

**ASSESSING THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN
THE EASTERN REGION OF GHANA**

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DECLARATION

I hereby declare that this submission is my own work towards the MSc. in Development Policy and Planning and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Inequalities in the distribution of health facilities have resulted in varying levels of accessibility to health care facilities in the country. Health facilities are better distributed in the southern part of the country compared to the three northern regions. The distribution of health of facilities is also comparatively better in urban areas compared to rural and deprived areas. As a result, accessibility to health facilities is better in southern Ghana and urban areas than the three northern regions, as well as rural and deprived areas. In the case of the northern part of the country it appears that since independence not much has been done in terms of investment in social infrastructure by successive governments compared to the southern part of the country.

This study sought to investigate the issue of spatial inequality in the distribution of health facilities by using the Eastern Region for a case study. It described the distribution and accessibility to health facilities in the Eastern Region. The causes of inequalities in the distribution of health facilities in the region were also examined. Quantitative techniques have largely been used. Purposive sampling technique was also used.

The study revealed that there are inequalities in the distribution of health facilities in the Eastern Region. The skewed distributions of health facilities are to the disadvantage of rural and deprived districts such as Birim North and Kwahu North in the Afram Plains while largely urban districts such as New Juaben and East Akim are comparatively better in terms of the distribution of health facilities. As a result accessibility to health facilities is poor in rural and deprived districts in the region compared to the largely urban districts. Lack of political will, conflicts such as chieftaincy dispute, lack of self initiatives by communities and difficulty in meeting population threshold for requirement for establishing facilities tend to cause inequality in the distribution of health facilities.

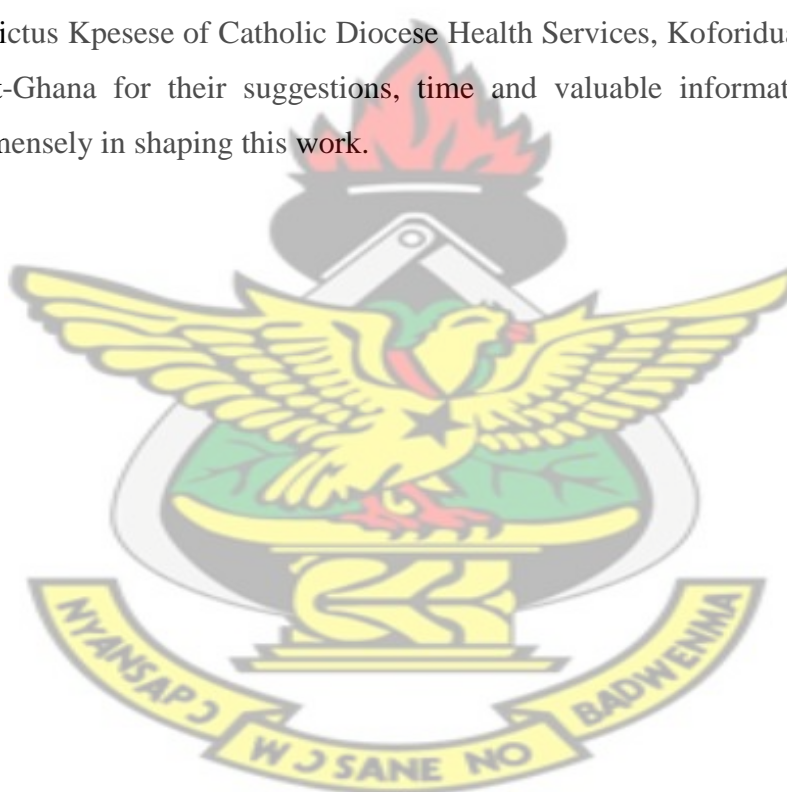
Based on these findings it has been argued that the solution to the problem inequality in the distribution of health facilities lies in the expansion of health infrastructure, the intensification outreach health services, timely release of funds, and early resolution of conflicts among others.

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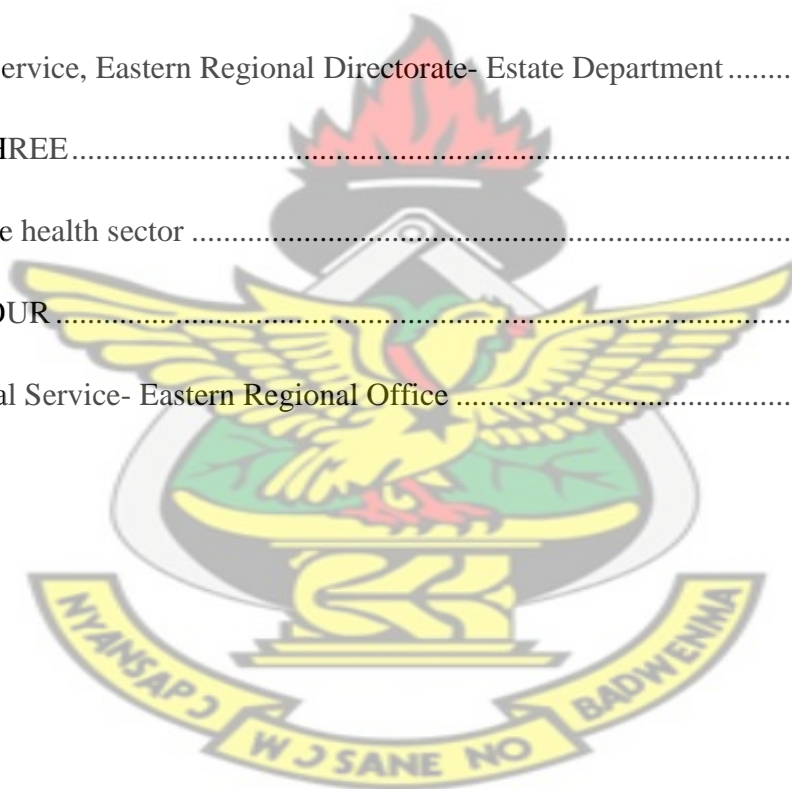
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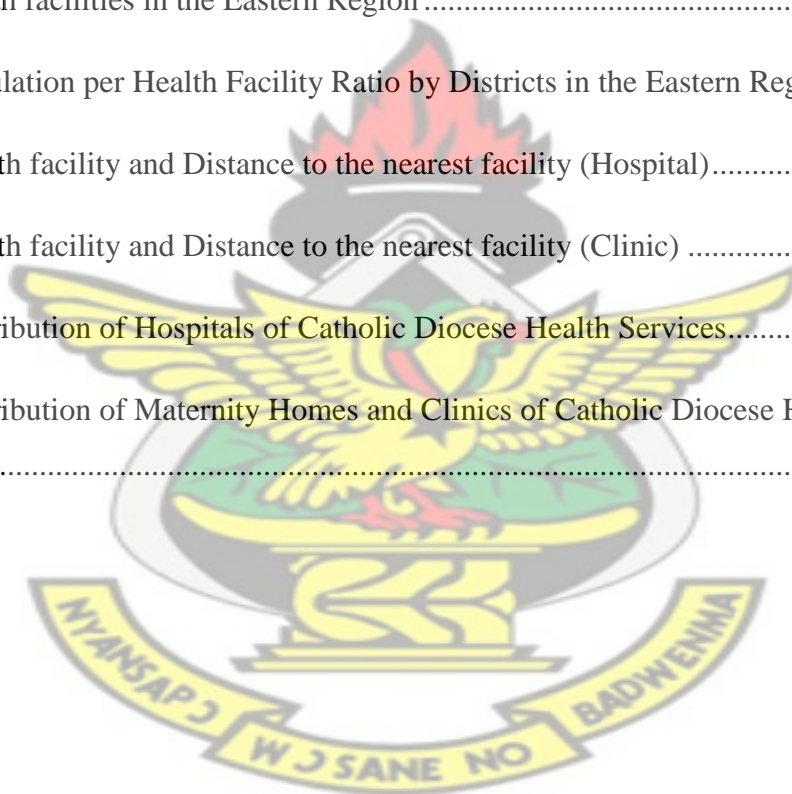
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ABBREVIATIONS/ACRONYMS

CHAG	Christian Health Association Ghana
DHMT	District Health Management Team
ECA	Economic Commission for Africa
GDHS	Ghana Demographic Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Service
MMDAS	Metropolitan Municipal District Assemblies
MOH	Ministry of Health
NGOs	Non-Governmental Organizations
PAHO	Pan American Health Organization
UN	United Nations
WHO	World Health Organization



CHAPTER ONE

GENERAL INTRODUCTION AND BACKGROUND OF THE STUDY TO SPATIAL INEQUALITY IN HEALTH FACILITIES IN GHANA: CHALLENGES AND RELEVANT ISSUES

1.1 Introduction

The vision of the health sector is to improve health status and reduce inequalities in the health outcomes of all people living in the country. Linked with this vision is a goal of working together for equity and good health for all people living in Ghana. However, it appears the recent increases in resources to the health sector have not been translated into improved service volumes and quality (MOH, 2004).

There are disparities in the distribution of health facilities between rural and urban areas as well among the regions in Ghana. The distribution and the use of health facilities in the country appear to be positively skewed towards the urban centres to the detriment of rural areas. There is also better distribution of health facilities in the urban core than the periphery and the slums (Bour, 2008).

Again, there is inter-regional disparity in the distribution of health facilities in the country. There are more health facilities in the Southern part of the country compared to the northern half. For instance, four southern regions namely; Ashanti, Volta, Western and Greater Accra accounted for over 70 per cent of health facilities compared to the rest of the country (GHS, 2005).

The number of public health facilities in the country increased from 251 hospitals in 1991 to 333 in 2001. However, Ashanti and Greater Accra Regions alone accounted for 47.4 per cent of the total number of hospitals compared with 9.6 per cent for the three northern regions (MOH, 2002). Clearly, Ashanti and Greater Accra Regions controlled almost half of all public hospitals in the country.

Furthermore, the Greater Accra alone accounted for 20.8 per cent of Health centres/ clinics compared with 15.1 percent for the three Northern regions (MOH, 2002). Although the relative share of population of the three northern regions was 17.2 per cent compared with 15.4 per cent for Greater Accra Region (GSS, 2005).

The situation was similar with respect to the distribution of private health facilities. Again, Ashanti and Greater Accra regions had 44.4 per cent of private health facilities in the country compared with 3.6 per cent for Upper East and Upper West regions (MOH, 2002).

The reason is that private motive influences the establishment of private health facilities and therefore areas with advantages of economies of scale and effective demand are likely to be centres of attraction, hence Ashanti and Greater Accra Regions had disproportionate share of private health facilities. However, the Northern and Upper East regions are mostly served by mission/NGO clinics and hospitals (GSS, 2005).

These disparities could be attributed to the fact that since independence for the purposes of production and economic gain the fertile south had been provided with better infrastructure, health and educational facilities, than the dry and barren north-an imbalance that still haunts the northern Ghana today (Anderson,2004).

The distribution of health facilities in the country does not only reflect rural-urban and inter-regional disparities but also exhibits intra-regional disparities. For instance, the total number of health facilities in the Brong Ahafo in 2009 was 226. However, out of this number, Techiman alone had 21 health facilities which was more than the total number of health facilities in four districts namely Pru (5 facilities), Sene (5 facilities), Tano South(4 facilities) and 5 facilities in TanoNorth (MOH,2009).

The study would therefore seek to investigate the issue of intra regional disparity in the distribution of health facilities by using the Eastern Region as a case study.

1.2 Problem Statement

Despite the considerable investment in the provision of health facilities, however large numbers of the population, particularly those in the rural areas and deprived communities still lack access to health services (MOH, 2007). The inequitable distribution of health facilities in the country has also resulted in a situation whereby more than three quarters (78.5 percent) of urban households had good access to health facilities compared with 42.3 percent of rural households. A further 78.5 per cent of urban poor live within 30 minutes of a health facility compared with 27 percent of rural households (GSS, 2003). This is worrying because the time required to reach a health facility could be critical in the survival of a sick person, especially in emergency situations.

Poor access to health facilities with appropriate equipment and staff, including obstetricians and midwives, remains a huge barrier in rural regions and remote areas. Lack of a functioning referral system and emergency transport compound the problems (Ansong-Tornui, et al, 2007).

Disparities in the distribution and accessibility to health facilities have also resulted in variation in health outcomes between regions. For instance, Northern Region recorded the highest infant mortality of 105 per 1000 live births compared with 45 per 1000 live births for Greater Accra (GHS, 2007). Doctor-population ratio was highest in the Northern Region (1:67,154) compared with Greater Accra's (1:5,624) (GHS, 2007).

According to the 2003 Demographic and Health Survey, the three northernmost and also the poorest regions had the highest rates of home delivery, whereas Greater Accra and Ashanti, the two most developed regions, had the lowest rates. For instance the proportion of home deliveries ranged from 13 per cent in Dangme West in Greater Accra to 95 per cent in Savelugu Nanton in Northern Region (GSS, 2003).

Obviously; this has impacted negatively on child survival rates in the Northern Regions. For instance Upper East and Upper West regions respectively recorded 78.2 percent and 78.6 percent of child survival rates which were below national average of 81.9 percent while that of Greater Accra and Ashanti regions had 82.9 percent and 84.1 percent respectively above the national average (GSS, 2000).

Strategies were put in place to address some of the challenges of distribution and accessibility to health facilities. The Ghana Health Sector Five Year program of Work (2002-2006) aimed to reduce inequalities between the north-south divide of the country, as well as rural and urban areas. Also, NDPC (GPRS I and II) had strategies which involved the provision of outreach services and clinics in deprived rural and peri-urban areas, especially in northern Ghana. A good quality model health centre was to be established for each district. As at the end of 2005 sixteen (16) health centres had been completed in various communities. (NDPC GPRS I 2005, Annual progress report). In 2007, 13 hospitals and 22 health centres were constructed (MOH, 2008).

Despite these modest gains, more effort must be put in place to address some of the challenges confronting the health sector in respect of inequitable distribution of health facilities. Hence priority of this research is to investigate into this problem by using the Eastern Regions as a case study.

1.3 Research Questions

The discussion above has highlighted the problems associated with the spatial inequality in the distribution of health facilities. The study consequently seeks to find answers to the following questions.

1. What is the extent of spatial inequality in the distribution of health facilities in the Eastern Region of Ghana?
2. What are the causes of spatial inequality in the distribution of health facilities in the Eastern of Ghana?
3. How physically accessible are health facilities within the Eastern Region of Ghana?
4. What policy measures should be adopted to address the issue of spatial inequality in the distribution of health facilities in the Eastern Region of Ghana?

1.4 Objectives of the Study

The general objective of the study is to assess the spatial distribution of health facilities in the Eastern Region of Ghana, using the Eastern as a case study. Furthermore, the study seeks to address the following specific objectives.

1. To describe inequalities in the distribution of health facilities in the Eastern Region of Ghana.

2. To examine the causes of spatial inequalities in the distribution of health facilities in the Eastern Region of Ghana.
3. To assess physical accessibility to health facilities in the Eastern Region of Ghana.
4. To make recommendations to influence future policy in addressing inequalities in the distribution of health facilities in the Region.

1.5 Scope of the Study

This study is confined to the Eastern region of Ghana. It looks at the issue of inequity in distribution of health facilities. The concepts equity and inequity have been extensively explored in section 2.4 in chapter two. The issue of accessibility in terms of distances to health facilities is also discussed.

The time scope for the study spans the period 2000 to 2011. This period has been chosen because since 2000 considerable attention has been paid to health related issues in the Millennium Development Goals (MDGs). The MDGs 4, 5, and 6 seek to reduce child mortality, improve maternal mortality and combat HIV/AIDS, respectively by the year 2015. These goals can be achieved if access to health care from health facilities is assured.

1.6 Justification of the Study

The study brings to the fore the importance of ensuring equity in the distribution of health facilities in the country. This is because health facilities are not equitably distributed in the country. Available evidence from previous discussion has shown that the three Northern Regions and rural and deprived communities lag behind in the distribution of health facilities compared to the Southern Ghana and urban areas. This has resulted in low accessibility to health care facilities in the three Northern Regions and rural and deprived communities. Therefore the study highlights the need to address these inequalities if Ghana is to achieve universal health care delivery for its citizenry.

It further exposes some of the issues of accessibility such as long distances to access health care from health facilities and its implications on health delivery. It also looks at poor road conditions which could lead to long waiting times to get a means of transport as well as high transport cost to health facilities especially in remote and rural communities in the country.

Thus, the need for government to improve road surface conditions in order to enhance access to health facilities in the country.

This research would increase knowledge and add to literature in academia. Educational institutions especially the tertiary institutions both within and outside the country would use the findings as reference material to conduct further research into the issue of spatial inequality in the distribution of health facilities in the country.

Findings of this study provide vital information to make inputs to inform government policies and strategies on the issue of inequity in the distribution of health facilities in the country. Again; it does provide the platform to review existing policies on the issue.

