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Assessment of Primary Healthcare Facilities Coverage in Rural Population of Sharg-Elnil Locality - Khartoum State from 2018 to 2020

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Abstract

Background: Sudan's health system is based on the district health system approach, which emphasizes the principles of Primary HealthCare (PHC). Nevertheless, the decentralization of the public sector resulted in more deterioration of the PHC system particularly in rural and peripheral areas due to lack of financial resources and managerial capacities.
Objectives: The study aimed to assess the primary Healthcare facilities coverage for rural population in Sharg Elnil locality from 2018 to 2020. The study was conducted in the rural areas of Sharg Elnil locality.
Materials and methods: Analytical, prospective Facility based study. A number of (37) Health facility was selected for the study. The study was conducted by using questionnaires. Data was computed and analyzed using SPSS program version 25.0. Descriptive and inferential statistic was used.
Results: The majority of health facilities were compliance with classification of ministry of health standards (94.6%). The number of villages that health facility covered in rural hospital was (10.3±1.4), (4.9±.5) health centers and (3.9±.6) in dispensaries. The vast majority of health facilities 83.8% have a mean of transportation to access health facility. Nearly half of the health facilities were distance less than 2 km of health area 48.6%. The vast majority of health facilities 83.8% have a mean of transportation to access health facility. The majority of health services available in health facilities were vaccination service (100%), nutrition services (94.6%), reproductive health services (70.3%), health education services (64.9%), disease surveillance system (64.9%), Essential, Community mobilization service (51.4%) while the health services available by less than 50% were drugs list in the health facility (45.9%), Health insurance coverage (27%) Free drugs for children less than 5 yrs (16.2%), the lab services (21.6%), referred system 24.3%, ambulance services 24.3%, blood bank services (13.5%), dentist services 5.4%, x-rays services 8.1% and other services 2.7%. Only 10.8% of the existence equipment in health facilities was adequate. The most basic problems and challenges found in health facilities were unsuitability of work environment 51.4%, deficit in medical devices 35.1%, deployment of contractors and health promoters 32.4%, no ambulance during summer days where scorpion and snake bites is more 32.4%, no treatment available during rainy season days 29.7%, un-continuity of electricity and water 21.6%, no health insurance 16.2% and building maintenance 5.4%.
Conclusion: The results show that, although the average PHC performance is almost appropriate and some of the surveyed health facilities have very high performances, some low-income and deprived

areas experience substantial challenges. It is recommended that PHC plans should be formulated across the country and then implemented according to the local health needs and priorities.

Keywords

Primary healthcare, Rural, Sharg-Elnil.

INTRODUCTION

Access to healthcare services is very critical to health, yet rural residents face a variety of access barriers. *A 1993 National Academies report, Access to Healthcare in America*, defined access as the timely use of personal health services to achieve the best possible health outcomes.

Ideally, residents should be able to conveniently and confidently access services such as primary care, dental care, behavioral health, emergency care, and public health services (Barr and Baltimore, 2008). According to *Healthy People 2020*, access to healthcare is important for:

- Overall physical, social, and mental health status
- Prevention of disease
- Detection and treatment of illnesses
- Quality of life
- Preventable death
- Life expectancy

Rural residents often experience barriers to healthcare that limit their ability to obtain the care they need. In order for rural residents to have sufficient healthcare access, necessary and appropriate services must be available and obtainable in a timely manner. For instance, to have reasonable healthcare access, a rural resident must also have:

- Financial means to pay for services, such as health insurance coverage that is accepted by the provider.
- Means to reach and use services, such as transportation to services which may be located at a distance.
- Confidence in their ability to communicate with healthcare providers, particularly if the patient has poor health literacy.
- Confidence in their ability to use services without compromising privacy.
- Confidence in the quality of the care that they will receive (Barr and Baltimore, 2008).

