# Assessment of the Spatial Distribution of Healthcare Personnel and Services in Mubi North Local Government Area Adamawa State

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Abstract:- This paper assesses the distribution of healthcare personnel and services in Mubi North Local Government area of Adamawa state with the view to provide more health personnel and better healthcare services delivery. The population and sample of the study was drawn from the estimated population of Mubi North as projected to 313,277 by 2021. The study area was stratified into its eleven political wards; namely Bahuli, Vimtim, Lokuwa, Kolere, Digil, Muchalla, Mijilu, Yelwa, Betso, Mayo Bani and Sabon Layi. Mubi North has a total of 38 healthcare facilities spread all over the wards. Sample size was derived using convenient sampling and simple random technique of 212 respondents from the eleven political wards. The data used were collected from both primary and secondary sources. Primary data were collected by the use of closeended questionnaire to elicit relevant information from the community members where healthcare facilities are situated. Secondary data were collected from existing documents which include analogue maps of the study area; population figures of each ward, names, locations, facility identification code, level, ownership, latitude, longitude and the distribution of the healthcare facilities. The study discovered that there are 11 medical doctors, 1 pharmacist, 20 nurses/midwives, 169 community/environmental/health information and heath extension workers, 15 technicians, 25 laboratory scientists and 109 health attendants in the The data further shows that 272 (52.6%) services area. exist while 245 services expected are not available across the 38 health centres. This implies that 52.6% of the expected services in all the Health Centres are available. The study also depicted that there are 350 health workers to a population of 313,277 people which means 1 health worker is to serve 1731 people while WHO recommends 2.5 health personnel per 1000 people. Based on WHO recommendation 783 health personnel are required to serve 313,277 population hence Mubi North LGA has a shortfall of 433 health personnel i.e. 55% short of standard. Health should ensure availability services providers of demographic and socio-economic data for consultation in view of health personnel and services distribution. More health professionals should be employed to serve in the various primary health care clinic/centres. The condition of service for the health personnel need to be improved so as to motivate them to accept positing to serve in rural areas and provision of selfless services on their duty post.

*Keywords:-* Assessment, Spatial, Distribution, Healthcare, personnel, services.

## I. INTRODUCTION

The persistently low quality and inadequacy of health services provided in public health facilities has made the private sector an unavoidable choice for consumers of health care in Nigeria. Ineffective regulation by the states signifies little control over the clinical activities of private sector providers while the cost of medical services in recent years, has increased faster than the average rate of inflation. This results to the nearcollapse of acute hospital services, characterized by frequent drug shortages, run-down physical structures and the influx of highly skilled but demotivated medical personnel. Meanwhile the country's population has continued to grow at about 3% annually, placing additional burden on existing resources (Nwakeze, and Kandala, 2011).

The human resource aspect comprises of the health professionals including doctors, pharmacists, nurses, midwives, laboratory technologists, administrators, accountants and other sundry workers. All these put together form the structure upon which the healthcare delivery is anchored in any society and the determinants of its infrastructure (Wikipedia 2021).

Access to health services is a complex and multiple approach that can be defined in several ways, however, it is basically referring to geographic availability. Improved information on health access demands at least an understanding of the availability of service providers in relation to populations. Studies showed that Provider-to-population ratios were used to estimate availability in 1970s and earlier (Annis, 1981), then the emergence of Geographic information systems (GIS) in 1980s and 1990s led to the evolution of distance as a metric (parker & Campbell 1998, Noor Zuroval, Hay, & Ochola, 2003) while network analyses, floating catchment area methods and cost-distance analyses are more recent (Oluma 2018, Luis & Cabral 2016, Neutens 2015) By identifying top tier hospitals and lower tier facilities, it is now possible to estimate specific access to emergency care and surgeries1studies on healthcare infrastructure in sub-Saharan Africa and Nigeria in particular has recognized the existence of different types and practices. There are traditional, biomedical/orthodox and synthetic types. However, the focus of this study is on the bio-medical or Western orthodox healthcare with its expansive bureaucratic ethos within the context of hospital structure.