Specifically, the Ministry of Health, which is directly responsible for provision of public health services delivery (in terms of policy formulation, monitoring and evaluation and regulation of health services delivery) and Ghana Health Service which is charge of implementation and service delivery stands to benefit from the outcome of this research. Thus, the ministry and its implementation agency would be informed about some of the challenges people face in accessing health care facilities and the need to put in place interventions to address them.

Private health provider's especially Non-Governmental Organizations and missions would benefit from the study in terms of having knowledge about communities where access to health facilities is low and the need to provide some interventions. This is because most of these organizations operate as non-profit.

1.7 Limitations of the study

One of the major limitations was the acquisition of the relevant data from the institutions that were surveyed. There were difficulties in convincing some officers of these institutions to release information for the study. However, the requisite information was obtained with the assurance that the data were for research purposes.

Another limitation is that the study concentrated on establishing inequalities in the distribution and accessibility to health facilities among the districts in the Eastern Region.

However, inequalities within each of the districts in terms of these facilities were not established. This is because the amount of data that would be required for such a study would have been so enormous for a study faced with limited time and resource constraints.

The study used spatial tools in establishing inequalities in the distribution of health facilities. However, these spatial tools did not establish the causes of inequalities in the distribution and accessibility to health facilities. However, this was overcome by obtaining qualitative data from some officers of the institutions that were surveyed.

1.8 Organization of the Study

The study is organized into five chapters. The first chapter comprises introduction, problem statement, research questions, objectives of the study; justification of the study and organization of the study. This sets the tone for the discussion of the subsequent chapters.

Chapter two reviews works done on the subject matter by various authors and scholars. As well as applying spatial tools and indices to analyze some of these works. A conceptual framework is thus built from the discussion emanating from this chapter.

Chapter three discusses the methodology used for the study. Issues such as research design, sampling procedures, data collection methods; data rationalization and analysis, and data presentation and reporting are discussed. Chapter four provides a comprehensive understanding of data collected from the field survey. Summary of findings, recommendations as well as conclusion has been discussed in chapter five.

CHAPTER TWO

A CONCEPTUAL REVIEW OF SPATIAL DISTRIBUTION AND ACCESSIBILITY TO HEALTH FACILITIES

2.1 Introduction

This chapter discusses the issues of spatial inequality by bringing to the fore the causes of inequalities. It further delves into the issue of inequalities in the distribution and accessibility to social services in general. Specifically, it also looks at issues of spatial distribution, concepts of equity and inequity, and access and quality of health delivery at the global level.

Ghana's situation is also discussed in areas of the causes of spatial inequalities, regional distribution of health facilities as well as accessibility to health facilities. Furthermore, spatial tools and indices are used to explain inequalities in the distribution of health facilities at the national level.

2.2 The Determinants of Spatial Inequalities

Inequalities exist between spatial units as they do between individuals. (Anderson and Pomfret, 2005). Spatial inequality is important for at least two reasons. The first reason is that interregional inequality is a dimension of spatial inequality. The second reason is that interregional inequality goes hand in hand with political and ethnic tensions which undermine social cohesion and political stability (Kanbur and Venables, 2005).

According to Williamson (1965), four reasons are decisive for the evolution of spatial inequalities: natural resources, migration, capital mobility, and government policies. He argues that most natural resources are point resources and thus are unequally distributed among different regions of a country. A discovery of new resources will then increase unbalanced development of regions, and a selective influx of labour and capital, perhaps encouraged by government policies, will lead to a further increase in spatial inequality.

Other arguments advanced as the cause of spatial inequalities is that of the economic geographer's distinction between first and second nature geography. First nature geography says that some regions are favoured by virtue of endowments of proximity to rivers, coasts,

ports, and borders. Evidently these factors account for some of the success of coastal China relative to the interior or border states of Mexico relative to the south.

Second nature geography emphasizes the interactions between economic agents and in particular increasing returns that can be created by dense agglomerations and interactions. Thus cities tend to have high productivity and agglomeration forces act to generate virtuous circles of self-reinforcing development. Most studies have emphasized second nature geography in explaining the level and trend of spatial disparities. Most of the focus has been on public infrastructure as a key explanatory force (Kanbur and Venables, 2005).

2.2.1 Spatial Inequalities in the Distribution of Social Services

Spatial inequalities in income, health, education, and poverty present significant economic and political challenges for governments of many developing countries. While systematic evidence on the extent of spatial inequality in developing countries is still relatively scarce, a growing body of work has documented the existence of spatial inequalities in many forms in various countries in Asia, Europe, Africa and Latin America (Kanbur and Venables, 2005; Kanbur, Venables, and Wan, 2006).

Using community level data on public services, Anderson and Pomfret (2005) show considerable inequalities in the provision of public services in Central Asia. For example, in Tajikistan, Gorno-Badakshan, the most isolated region, has poor roads, low quality and inadequately heated schools, and low availability of water, sewer and garbage disposal system.

For Africa, many of the social indicators used by Sahn and Stifel (2003) in their documentation of rural-urban disparity such as school enrolment and neonatal care show direct reflections of inequality in the distribution of public schools and public health facilities.

Inequalities in access to social infrastructures may also be as a result of inefficiency in the distribution and allocation of facilities between areas or as a result of social barriers like ethnicity, religion or status which may directly limit certain groups from having access to public facilities (Stevenson, 2004).

The spatial variation in availability and access to infrastructure results in spatial disparities in living standards both within and between regions and localities (Madu, 2007). Infrastructures are an important part of any rural economy. The provision of such facilities discourages rural-urban migration which means that public facilities have to be provided to both urban and rural communities (Mabogunje, 1977).

In Zimbabwe, an important method the newly independent government used to reduce spatial inequalities was the provision of infrastructure and services in predominantly black areas, which had seriously been neglected during the colonial era. The facilities provided included roads, schools, health services; domestic water supplies. This has probably been the government's most successfully attempt to reduce regional inequalities (Conyers, 2001).

2.3 .The Concepts of equity and Inequity

The term equity can be defined in various ways. According to the Webster's New Collegiate Dictionary, equity is the justice according to natural law or right; specifically: freedom from bias or favoritism. The American Heritage dictionary also defines equity as the state, ideal, or quality of being just, impartial, and fair.

Inequity on the hand is the linguistic opposite of equity. It is the state, ideal, or quality of being unjust, partial, or fair. Although equality and equity are often conflated, the words have two different meanings and are conceptually very different. Equality is sameness, and equity is fairness. In any particular situation, equal may not be equitable, or equal may be precisely be equitable, but an ethical justification must be must be presented for why a certain a certain distribution constitute inequity (PAHO, 1999).

The term equity can also be can also be delineated into horizontal equity and vertical equity. Horizontal equity describes the allocation of equal or equivalent resources for equal need while vertical equity is the allocation of different resources for different levels of need. These two conceptions of equity have dramatically different policy implications, and cannot be applied randomly to problems but must appeal to some principle or special feature of the problem that justifies the choice of one over the other. For example, a universal healthcare plan might appeal to horizontal equity on the basis that everyone needs health care at some point. On the other hand, targeted programmes for the poor would appeal to vertical equity.

Vertical equity has the potential for redistributing resources, and therefore faces more political challenges (PAHO, 1999).

The term inequity has a moral and ethical dimension. It refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust. So, in order to describe a certain situation as inequitable, the cause has to be examined and judged to be unfair in the context of what is going on in the rest of society (Whitehead, 2000).

2.4 Inequities in Health

Whitehead (1991) defines health inequities as differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust. Whitehead specifies that there are seven determinants of health disparities that can be identified:

1. Natural, biological.
2. Health damaging behavior which is free chosen, such as participation in certain past sports and past times.
3. The transient health advantage of one group over another when that group is first to adopt a health-promoting behavior.
4. Health damaging behaviour in which the degree of choice of lifestyles is severely restricted.
5. Exposure to unhealthy, stressing living and working conditions.
6. Inadequate access to essential health and other basic services.
7. Natural selection or health-related social mobility involving the tendency for sick people to move down the scale.

Health disparities determined by the first three categories would not be considered unfair nor just, while the last four would be considered by many to be avoidable and the resultant health differences to be unjust.

According to (ECA, 2008), health inequities are the avoidable, unfair and unjust inequalities in access to and utilization of health services between regions and population subgroups within a country. Inequity in health does not refer to all health disparities, but specifically to those health disparities that are unfair because they are associated with underlying socio-economic circumstances, such as wealth or geography, that systematically put some groups of

people at disadvantage with respect to health opportunities. Inequities in accessing health care matter because they have serious implications for human development. Firstly, they are socially determined, violate the basic precepts of social justice for everyone to have equal opportunity to be healthy. The Universal Declaration of Human Rights recognizes access to health as a human right and emphasizes the importance for governments and development actors to guarantee basic access to health for all.

Secondly, health inequities impede the achievement of the health Millennium Development Goals (MDGs). For example goal 5 of the MDGs which seeks to reduce maternal mortality rates by 75 percent by the year 2015. The health MDGs targets cannot be fully achieved if large segments of the population do not have access to health. Thirdly, inequities in access to health care are bad for economic growth, poverty reduction and overall development. The reason is that when a significant number of productive populations of a country do not have access to health services, productivity of that nation would be negatively affected, incomes are most likely to be low and generally standard of living would be low. This is because a healthy population is required in achieving increases in productivity. Extreme health inequities can also lead to intergenerational deprivation or limited access to health care and other livelihood assets such as education, resulting in limited opportunities for breaking out of poverty (ECA, 2008).

2.5 Health Delivery, Distribution and Access to Health Facilities

In the past few years there has been increased concern for the health of the poor and reducing inequalities in both health status and access to health care (Later veer, et al 2003). According to the WHO (2008) health inequities find their roots in the way health systems exclude people, such as inequities in availability, access, quality and burden of payment of health services. Thus, when people cannot access health care because either health facilities are not available or there is difficulty of physical access, as well as peoples' income are so low that that they cannot pay for quality health services then they are being denied the right to health care. Hence inequalities in access to health care can lead to unequal health outcomes.

For instance, in each region (except in the Africa region) there are countries where mortality rates are less than one fifth of what they were 30 years ago. Leading examples are Chile, Malaysia, Portugal and Thailand which have been able to reduce under-five mortality by at

least 80 percent. These results have been associated with improved access to expanded health-care networks, made possible by sustained political commitment and by economic growth that allowed them to back up their commitment by maintaining investment in health sector (WHO, 2008).

In Cambodia the use of health facilities is three times in urban areas and this has led to lower infant and child mortality rates in the urban areas compared to the rural areas. (Annear, et al 2008). Colombia's national health insurance scheme was part of a package of health reforms introduced nation-wide in 1993, with the aim of improving service access, efficiency and quality. The subsidized regime played a key role in increasing coverage for the poor and people living in the rural areas. Access to and use of health services increased in rural areas over 15 years up to 2000: for example, there was 49 percent increase in pre-natal care, and a 66 percent increase in assisted deliveries (Florez and Hernandez, 2005).

Between 1900 and 2000, Thailand significantly reduced its level of child mortality and at the same time halved inequalities in child mortality between the rich and the poor. Among the measures include improved insurance coverage and more equitable distribution of primary health care infrastructure and intervention coverage. Increased production, financial incentives and educational strategies led to more equitable allocation of doctors in rural areas in the 1980s. This combination led to increased utilization of health services. For example, vaccination coverage rose from 20 percent to 40 percent in the early 1980s to over 90 percent in the 1990s; skilled birth attendance rose from 66 percent to 95 percent between 1987 and 1999 (Vapattanawong, et al 2007).

Sri Lanka has reduced maternal mortality by 87 percent in the past 40 years by ensuring that 99 percent of pregnant women receive four antenatal visits and give birth in a health facility (UN, 2010). In Yemen access to health services is a problematic because of vast geographical area and the sparse population distribution across the rural areas in addition to a poorly developed road networks and lack of proper public transport (Al-Taiar et al, 2008).

At the regional level, African governments have repeatedly underscored the importance of reducing inequities by improving access to health for all. The most recent affirmation of their commitment was made at the 3rd Ordinary Session of African Union Conference of Ministers

of Health held in April 2007 in Johannesburg, South Africa under the theme “Strengthening the Health Systems for Equity and Development”.

In their final declaration, the Ministers renewed their commitment to strengthen health systems for equitable health outcomes and specifically to develop social protection systems, particularly for the poor and vulnerable groups in society, aimed at promoting greater access to health-care services and promoting families from the financial hardship associated with catastrophic health emergencies (ECA, 2008).

In Ethiopia, government is the main health provider but the coverage and distribution of its health facilities among regions remains uneven. Poor health coverage is of particular concern in rural Ethiopia, where access to any type of modern health institution is limited at best. Health systems and roads are underdeveloped, and transportation problems are severe, especially during the rainy season. Almost all births take place at home in Ethiopia (94 percent) with only six percent of women delivery in a clinic or hospital. Many of these women live in remote areas that are too far from a road, let alone a health facility where they can receive emergency obstetric care (Chaya, 2007).

In Sierra Leone, fewer than half (42 percent) of deliveries are attended by a skilled attendant and less than one in five deliveries are carried out in health facilities. Health services are unevenly distributed throughout the country, giving rise to inequities. There are also geographical barriers-with long and arduous journeys to health facilities and poor transport links-and financial barriers (Amnesty international, 2009).

Health facilities are not only inadequate; they are also unequally distributed across the country. With an 11 mile average distance to the nearest health facility and the inadequate distribution of health facilities due to poor planning and self interest combined with poor road network, are formidable barriers to health care.

Basic utilities are in short supply everywhere in Sierra Leone, including in hospitals and health care centres. Many government hospitals have no running water. Lack of electricity is a country -wide problem. Only 10 percent of hospitals and Community Health Centres have a reliable electricity supply, limiting their capacity to provide 24-hour emergency obstetric care.

Remote areas are particularly hard hit by personnel shortages, with staff reluctant to work there because of poor infrastructure, lack of educational opportunities for their children and low quality of life. For instance, in Bonthe and Moyamba district in the south and Tonkolili district in the north, there were no midwives in 2008. A disproportionately high number of health staff works in Freetown and the Western Area meets WHO staffing ratios of one doctor per 12,000. But, in Kailahun district, in the east of the country, there is one doctor per 191, 346 (Amnesty international, 2009).

2.6. Spatial Inequalities in Ghana

Inequalities in spatial development give rise to poverty, which then tends to be spatial in nature. In most, cases spatial inequalities are related to resource endowment. In this regard, climate, weather, and physical resource endowment are important (Tsikata and Seini, 2004). Most important resources such as gold, diamonds and most recently crude oil are all found in the Southern part of the country. The climate in the South is also favorable for cultivating export crops.

A clear pattern of inequality in Ghana manifests itself in the North-South dichotomy in development. A number of studies have emphasized the broad disparity between the three Northern Regions and the Southern part of the country in terms of levels of economic development and the general quality of life, with Northern Ghana falling relatively behind (Songsore, 1983, Ewusi, 1976 and Dickson, 1968).

2.6.1. Causes of Spatial Inequalities in Ghana.

A critical factor in the North-South divide is the uneven distribution of natural resources within Ghana. The forest in the South is an invaluable asset that not only can be exploited directly, but it is also a suitable environment for producing cash crops such as cocoa and cola. The fertile soils also support the production of a variety of food crops, including horticultural crops. By contrast, the North is decidedly disfavoured. The short growing season and the erratic rainfall reduce the variety of crops that can be grown. Few mineral deposits have been discovered, and none are extensively exploited (Tsikata and Seini, 2004).

Inequality in Ghana, as in most societies, has also been determined by factors such as physical environment (particularly examining the differences between the poor north and the prosperous south, and the rural-urban divide), gender, disability and class. More specifically, inequality of opportunities among the peoples of Ghana is often the result of the combined effect of objective factors such as differential resource endowment, history and public policy, as well as subjective factors such as attitudes and prejudices (UNDP, 1997).

Cumulatively, these effects cut across regions. There are wide disparities with respect to the distribution of medical and health facilities, access to telephones, consumption of electricity, small scale industries, schools and other key social services, particularly between the north and the south, rural and urban areas. For example at independence, having been largely neglected and left relatively underdeveloped under colonial rule, the northern region declared a social and economic distance from the rest of the country and its political leaders argued that their people were not ready to be governed as part of independent Ghana without special protections (Gyimah-Boadi, E. and Asante, R 2004).

Furthermore, taking account of the distribution of facilities such as schools and hospitals in the country, some observers have ranked the regions in Ghana along a continuum of the most to the least developed. Dickson(1975) puts the following list in the descending order of rank:(1) Greater Accra (2) Asante (3) Eastern(4) Central (5) Western (6) Volta (7) Brong – Ahafo (8) Northern (9) Upper East and Upper West. Thus, the three Northern Regions which placed last in the rankings were disadvantaged in the provision of facilities compared to the South.