The United Nations Sustainable Development Goals that all UN Member States have agreed to try to achieve Universal Health Coverage by 2030. This includes financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all. Together with the World Bank, WHO has developed a framework to track the progress of UHC by monitoring both categories, taking into account both the overall level and the extent to which UHC is equitable, offering service coverage and financial protection to all people within a population, such as the poor or those living in remote rural areas. Universal health coverage (UHC) means that all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship.

UHC is firmly based on the WHO constitution of 1948 declaring health a fundamental human right and on the Health for All agenda set by the Alma Ata declaration in 1978. UHC cuts across all of the health-related Sustainable Development Goals (SDGs) 2030, and brings hope of better health and protection for the world's poorest (World Health Organization, 2017). WHO uses 16 essential health services in 4 categories as indicators of the level and equity of Health coverage including Reproductive, maternal, newborn and children Health (World Health Organization, 2017). This study research will describe why

access to rural primary healthcare services is important to the national experience and will explore the rich academic literature regarding access and coverage of healthcare services. The study will investigate the barriers and also will help to identify and addresses such diverse areas in healthcare access, quality, costs, legislation, regulations, health promotion, and disease prevention in relation to rural and underserved populations in Sharg Elnil locality, then propose a new synthesis of access characteristics suitable for ensuring that new policies designed to improve access consider the complex concept of access in rural areas.

Also, the research will outline how current and future healthcare system changes will influence societal consideration of access as investments to improve rural health coverage. Small set of tracer indicators is identified to assess overall progress of Health coverage, the selection of indicators done to the extent that they are possible, based on objective considerations, address a breadth of health interventions to capture the essence of the goal of Primary health coverage. Tracer indicators are likely to be added or changed according to the socioeconomic and epidemiological situation changes. Commonly used indicators include immunization coverage, pregnancy and delivery care and coverage families planning services, Nutrition as well as coverage of interventions on behavioral risk factors. Indicators on safe water and sanitation will be also included. This study aimed to assess the primary Healthcare coverage for rural population in Sharg Elnil locality from 2018 to 2020.

MATERIALS AND METHODS

Study design

Analytical, prospective Facility and community-based study.

Study area

The study was conducted in the rural areas of Sharg Elnil locality. However, Sharg Elnil locality located in Khartoum state, it has an area of 8,188 km^2. It consists of eight localities and 8 administrative units, 4 of them are rural (Wad Abu Salih, Abudilage, Umdwaan ban and Wadi Soba AU. total population are 1,071,222 and 37% are rural community in 189 rural villages. The health services provided in rural areas by 3 hospitals, 24 Government Health Centers, 10 Organization Health Centers, 21 HC, 22 Government BHUS and 13 BHU.

Study population

In-charge Health workers of the selected Health facilities.

Sample size

The sampling of (59) Health facilities was (37) Health facility selected according to the following formula;

$$n=N/1+ (N)\ e^2$$

Whereas:

n=desired sample size
N =Population Size
e =Margin of error
*n=38 =but intentionally reduced to **37** health facility for the purpose of the cluster sampling.*

Sampling unit

- Head of Household.
- Mothers/ caretakers of children aged 12 – 23 months.
- In-charge Health workers of the selected Health facilities.

Sampling technique

- Simple random Sample to select Health facilities.
- Cluster sampling.

Inclusions criteria

- All selected mothers/ caretakers of children aged 12 – 23 months.
- All working Primary Healthcare sites.
- All health worker who are the first responsible of Health sites in the study area.

Exclusions criteria

- Secondary and Tertiary Health facilities.
- Health facilities not working.
- Outreaches and mobile sites.

Study variables

The variables under study were:

A. ***Background variables***

- age, sex, area.

B. ***Reproductive, maternal, newborn and child health***

- family planning
- antenatal and delivery care
- full child immunization
- Health-seeking behavior for child illness.

C. ***Infectious diseases***

- coverage of insecticide-treated bed nets for malaria prevention
- Adequate sanitation.