The health sector service in Nigeria according to Adeoye, Yusuf, Balogun, and Carim-Sanni, (2011) is by far one of the most important part of complex economic service sector as a way of contributing to each other. The health service sector contributing to each other as promotion in the country, they include Herbalist who constitute the traditional element in the county's health system, the private practitioner, the Voluntary Agencies, the individuals, the organization, the local authorities, the state and Federal government. Health facilities also through nursing homes to modern high technical and centralized hospital by implementation, be observed that the health sector in Nigeria could simply be described as a mixed enterprise system involving all level of government federal, state, local government, private practitioners as sole proprietors or partners, missionary, individual organization.

The aim of this paper is to assess the distribution of healthcare personnel and services in Mubi North Local Government area with the view to provide more health personnel and better health services delivery. The objectives include; identification of the various healthcare personnel and services in the study area; assess the spatial distribution of the healthcare personnel and services; determine the adequacy of healthcare personnel and services as well as recommending possible remedy to challenges of healthcare personnel and services distribution and delivery in the area.

## II. CONCEPTUAL FRAMEWORK

There are three health structures in Nigeria, which are arranged in a hierarchical order. These are primary, secondary and tertiary health institutions. Primary Health Care (PHC) by policy arrangements is within the purview of Local Government, based on the residual operation of Local Government Authority. Primary health structures are unarguably the first points of call for the sick and injured persons. They undertake mild healthcare cases like treatment for malaria, fever, cold, nutrition disorder, among others. They are especially for milder health problems and health education. They also handle infant, maternal and pregnancy matters. Other health issues in their care are family planning and immunization (Badru, 2003). Finally primary health centres emphasize health care and are involved in record keeping, case reporting and patients referral to higher tiers. Primary health centres are known within the system by content of health centre, maternity home/clinic and dispensaries.

Primary healthcare centres refer complicated cases to secondary general hospitals. According to Medical and Dental Council of Nigeria (MDCN) in Badru (2003), primary health centres are also to undertake such functions as health education, diagnosis and treatment of common ailments, through the use of appropriate technology, infrastructure and essential drug list.

Secondary health centres are involved with not only prevention but also all treatments and management of minimal complex cases. However, the more complicated cases are referred to the tertiary or specialist hospital. General hospitals have provisions for accident and emergency unit and diagnosis unit [including X-ray, scan machines and other pathological services] among other services (Badru, 2003). The status of being a second layer of health institutions imposes certain acceptable standards and level of infrastructure.

According to Medical and Dental Council of Nigeria, there should be a minimum of three doctors who are to provide medical, surgical, pediatric and obstetric care in any general hospital. Furthermore, the general hospital incorporates the facilities of the primary healthcare into its own to play its role as a second tier health institution. As a matter of fact, to be so qualified, it should provide simple surgical services, supported by beds and bedding for minimum of 30 patients.

A tertiary health institution, also called specialist/teaching hospitals, handles complex health problems/cases either as referrals from general hospitals or on direct admission to its own. It has such features as accident and emergency unit, diagnostic unit, wards units, treatment unit and outpatient consultation unit. All these units are to be equipped with the necessary facilities and staffed by skilled personnel. Teaching hospitals also conduct researches and provide outcomes to the government as a way of influencing health policies. This explains why this type of health institution is often a university-based. (Erinosho, 2005; Badru, 2003).

#### III. METHODS AND MATERIALS

This study adopted a descriptive survey design of healthcare personnel and services. The study was carried out in Mubi North Local Government Area (LGA) of Adamawa State, Nigeria.