Using a quantitative measure ranging from 1 to 0, and using Greater Accra as the base Ewusi (1976) ranked the regions as follows (1) Greater Accra 1.000 (2) Central Region 0.398 (3) Western 0.392 (4) Eastern Region 0.355 (5) Ashanti Region 0.340 (6) Volta Region 0.306 (7) Brong-Ahafo Region 0.365 (8) Northern Region 0.110 (9) Upper Region (East and West) 0.071. The Greater region which obtained highest score of 1.00 was considered as the most developed region, while the three Northern Regions lagged behind with the two Upper Regions scoring 0.110 as the least developed regions in the country.

2.7 Regional Distribution of Health Facilities in Ghana

There are more health facilities in the Southern part of Ghana than the Northern part. In terms of total number of facilities, each of the seven regions in the Southern Ghana has more health facilities than each of the three Northern Regions (GHS, 2007). Table 2.1 at page 18 shows the distribution of health facilities as of 2007. It can be seen that Ashanti and Greater Accra Regions have the highest number of health facilities, that is, 549 and 467 respectively compared with the three Northern Regions which had the lowest number of health facilities; that is, Upper West (135), Upper East (144) and Northern Region (188).

The distribution of the various types of health facilities also shows disparities between the Southern regions and the three Northern Regions. None of the three Northern regions has a psychiatric hospital, while all the four Psychiatric Hospitals are located in the Southern part of the country, namely Greater Accra(2) and Central(1). Regarding Government Hospital the number of hospitals in Ashanti Region (22) alone is more than that of the three Northern Regions (15). There are also more Private hospitals in the South than in the North. For instance, Greater Accra has 79 private hospitals compared to 2 private hospitals in Northern Region.

Again, until recently the two main teaching hospitals in the country, namely Korle-Bu and Komfo Anokye which are important national referral centres were all located in the Southern part of the country. However, the Regional Hospital in Tamale has now been upgraded to a Teaching Hospital, though it cannot boast of same level of infrastructure as the two leading Teaching Hospitals. Obviously, this would negatively affect the quality of health care received by people in the northern part of the country. As they would still have to travel down the south to seek health care at a higher level facility. This would lead to incurring additional financial cost as well as the inconveniences of travelling long distance to the south to seek health care.

Table 2.1: Distribution of Health Facilities by Region (2007)

	TEACH ING HOSPIT ALS	REGIONA L HOSPITA LS	PSY- CHIA TRIC HOSPI TAL	HOSPITALS				POLY CLINI C	HEALTH CENTRES AND CLINICS					MATERNITY HOMES		CHPS			GRAND	TOTAL
REGION	GOVT	GOVT	GOVT	CHAG	GOV T	ISLAM IC	PRIVA TE	QUASI GOV'T	GOVT	CHAG	GOVT	ISLA MIC	PRIVA TE	QUASI GOV'T	GOVT	PRIVA TE	QUASI GOVT	GOV T	PRIVAT E	
ASHANTI	1	0	0	17	22	3	48	2	0	32	140	2	161	9	3	105	0	4	0	549
BRONG AHAFO	0	1		9	7	1	6	0	0	8	123	0	18	4	3	37	0	11	0	228
CENTRAL	0	1	1	3	8	1	8	1	0	9	68	0	62	2	0	34	0	43	0	241
EASTERN	0	1	0	5	12	0	5	3	0	19	165	0	63	7	1	47	0	44	0	372
GREATER ACCRA	1	1	2	3	7	2	79	6	7	5	42	1	232	16	0	55	1	4	0	466
NORTHER N	0	1	0	4	8	0	1	2	0	25	120	0	5	3	2	9	0	10	0	188
UPPER EAST	0	1	0	1	4	0	0	0	0	15	54	0	11	1	0	2	0	55	0	144
UPPER WEST	0	1	0	2	3	2	1	0	0	14	60	3	3	0	0	6	0	39	0	135
VOLTA	0	1	0	8	11	0	7	1	1	9	192	0	23	0	0	24	0	19	0	296
WESTERN	0	1	0	3	11	1	1	7	2	20	95	2	109	22	0	60	0	56	2	392
GRAND TOTAL	2	9	3	55	93	10	156	22	10	156	1059	8	688	64	9	379	1	385	2	3011

Source: Ghana Health Service (2007)

2.8. Tools for Spatial Analysis

The descriptive analysis of data on the distribution of health facilities in Ghana has been discussed in the previous section. And it shows that there are disparities in the distribution of health facilities in the country. In addition, this section therefore seeks to describe the spatial tools that would be used in the subsequent section to determine whether there is equity or inequality in the distribution of health facilities the country. There are several of such planning tools that can be used in spatial analysis. However, for the purposes of this study measure of concentration, distribution quotient and measure of association introduced by Rondinelli (1985) are used to measure whether there is equity or inequality in the distribution of health facilities in Ghana.

- **Distribution Quotient.** It presents the relative degree of concentration of specific activities within particular units. It is calculated by dividing the percentage of specific activity(Y) by the percentage of the land area(X) for each spatial unit. The formula for calculating the Distribution Quotient (DQ) is stated as: $DQ = Y/X$ where Y= percentage of specific activity and X= percentage of land area for the spatial unit. Distribution quotient with a higher ratio means that there is higher concentration of an activity while distribution quotient with a lower ratio shows there is lower concentration of an activity
- **Measure of Concentration.** It measures the degree to which an activity or function is dispersed widely among spatial units or are concentrated within an area in a region. It is stated as follows

$$C = \frac{\sum |X - Y|}{2}$$

Where C is the measure of concentration; X represents a percentage of region's physical area in each territorial unit while Y represents the percentage of activities in each territorial unit. The values of measure of concentration range from 0 to 100. The higher the value of C the more unevenly distributed or higher concentration of activities or functions is within the region. If the figure obtained for the measure of concentration falls within the midpoint value of 50 in the range of 0 to 100, then it suggests equality in the concentration of the activity.

- **Measure of Association (M.A).** It can also be used to measure the degree of association between the health facilities and territorial units in the country. It set of value ranges from 0 to 100. Therefore, greater the value of M.A the stronger the association between two activities within a territory. A measure of association with a value of 50 which falls within a midpoint in the value of 0 to 100 suggests equality between territorial unit and an activity.

It is expressed by the formula

$$M.A=100-\frac{\sum |X-Y|}{2}$$

Where X represents a percentage of the physical territory and Y represents the percentage of activities in the region.

2.8.1 Using Spatial planning indices to Analyze Inequalities in the Distribution of Health Facilities at the Regional Level.

This section shows the figures obtained by calculating distribution quotient, measures of association and concentration of health facilities and land area of the various regions in the country.

- **Distribution Quotient.** Calculating the Distribution Quotient (DQ) stated as: $DQ = Y/X$ where Y= percentage of specific activity and X = percentage of land area for the spatial unit. From the table 2.2 at page 22 it can be concluded that Greater Accra has the highest concentration of health facilities as it has the highest distribution quotient ,that is, $DQ = 11.1$ while Central ($DQ = 1.95$) and Ashanti($DQ = 1.78$) followed second and third respectively.

The northern region has the lowest distribution quotient as indicated by $DQ = 0.21$ followed by Brong Ahafo ($DQ = 0.46$) and Upper West ($DQ = 0.58$) respectively. Thus, Northern Region has the lowest concentration of health facilities as its distribution quotient shows the lowest ratio. The limitation of this tool is that it fails to reveal inequalities in other health related issues such as the ratio of hospital beds, x-ray equipment to population using a health facility. These logistics are needed for the effective functioning of health facilities. It rather concentrates on the ratio between land area and the physical facility.

- **Measure of Association (M.A).** Calculating measure of association as expressed by the formula

$$M.A = 100 - \frac{\sum |X - Y|}{2}$$

Where X represents a percentage of the physical territory and Y represents the percentage of activities in the region. From the table 2.2 at page 22 M.A is calculated as

$$M.A. = \frac{100 - 72}{2}$$

$$M.A = 14$$

The Measure of Association (M.A.) 14 falls far below the mid point value of 50 in the range of 0 to 100. Hence it can be concluded that there is a relatively low level of association between territorial area and the number of health facilities in the country. The implication is that the density of health facilities in terms of the number of health facilities available per territorial units is likely to be low; hence the availability and access to healthcare from health facilities in some parts of the country would be low.

Despite its importance in establishing the relationship between territorial units and health facilities which has implication for physical access, it has the limitation of not measuring issues such as the relationship between territorial units and quality of health care delivery as well as the ability to pay for health services.

- **Measure of Concentration** as stated as by the formula

$$C = \frac{\sum |X - Y|}{2}$$

Where C is the measure of concentration; X represents a percentage of region's physical area in each territorial unit while Y represents the percentage of activities in each territorial unit. From the table 2.2, measure of concentration for regional distribution of health facilities is calculated as follows.

$$C = \frac{72}{2}$$

$$C = 36$$

The Measure of Concentration (M.C) 36 falls below the mid point value of 50 in the range of 0 to 100 in the calculated concentration, the figure suggest the concentration of health facilities in the country is low. However, the tool has the limitation of failing to measure

inequalities in quality of health care, the number of personnel and equipment among the health facilities in the regions.

Table: 2.2.Calculating measure of concentration, Association and Distribution Quotient for Health Facilities at the Regional Level.

Region	Area(sq.km)	Percentage of area (X)	Number of health facilities	Percentage of health facilities(Y)	X-Y	Distribution Quotient
ASHANTI	24389	10.2	549	18.2	8	1.78
BRONG AHAFO	39557	16.6	228	7.6	9	46
CENTRAL	9826	4.1	241	8	3.9	1.95
EASTERN	19323	8.1	372	12.4	4.3	1.53
GREATER ACCRA	3245	1.4	466	15.5	14.1	11.1
NORTHERN	70384	29.5	188	6.2	23.3	21
UPPER EAST	8842	3.7	144	4.8	1.1	1.30
UPPER WEST	18376	7.7	135	4.5	3.2	58
VOLTA	20570	8.6	296	9.8	1.2	1.34
WESTERN	23921	10.0	392	13	3	1.3
Total	238433	100	3011	100	72	

Source: Computed from GHS (2007) and Ghana districts (2011)

2.9 Accessibility to Health Facilities-A Conceptual View

According to Penchansky and Thomas (1981), access to health care is grouped into five categories. These are: affordability, availability, accessibility, accommodation, and acceptability. Affordability is determined by how the provider's charges relate to the client's ability and willingness to pay for services. Availability measures the extent to which the provider has the requisite resources, such as personnel and technology, to meet the needs of the client. Accessibility refers to geographic accessibility, which is determined by how easily the client can physically reach the provider's location. Accommodation reflects the extent to which the provider's operation is organized in ways that meet the constraints and preferences of the client. Acceptability captures the extent to which the client is comfortable with the more immutable characteristics of the provider, and vice versa.

However, for purposes of this discussion accessibility would be discussed in the context of physical or geographical accessibility to health facilities. According to WHO standard, every person should have access to health care within a 5km radius. However, in Ghana half of the population cannot consult a doctor within 5km, which corresponds to 1 hour walking distance (Boom et al, 2004). According to GHS (2003), there are still people living beyond 8km radius to a health facility, though the UN recommended distance is 5km, which affects access to health care services, especially among the poor and vulnerable groups who cannot have access to healthcare.

The World Health Organization country report on Ghana observed that the mean time taken to reach a government health facility by means of a car was 39 minutes 4 seconds and for private health facility, it was 40 minutes 4 seconds; and 49 minutes 5 seconds for NGO health facility (WHO, 2005). This shows clearly that the time required to reach all the three health facility types above is more than 30 minutes considered as good for people to live within the reach of a health facility (GSS, 2003). However, in the urban areas the situation was quite better, that is, 26 minutes.5 seconds was needed to reach a health facility. But, again not good in the rural areas (48 minutes.30 seconds) required to reach a health facility (WHO, 2005).

According to GSS (2003), access to health service is classified as good for persons who live less than 30 minutes from a health facility. However, the GSS (CWIQ II 2003) stated that 57.7 percent Ghanaians had access to health facilities within 30 minutes of their places of residence.

The inequitable distribution of health facilities in the country has impacted negatively on accessibility. For instance in the Northern region, 12.3 percent in Tamale could access hospital within their locality. While 23.7 percent accessed the nearest hospital within 1-5 kilometres and 1.4 percent went beyond 31 kilometres to the same facility. In Gushiegu-Karaga in the same region only 0.2 percent could have access to the nearest hospital within their locality while 0.5 percent could access the nearest hospital within 1-5 kilometres. Majority of the residents of Karaga (90.1 percent) could have access to the nearest health facility at a distance of 31 kilometres and beyond (GSS, 2000).

The situation was comparatively better in Ashanti region. In Kumasi Metropolis, there were hospitals within all the communities. In other words the nearest hospitals could be reached in

less than 5 kilometres. In Amansie East one of most deprived districts in the region the situation was better than Karaga, as 0.7 percent could access health care from public hospital within their locality while 6.6 percent were within 1-5 kilometres to the nearest facility and 30.4 percent went beyond 31 kilometres in order to access health care from the nearest hospital (GSS, 2000).

Transportation also has an impact on accessibility to health care facilities. In a study on Combating Maternal Mortality, the role of Rural Transportation in the Gushiegu district (Boansi et al, 2010) observed that the poor state of rural transport has made it difficult for nursing mothers to seek health care, as they tend to ride or walk longer distances to access these services. The study further observed that 69 percent of pregnant and nursing mothers visit health facilities either by walking, using a bicycle, or both.

Due to walking and bicycling in accessing health facilities, travel time to access health care has adversely been affected. This is because walking and bicycling are not faster and convenient means to reach health facilities. Travel time would have been better if cars are used as a means of transport to health facilities. Again, 64 percent of pregnant and nursing mothers spent an average of 60 minutes to travelling to access health care. Besides availability of a means of transport, high transport cost was also a barrier to health care.

2.9.1 Quantitative Measures of Accessibility

Quantitative measures of accessibility have a variety of uses. They are used to investigate the reasons for spatial differences of health indicators, and also to determine the size of the population that would benefit from additional health facilities (Bigman and Deichman, 2000)

The shortest distance index is one of the indicators used to measure the shortest distance from any demand point to public facilities. It is expressed as $E_i = \min_j (d_{ij})$ where E_i is the shortest distance for location i , and d_i is the shortest distance from the point of origin i to the location of the facility.

However, the shortest distance index has two drawbacks when used to determine the demand for and location of public facilities. First, this indicator considers only the spatial relationship between a given location and the service centre, but not the services provided at the centre.

Second, the shortest distance index has an underlying assumption that people will use the closest facility which is not always the case.

Another indicator used to measure accessibility is the average distance index. It measures the average distance (or travel time or travel costs) from a given demand point to all facilities in an area. It is shown by the equation

$$T_i = \frac{\sum_{j=1}^k d_{ij}}{k}$$

Where T_i is the average distance or travel time or travel costs index, d is the distance between demand point i and the location of facility j , and k is the number of facilities (Bigman and Deichman, 2000)

2.10 Population per Health Facility Ratio

This section discusses the issue of population per health facility ratio in each of the ten geographical regions. Population per health facility ratio is an indicator of the number of health facility available per a given population in an area. However, population per health facility ratio does not automatically translate into higher accessibility to health facilities. But a lower population- health facility ratio is better indicator to accessibility to health facilities than a higher population health facility.

2.10.1 Population per Health Facility Ratio at Regional Level

Population per health facilities ratio also reflects regional disparities. Table 2.3 at page 26 shows that population per health facility ratio is highest in the Northern region (1:11,751). This figure is almost twice the national average of 1: 7,616. The implication is that the number of health facilities available to the population is likely to be the low in this region. Interestingly, Upper West has the lowest population per health facility ratio of 1: 4,806 though it has poor accessibility to health facilities. Only two percent of localities in the region have hospitals within it and only 11 percent have a clinic/maternity home facility within the locality (GSS, 2005).

In the Southern part of the country, population per health facility ratio is relatively better in the Western (1:6120), Eastern (1:6,242) and Volta(1:6,303) regions. These figures are above the national average of 1:7,751 and suggest that there are likely to have more health facilities available to the population in these areas. Also, Ashanti (1:8,316), Greater Accra (1:8,429) and Central regions (1:7,649) have figures above the national average.

Table 2.3: Population per Health Facility Ratio by Region

Region	Population	Health facilities	Population per health facility ratio
Ashanti	4,565,683	549	1:8,316
Brong Ahafo	2,157,949	228	1:9,465
Central	1,843,403	241	1:7,649
Eastern	2,322,029	372	1:6,242
Greater Accra	3,927,879	466	1:8,429
Northern	2,209,100	188	1:11,751
Upper East	993,317	144	1:6,898
Upper West	648,797	135	1:4,806
Volta	1,865,730	296	1:6,303
Western	2,399,348	392	1:6,120
Total	22,933,234	3011	1:7,616

Source: Computed from GSS (2005) and GHS, 2007.