D. ***Service capacity and access***

- basic hospital access
- health worker density
- access to essential medicines

DATA MANAGEMENT AND ANALYSIS

Data collection technique

The study was conducted by using questionnaires, checklists, observation and Interviews with structured close-ended questionnaire.

Data collection tool

Structured direct interviews questions using MICS tool.

- Pre testing:

The tool was developed and tested by UNICEF.

Data collector

- Fieldwork.
- Teams.

Data cleaning

First step: Data collected and checked at the facility to ensure no missing data or incorrect data had been collected.
Second step: Verification of all collected data.

Data analysis

- Data was computed and analyzed using SPSS program version 25.0. The descriptive and inferential statistic was used.

Ethical Clearance

- ✓ Informed consent was taken from the interviewers.
- ✓ The questionnaires were filled in each household after the acceptance of the women age 15-49 and caretaker of the child under the age of one year, are taken.
- ✓ No harm for the people is expected because no intervention or any other procedure was done, it is only data collection.

Conflict of interest and funding

The researcher has not received any funding or benefits from industry or elsewhere to conduct this study.

Limitations

- Cultural barrier of communicating with women in data collection process at households.
- Low Community acceptance or cooperation.
- Financial resources.

RESULTS

Figure 1 below indicates the studied health facilities. However, the sample of health facilities includes 3 rural hospital (8.1%), 21 health centers (56.8%) and 13 (35.1%) dispensaries.

Figure 2 shows that the vast majority of health facilities were compliance with classification of ministry of health standards (94.6%).

Table 1 explained that the mean total distribution of population targets that health facility covered was (16241.1±3782.1) inhabitants while many of villages that health facility covered was (5.0±.5) village. However, the mean of rural hospital population covered was (14309.3±1443.4), (6230.0±1120.0) for health centers and (32858.6±9061.1) for dispensaries. The number of villages that health facility covered in rural hospital was (10.3±1.4), (4.9±.5) health centers and (3.9±.6) in dispensaries. There were no significance differences between population target for health facility, number of villages that health facility covered and the type of health facility, $p<0.05$.

The vast majority of health facilities 83.8% have a mean of transportation to access health facility, figure 3.

Figure 4 indicates that nearly half of the health facilities were distance less than 2 km of health area's 48.6% while 32.4% distance about 3-5 km and only 18.9% their distance was more than five km.

The vast majority of health facilities 83.8% have a mean of transportation to access health facility, figure 4.

Table1 shows that there was significance difference in the mean distribution of number of health personnel in the health facility, $p < 0.05$ except for X-ray technician ($p=.160$). The high mean was medical assistance (.8378), lab technicians (.7568), nurse (.4054), GP (.4865) and pharmacists (.3784).

The majority of health services available in health facilities were vaccination service (100%), nutrition services (94.6%), reproductive health services (70.3%), health education services (64.9%), disease surveillance system (64.9%), Essential, Community mobilization service (51.4%) while the health services available by less than 50% were drugs list in the health facility (45.9%), Health insurance coverage (27%) Free drugs for children less than 5 yrs (16.2%), the lab services (21.6%), referred system 24.3%, ambulance services 24.3%, blood bank services (13.5%), dentist services 5.4%, x-rays services 8.1% and other services 2.7% as shown in table 2.

Only 10.8% of the existence equipment in health facilities was adequate, figure 5.

The most basic problems and challenges found in health facilities were unsuitability of work environment 51.4%, deficit in medical devices 35.1%, deployment of contractors and health promoters 32.4%, no ambulance during summer days where scorpion and snake bites is more 32.4%, no treatment available during rainy season days 29.7%, un-continuity of electricity and water 21.6%, no health insurance 16.2% and building maintenance 5.4% as stated in figure 6.