The population and sample of the study was drawn from the estimated population of Mubi North as projected to 313,277 by 2021. The study area was stratified into its eleven political wards; namely Bahuli, Vimtim. Lokuwa. Kolere, Digil, Muchalla, Mijilu, Yelwa, Betso, Mayo Bani and Sabon Layi. The area has a total of 38 healthcare facilities in Mubi North. Sample size was derived using convenient sampling and simple random technique of 212 respondents from the eleven political wards.

The data used were collected from both primary and secondary sources. Primary data were collected by the use of close-ended questionnaire to elicit relevant information from the community members where healthcare facilities are situated. Secondary data were collected from existing documents which include analogue maps of the study area; population figures of each ward, names, locations, facility identification code, level, ownership, latitude, longitude and the distribution of the healthcare facilities.

The data were analyzed and presented by the use of simple frequency tables and charts to explain the distribution of healthcare personnel and services in the area. The sample size consist of the thirty-eight (38) healthcare facilities located in the 11 wards of Mubi North LGA.



Fig. 1: Existing Healthcare Facilities in the study area Source: Google.com, 2021.

## IV. RESULTS AND DISCUSSION

The information obtained for the study revealed the following results as presented and discussed.



Fig. 2: Gender

Fig. 2 shows that 75.5% of the respondents are male while 24.5 are female. Gender has been given adequate consideration in assessing the facilities.



Fig. 3: Number of Persons per Household

From Fig.3 the respondent representing the household reported that 42.9% of the people stay 4-6 persons per household, 27.8% stay 1-3 persons, 16.0% stay 7-9 people while 13.2% stay 9 and above persons per household. This indicates that there is little or congestion of people in households.



Fig. 4: Occupational Structure

Fig. 4 reveals the respondent's occupational structure on which civil servant is 45.3%, Business 20.3%, farmers 17.5% while others is 16.9%. Majority of the respondents are civil servants coupled with the fact that most (17) of the health facilities are located within LGA headquarters and around three (3) tertiary institutions (Federal Polytechnic, Adamawa State University and College of Health Technology).



Fig. 5: Educational Structure

Fig.5 reveals that most of the respondents have acquired basic education as 42.9% attended post primary, 27.8% of them did not go to school, and 16.0% attended primary school while those who attended tertiary institution are 13.2%.



Fig.6 presents that 69.3% of the respondents are married, 21.2% are single, 7.5% are widows while are 1.9% are divorcee. This implies that most of the respondents have close concern with health issues as it may directly affect family life and living condition.

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Fig. 7: Ownership of Healthcare Facilities

Fig. 7 reveals that 75.7% of the Health Infrastructure are owned by government and 24.3% are owned by public individuals. This implies that most available health facilities in the study area are owned by public/government while fewer numbers belong to private individuals.

Name of Ward	Population	N0. of Health Facilities	Doctors	Pharmacists	Nurses & midwives	Community/ Environmental health Workers	Technicians	Laboratory Scientists	Health Attendance/ others	Services Available
Bahuli	27,384	3	-	-	-	11	-	-	3	24Y 18N
Vimtim	23,389	3	-	-	-	12	1	1	9	26Y 15N
Lokuwa	32,591	10	9	1	15	58	28	20	41	80Y 61N
Kolere	25,649	1	-	-	-	6	-	-	4	08Y 06N
Digil	28,226	3	-	-	-	12	-	1	3	15Y 13N
Muchalla	30,649	3	-	-	-	8	1	-	7	25Y 17N
Mijilu	25,100	3	-	-	-	4	1	-	4	13Y 29N
Yelwa	29,471	4	2		3	31	11	3	17	31Y 25N
Betso	31,043	3	-		2	8	-	-	7	19Y 23N
Mayo Bani	25,418	3	-	-	-	9		-	10	12Y 29N
Sabon Layi	34,357	2	-	-	-	10	-	-	4	19Y 9N
Total	313,277	38	11	1	20	169	15	25	109	272Y 245N

Table 1: Distribution of Health Personnel and Services per Ward Key: Y=Yes. N=No.