2.11 Conceptual framework for the Study of Inequality in the Distribution and Accessibility to Health Facilities

Literature review on the distribution of health facilities in Ghana reveals that there is inequity in the distribution of health facilities with its resultant impact on accessibility to these facilities. A diagram explaining inequality and accessibility to health facilities has been shown at page 28

. It has four main themes namely, spatial environment, hierarchy of health facilities, factors determining levels of accessibility and determinants of spatial inequality. This spatial environment can be looked at the national, regional, district, sub-district, rural and urban levels. The national level refers to the entire territory of Ghana. The regional on the other

hand describes the various regions, while the district refers to the districts in the country .The districts are further divided into sub-districts. The entire country can also be divided into rural and urban based on criteria such as population and the functions a settlement performs.

Differences in resource endowment, government policies and capital mobility or capital can cause differences in distribution of health facilities. Agglomeration factor such as government policy in the terms of the provision of infrastructure such as road, electricity, schools and water can attract capital for the provision of health facilities by the private sector. These basic infrastructures are also crucial in the provision of public health facilities.

Health facilities are also ranked in terms of the level of infrastructure and services it performs. At the top are the Teaching Hospitals, followed by Regional Hospitals, Polyclinics, District Hospitals, Health centres/clinics and Health post/CHPS.

Accessibility to any of these facilities is influenced by distance, condition of road, travel and waiting times. Long distance used, long waiting time either to get a means of transport or receive treatment at a facility and poor surface condition of roads can lead to low accessibility to health facilities and vice versa

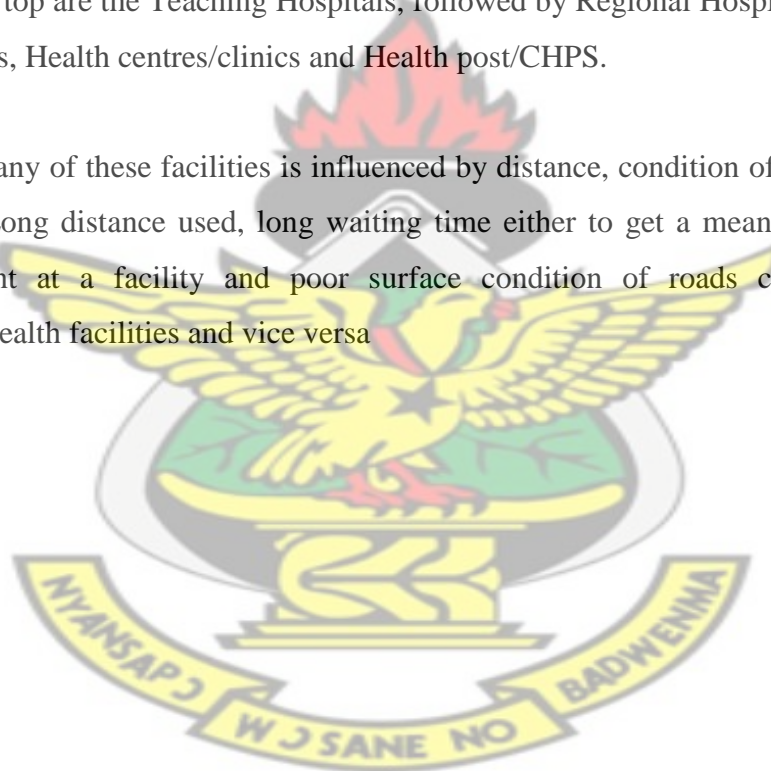
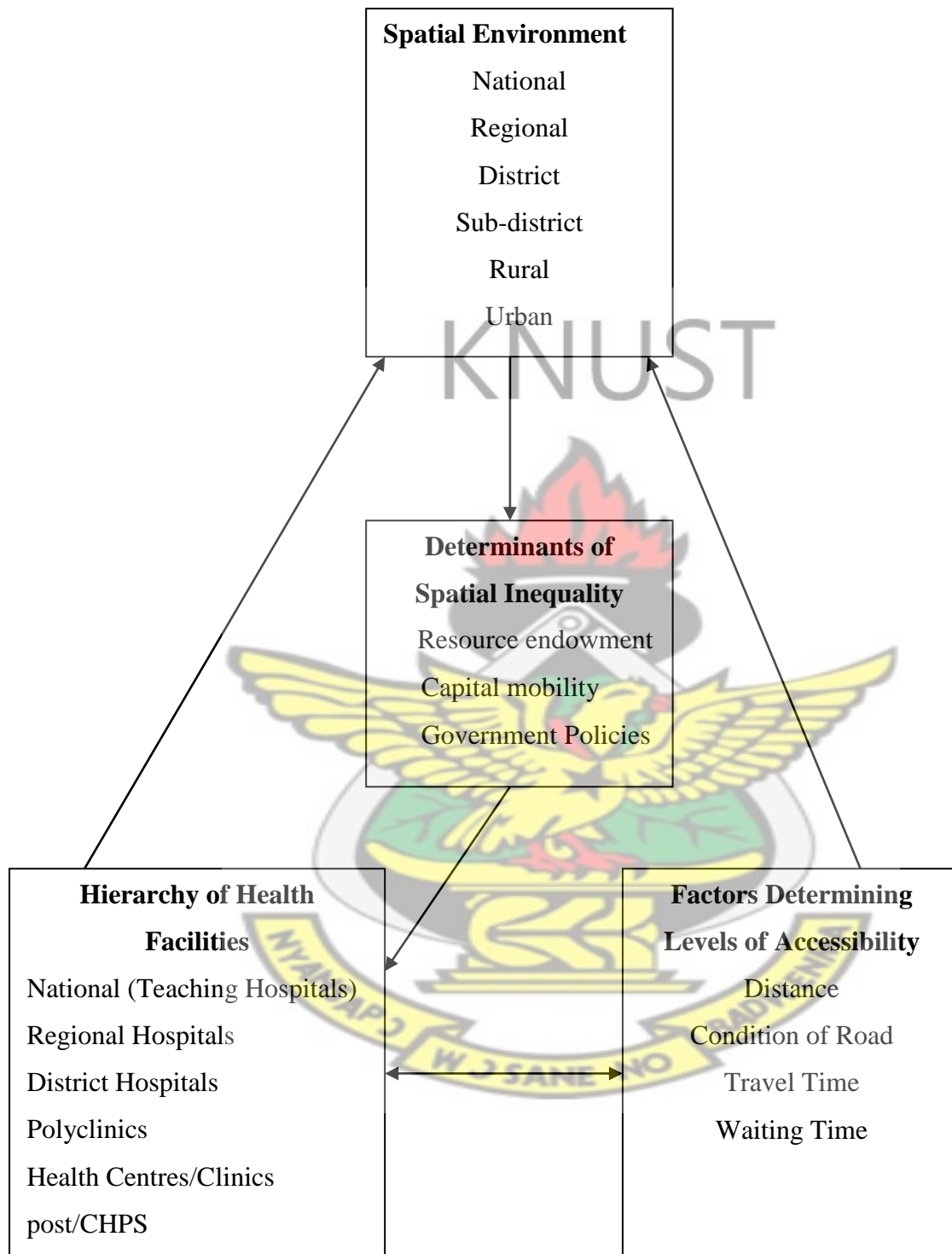


Figure 2.1: Diagram of Inequality in the Distribution and Accessibility to Health Facilities



Source: Author's construct, January, 2012

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the approach and methodology used for the study. The chapter starts with research the design employed for the study. It continues by providing reasons for the choice of the research design and its limitations. Also research processes, data types, sources and methods of collection of data are also discussed. This chapter further looks at sampling techniques used for the study. The chapter ends by presenting the techniques used to analyze the data. The rationalization and analysis as well as data presentation and reporting of the study has also been highlighted.

3.2 Research Design

The research design used for the study is the case study approach. A case study research means single and multiple case studies (Thomas, 2011). Hence a single case study has been adopted, by choosing the Eastern region as the study area.

A case study is an empirical enquiry that allows the researcher to investigate and understand the dynamics of a particular system. It does not only examine in depth a phenomenon but also helps the researcher to establish the interrelationships among factors such as people, programmes, policies, decisions, organizations , and others.

According to Thomas (2011) cases studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame-an-object-within which the study is conducted and which the case illuminates and explicates.

The case study as research design has some merits. It provides a profound understanding to the researcher on complexities of issues involved in the research by combining data from diverse perspectives and sources. It also helps give a comprehensive focus to the research. Despite its usefulness as a design instrument, a case study lacks representativeness. As a result, it is difficult to generalize the findings of a case study.

In order to reduce the limitation not being able to generalize the findings of a case study, Eastern region has been selected out of ten regions in Ghana in order to bring to the fore peculiar situation in the region, in terms focus of the study.

3.3 Research Processes

The different stages of the research and the approaches adopted at each stage are discussed below. The discussion also entails the major setbacks encountered at each stage and how they were remedied.

3.3.1 Problem Definition

Every research starts with the definition of a problem, hence this study commenced by defining a problem. This involves identifying a topic that is worth researching into and at the same time would be of interest to stakeholders. A major challenge faced at this stage was the difficulty of selecting as a subject from numerous subjects identified. Issues such as the availability of literature, the need for originality and readiness of major stakeholders in the study area to make available information; time and other resources were taken into consideration before selecting this topic.

There was also the difficulty of selecting which aspects of the health sector to research into as a wide range of issues on health were identified. It was finally decided to concentrate on the spatial aspects of health hence the choice of research into the distribution of health facilities in the Eastern region.

3.3.2 Desk Study and Review of Relevant Literature

In conformity with the scope and the problem defined in the research, relevant literature of works previously done on the inequality in distribution and accessibility to health facilities in Ghana and elsewhere were sought from internet sources, books, journals and others were used in addition to primary data collected. This helped to gain insight into research on the topic as well as to address any shortfall likely to emanate from the use of primary data.

3.3.3 Design of Field Survey Instruments

Review of literature on the topic guided in designing questionnaires which were in conformity with the research objectives and questions. The questionnaire is one of the most widely used instruments for collecting data in survey research. Bryman (2004) suggests that the appeal of the questionnaire stems from its cheapness and quickness in terms of administration, the absence of interviewer effect and its convenience for correspondence.

Different questionnaires were designed for the various stakeholders in the study; namely, Ghana Health Service, and selected NGOs in the health sector as well as Ghana Statistical Service. The questionnaires were carefully worded by taking into consideration the varied data expected of various stakeholders.

The survey questionnaires were semi-structured, containing both open-ended and close ended questions. The close-ended questions required the respondent to make choices from alternative responses while the open-ended questions provided space for them to give their own answers. Advantage of the semi-structured questionnaire was that while the closed questions made the questionnaire easy to complete, the open-ended questions provided the opportunity for respondents to give more detail information about issues being investigated.

3.4 Categories of Data Collected, Sources and Methods Used.

Categories of data required for the study are statistics on the distribution, types and ownership of health facilities in Eastern Region, stakeholders involved in health care provision in the Eastern region, as well as distances to health facilities. Also required are causes of inequalities in the distribution of health facilities and challenges in the distribution of health facilities in the Eastern region.

The sources of data on the distribution of health facilities, types and ownership status of health facilities, location of health facilities in Eastern region were obtained from statistics and information unit of Ghana Health Service by administering a questionnaire. Again, information on the causes of inequalities in the distribution of health facilities and challenges in the distribution of health facilities in the Eastern region were obtained from the Estate Department of Ghana Health Service by a questionnaire.

NGOs whose activities relate to the health sector, namely Hunger Project-Ghana and Catholic Diocese Health Services were approached with a questionnaire for data on the types and number of health facilities they have and challenges in the inequalities in distribution of health facilities in the region. Data on the various distances to health facilities in the Eastern region and its implication on accessibility to health facilities were obtained from the Eastern Regional Office of Ghana Statistical Service.

Table 3.1: A Summary of Data Types, Sources and Data Collection Methods

Data Types	Source/Unit of enquiry	Data Collection Methods
1. Statistics on the total number of health facilities including the types and location of these facilities.	Ghana Health Service- Eastern region Health Information Unit	Questionnaire
2. Causes of inequalities in the distribution of health facilities.	Estate Department	Questionnaire
3.Challenges in the distribution of health facilities.		
1 Statistics on the total number of health facilities.	NGOs in Health Sector	
2. Types of facilities.	1.Hunger Project-Ghana	Questionnaire
3. Challenges in the distribution of health facilities.	2.Catholic Diocese Health Services-Eastern Region	Questionnaire
1. Distances to health facilities in the Eastern Region.	Ghana Statistical Service- Eastern Region	Questionnaire
2. Implications of distances to health facilities on accessibility.		

Source: Author's Construct, January, 2012

3.5 Sampling Techniques

Since the study was basically an institutional survey and the researcher had in mind which institutions to approach for the relevant data, purposive sampling techniques were used to select the units of enquiry for the study which are briefly listed below.

- Ghana Health Service: Due to their small number, some officers of Ghana Health Service at the Eastern Regional Directorate were surveyed.

- NGOs: Again, some of officers of health related NGOs, namely Catholic Diocese Health Service and Hunger Project –Ghana were identified and surveyed.
- Ghana Statistical Service: An officer from the Ghana Statistical Service was identified and surveyed.

3.6 Data Rationalization and Analysis

Data analysis is very important because it gives an opportunity for making meaning out of the data by interpreting the data collected from the field. In the process of analyzing efforts were also made to relate the analysis to literature discussed previously. This was done by being guided by the research questions as well as objectives of the study.

Editing of data was done to remove errors, cross-check the facts and all discrepancies were reconciled. There were instances additional interviews had to be done to verify important facts. This was to ensure the reliability of the research findings.

After editing the data, coding was done by categorizing answers provided according to how they appear on the questionnaires. Some of the data were transformed into tables while others which were already in the form of tables were analysed.

Both quantitative and qualitative methods were used to analyze the data. Quantitatively spatial analysis tools such as distribution quotient, measures of concentration and association were used to explain the extent of relationship between variables. These spatial tools helped to establish the extent of spatial inequalities in the distribution of health facilities. Microsoft Excel was also used to present data in tables. Again, some of the data collected from the surveyed institutions were in the form of tables; which were also analysed.

Qualitative data collected from officers of Ghana Health Service- Eastern Regional Directorate and Health Related NGOs namely Hunger Project-Ghana and Catholic Diocese Health Services were used to supplement the quantitative data by using descriptive means to analyze them.

3.7 Data Presentation and Reporting

Results obtained from the study are both quantitative and qualitative. Findings and analyses of the results are presented under the main topics or themes to address the research objectives and questions. The results are first presented according to each of the major themes and subsequently a comparative analysis of among some of the districts in the region. The appropriate tables were used to present the data. Also discussion of findings from officers of key institutions such as Ghana Health Service and Health related NGOs are done thematically.



CHAPTER FOUR

PROFILE OF STUDY REGION AND DISCUSSION OF FIELD SURVEY DATA RESULTS

4.1 Introduction

This chapter presents and analyses the empirical data obtained from the field. It also presents issues of relevance to the study such as the location, distribution and accessibility to health facilities. The contributions of other major stakeholders such as the Ghana Health Service, NGOs that are involved in the health sector as well as Ghana Statistical Service are discussed.

The quantitative data comprising the location, distribution and types of health facilities were obtained from Ghana Health Service Health information unit in the Eastern Region and Catholic Diocese Health Service and distances to health facilities obtained from documents of the Ghana Statistical Service in the Eastern Region based on the 2000 Population and Housing Census have been analysed. While qualitative data on the challenges in the distribution of health facilities and the causes of inequality in the distribution of health facilities from the Estate department of the Ghana Health Service as well as challenges facing the distribution of health facilities in the region obtained from the Catholic Diocese Health Services and Hunger Project-Ghana are also discussed.

All throughout the discussion, attempt is also made to compare and contrast some of the data with spatial tools and tables among the districts in the region under different headings. Also, in the discussion of the field data, references are made to literature reviewed in the previous chapters.