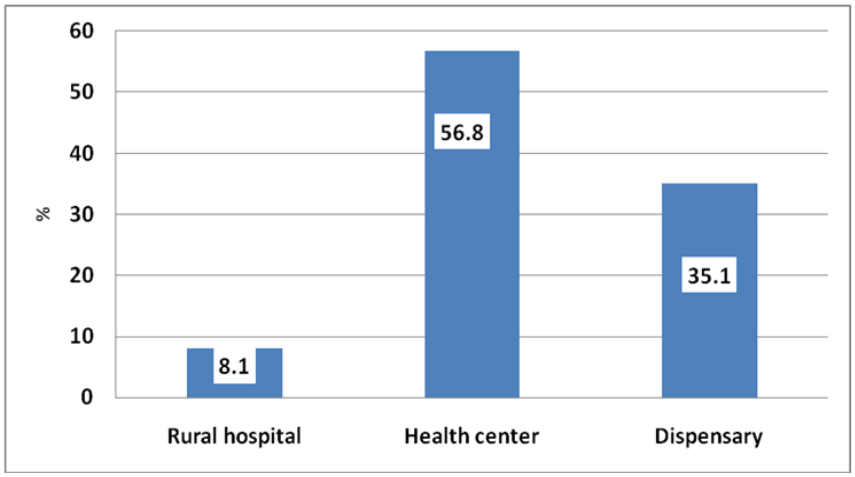

Fig. 1: Distribution of sample size according to type of health facility (n=37)

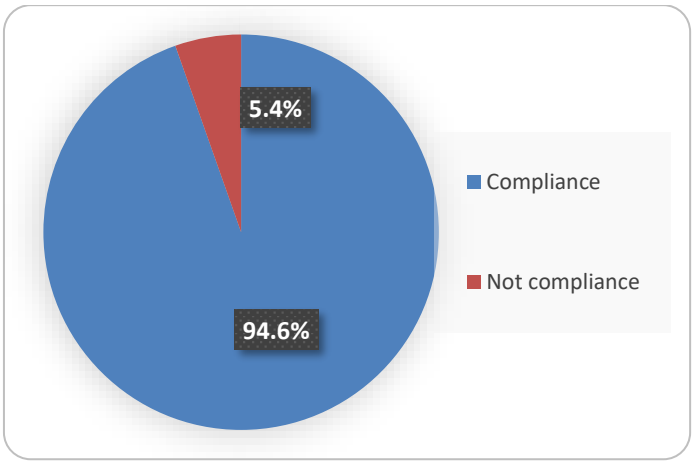

Fig. 2: Distribution of health facility according to compliance with classification of ministry of health standards (n=37)

Type of health facility	Population targets that health facility covered	Number of villages that health facility covered
Rural hospital	14309.3±1443.4	10.3±1.4
Health center	6230.0±1120.0	4.9±.5
Dispensary	32858.6±9061.1	3.9±.6
Total	**16241.1±3782.1**	**5.0±.5**
P-value	**.002***	**.001***

Table 1: Mean distribution of population target that health facility covered and number of villages that health facility covered according to type of health facility

*P-value considered significant at less than 0.05 levels

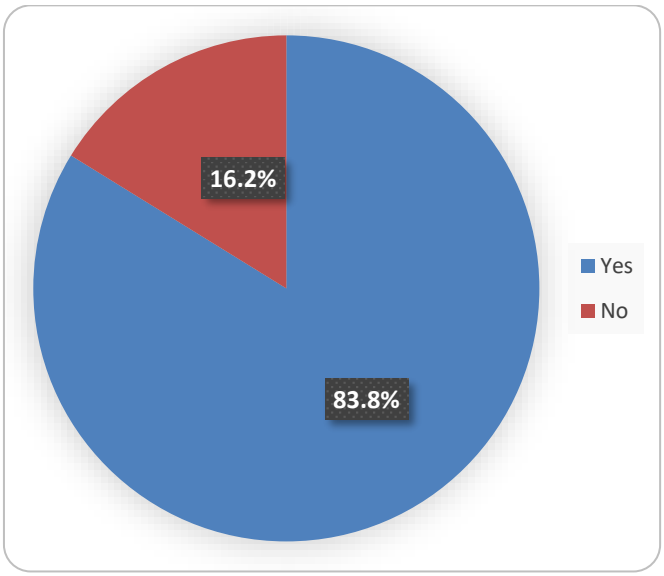

Fig. 2: Distribution of health facility according to whether if there were any mean of transportation to access health facility or not (n=37)