Table 1 shows (see detail on appendix I) the distribution of health care personnel and services available in each of the political ward. On the table there are 11 medical doctors, 1 pharmacist, 20 nurses/midwives, 169 community/environmental/health information and heath extension workers, 15 technicians, 25 laboratory scientists and 109 health attendants. The data further shows that 272 (52.6) services exist while 245 services are available across the 38 health centres. This implies that 52.6% of the expected services in all the HC are available. From the table 7 there are 350 health workers to a population of 313, 277 people which means 1

health worker is to serve 1731 people while WHO recommends 2.5 health personnel per 1000 people. Based on WHO recommendation 783 health personnel are required to serve 313,277 population hence Mubi North LGA has a shortfall of 433 health personnel i.e. 55% short of standard.

#### A. Personnel Status in the Health Facilities

Thirty eight (38) health facilities are operational from Mondays to Sundays 24 hours daily, thirty six (36) of them are registered and licensed while two (2) Bil Med Clinic and Ndotti Dispensary) are not licensed at the time of data collection.

Shown on the appendix I are all the names of health facilities, 16 categories of health personnel which include; Doctors, Pharmacist, Pharmacy technician, Dentist, Dental technician, Nurses, Midwives, Nurses/midwives, Laboratory technician, Laboratory scientist, Health record/HIM officers, Community health officers, Community health extension workers. Junior community health extension workers. Environmental health officers, Health attendants/assistants, and 14 number of health services (Beds, Outpatient, In patient, Onsite laboratory, Onsite imaging, Onsite pharmacy, Mortuary, Ambulance, Medical, Surgical, Obstetrics/gynecology, Pediatrics, Dental, Clinical) exist in presents available health personnel and services in each of the thirty eight (38) health centres as reported below:

- Bahuli Primary Health Centre: Has 1 Health Information Management (HIM) Officer, 2 community health extension workers, 2 junior community health extension workers, 1 environmental health officer and 1 health attendant/assistant. With a service record of 9 beds, 8 available services and 5 expected but unavailable services.
- Burha vango Primary Health Clinic: Has 2 community health extension workers, 2 junior community health extension workers, 2 environmental health officers and 1 health attendants/assistants. With a service record of 8 beds, 7 available services and 6 not available.
- Maduguva Primary Health Clinic: Has 1 community health extension worker, 1 junior community health extension worker and 1 health attendants/assistant. With a service record of 5 beds, 5 available services and 7 not available.
- Duda Primary Health Clinic: Has 1 community health extension worker, 1 junior community health extension worker, and 1 health attendants/assistants. With a service record of 12 beds, 8 available services and 5 unavailable.
- Ribawo Primary Health Centre: Has 2 community health extension workers, 1 junior community health extension worker, and lastly 1 health attendant/assistant. With a service record of 3 beds, 8 available services, and 5 absent.
- Vimtim Primary Health Centre: Has 1 dental technician, 1 laboratory technician, 2 community health extension workers, 3 junior community health extension workers, 2 environmental health officers, and lastly 7 health attendants/assistants. With a service record of 11 beds, 7 available services and 6 not available.
- ADSU Health Clinic: Has 1 doctor, 4 pharmacy technicians, 3 nurses, 2 nurses/midwives, 1 laboratory scientist, 2 health record/HIM officers, 1 community health officers, and lastly 3 health attendant/assistants. With a service record of 14 beds, 4 available services and 9 absent.
- Bafa Specialist Clinic: Has 2 doctors, 2 pharmacy technician, 1 dental technician, 1 nurse, 1 midwives, 1 nurses/midwives, 2 laboratory technician, 4 health record/HIM officers, 2 community health extension workers, 1 junior community health extension workers, 1 environmental health officers, and lastly 3 health attendants/assistants. With a service record of 6 beds, 10 available services and 3 not available.