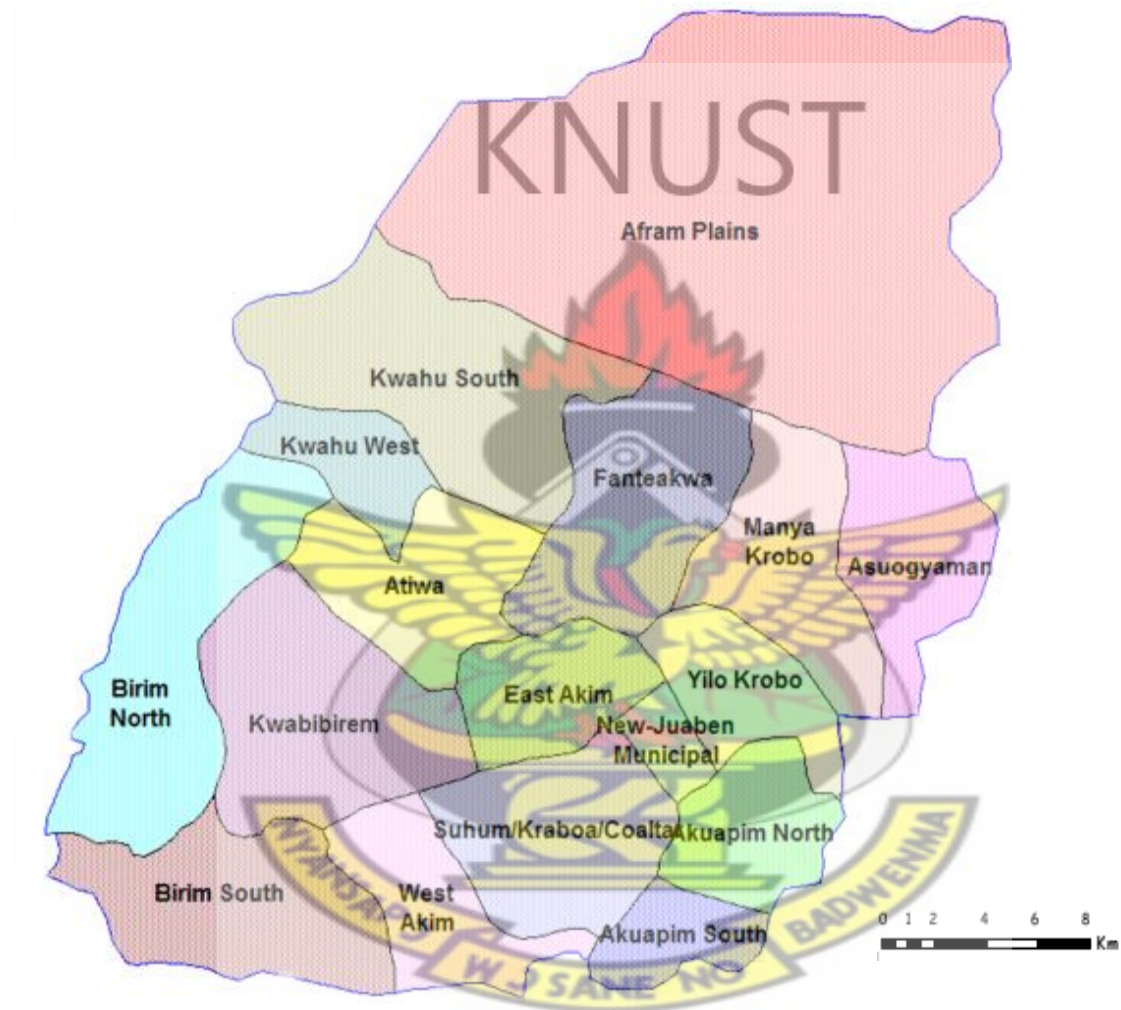
4.2 Study Region in Context

This section discusses the profile of the study region, Eastern. This helps to bring to the fore the characteristics of the region in terms of political, socio-economic and physical characteristics of the region.

Size and Location

The Eastern Region occupies a land area of 19,323 kilometres and constitutes 8.1 per cent of the total land area of Ghana. It is the sixth largest region in terms of land area. It lies between latitudes 6° and 7° North and between longitudes 1°30' West and 0°30' East. The region shares common boundaries with the Greater Accra, Central, Ashanti, Brong Ahafo and Volta Regions. Koforidua is the administrative capital of the region.

Figure 4.1 Area Map of Eastern Region



Wikipedia.Com, January, 2012

Physical features

The region has four main geographical features, namely:

- (i) The Kwahu scarp with an elevation of 2,586 feet above sea level.
- (ii) The Atiwa-Atwiredu Ranges near Kibi, reaching an elevation of 2,400 feet.
- (iii) The Akuapem highland attaining an elevation of 1,530 feet which is the southern extension of the Togo-Atakora mountain ranges and
- (iv) The isolated hills/mountains dotting the relatively low-lying plains to the south, notably the Krobo and the Yogaga mountains (GSS,2000).

The relevance of the physical characteristics to the study is that some areas of the region are located on mountainous, hilly and difficult to reach areas lacking infrastructures such as roads, electricity and water. Hence it becomes very difficult to site health facilities in these areas.

Demographic characteristics

According to the 2000 Population and Housing Census the population of the Region stood at 2,106,696, represents 11.1 per cent of Ghana's population of 18,912,079. It is the third most populous region after Ashanti and Greater Accra Regions.

Population density, urbanization and urban-rural composition

The population density of the Region increased from 54 persons per square kilometre in 1960 through 87 persons in 1984 to 109 in 2000. The densities at the district level vary from a high of 684 in New Juaben, through 323 in Akwapim South, 99 in Birim North to a very low of 26 in the Afram Plains.

As noted earlier the region accounts for about a tenth (11.1 percent) of the country's population and has about two thirds (65.4 percent) of its population living in the rural areas. An aspect of urban localities in the region is that they are rather medium to small size urban areas of which over half (57.1 percent) are under 10,000 inhabitants. An additional 30.4 per cent are between 10,000 and 19,900 people.

The proportion of the population urban in the districts varies from 5.1 per cent in the Afram Plains district to 83.4 per cent in the New Juaben municipality. The level of urbanization in New Juaben is due to the fact that the municipality is a regional capital and therefore benefits tremendously from many development projects (GSS, 2000).

Distribution of educational facilities

Data from the Eastern regional Office of the Ghana Education Service (GES) indicate that the region has 964 kindergarten schools, 1,912 primary, 1,028 JSS, 74 SSS and six Teachers Training Colleges

- Number of schools by district

The data show that availability of educational facilities decreases with increasing level of education. SSS is less available to many localities compared with primary schools and JSS. Whereas primary school educational facilities are available within the locality to between 4.4 and 39.8 per cent of localities, JSS facilities are available within the locality, to between 3.0 and 18.0 per cent of localities.

The percentage is lower for SSS, which are within only between 0.2 and 4.7 per cent of the localities. Manya Krobo has the highest percentage (39.8 percent) of localities which have primary school facilities within the locality, closely followed by Yilo Krobo (38.6 percent) and Fanteakwa (31.3 percent). The lowest proportion is in Kwaebibirem (4.4 percent).

Over 70.0 per cent of localities have primary schools within five kilometres varying from Akwapim South (94.1 percent), Yilo Krobo (94.0 percent), Manya Krobo (91.0 percent), and New Juaben (93.7 percent) to Birim South (73.7 percent) and Afram Plains (73.4 percent). All the primary schools in New Juaben and Akwapim North are within 10 kilometres of the locality. Except Birim South (93.3 percent) and Afram Plains (90.1 percent), between 97.3 and 99.9 percent of localities in the region are within 10 kilometres of a primary school. For localities with schools between 6-10 kilometres away. Birim South has the highest proportion (19.6 percent) followed by Afram Plains (16.7 percent) and the least is Yilo Krobo (4.3 percent).

District distribution of JSS facilities shows that Asuogyaman has 18.0 per cent of the localities with JSS within the locality, followed by Yilo Krobo (16.7 percent) and New Juaben (16.6 percent). Districts with a high proportion of localities with a JSS within 1-5 kilometres from the facility are Akwapim South (84.5 percent), New Juaben (76.3 percent), and West Akim (72.2 percent). Once again the Afram Plains has the lowest proportion (42.2 percent) of a JSS facility within 1-5 kilometres. Asuogyaman district has the highest per cent of localities with SSS facilities (4.7 percent) followed by Akwapim North (2.5 percent).

East Akim district (0.2 percent) has the least percentage of localities in the SSS facilities. In each district, the proportion of localities with a primary school facility is far higher than that with a JSS facility, indicating that in each district many primary schools do not have their complement of JSS. This implies that post-primary pupils have to travel to another locality for a JSS facility or end their education at the primary school level. (GSS, 2000)

The implications of this for the study is that health personnel such as doctors and nurses are willing to accept posting to areas where they can have access to educational facilities to educate their children. For instance, Akuapem South with 84.4 percent of JSS within 1-5 kilometres is more likely to attract medical personnel such as doctors than Afram plains which has the lowest proportion (42.2 percent) of a JSS facility within 1-5 kilometres .

4.3 Distribution of Health Facilities in the Eastern Region

Statistics on the distribution of health facilities obtained from the Ghana Health Service-Eastern Regional Directorate (2009) show that there are 522 health facilities in the region. And some districts have higher concentration of health facilities than others. East Akim for instance has 82 health facilities, more than the total number of health facilities for six districts namely, Upper Manya Krobo (8 facilities), Kwahu North (13 facilities), Fanteakwa (13 facilities), Kwahu West (14 facilities), Akyemansa (14 facilities), Kwahu East (15 facilities) respectively. However, the total population of any two of these districts is higher than the population of East Akim as can be seen from table 4.1 at page 40. The implication is that accessibility to health facilities would most likely be higher in East Akim than all the six districts.

There is inequality in distribution of the types of health facilities in the region. Only two districts, namely New Juaben and Yilo Krobo have polyclinics while none of the remaining 19 districts have polyclinics.

However, the distribution of Health centres, Clinics and CHPS compounds is relatively better. Almost all the districts have health centres and clinics though there are few disparities. For instance East Akim alone has 43 clinics while districts such as Upper Manya Krobo and Kwahu North had only a clinic each. CHPS Compounds are the most dominant facility in the region. All the 21 districts have some CHPS Compounds. Again, there are some inequalities in the distribution. For instance, districts such as East Akim and Lower Manya Krobo have as

many as 33 and 23 respectively, while Upper Manya Krobo and Kwahu West have few as 1 and 4 CHPS compounds respectively.

Table 4.1 at the next page summarizes the distribution of various types of health facilities in the region.

Table 4.1: Distribution of Health Facilities in the Eastern Region (2009)

District	Type of Facility							Total
	Regional Hospital	District Hospital	Polyclinic	Hospital	Health Centre	Clinic	CHPS	
Akwapim North	0	1	0	1	6	6	9	23
Akwapim South	0	1	0	2	2	5	30	40
Akyemansa	0	0	0	0	3	4	7	14
Asuogyaman	0	1	0	0	2	9	21	33
Atiwa	0	1	0	0	2	6	17	26
Birim Central	0	1	0	0	1	1	17	20
Birim North	0	0	0	0	2	5	9	16
Birim South	0	1	0	0	2	0	10	13
East Akim	0	1	0	1	4	43	33	82
Fanteakwa	0	1	0	0	2	5	5	13
Kwaebibirem	0	0	0	3	4	2	23	32
Kwahu East	0	0	0	0	3	5	7	15
Kwahu North	0	1	0	0	3	1	14	19
Kwahu South	0	1	0	0	3	5	4	13
Kwahu West	0	1	0	1	7	1	4	14
Lower ManyaKrobo	0	1	0	2	0	6	23	32
New Juaben	1	0	1	2	2	15	15	36
Suhum Kraboa Coaltar	0	1	0	0	1	8	16	26
Upper ManyaKrobo	0	1	0	0	0	5	2	8
West Akim	0	1	0	0	1	8	17	27
YiloKrobo	0	0	1	0	1	10	8	20
Total	1	15	2	12	51	150	291	522

Source: Ghana Health Service, Regional Health Directorate, Koforidua-2009

4.3.1 Using Spatial planning indices to Analyze Inequalities in Distribution of Health Facilities in Eastern Region

The calculation of Spatial indices namely distribution quotient, measures of association and concentration have established inequalities in the distribution of health facilities in the Eastern Region.

- **Distribution Quotient (DQ):** The calculation of distribution quotient stated by the formula: $DQ = Y/X$ has established inequalities in the distribution of health facilities in the region. For instance, table 4.2 at 43 shows that New Juaben has the highest concentration of health facilities with $DQ = 9.1$ while East Akim ($DQ = 4.36$) and Akwapim South ($DQ = 3.85$) followed second and third respectively. Kwahu North has the lowest concentration of health facilities as indicated by $DQ = 0.20$. While Upper Manya Krobo and Kwahu South followed with each having $DQ = 0.34$.

Thus, the concentration of health facilities in these two districts is also low. The implication is that access to health facility is likely to be low in the districts with low distribution quotients while access to health facility would be high in the districts with high distribution quotients. Hence more attention must be paid to the areas with low distribution quotients in terms of provision of health facilities in the region.

Despite its importance in helping measure inequalities in the distribution of health facilities, the distribution quotient fails to measure inequalities in vital health issues such as personnel, ambulance services, and operating theatres in the various health facilities in the region.

- **Measure of Concentration:** As stated by the formula $C = \frac{\sum(X-Y)}{2}$

This has been used to measure the level of concentration of health facilities in the region. The $X-Y$ is the summation of the difference in percentage of area(X) and percentage of health facilities(X). The figure obtained is 66.43 as it shown on the table 4.2 at page 43.

$$C = \frac{66.43}{2}$$

$$C = 33.21$$

Since the figure obtained 33.21 falls below 50 which is the midpoint value in the range of 0 to 100 it can be concluded that the level of concentration of health facilities in the Eastern Region is not very high. The M.C = 33.21 obtained for Eastern Region is lower than M.C= 36 obtained at the national at page 22. This suggests that the level of concentration of health facilities is higher at the national level than in the Eastern Region This has the tendency of impacting negatively on access to health care in the region. Therefore, more needs to be done to increase the number of health facilities in the region.

The measure of concentration has the limitation of failing to measure the level of concentration of important health indicators such as the concentration of doctors, nurses and other health personnel. It also fails to measure the concentration of different types of health facilities among the various districts in the region.

Measure of Association (M.A) as expressed by the formula.

$$M.A = 100 - \frac{\sum |X - Y|}{2}$$

It has been used to measure the association between territorial units and concentration of health facilities in the Eastern Region.

$$M.A. = \frac{100 - 66.43}{2}$$

$$M.A = 16.78$$

The M.A. 16.78 falls far below the midpoint value of 50 in the range of 0 to 100. Hence it can be concluded that there is a relatively low level of association between territorial area and the number of health facilities in the Eastern Region. This implies that the number health facilities per the territorial unit in the Eastern Region is not high, and this is likely to lead to low accessibility to health facilities, hence more needs to be done to improve upon the provision of health facilities in the region.

However, the association between territorial units and the number of health facilities is relatively higher in the Eastern Region (MA = 16.78) than the national level (M.A=14) which can be seen at page 22. The Measure of Association as spatial planning tool failed to measure the relationship between territorial units and other health indicators such as personnel, logistics and others.

Table 4.2 next page summarizes how spatial tools have been used to measure inequalities in the distribution of health facilities in the Eastern Region.

Table 4.2: Calculating measure of concentration, Association and Distribution Quotient for Health facilities in the Eastern Region

District	Area (sq.km)	Percentage of area(X)	Number of health facilities	Percentage of health facilities(Y)	X-Y	Distribution Quotient
Akwapim North	450	2.24	23	4.4	2.16	1.9
Akwapim South	403	2	40	7.7	5.7	3.85
Akyemansa	667.17	3.32	14	2.7	.62	0.81
Asuogyaman	1,507	7.53	33	6.3	1.23	0.83
Atiwa	754	3.76	26	5	1.24	1.32
Birim Central	1,090	5.44	20	3.8	1.64	0.69
Birim North	1,250	6.2	16	3.1	3.1	0.5
Birim South	299.50	1.5	13	2.5	1	1.66
East Akim	725	3.6	82	15.7	12.1	4.36
Fanteakwa	1,150	5.7	13	2.5	3.2	0.43
Kwaebibirem	1,230	6.1	32	6.13	.03	1
Kwahu East	860	4.29	15	2.9	1.39	0.67
Kwahu North	3559	17.77	19	3.6	14.17	0.20
Kwahu South	1462	7.3	13	2.5	4.8	0.34
Kwahu West	414	2.1	14	2.7	.6	1.28
Lower Manya Krobo	819	4.1	32	6.1	2	1.48
New Juaben	110	.55	26	5	4.45	9.1
Suhum Kraboa Coaltar	971	4.8	36	7	2.2	1.45
Upper Manya Krobo	885.6	4.4	8	1.5	2.9	.34
West Akim	825	4.1	27	5.1	1	1.24
Yilo Krobo	594	2.9	20	3.8	.9	1.3
TOTAL	20025.27	100	522	100	66.43	

Source: Computed from Ghana Health Service (2009), Ghana districts (2011) and Geohive (2011)

4.4 Population per Health facility Ratio in the Eastern region.

The population per health facility in the region was calculated based upon data obtained from the Eastern Regional Directorate of the Ghana Health Service and 2000 population census. It has been established that there are disparities in population per health facility ratio in the Eastern Region. This has been shown on Table 4.3 at page 45. The average population per health facility ratio for Eastern Region is 1:4,574, almost half the national average of 1:7,616 at page 26.