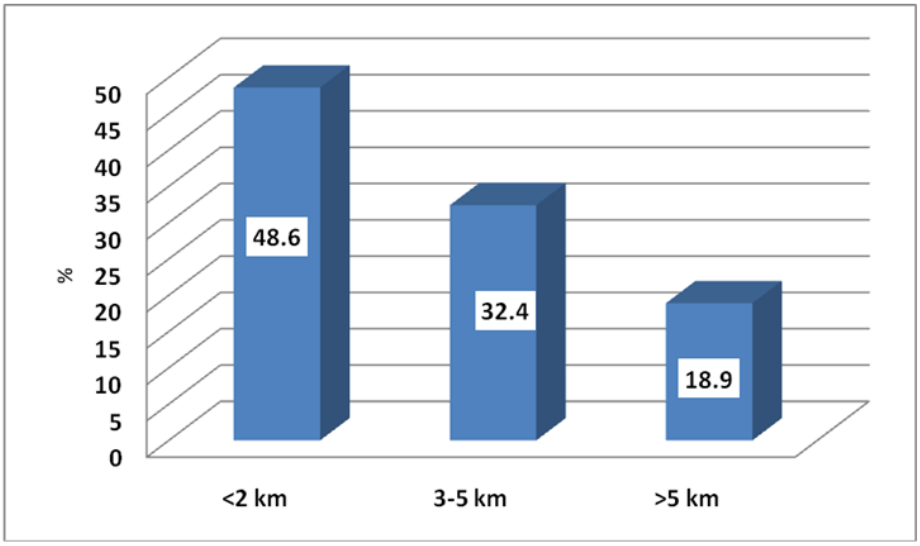

Fig. 3: Distribution of health facility according to distance surface of health area of health facility (n=37)

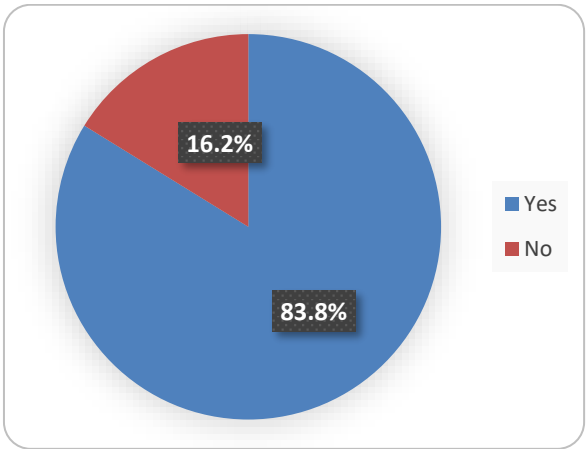

Fig. 4: Distribution of health facility according to whether if there were any mean of transportation to access health facility or not (n=37)

Health personnel	Mean	Std. Error Mean	Sig.
Specialist	.2162	.01	.009*
GP	.4865	.1	.001*
Dentist	.1892	.1	.006*
Pediatrician	.2162	.1	.009*
Gynecologist	.1892	.1	.006*
Medical assistance	.8378	.1	.000*
Pharmacist	.3784	.1	.000*
Nurse	.4054	.1	.000*
Public health officer	.1622	.1	.032*
Lab. technician	.7568	.11	.000*
X-ray technician	.0541	.04	.160
Managerial cadres	.4324	.1	.001*
Other	.7297	.2	.005*