- Bil Med Clinic: Has 2 doctors, 2 pharmacy technicians, 3 nurses, 2 nurses/midwives, 2 laboratory technicians, 1 community health officers, 2 community health extension workers, 1 junior community health extension workers, 2 environmental health officers, and lastly 4 health attendants/assistants. With a service record of 10 beds, 9 available services, and 4 not available.
- College of Health Tech. Health Clinic: Has 1 pharmacy technician, 1 laboratory technician, 1 laboratory scientist, 1 health record/HIM officer, 2 community health officers, and lastly 4 community health extension workers. With a service record of 7 beds, 6 available services and 7 not available.
- Federal Polytechnic Mubi Health Clinic: Has 2 doctors, 1 pharmacist, 2 pharmacy technician, 1 dental technician, 10 nurses, 5 laboratory technicians, 2 laboratory scientist, 1 health record/HIM officers, 2 community health officers, 10 community health extension workers, 3 environmental health officers, and lastly 12 health attendants/assistants. With a service record of 12 beds, 10 available services and 3 unavailable services.
- Lokuwa Primary Health Centre: Has 1 midwife, 1 laboratory technician, 7 community health extension workers, 4 junior community health extension workers and 6 health attendants/assistants. With a service record of 16 beds, 8 available services and 5 not there.
- New Life Health Clinic: Has 2 doctors, 4 pharmacy technician, 4 laboratory technician, 1 laboratory scientist, and lastly 4 health attendants/assistants. With a service record of 24 beds, 9 available services, and 4 not available.
- Ramadan Dispensary: Has 1 community health extension workers, 1 junior community health extension workers, and lastly 1 health attendants/assistants. With a service record of 3 beds, 4 available services, and 9 not available.
- Ubandoma Dispensary: Has 1 community health extension workers, and 2 health attendants/assistants. With a service record of 1 bed, 2 services available and 11 no available.
- Wuro Gude Primary Health Centre: Has 4 community health extension workers, 2 junior community health extension workers, and lastly 4 health attendants/assistants. With a service record of 11 beds, 8 services available and 5 not available.
- Kolere Primary Health Centre: Has 4 community health extension workers, 2 junior community health extension workers, and lastly 4 health attendant/assistants. With a service record of 16 beds, 7 services available and 6 not available.
- Didif Primary Health Clinic: Has 2 community health extension workers, 1 junior community health extension worker, 2 environmental health officers, and lastly 2 health attendant/assistants. With a service record of 11 beds, 6 services available and 7 uno available.
- Digil Primary Health Centre: Has 1 laboratory technician, 3 community health extension workers, 4 junior community health extension workers, and lastly 1 health

attendants/assistants. With a service record of 13 beds, 7 services available and 6 not available.

- Yaza Health Clinic: no record
- Bagira Health Clinic: Has 1 community health extension worker. 9 beds, 6 services available and 7 not available.
- Jilvu Primary Health Clinic: Has 1 community health extension worker. With a service record of 4 beds, 5 services available and 8 not available.
- Muchalla Federal Model Health Centre: Has 1 pharmacy technician, 3 community health extension workers, 2 junior community health extension workers, 1 environmental health officer, and 7 health attendants/assistants. With a service record of 18 beds, 11 available services, and 2 not available.
- Kiriya Health Clinic: Has 1 community health extension worker and 1 health attendants/assistants. With a service record of 8 beds, 2 available services, and 11 not available.
- Mijilu Primary Health Centre: Has 1 community health extension worker. With a service record of 6 beds, 4 available services, and 9 not available.
- Miza Primary Health Centre: Has 1 pharmacy technician, 1 community health extension worker, 1 junior community health extension worker, and lastly 3 health attendants/assistants. With a service record of 4 beds, 4 available services and 9 not available.
- Basira Health Clinic: Has 2 doctors, 1 pharmacy technician, 2 nurses, 1 midwife, 2 laboratory technicians, 1 health record/HIM officers, 3 community health extension workers, 2 junior community health extension workers, 3 environmental health officers, and lastly 7 health attendants/assistants. With a service record of 30 beds, 9 available services and 4 not there.
- Kochifa Health Centre: Has 1 laboratory technician, 7 community health extension workers, 1 junior health extension workers, and lastly 3 health attendants/assistants. With a service record of 13 beds, 9 available services, and 4 unavailable services.
- Ndotti Dispensary: Has 1 community health extension worker, and 3 health attendants/assistants. With a service record of 3 beds, 2 services available and 11 not available.
- New Market Health Centre: Has 3 community health extension workers, 1 junior community health extension worker, and lastly 4 health attendants/assistants. With a service record of 8 beds, 7 available services, and 6 not available.
- Betso Child Health Cent re: Has 2 midwives, 3 community health extension workers, 1 junior health extension worker, and lastly 5 health attendants/assistants. With a service record of 10 beds, 4 available services, and 9 not available.
- Kwa Primary Health Clinic: Has 1 community health extension worker. With a service record of 2 beds, 5 available services, and 8 not available.
- Suzuwa Primary Health Centre: Has 2 community health extension workers, 1 junior community health extension workers, and lastly 2 health attendants/assistants. With a