The population per health facility ratio is better in the Eastern region than the national level. Among the districts, Upper Manya Krobo (1:11,369) has the highest population-facility ratio while East Akim (1:1,381) has the lowest. Again, the population per health facility ratios for Kwahu North (1:8,108) and Fanteakwa (1:7,511) are relatively higher compared with Lower Manya (1:2,622), the second lowest in the region.

The implication is that access to health facilities is likely to be better in districts with low population- health facility ratio compared with areas with high population health facility ratio. Therefore those districts with high population health-facility ratio ought to be given more attention in the provision of new health facilities. Table 4.3 at page 45 shows the population-health facility ratio in the Eastern region.

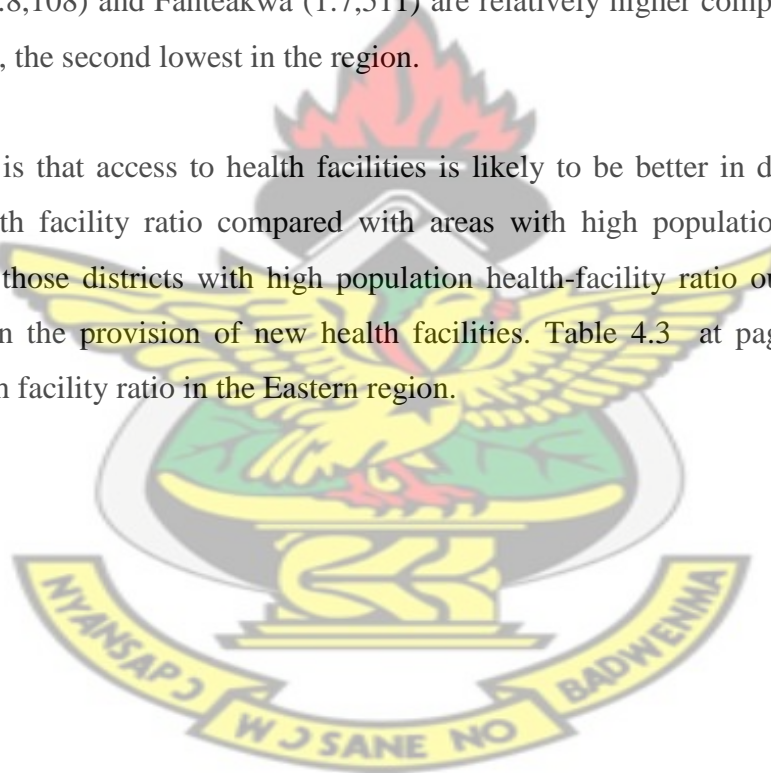


Table 4.3: Population per Health Facility Ratio by Districts in the Eastern Region

District	Population	Health facilities	Population -health facility ratio
Akwapim North	118,716	23	1:5,162
Akwapim South	131,852	40	1:3,296
Akyemansa	62,110	14	1:4436
Asuogyaman	86,039	33	1:2,607
Atiwa	102,468	26	1:3941
Birim Central	134,147	20	1:6,707
Birim North	77,809	16	1:4863
Birim South	69,107	13	1:5,316
East Akim	113,251	82	1:1,381
Fanteakwa	97,637	13	1:7,511
Kwaebibirem	203,096	32	1:6,347
Kwahu East	76,966	15	1:5,131
Kwahu North	154,046	19	1:8,108
Kwahu South	87,350	13	1:6719
Kwahu West	82,158	14	1:5868
Lower ManyaKrobo	83,917	32	1:2,622
New Juaben	154,994	26	1:5,961
SuhumKraboaCoaltar	188,662	36	1:5,241
Upper Manya Krobo	90,952	8	1:11,369
West Akim	174,709	27	1:6,471
YiloKrobo	97,512	20	1:4,876
TOTAL	2,387,509	522	1:4574

Source: Computed from census 2000 (projection) and Ghana Health Service-2009

4.5 Distances to Health Facilities in the Eastern Region

This section discusses the distances to health care from facilities such as hospitals and clinics in the region. These were based upon documents obtained from Ghana Statistical Service in the Eastern Region on the 2000 Population and Housing census. It shows that distances to health facilities are comparatively better in the largely urban districts than largely rural districts in the region.

4.5.1 Distance to the Nearest Facility (Hospital).

The data shows that only a few localities in the Eastern Region have hospitals within them. The percentage of localities with hospital is highest in Asuogyaman (1.7 percent) followed by Manya Krobo (1 percent) and Kwahu South (1 percent). No locality in Yilo Krobo and Birim North has a hospital within the locality.

Percentage of localities, which have no hospital facility, but are within five kilometres of such a facility is highest for Suhum Kraboa Coaltaar (19.2 percent) followed by Manya Krobo (17.9 percent) and West Akim (17.7 percent), respectively.

Largely urban district such as New Juaben has only 0.8 percent of localities with hospitals within the locality while another 12.3 percent are within five kilometers of the facility. Among the districts it is only New Juaben that all localities are not more than 25 kilometres within the reach of a hospital.

Accessibility to health facility increases with distance in the region. For example, largely rural district like Afram Plains has only 12.2 percent of localities within 10 kilometres of a hospital, over 50 percent (52.6 percent) of localities are 32 kilometres or more from a health facility. Similarly, Birim North has 8.9 percent of localities within 10 kilometres of a hospital while 45 percent of localities are 31 kilometre or more from a facility. Thus, a lot of localities in Birim North and Afram Plains are beyond the 5 kilometre recommended distance by Ghana Health Service considered as good for people to access health care from a health facility.

Hence, accessibility to hospitals is comparatively better in New Juaben, West Akim, and Suhum Kroboa coaltaar than districts such as Birim North and Afram Plains which are far from the regional capital Koforidua located in the New Juaben district.

Table 4.4 at page 47 shows distance to health facilities (hospitals) among districts in the region as at the year 2000.

Table 4.4: Health facility and Distance to the nearest facility (Hospital)

Distance In km	Birim North	Birim South	West Akim	Kwae- biberem	East Akim	Suhum Kraboa Coaltar	Fante-akwa	New Juabeng	Akwapim South	Akwapim North	Yilo Krobo	Manya Krobo	Asuogyaman	Afram Plains	Kwahu South
Hospital	624	850	1185	1634	1970	2027	1586	253	543	325	233	402	172	696	630
Within locality	0.0	0.1	0.1	0.4	0.2	0.3	0.1	0.8	0.4	0.3	0.0	1.0	1.7	0.6	1.0
1-5	1.8	9.6	17.7	3.8	11.0	19.2	0.9	12.3	17.1	9.5	10.7	17.9	14.5	5.6	10.6
6-10	7.1	16.5	32.2	19.5	34.3	25.5	15.0	14.2	27.8	20.3	17.2	25.9	14.0	6.0	17.9
11-15	12.0	9.4	24.6	12.9	20.4	18.2	36.9	53.8	32.8	21.2	22.7	17.7	17.4	6.6	15.7
16-20	12.3	16.4	11.8	21.0	17.5	14.2	16.0	12.6	15.7	32.9	21.5	13.7	17.4	7.6	21.0
21-25	14.9	13.4	8.6	8.7	12.0	2.2	12.0	6.3	5.2	9.8	8.6	8.0	8.1	11.4	10.6
26-30	6.9	13.9	4.0	17.2	3.4	6.4	10.5	0.0	0.7	4.3	3.0	6.5	9.9	9.6	7.6
31+	45.0	21.1	1.1	16.6	1.3	14.0	8.6	0.0	0.4	1.5	16.3	9.5	16.9	52.6	15.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Ghana Statistical Service-Eastern Region, 2000 Population and Housing Census

4.5.2 Distance to the Nearest Facility (Clinic).

Concerning clinics, again the 2000 census data show that Akwapim North has the highest percent (9.5) of localities with a clinic within the locality, followed closely by Asuogyaman (9.3 percent) and the least in Fanteakwa (0.8 percent). New Juaben has the highest percentage of localities (48.6 percent) within five kilometres of a clinic facility, followed by Asuogyaman (43 percent). Afram Plains has the least proportion of localities with a clinic within five kilometres (12.1 percent) and as well as the highest localities (35.3 percent) with a clinic 31 kilometres or more from the locality. Kwaebibrem follows with 6.4 percent.

Again, it is only New Juaben that all localities are not more than 20 kilometres of a clinic. The implication is that accessibility to clinics would be better in New Juaben and Akwapim North than in Afram Plains. Table 4.5 at page 49 shows the distance to clinics among the districts in the Eastern Region as at 2000.

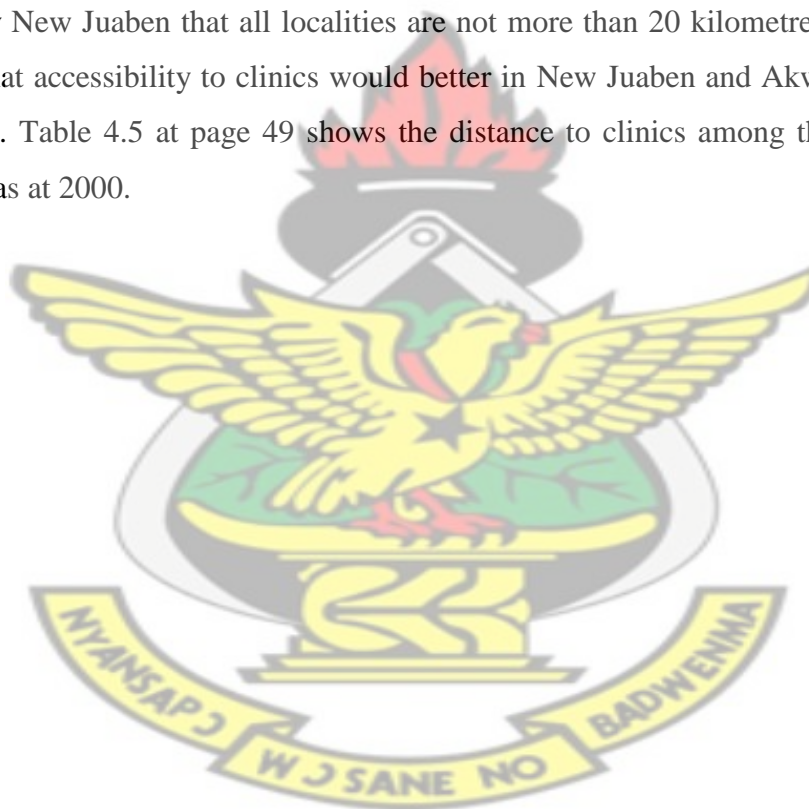


Table 4.5: Health facility and Distance to the nearest facility (Clinic)

Distance In km	Birim North	Birim South	West Akim	Kwae- biberem	East Akim	Suhum Kraboa Coaltar	Fante-akwa	New Juabeng	Akwapim South	Akwapim North	Yilo Krobo	Manya Krobo	Asuogyaman	Afram Plains	Kwahu South
Clinic	624	850	1185	1634	1970	2027	1586	253	543	325	233	402	172	696	603
Within locality	3.7	2.4	1.8	1.5	1.3	1.1	0.8	2.8	1.1	9.5	5.6	6.5	9.3	1.6	5.6
1-5	31.4	20.1	30.9	19.6	37.8	42.9	19.1	48.6	37.2	40.0	37.8	32.3	43.0	12.1	30.3
6-10	36.7	30.1	32.5	46.2	43.0	32.3	38.4	33.6	31.9	39.1	23.6	26.9	28.5	13.9	28.1
11-15	13.8	6.7	23.7	14.5	12.2	12.0	15.9	14.6	24.9	8.3	17.6	15.2	17.4	8.2	13.7
16-20	6.9	14.4	7.0	7.5	4.8	1.9	14.8	0.4	4.4	2.5	11.2	7.2	1.2	9.2	11.3
21-25	2.2	8.7	3.5	0.2	0.5	3.5	10.5	0.0	0.6	0.3	3.0	4.2	0.0	10.3	3.2
26-30	0.0	11.3	0.4	4.1	0.1	4.8	0.3	0.0	0.0	0.0	0.9	4.5	0.6	9.3	1.9
31+	5.3	5.8	0.3	6.4	0.4	1.4	0.0	0.0	0.0	0.0	0.4	3.2	0.0	35.3	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Source: Ghana Statistical Service- Eastern Region, 2000 Population and Housing Census

4.6 Inequalities in the Distribution and Access to Health Facilities -Perspectives from Health Facility Providers in the Eastern Region.

In addition to the quantitative data collected and analyzed to measure inequalities in the distribution of health facilities in the region, qualitative data was also sought to get an idea about inequality in the distribution of health facilities, the causes of the inequalities and its implications on access to health care. As a result selected officers from the Ghana Health Service and Health related NGOs namely Catholic Diocese Health Services and Hunger Project-Ghana provided some insights into the issues.

4.6.1 Ghana Health Service-Eastern Regional Directorate-Estate Department

The department provided insights into the challenges directorate encounter in the distribution of health facilities as well as the causes of inequality in the distribution these facilities.

- **Inequalities in the Distribution of Health Facilities**

Comparatively, more health facilities in the region are concentrated in largely urban districts such as New Juaben and East Akim, while largely rural districts like Upper Manya Krobo and Fanteakwa lag behind. Both New Juaben and East Akim are Municipal and have more infrastructure such as schools, hospitals, banks and others that allow them to perform more urban functions. New Juaben does not only boast of regional hospital serving as the main referral centre in the region, but in addition has the St. Joseph hospital, the leading orthopaedic centre in the region. In East Akim, towns such as Kyebi, Tafo and Ossiem have hospitals providing health services to many nearby communities.

However, in Fanteakwa and Aseewa the only hospitals are located in the respective district capitals thereby putting a lot of pressure on these facilities. Furthermore, deprived and largely rural districts such as Afram Plains and Birim North are worse off in terms of the distribution of health facilities in the region. As result, accessibility to health facilities is better in districts such as New Juaben and East Akim than Afram Plains, Birim North and Upper Manya Krobo districts.

- Causes of inequalities in the Distribution of Health Facilities

The factors responsible for causing inequality in the distribution of health facilities in the region were also enumerated by the department. These include lack of political will and self initiatives by communities; conflicts such as chieftaincy dispute and not meeting population threshold criteria for projects have led to the situation whereby some communities in the region either do not have health facilities or ongoing projects have stalled.

Political will of ruling government may influence which areas are given adequate attention in terms of the provision of facilities. Areas which are seen as continuously opposed to the government of the day in terms of not getting enough votes during national elections may be denied of facilities or in some cases facilities that have been initiated by a previous regime may be abandoned by the government of the day

An important criterion the Ghana Health Service and other stakeholders in the health sector consider when siting a health facility is self-initiative and commitment from the community. There are situations where a community may qualify for a health facility to be sited. However, if such a community is unwilling to partner these stakeholders in terms of the provision of land, labour and contribute little financial resources then that area may be without a health facility for a long period of time.

Another factor is that of opposition to projects in a community due conflicts such as chieftaincy disputes. In areas where there are rival chiefs, there is always the difficulty as to which of them should be approached for land and other issues before a facility is sited. The feuding factions may tend to undermine each and make sure that projects do not spring up to the credit of the opponent. Hence some communities are without projects as a result of these disputes. A typical example is the protracted chieftaincy dispute involving two opposing factions in Akuse in the Lower Manya district. One faction wants Akuse to the part of Greater Accra while the other faction wants it to remain in the Eastern region. This has resulted in the inability to attract projects as well as the stalling of ongoing projects. An example is the expansion works of the Akuse Hospital. The Ghana Health Service has provided the plan for the project while the district Assembly had provided the funding for the project since the late 2010. But chieftaincy dispute has stalled the project. It would be very difficult for new health facilities to be built in the area if

the current situation persists. The implication is that many people would be denied access to health care.

Population is also an important criterion used to determine which areas should benefit from a particular facility. There are instances where some communities are not only remote but are also scattered such that those communities may not have the population threshold of 3500 to 5000 to establish a lower level facility like a CHPS compound. Other remote communities may have the required population threshold but are denied any form of health facility. While communities close to urban areas and better served with infrastructure like roads, schools, electricity and without the required population threshold may have a health facility established there.

- **Challenges in the Distribution of Health Facilities**

There are a lot of challenges that are encountered in the distribution of health facilities in the region. Among these challenges are lacks of funding, logistics, infrastructure such as roads, and inadequate personnel.

Lack of funding for projects tend to negatively affect the building of new health facilities or continuing those that have stalled. A project may have several sources of funding, namely Government, Donor partners, NGOs and others. However, there are instances whereby donors may release their grants but funds from government may not be forthcoming. Projects may lie idle as a result. There are several examples of projects that have stalled in the region as result of lack of funding. For instance the rehabilitation of a Maternity ward at Donkorkrom in Kwahu North district which was started in 1999 has not yet been completed. The construction of District Health Management Team office at Atua in Agormanya has not been completed since 2005. Also the construction of a Maternity Block at Asamankese has not been completed. Again, the completion of 2 bedroom semi-detached staff bungalow at the Kibi Hospital has not been completed since 2004.