Table 1: Mean distribution of number of health personnel in the health facility

*P-value considered significant at less than 0.05 levels

Service	Available	
	No.	%
Health insurance coverage	10	27.0
Essential drugs list in the health facility	17	45.9
Free drugs for children less than 5 years	6	16.2
Vaccination services	37	100.0
Nutrition services	35	94.6
Reproductive health service	26	70.3
Health education services	24	64.9
Community mobilization service	19	51.4
Disease surveillance system	24	64.9
The lab services	8	21.6
Dentist services	2	5.4
X-rays services	3	8.1
Blood bank service	5	13.5
Ambulance service	9	24.3
Referred system	9	24.3
Other service	1	2.7

Table 2: Distribution of health services availability in the health facility

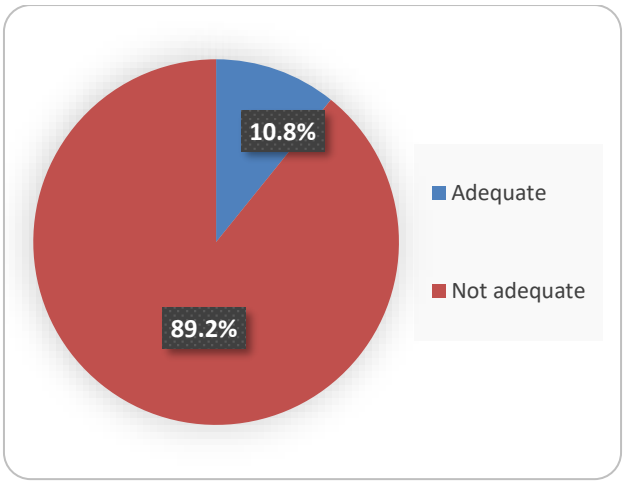

Fig. 5: Distribution of health facilities according to existence equipment (n=37)