service record of 4 beds, 7 available services, and 6 not available.

- Kotirde Primary Health Clinic: Has 1 community health extension worker, and 2 health attendants/assistants. With a service record of 3 beds, 1 available service, and 12 not available.
- Mayo Bani Primary Health Centre: Has 3 community health extension workers, 1 junior community health extension worker, 1 environmental health officers, and lastly 2 health attendants/assistants. With a service record of 17 beds, 4 available services, and 9 not available.
- Muva Primary Health Centre: Has 2 community health extension workers, 1 environmental health officer, and lastly 6 health attendants/assistants. With a service record of 14 beds, 4 available services, and 9 not available.
- Sabon Layi Health Centre: Has 5 community health extension workers, 2 junior community health extension workers, and 2 health attendants/assistants. With a service record of 14 beds, 9 available services, and 4 not available.
- Wuro Alkali Primary Health Centre: Has 6 community health extension workers, 2 junior community health extension workers, and 2 health attendants/assistants. With a service record of 6 beds, 8 available services and 5 not available.

## B. Services Status in the Health Facilities

Out of the thirty eight (38) health care facilities only 30 provide the following services as categorized into Medical services, Surgical, Obstetrics and Gynecology, Pediatrics, Dental, with some specific clinical services.

There are eight (8) Medical services available in the thirty (30) health care facilities namely infectious disease which are available in twenty four (24) health care facilities, eighteen (18) with cardiology, sixteen (16) with gastroenterology, fifteen (15) dermatology, 14 with hematology, with 2 with psychiatry/behavioral medicine, one with pulmonology and 1 health centre provides geriatric service showing a total of ninety one (91) medical services available in the various facilities. Surgical services available in the thirty (30) health care facilities include four (4) Anesthesia services available in seven (7) health care facilities, four (4) general surgery, two (2) pediatric surgery and one (1) pathology which sums up to 14 surgical services.

Obstetrics and gynecology services available in the health care facilities; twenty six (26) obstetrics and gynecology services and eleven (11) fertility/assisted reproductive services. Pediatric services available are child psychiatry/behavioral medicine existing in one (1) centre, in four (4) pulmonology, five gastroenterology and two (2) neonatology pediatric services. Nine centres provide periodontics Dental services.

Clinical services of different types are available in the thirty (30) health care facilities; among the clinical services include; antenatal care, immunization, HIV/AIDS services,

non-communicable diseases, family planning, intensive care services, communicable disease, hepatitis, child survival, accident and emergency, nutrition health education and community mobilization, maternal and newborn care.