Adequate logistics is very essential for the proper functioning of any health facility. However, a host of health facilities in the region lack the requisite logistics to provide certain services. For example the Eyiresi Government Hospital which serves as the district hospital in the Atiwa district does not have x-ray facilities. Hence emergency cases requiring the performing of x-ray

have to be sent to either Nkawkaw or the regional hospital in Koforidua at a considerable distance.

Lack of infrastructure such as roads, electricity, portable water and schools in some communities in the region makes it difficult for them to be provided with health facilities. Typical examples abound in the Lower Manya district where communities such as Kordiabe, Patahunya, Yoyim, Yokoyim, and Gortsonya are located on mountainous area. People in these communities have to resort to walking for long distances before they can reach a health facility. Even where they can have the access to roads, those roads are in bad condition and only a few stretches. In fact, these communities are located on mountainous, rocky areas, hence they are inaccessible. They are mostly accessible by foot and motorbike. They are without electricity, portable water and some are without schools. As a result siting a health facility in any of these villages would be very difficult.

Inadequate personnel are also a challenge in the distribution of health facilities in the region. Some of the health facilities in the region do not have adequate health personnel such as doctors, nurses and laboratory technicians. A typical example is the Fanteakwa district where there is one medical doctor in the district and his services can only be sought in the Begoro Government Hospital. Road infrastructure in this district is one of the poorest in the region and people travel long hours to get the services of the only doctor in the district.

4.6.2 The Catholic Diocese Health Services

The Catholic Diocese has 13 health facilities in the Eastern region. These health facilities are spread across 10 districts in the region. Out of the 13 facilities, 4 are hospitals and 7 health centres which are well interspersed in the region and two rehabilitation centres namely, St John's Optical works and Orthopedic Training Centre all in Nsawam.

According to the diocese there is inequality in the distribution of health facilities in the Eastern region. The government health facilities are sited in the cities, urban and semi urban areas. In the light of this the Diocese has most of its facilities in the rural areas where majority of the people live.

The Diocese Health Service faces some challenges with respect to the provision of health facilities in the region. For instance, most Ministry of Health facilities are located based on political strength of opinion leaders from such communities. There is also lack of regional and district/municipal plans delineating health facility needs based on disease burdens and population profile. Therefore, there are difficulties in selecting communities which are in most need of health facilities.

Table 4.6: Distribution of Hospitals of Catholic Diocese Health Services

NAME	PLACE
The Holy Family Hospital	Nkawkaw
St.Dominic's Hospital	Akwatia
St. Joseph's Hospital	Koforidua
St. Martin's Hospital	Agormanya

Source:Catholic Diocese Health Services,2010

Table 4.7: Distribution of Maternity Homes and Clinics of Catholic Diocese Health Services

NAME	PLACE
St.Joseph's	Kwahu Tafo
St. Michael	Akim Ntronang
St.Monica's	Akim Sekyere
St. John's	Akim Ofoase
Catholic Clinic/Maternity	Akim Swedru
Notre Dame	Adoagyiri
Akrofufu	Akrofufu

Source: Catholic Diocese Health Services,2010

4.6.3 The Hunger Project-Ghana

The Hunger Project is another NGO engaged in the provision of health facilities in the region. Currently the Hunger Project has health facilities in 20 out of the 21 districts in the region with the exception of New Juaben. The reason is that New Juaben is better endowed with regard to the

distribution of health facilities compared to the other districts in the region. The health facilities are called the epicenter clinics.

The Hunger Project-Ghana has observed that there are inequalities in the distribution of health facilities in the region. For instance, the number of health facilities in the Afram Plains, Birim North, and Fanteakwa and Upper Manya districts is inadequate. Again, a significant number of areas in some of the districts in the region have been demarcated as CHPS zones but have no health facilities to make them operational. Almost all the health facilities of the Hunger project are located in deprived communities which encounter difficulties in accessing health care.

The Hunger Project faces some challenges in the provision of health facilities in the region. There is the problem of inadequate logistics, that is, after the Hunger Project has put up a clinic, there is a difficulty of getting the District Health Management Teams to provide equipment, beds and drugs with the usual excuse of lack of funding.

There is also the problem of inadequate personnel. Every clinic is expected to be manned by a midwife but some do not have. This is because the District Health Management Teams are unable to provide all the personnel needed to man the clinics. Another challenge is the failure of District Assemblies to provide electricity and water to the clinics. As a result, some of the clinics are unable to render services, especially in the night. An Example is the Epicenter Clinic at Dominase in the Fanteakwa District does not have electricity and therefore finds it difficult providing services to the patients at night.

There is also the issue of poor road network in parts of the region. Poor surface conditions increases travel time to health facilities and transport cost in most rural communities in the region. Waiting time to get a means of transport also tend to be long. In some of the communities people can get a means of transport to a health facility during market days. For instance people, in Batorkope and Kumakuma Siasi in the Upper Manya district can only get a means of transport to the District Hospital in Asesewa only once in a week, that is, on market day. This is because the roads linking these communities are in too deplorable. Also, there are a lot of areas in Fanteakwa, Afram Plains, Birim North districts with poor road conditions. As a result, accessibility to health care is serious challenge in these districts.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This chapter provides the summary of key findings of the previous chapter. The discussion is done in conformity with the objectives of the study and recommendations are made based on it. The recommendations if implement would help improve the health facility situation in the country.

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5.2 Key Findings on the Health Facilities Situation in the Study Region.

The main findings of the study areas are presented under major headings and are in line with the objectives of the study. The main findings are discussed from 5.2 to 5.4.

5.2.1 Inequalities in the Distribution of Health Facilities in the Study Region.

A descriptive analysis of data on health facilities in the Eastern region as well as information gathered from selected stakeholders in the health sector in the region has established that there are inequalities in the distribution of health facilities in the Eastern Region.

There are disparities in the distribution of health facilities among the districts in the region. For instance, the total number of health facilities in one district that is East Akim (82 facilities) is more than the number of health facilities in six districts namely, Upper Manya (8 facilities), Kwahu North (13 facilities), Fanteakwa (13 facilities), Kwahu West (14 facilities), Akyemansa (14 facilities), and Kwahu East (15 facilities). However, the total population of these districts is far higher than that of East Akim. The implication is that accessibility to health facilities would most likely be better in the districts with higher concentration of health facilities than those with the lower concentration of facilities.

The analysis of data using spatial planning tools namely, distribution quotient, measures of association and concentration have also established that there is inequality in the distribution of health facilities in the Eastern Region. The results of distribution quotient calculated to determine ratio between health facility and land area showed that New Juaben with higher ratio of DQ =

9.1 has the highest concentration of health facilities followed by East Akim (DQ = 4.36) while Kwahu North has the lowest concentration of health facilities with DQ = 0.20; followed by Upper Manya Krobo and Kwahu South with each having DQ = 0.34. The implication is that accessibility to health facility would most likely be higher in New Juaben than Kwahu North.

Measure of Concentration (M.C) calculated to determine the level of concentration of health facilities over the land area in the region has also shown that the level of concentration of health facilities in the Eastern Region is not very high. This is evidenced by the figure 33.21 which falls below the midpoint value of 50 in the range of 0 to 100. This has implications on accessibility to health facilities in the region.

Again, Measure of Association calculated to determine the relationship between territorial unit and the number of health facilities in the region also reveals that there is relatively low level association between health facilities and territorial units in the Eastern region as evidenced by M.A=16.78 which falls far below the midpoint value of 50 in the range of 0 to 100. This implies that the number of health facilities per territorial unit of the Eastern region is not high and this may also have implications for accessibility to health care facilities.

5.3 Causes of inequalities in the Distribution of Health Facilities

The Estate Department of Ghana Health Service in the Eastern Region outlined the factors that have caused inequalities in the distribution of health facilities in the Region. Prominent among these factors are political considerations, lack of self initiatives by communities, conflicts such as chieftaincy disputes and not meeting population threshold criterion for the provision of health facilities.

Political considerations tend to influence which areas benefit from a health facility at particular point in time. An area perceived to be continuously opposed to the government of day in terms of always voting against it during national elections may be denied completely of projects or even those projects initiated by previous regimes may be halted with the usual excuse of lack of funds.

There is also the issue lack of commitment from some communities in releasing land, providing labour and contribute other resources to enable a health facility to be sited for them. Most of the

health services providers such as the Ghana Health Service and other health related NGOs require communities in need of health facilities to contribute their quota. Communities that have shown a lot of commitment in terms of releasing land and contribute other resources tend to benefit more from a facility. However, in situations whereby these commitments are lacking; a community would be most unlikely to benefit from the provision of a health facility. Thus, accessibility to health facility is most likely to be low in a community without a health facility as result of unwillingness to contribute towards the provision of a project.

Conflicts such chieftaincy disputes have also contributed to the situation whereby some ongoing projects have either been abandoned or not taken off at all. An example is the protracted chieftaincy disputes involving rival factions in the Akuse. This has caused expansion works of the Akuse Government Hospital to be halted. The implication is that the town and its environs would find it difficult to attract new facilities unless the current stalemate is resolved.

Another factor that has contributed to inequality in the provision of health facilities is some communities not meeting the population threshold criteria for establishing health facilities .The Ghana Health Service uses population as one of the criterion for the provision of the various levels of health facilities. For a community to benefit from a lower facility like a CHPS compound, the population requirement ranges from 3500 to 5000. However, there are some communities in the region that are scattered and do not meet the population criterion to benefit from a health facility, though that community may have serious health challenges and require a health facility.

5.4 Inequalities in Distances to Access Health Facilities in the Eastern Region

Analysis of data of distances to health facilities based on the 2000 population and Housing Census by the Ghana statistical Service-Eastern Region has shown that there are inequalities in distances to hospitals and clinics among the districts in the Eastern region. Accessibility to health facilities is better in largely urban districts than the largely rural ones.

Regarding distances to the nearest hospital in the region, Asuogyaman district (1.7 percent) has the highest number of localities with a hospital followed by Manya e;lyKrobo (1 percent) and Kwahu South (1 percent).While none of the localities in Birim North and Yilo Krobo has

hospital within it. Suhum Kraboa Coalta has the highest number of localities which are within five kilometres of a hospital followed by Manya Krobo (17.9), West Akim (17.7) and New Juaben (12.3) respectively.

Accessibility to health facility increases with distance in the region. For instance, Afram Plains has only 12.2 percent of localities within 10 kilometres of a hospital, over 50 percent (52.6 percent) of localities are 32 kilometres or more from a health facility. Similarly, 8.9 percent of localities in Birim North are within 10 kilometres of a hospital while 45 percent of localities are 31 kilometres or more from a hospital. However, in New Juaben all localities are not more than 25 kilometres of a hospital. Thus, accessibility to health facility is better in largely urban district like New Juaben than largely rural districts such as Birim North and Afram Plains.

Distance to clinics in the Eastern Region also shows similar disparities with that of distance to a hospital. For instance Akwapim North (9.5) has the highest percentage of localities with a clinic followed by Asuogyaman (9.3 percent) and Fanteakwa has the least (0.8 percent). New Juaben has the highest percentage of localities (48.6 percent) within five kilometres of a clinic facility, while Afram Plains has the least proportion of localities with a clinic within five kilometres (12.1 percent) and the highest localities (35.3 percent) with a clinic 31 kilometres or more from the locality. Again, accessibility to health facilities is better in New Juaben where all localities are not more than 20 kilometres of a clinic than Afram Plains where a lot of the localities are more than 31 kilometres of a clinic.

5.5 Recommendations

The findings discussed above have revealed that there are inequalities with respect to the distribution and accessibility to health facilities. Various stakeholders have proposed varied measures to help address the challenges. Based upon the suggestions put forward, the following recommendations are made:

- Expansion of Health Infrastructure

Government must speed up efforts in renovating, building and equipping more health centres, CHPS compounds and clinics especially in largely rural districts where the availability of these facilities is either low or non-existence. In the short-term where the facilities are available but in

poor condition, Ghana Service and district assemblies can mobilize funds to renovate and equip these facilities. As a long term measure, the Government through the Ministry of Health and Ghana Health must build more health facilities especially in areas in the country where there are difficulties with access to health care. When this is done, it would help improve access to health facilities for a greater part of the population who live in the rural areas. Population-health facility ratio would be reduced. Then, the country would be on course to achieve the health related MDGs, namely, reducing child mortality, improving maternal mortality and combating HIV/AIDS.

- Intensification of Outreach Health Services

There should be intensification of outreach health services especially in deprived and remote communities without health facilities. Government must support the Ministry of Health and Ghana Health Service with the requisite resources so that more Community Health Personnel would be trained and adequately equipped with motor bikes, drugs and other essential equipments to provide health care delivery to hard to reach communities. This would help address the issue of people within some communities travelling long distances to access health care from a facility.

- Timely Release of Funds

The construction of health facilities are sometimes halted or abandoned as a result of delays in the release of funds by stakeholders such as government and development partners. As an immediate measure the Ghana Health Service could reach out to benevolent organizations and individuals to solicit funds and as well as mobilizing funds from within their establishment for early completion of projects. In long term, Ghana Health Service must be more proactive by constantly collaborating with the Ministry of Health and the central government to press for the prompt release of funds to ensure the early execution of projects. Ultimately, more health facilities would be available for utilization and the challenge of inaccessibility to health care would be reduced to the barest minimum.

- Reducing Political Considerations in the provision of projects.

It is the responsibility of the every government to ensure that all citizens in the country have access to health care .Therefore; government must allow the mandated institutions such as the

Ghana Health Service the free hand to select communities that genuinely need health facilities. Also communities should not be denied health facilities by way of abandoning ongoing projects because they are perceived to be opposed to the government. The fact that funding for projects comes from government of the day which wants to remain in power the problem cannot be eradicated completely, but can be the minimized when civil society organizations and the media intensify their watch dog roles.

- Early Resolution of Conflicts

The occurrence of conflicts in area especially that of chieftaincy disputes has the potential of halting the execution of new projects in an area. Projects can also be vandalized as a result of conflicts. Hence an institution such as the House of Chiefs both at the national and regional levels must be adequately resourced to resolve chieftaincy disputes. In addition, the security agencies especially the police must be adequately equipped to deal conflicts that have potential of destroying property.

- Intensification of education on Community Participation in Projects

Community participation is an essential requirement in the provision of projects by stakeholders in the health sector. However, due to the perception prevalent among sections of the population that government collects taxes from the people so it is the responsibility of government to provide all facilities. Some communities would want to sale land for the provision of a health facility that would benefit them. Again, they would require that the services they also render are paid for. This problem would be addressed through continuous education through the mass media to create awareness of the need for such communities to seen as part owners of the projects that is why they are required contribute some resources towards it

- Human Resource Development

Human resource development in the health sector should be given the needed attention. This can be achieved by retaining existing staff and attracting new ones. Here, government through the Ministry of Health, Ghana Health Service and District Assemblies can commit more resources to provide incentive package which could be in the form of staff housing and motor bikes to health personnel who accept postings to inaccessible parts of the country. Special allowances should be paid to health personnel accepting postings to rural communities. This would enhance the

capacity of lower level facilities such as CHPS compounds and health centres to treat minor cases that are sometimes referred to hospitals that are located at considerable distances.

- Improvement in Logistics

Stakeholders such Government, District Assemblies and District Health Management Teams must put in effort in providing health facilities especially those in the rural communities with logistics such as beds, X-ray facilities, electricity and water. When these logistics are available and coupled with adequate medical staff at the facilities assured this would help reduce long waiting times as a result of high doctor-patient ratio that that is a common feature in most health facilities especially in the rural areas. Thus, quality, accessible and efficient health care delivery would be assured.

- Improvements in Road Infrastructure;

Poor road conditions are an impediment to accessibility to health facilities. This can cause unavailability of a means of transport, long waiting times to get a means of transport, high transport fares, spending long hours to reach health facilities. As an immediate measure the Feeder Roads Department and district assemblies must step up efforts by occasionally cutting the surfaces of the poor roads linking the deprived and rural communities. In the long term government should commit more resources in permanently tarring some of these roads. This would help improve access to health facilities.

- Integration of Health Equity into National Development and Poverty Reduction Strategies.

Relevant sectors of the economy such as education, agriculture, housing, tourism, social welfare should securely mainstream health equity into their sectoral policies to assist in improving geographical access health care.