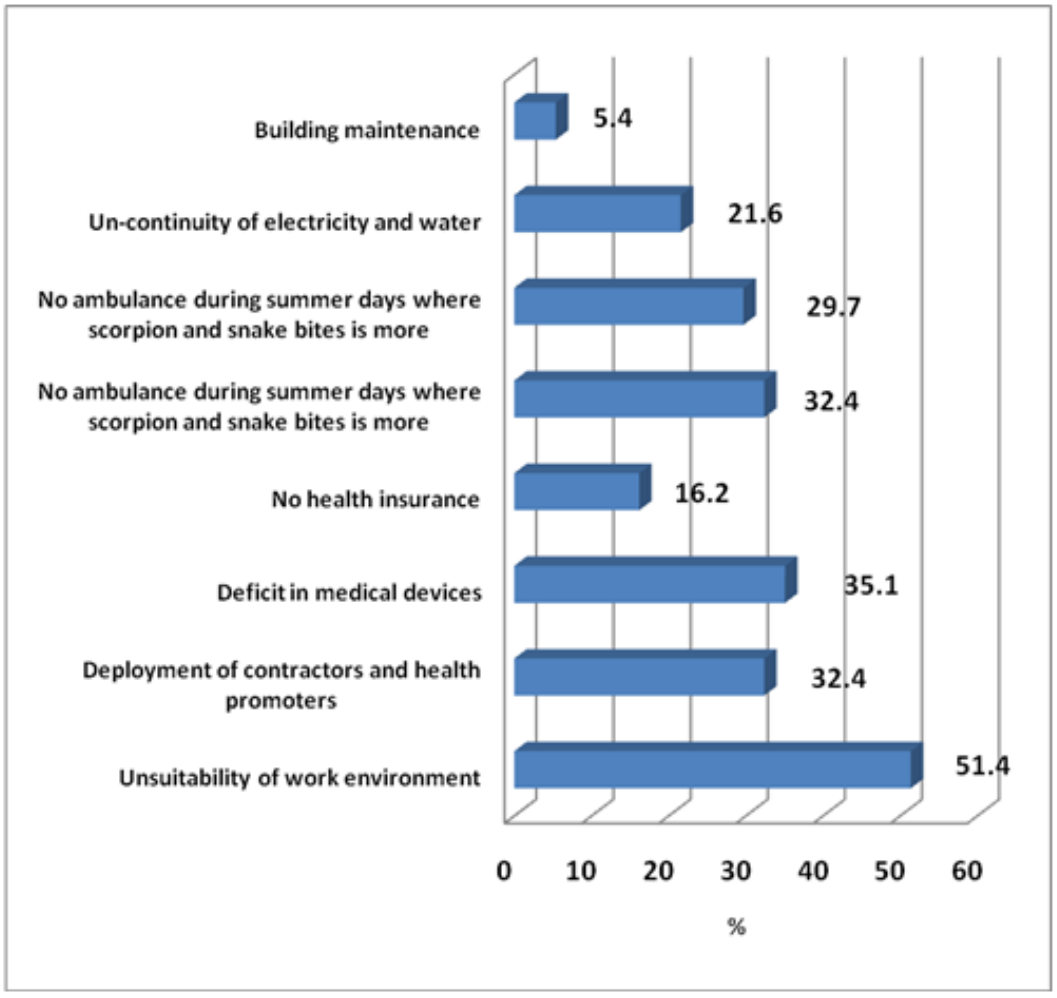

Fig. 6: Distribution of health facilities according to basic problems and challenges found (n=37)

DISCUSSION

Access to PHC is known as an important component of healthcare provision and referral management. It has also been described as a key factor for acceptability and accessibility (Ward *et al*., 2018). This

Study aimed to assess the primary Healthcare facilities coverage for rural population in Sharg Elnil locality from 2018 to 2020. The majority of health facilities were compliance with classification of ministry of health standards (94.6%). In the literature, there is no consistent classification of healthcare facilities. In order to benchmark, assess, and compare the environmental performance of these buildings, it is important to clearly identify the typology within the scope of a particular research. However, healthcare facilities are classified into the following six categories: patient type, care provided management and ownership, level of care, facility size, and location (Ahmed *et al*., 2015).

This study showed that the mean total distribution of population target that health facility covered was (16241.1±3782.1) (1.6/10000) inhabitants while the number of villages that health facility covered was (5.0±.5) village. The number of health facilities per population of 10,000 or the number of health facilities per total population living in a designated area. The ratio can be adjusted to per 10,000 population by multiplying the numerator and denominator by the same factor required for the denominator to equal 10,000, this finding appeared that our health facilities within the standard (The Global Fund, 2009). In terms of distance nearly half of the health facilities were distance less than 2 km of health area 48.6% while 32.4% distance about 3-5 km and only 18.9% their distance was more than 5 km. The result showed that still there were near 50% of health facility their distance was more than 2 km.

Although, there is some evidence that increasing distance from health services inhibits the use of primary (Jones *et al*., 1998) and secondary care (Haynes *et al*., 1999), and that it is associated with a range of poor health outcomes, from higher than expected numbers of deaths from asthma to lower than expected five year survival from cancer (Haynes *et al*., 1999), few studies have attempted to quantify or set thresholds of poor access (Haynes *et al*., 1999). Furthermore, measures of geographical access can be difficult to compare. Rurality has often been used as a proxy for inaccessibility (Hyndman *et al*., 2000), as have dichotomous categorizations such as the presence or absence of a service provider in an area (Hyndman *et al*., 2000). More complex measurements such as the straight line distance between populations (i.e demand points) and health service providers (Gregory *et al*., 2000), or 'network distances' (which can include both road distance and travel time) (Jones *et al*., 1998) have added complexity, but the relationship between these measures is not clear.