#### V. CONCLUSION

Health care delivery in Mubi North LGA lack adequate personnel and services. There are only 8 medical doctors serving the population. Based on WHO recommendation 783 health personnel are required to serve 313,277 population hence Mubi North LGA has a shortfall of 433 health personnel i.e. 55% short of standard. The distribution of Health care personnel and services in the 38 health centres has not gotten needed attention despite high demand by the people and huge budget allocated by the three tiers of government on the sector. This can however, be attributed to ineffective planning and poor implementation of health policies and programmes in the country. Enough and adequate distribution of health care personnel is paramount to good healthcare services delivery. The existing gap need to be filled to secure tangible readiness to face local and global healthcare challenges like Ebola and COVID-19.

#### RECOMMENDATIONS

Based on the research findings the following recommendation are made.

- Health services providers should ensure availability of demographic and socio-economic data for consultation in view of health personnel and services distribution.
- More qualified health personnel should be employed to serve in the various primary health care centres especially doctors, nurses/midwives, community health worker and scientists among others.
- The condition of service for the health personnel should also be improved so as to motivate them to accept positing rural areas and provision of selfless services on their duty post.
- Adequate medical equipment and drugs should be provided in the health centres based on their strata of services.
- Regular training/workshops should be organized for health workers to update them on current health situation and challenges for the way forward.
- Community participation should be considered very important in the implementation of health care policies and project in their communities
- The health sector should advocate for increase in budgetary allocation.

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## Appendix I: Existing Personnel and Services in Each Healthcare Centre

	F	Α	С	Ι	L	Ι	Т	Y					Ν	Α	Μ	E			
Personnel	Bahuli	urha vango	naduguva	Besto HC	Kwa PHC	uzuwa PHC	lif PH Clinic	Digil PHC	aza H Clinic	olere PHC	su H CClinic	a H CCClinic	Med H Clinic	llege of HTec	PM H Clinic	okuwa PHC	v Life Health	madan Dispn	ndoma Dispn
		В	-		, ,	S	Dio		Y	X	ΡQ	Baf	Bil	C0]	FI	Ľ	Nev	Rai	Uba
Doctors	0	0	0	0	0	0	0	0		0	1	2	2	0	2	0	2	0	0
Pharmacist	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0
Pharmacy Tech.	0	0	0	0	0	0	0	0		0	4	2	2	1	2	0	4	0	0
Dentist	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
Dental Tech.	0	0	0	0	0	0	0	0		0	0	1	0	0	1	0	0	0	0
Nurses	0	0	0	0	0	0	0	0		0	3	1	3	0	10	0	0	0	0
Midwives	0	0	0	2	0	0	0	0		0	0	1	0	0	0	1	0	0	0
Nurses/midwives	0	0	0	0	0	0	0	0		0	2	1	2	0	0	0	0	0	0
Lab. Tech.	0	0	0	0	0	0	0	1		0	0	2	2	1	5	1	4	0	0
Lab. scientist	0	0	0	0	0	0	0	0		0	1	0	0	1	2	0	1	0	0
HIM officers	1	0	0	0	0	0	0	0		0	2	4	0	1	1	0	0	0	0
Community health officers	0	0	0	0	0	0	0	0		0	1	0	1	2	2	0	0	0	0
CHE workers	2	2	1	3	1	2	2	3		4	0	2	2	4	10	7	0	1	1
JCHE workers	2	0	1	1	0	1	1	4		2	0	1	1	4	10	4	0	1	0
Environmental HO	1	2	0	0	0	0	2	0		0	0	1	2	0	3	0	0	0	0
Attendants/ Assistants	1	1	1	5	0	2	2	1		4	3	3	4	2	12	6	4	1	2
Services																			
Beds	9	8	5	10	2	4	11	13		16	14	6	10	7	12	16	24	3	1
Out patient	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
In patient	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Onsite Lab.	Y	Y	Ν	Y	Ν	Y	Ν	Y		Y	Y	Y	Y	Y	Y	Y	Y	Ν	Ν
Onsite imaging	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν		Ν	Ν	Y	Ν	Ν	Y	Ν	Y	Ν	Ν
Onsite pharmacy	Y	Y	Ν	Y	Ν	Y	Ν	Y		Y	Y	Y	Y	Ν	Y	Y	Y	Ν	Ν
Mortuary	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν		Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Ambulance	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν		Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Medical	Y	Y	Y	Ν	Y	Y	Y	Y		Y	Ν	Y	Y	Y	Y	Y	Y	Y	Ν
Surgical	Y	Ν	Y	Ν	Ν	Ν	Ν	Ν		Ν	Ν	Y	Y	Ν	Ν	Y	Y	Ν	Ν
Obstetrics/gynecology	Y	Y	Y	N	Y	Y	Y	Y		Y	N	Y	Y	Y	Y	Y	Y	N	N
Pediatrics	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν		Ν	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν
Dental	Ν	Ν	Ν	Ν	Ν	Ν	Y	Ν		Ν	Ν	Y	Y	Ν	Y	Ν	Ν	Ν	Ν
Clinical	Y	Y	Y	Ν	Y	Y	Y	Y		Y	Ν	Y	Y	Y	Y	Y	Y	Y	Y

