis, anal papiloma, genital herpes, vaginitis, endometriosis, pterigium, insomnia, psychosis, arthralgia, helminths infestation, dermatophytosis.

DISCUSSION

The World Fact Book - Central Intelligence Agency states that in Nigeria physicians per 1,000 population is 0.41, which does not bode well for adequate access to health care. In most parts of Nigeria and Africa at large there is a dearth of medical personnel available to see patients. Distances to hospitals and medical centres also pose a deterrent to patient visits (TWTB/CIA 2016). For human capital development to be at its optimal level access to health care must be assured without barriers. The availability of medical personnel in Nigeria is generally skewed, with more personnel's stationed in urban centres while few or no personnel are available in the rural villages which house the majority of the state's population.

The barriers to health care are not only based on the lack of adequate medical personnel, there still exist barriers to health delivery due to lack of adequate finance, quality of service, as well as access to transportation to urban centers (inhibiting access to health facilities). Patients with lack of adequate finance tend to be non-compliant with their medications, due to the cost of these medications (Joffe and Mindell, 2012). It is for this reason that patients presenting with chronic illnesses like diabetes and hypertension are given drug supply for 6 to 12 months (Joffe and Mindell, 2012). These rural populations have to make a choice between feeding their families and purchasing medications with the average median income of $0.5/day (Cross River State Nigeria/Encyclopaedia Britannica, 2015; WHO, 2013).

The short term medical mission organized by Milestone Medical Outreach (MMO) was seen to bridge this gap by bringing health care literally to where the people are. Incidence of Hypertension, Headaches/Body Pains, Arthritis and Malaria were the most predominant of the complaints the patients attending the medical mission presented with in the varying locations as shown in Figure 2. The 2012 World Health Report Country Data Sheet reflects that in countries like Nigeria and Ghana over 85% of their population habit in areas of high malaria transmission (Ibok et al*.,* 2014). This accounts for the high incidence of complaints of malaria (28.32% ± 0.92). The patients were treated with Artemisin combination therapy in line with WHO specification for malaria treatment (WHO, 2013). Referrals were issued to patients with complicated malaria with follow up treatments at the closest teaching hospital. Arthritis was a common complaint in all the communities (28.43% ± 1.32), and this is due to the fact that these communities are farming communities and repetitive motion of planting , harvesting and lifting heavy produce accounting for the rampant complaints of arthritis, body pains.

Hypertension was a very common disease diagnosed during the mission with very high prevalence 34.78% ± 1.92. The high prevalence of the condition is blamed on lifestyle and dietary factors, such as physical inactivity, alcohol and tobacco use, and a diet high in sodium (usually from processed and fatty foods). In addition to provision of medication to patients counselling on lifestyle changes, both physical and dietary was undertaken by the counsellors to ensure that patients were responsible for the management after the medical mission ended (Onyeka and Nwambekwe, 2007; Ilomuanya et al*.,* 2012; Eleazu and Okafor, 2012).

Due to the nature of the ailments that were diagnosed during the medical mission, it was thus essential that the health care providers that were based in these regions were contacted to provide a follow-up care for these patients especially after their medication had run out.

The overall aim of the mission was to developed a system that was sustainable, when health care is sustainable the health of the populace can be guaranteed, thus the importance of creating an intersection between provision of health services, materials and medications free of charge to the populace whilst working with local healthcare volunteers and the patients will be important in fostering sustainability. The predictors of the need for medical mission showed that adults especially male, 41-49 years old with a diagnosis of chronic disease with significant odds ratio benefitted from this health service as they were the population most likely to utilize these missions as their means to access health care and medications for 3 – 6 months (in cases of those suffering from hypertension and diabetes and other chronic diseases). These categories of individuals make up the working class of every community and thus availability to adequate health care and medication is very important. The data obtained from this mission will be utilized to organize more successful missions forming sustainable collaborations with non-governmental organizations and the government so that these missions though short term will form a bridge for the underserved communities. This liaison will ensure that even though these missions are short term, their impact via collaborations with the government will be felt long term thus fostering the attainment of the United Nations Development Program's goals (UNDP, 2015).

Conclusion

The care provided in during the medical missions incorporating both medical practitioners practising in the diaspora and those practising in Nigeria ensured that patient care was optimal in line with internationally recognized procedures across the 14 communities in Cross River State Nigeria. Provision of medications though not sustainable was usefully for immediate care and monitoring of those living with chronic diseases like hypertension and diabetes promoting the United nations development program's sixth and eighth millennium development goal, that is, combating HIV, malaria and

other diseases and developing global partnerships for development.

Conflict of interests

The authors have not declared any conflict of interests.

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