In addition, the study showed that the vast majority of health facilities 83.8% have a mean of transportation to access health facility. This in line with statement that transportation cost and cultural factors have also been shown to influence access to healthcare (Langu *et al*., 2001, Govender,2005). Poverty and financial constraints influence decisions on where and when to sought help for health complaints (Langu *et al*., 2001). There was significance difference in the mean distribution of number of health personnel in the health facility, $p< 0.05$ except for X-ray technician ($p=.160$). The high mean was medical assistance (.8378), lab technicians (.7568), nurse (.4054), GP (.4865) and pharmacists (.3784). When comparing the number of personnel per capita we found a shortage in health personnel and also in equality distribution of health personnel in the health facilities at the locality level (district). Several existing studies confine themselves to the distribution of a single cadre, such as general practitioners or nurses (Robinson and Wharrad, 2000, Robinson and Wharrad, 2001), we describe the distribution both at the aggregate level and at the cadre level. According to the 2006 World health report, mainland Tanzania has a total of 48508 health workers, of whom 822 are physicians and 13292 are nurses (World Health Organization, 2006).

Tanzania has the lowest physician/population ratio in the world. However, the underlying HRH data source shows that the country also has 717 Assistant Medical Officers with practical clinical skills comparable to those of physicians. In addition, there are 5642 clinical officers, who undertake a substantial share of the clinical practice (Tanzania,2001). Medical assistants, with little or no formal training, constitute a large share (40%) of the health workforce. Furthermore our study showed that the majority of health services available in health facilities were vaccination service (100%), nutrition services (94.6%), reproductive health services (70.3%), health education services (64.9%), disease surveillance system (64.9%), Essential, Community mobilization service (51.4%) while the health

services available by less than 50% were drugs list in the health facility (45.9%), Health insurance coverage (27%) Free drugs for children less than 5 yrs (16.2%), the lab services (21.6%), referred system 24.3%, ambulance services 24.3%, blood bank services (13.5%), dentist services 5.4%, x-rays services 8.1% and other services 2.7%. This in line with statements that activities of PHC include curative, preventive and promotive healthcare as well as family welfare services. CHCs serve as first 8 referral units (Furs) for four to five PHCs and also provide facilities for obstetric care and specialist consultations. According to norm, each CHC should have at least 30 beds, one operation theatre, X-Ray machine, labour room, laboratory facilities, and to be staffed by four medical specialists- surgeon, physician, gynecologist and pediatrician. According to data available for 2008-09 we have 145272 SCs, 22370 PHCs, and 4045 CHCs. (Ministry of Health and Family Welfare, 2000).

This result showed that only 10.8% of the existence equipment in health facilities was adequate. However, a lack of resources in healthcare settings has serious consequences for the quality of patient care and the professional work environment for nurses, therapists, and other healthcare providers. Having more health system resources available and making better use of the resources are two approaches that can suffice the needs of workers and meet patients' expectations (Mosadeghrad, 2014). The majority of health facilities had community participation 78.4%. In line study showed that at a more fundamental level, community participation has been perceived to have facilitated community ownership and development as reported in two studies (Cargo *et al*., 2011, Basu Roy *et al*., 2014).

The present study showed that all the households confirmed presence of health facilities but the most basic problems and challenges found in health facilities were unsuitability of work environment 51.4%, deficit in medical devices 35.1%, deployment of contractors and health promoters 32.4%, no ambulance during summer days where scorpion and snake bites is more 32.4%, no treatment available during rainy season days 29.7%, un-continuity of electricity and water 21.6%, no health insurance 16.2% and building maintenance 5.4%. However, previous literature showed that the provision of health services in rural and remote areas is significantly affected by limited funding and other resource constraints. As mentioned already, in developing countries, there is considerable poverty and limited facilities and resources available for healthcare.

In many developed countries, there has been a trend towards the reduction of funding and infrastructure support for health services in rural and remote communities. This is occurring in rural communities against a background of changing practices in major rural industries such as agriculture, mining, fishing and forestry, combined with wider social and economic changes causing considerable upheaval often described as 'the rural decline' (Lawrence and Williams,1990). At the same time, economic rationalist policies have led to reduced infrastructure in rural communities, with the closure of schools, hospitals, government offices and banks. Many rural and remote communities bear the cost of global change without the commensurate benefits (Birrell *et al*., 2000).

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