F A C I L I T Y

N A M E

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Appendix I: Cont. Personnel/

Services																			
	Wuro Gude PHC	Kotirde PH Clinic	Mayo bani PHC	Muva PHC	Kirya Health Centre	Mijilu pry HC	Miza Pry HC	Bagira Health Clinic	Jilvu Pry HC	Muchalla Fed Model u.C.	Sabon Layi HC	Wuro Alkali Pry HC	Duda Pry Health Clinic	Ribawo Pry	Vimtim pry HC	Basira Health Clinic	Kochifa HC	Ndotti Dispensary	New Market HC
Doctors	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Pharmacist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pharmacy technician	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0
Dentist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dental technician	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Nurses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Midwives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Nurses/midwives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab. Technician	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0
Lab. Scientist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HIM officers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Community health officers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHE workers	4	1	3	2	1	1	1	1	1	3	5	6	1	2	2	3	7	1	3
JCHE workers	2	0	1	0	0	0	1	0	0	2	2	2	1	1	3	2	1	0	1
Environmental health officers	0	0	1	1	0	0	0	0	0	1	0	0	0	0	2	3	0	0	0
Health attendants/ assistants	4	2	2	6	1	0	3	0	0	7	2	2	1	1	7	7	3	3	4
Beds	11	ю	17	14	8	9	4	6	4	18	14	9	12	З	11	30	13	3	8
Out patient	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
In patient	Y	Ν	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Ν	Y
Onsite Lab.	Y	Ν	Y	Y	Ν	Y	Y	Ν	Ν	Y	Y	Y	Y	Y	Y	Y	Y	Ν	Y
Onsite imaging	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Onsite pharmacy	Y	Ν	Y	Y	Ν	Y	Y	Y	Ν	Y	Y	Y	Y	Y	Y	Y	Y	Ν	Y
Mortuary	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Ambulance	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Medical	Y	Ν	Ν	Ν	Ν	Ν	Ν	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Ν	Y
Surgical	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Y	Ν	Ν	Y	Y	Ν	Y	Ν	Ν	Ν
Obstetrics/ gynecology	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Pediatrics	Y	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Ν	Y	Y	Ν	Ν	Ν	Ν	Y	Y	Ν	Ν

Source: Fed Ministry of health webpage, 2020.

Ν

Y

Y

Y

Y

Y

Y

Y

Ν

Y

Ν

Y

N

Y

Ν

Y

Y

Y

Ν

Y

Ν

Y

Key: Y= yes, N = No

Ν

Y

Dental

Clinical

N

Y

Ν

Ν

Ν

Ν

Ν

Ν

Ν

Ν

Ν

Ν

Ν

Ν