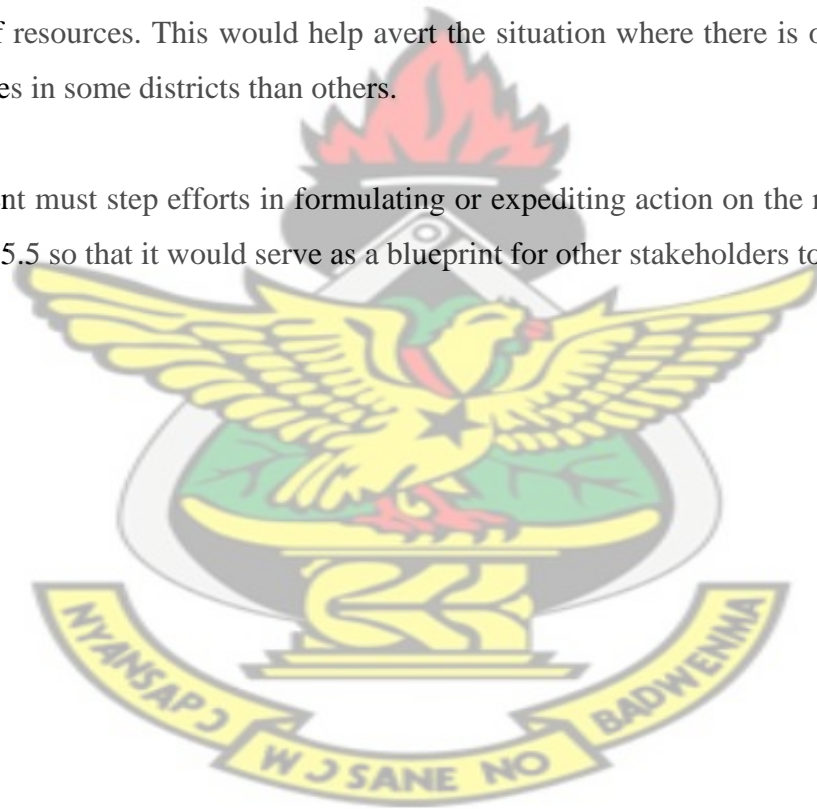
5.6 Conclusion

The importance of a healthy population in achieving increases in productivity and reducing poverty in the country cannot be overemphasized. Hence the concern of government is to achieve equitable health care for all its citizens. However, there are inequalities in the distribution and accessibility to health facilities in the country. This poses serious challenges if Ghana were to meet the health related MDGs.

More attention must be focused on bridging intra and inter districts gaps in the provision and accessibility to health facilities. Again intra and inter-regional disparities in the distribution of health facilities also ought to be given the needed attention. Resources released to Regional and MMDAs Health directorates as well as district assemblies must be monitored and ensured that they are being used to improve health care delivery.

Government through the National Development Planning Commission must be seen to be doing more by coming out with comprehensive policies that seek to pay more attention to spatial equity in the design of plans detailing the health facility needs of communities in the country. This must be backed by political commitment from government in ensuring that there is equity in the allocation of resources. This would help avert the situation where there is overconcentration of health facilities in some districts than others.

Thus, government must step efforts in formulating or expediting action on the recommendations made in section 5.5 so that it would serve as a blueprint for other stakeholders to follow.



REFERENCES

Amnesty International (2009), Out of Reach, the Cost of Maternal Health in Sierra Leone. Health is a Human Right, London.

Andersen, H.M. (2004), "Villagers", Differential treatment in a Ghanaian hospital". Social Science and Medicine 59, 2003-2012

Anderson, K and Pomfret, R (2005). Spatial inequality and development in Central Asia. United Nations University World Institute for Development Economics Research. Research Paper No.2004/36, Helsinki.

Annear, LP. Bigdeli, M., Eang, CR. and Jacos, B. (2008), providing access to health services for the poor: Health equity in Cambodia. Studies in HSOóP.

Ansong-Tornui, Armar-Klemesu, J.M., Arhinful, D., Penfold, S., and Hussein, J. (2007), "Hospital Based Maternity Care in Ghana: Findings of a confidential enquiry into Maternal Deaths". Ghana Medical Journal 41(3):125-132

Asante, R and Gyimah-Boadi, E., (2004), Ethnic Structure, Inequality and Governance of the Public Sector in Ghana. United Nations Research Institute for Social Development.

Bigman, D and Deichman, U (2000), Spatial Indicators of Access and Fairness for the Location of Public Facilities. World Bank Regional and Sectoral Studies, Washington, DC.

Boansi, P.K., Ekekpe, E., and Bonney, A.A (2010), Combating Maternal Mortality in the Gushiegu District of Ghana: The Role of Rural Transportation. Journal of Sustainable Development in Africa 12(5). University of Pennsylvania, Clarion, Pennsylvania.

Bour, D. (2008), Analyzing the Socio-Spatial inequities of health services in sub-Saharan Africa: Interrogating geographical imbalances in the uptake of health care. Inaugural Lecture, Great Hall. KNUST, Kumasi

Bryman, A. (2004), Social Research Methods (2nd Edition). Oxford University Press, Oxford

Chaya, N. (2007), Poor Access to Health Services: Ways Ethiopia is overcoming it. Population Action International. Vol 2, issue2. Washington, DC

Conyers (2001), Regional Development. Harare. ZEB

Dickson, K., (1975). "Development Planning and National Integration in Ghana" in D.R. Smock and Bentsil-Enchill (eds). The Search for National Integration in Africa (NY: Free Press).

Dickson, K.B (1968). "Background to the problems of economic development in Northern Ghana," Annals of Association of American Geographers, vol 58/4.

ECA (2008), Mainstreaming Health Equity into the Development Agenda in Africa, Policy Brief. ECA, Addis Ababa.

Ewusi, K (1976); Levels of regional development in Ghana, Social indicators research. vol 3/1.

Florez, C.E, and Hernandez, D.,(2005).Financing the Health System. Colombia Case Study.

Geohive (2011), <http://www.geohive.co>(Retrieved:May 2011)

Ghana districts (2011), [http:// www.ghanadistricts.com/region/?r=4](http://www.ghanadistricts.com/region/?r=4)(Retrieved:April 2011)

Ghana Statistical Service, (2000), Summary report of final report, 2000 Population & Housing Census, Accra.

Ghana Statistical Service, (2003), Core Welfare Indicators Questionnaires (CWIQ II), Accra.

Ghana Statistical Service, (2003), Ghana Demographic and Health Survey, Accra.

Ghana Statistical Service, (2005), Population Data Analysis Reports. Volume 2, Accra.

Ghana Statistical Service (2005), 2000 Population and Housing Census, Accra.

Ghana Health Service, (2003), Annual Report, Ghana Health Service (2003), Accra.

Ministry of Health, (2001), A bulletin of health information, (Information for Action), Centre for Health Information Management (CHIM), Accra.

Ministry of Health (2002), A bulletin of health information, (Information for Action), Centre for Health Information Management (CHIM), Accra.

Ministry of Health (2002), Partnership for Health: Bridging the Inequalities Gap, 5-Y Programme of Work (2002-2006), Accra.

Ministry Of Health (2004), The Ghana Health Sector Programme of work, Accra.

NDPC,(2003), Growth and Poverty Reduction Strategy(GPRS I) 2003-2005. National Development Planning Commission, Accra.

Ghana Health Service,(2005), Annual Report, Accra.

NDPC,(2005), Growth and Poverty Reduction Strategy(GPRS II) 2006-2009. National Development Planning Commission, Accra.

NDPC (2006), Annual Progress Report. Implementation of the Ghana Poverty Reduction Strategy (GPRSI), National Development Planning Commission, Accra.

Ghana Health Service, (2007), Facts and Figures, Accra.

Ministry of Health (2007), National Health Policy, Creating Wealth Health, Accra.

NDPC (2008), Annual Progress Report, Implementation of the Ghana Poverty Reduction Strategy (GPRSII), National Development Planning Commission, Accra.

Ministry of Health, (2008), Independent Review; Health Sector Programme of Work 2007, Daft Report, Accra.

Ghana Health Service,(2009), Annual Report, Ghana Health Service, Eastern Regional Directorate, Koforidua.

Ministry of Health, (2009), In-depth Review of the community-based Health Planning Services Programme (CHPS); A report of Annual Health Sector Review, Accra.

Kanbur, R and A.Venable (2005). Rising spatial disparities and development. Number 3 in United Nations University Policy Brief. Helsinki.

Kanbur, R., Venables, A., Wan, G,(2006). Spatial Disparities in Human Development: Perspectives from Asia. United Nations Press.

Laterveer, L.W., Niessen, et al (2003),'' pro-poor health policies in poverty reduction strategies' Health Policy and Planning_18(2):138-145

Mabogunje, A.L, (1977), Cities and Social Order. University Press, Ibadan.

Madu, I.A, (2007), The underlying factors of Rural Development Patterns in the Nsukka Region of Southeastern Nigeria, Journal of Rural and Community Development, 2:110-122.

PAHO(1999), Principles of Basic Concepts of Equity and Health ,Division of Health and Human Development,PAHOWHO.

Penchansky R, and Thomas., JW (1981) .The Concept of Access: Definition and Relationship to Consumer Satisfaction. Medical Care. Pub Med; 19(2):127–40.

Rondinelli, D.A.,(1985).Applied Methods of Regional Analysis: Spatial Dimensions of Development Policy. West View Press, Boulder, Colorado.

Sahn, D and Stifel, D (2003),” Urban-Rural Inequality in Living Standards in Africa’’. Journal of African Economics 12(1).

Songsore, J (1983), Intraregional and interregional labour migrations in historical perspective: the case of North-Western Ghana. University of Port Harcourt, Faculty of Social Sciences. Occasional papers, Series, No.1.

Stevenson, D.,(2004).”Civic Gold”: Cultural Planning of Politics of the Third Way. International Journal of Cultural Policy, 10(1):119-131.

Tair-Al, A., Clark, A., Longenecker, J. and Whitty, JM (2010). Physical accessibility and utilization of health services in Yemen. International Journal of Health Geographics. 9(38).

Thomas, G., (2011), A typology for the case study in social science following a review of definition, discourse and structure. Qualitative Inquiry, 17(6), 511-521.

Tsikata, D and Seini, W. (2004), Identities, Inequalities and Conflicts in Ghana. Centre for Research on Inequality, Human Security and Ethnicity, working paper 5, University of Oxford.

UNDP/Republic of Ghana (1997). Ghana Human Development Report. Accra, UNDP

UN (2010), Global Strategy for Women’s and Children’s Health, New York

Van den Boom G.J.K., Nsowah-Nuamah, N.N.N., Overbosch, G.B (2004). Health care Provision and self-medication in Ghana. Centre for Food Studies, Amsterdam; ISSER, University of Ghana-Legon

Vapattanawong P., Hogan M., Hanvoravongchai P., Gakidu E., Vos T., Lopez A., and Lim S (2007). Reduction in child mortality levels and inequalities in Thailand: analysis of two censuses. The Lancet, Volume 369, Number 9564.

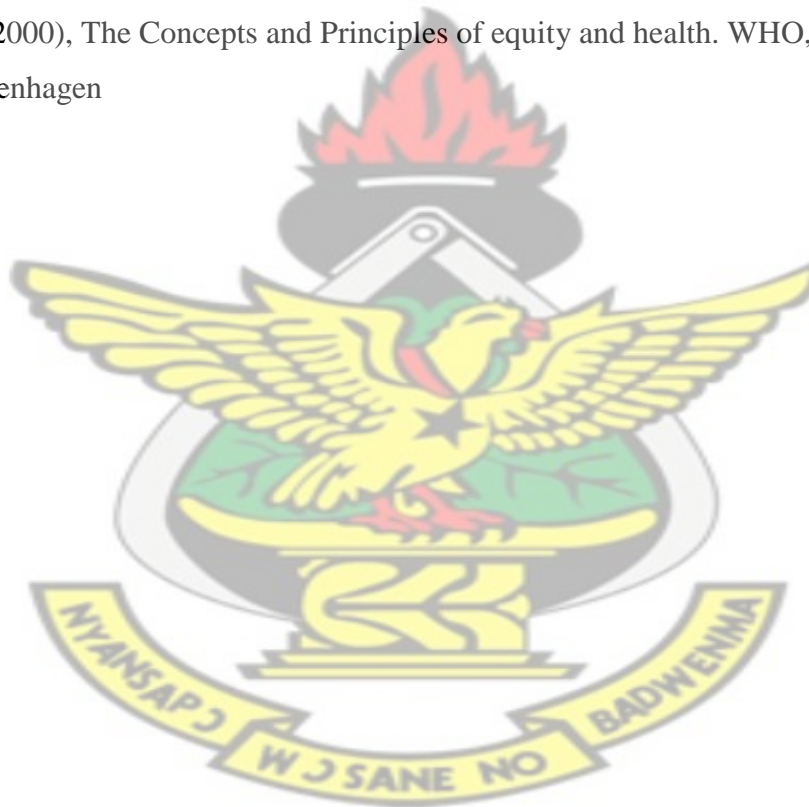
Williamson J.G.(1965). Regional inequality and the Process of National Development: A Description of Patterns. Economic Development and Cultural Change, 13(4).

World Health Organization (2005), Report of Ghana, Geneva.

World Health Organization, (2008). Primary Health Care Now More Than Ever, World Health Report, Geneva.

Whitehead, M (1991), The Concepts and Principles of Equity and Health, WHO, EURO Report.

Whitehead, M (2000), The Concepts and Principles of equity and health. WHO, Regional Office for Europe, Copenhagen



APPENDIXS

APPENDIX ONE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF PLANNING AND LAND ECONOMY

DEPARTMENT OF PLANNING

M.Sc. DEVELOPMENT POLICY AND PLANNING PROGRAMME

**TOPIC: ASSESSING THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN
THE EASTERN REGION OF GHANA**

QUESTIONNAIRE

(Ghana Health Service, Eastern Regional Directorate- Health Information Unit)

This interview is strictly for academic purpose. No respondent or the organization he/she represents will be identified by name in the report without his/her consent. Your input to the discussion in the following areas regarding the distribution of health facilities would be highly appreciated.

1. What is the total number of health facilities in the Eastern Region?

2. What are the types of health facilities do you have in the region?

3. What are the locations of these facilities?

4. Do you think there is inequality in the distribution of health facilities in the Eastern region?

Yes ☐

No ☐

5. If yes, state the reasons-----

6. If no, give reasons-----

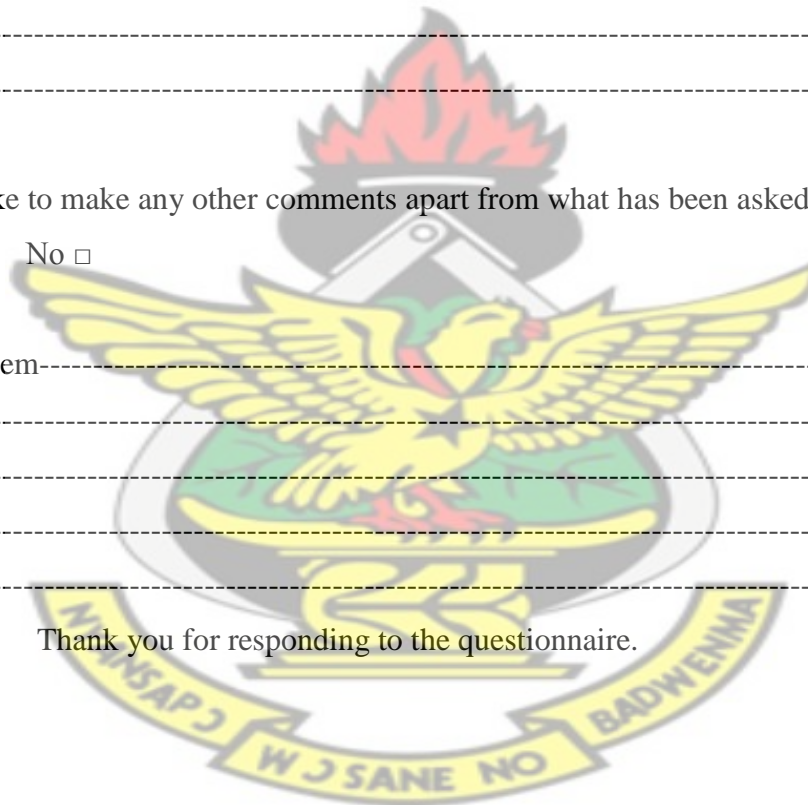
7. Would you like to make any other comments apart from what has been asked?

Yes ☐

No ☐

8. If yes, state them-----

Thank you for responding to the questionnaire.



APPENDIX TWO
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
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M.Sc. DEVELOPMENT POLICY AND PLANNING PROGRAMME

**TOPIC: ASSESSING THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN
THE EASTERN REGION OF GHANA**

QUESTIONNAIRE

(Ghana Health Service, Eastern Regional Directorate- Estate Department)

This interview is strictly for academic purpose. No respondent or the organization he/she represents will be identified by name in the report without his/her consent. Your input to the discussion in the following areas regarding the distribution of health facilities would be highly appreciated.

1. What are the causes of inequalities in the distribution of health facilities in the Eastern region?

2. What challenges do you encounter in the distribution of health facilities in the region?

3. What measures do you propose to address the challenges stated above?

4. Would you like to make any other comments apart from what has been asked?

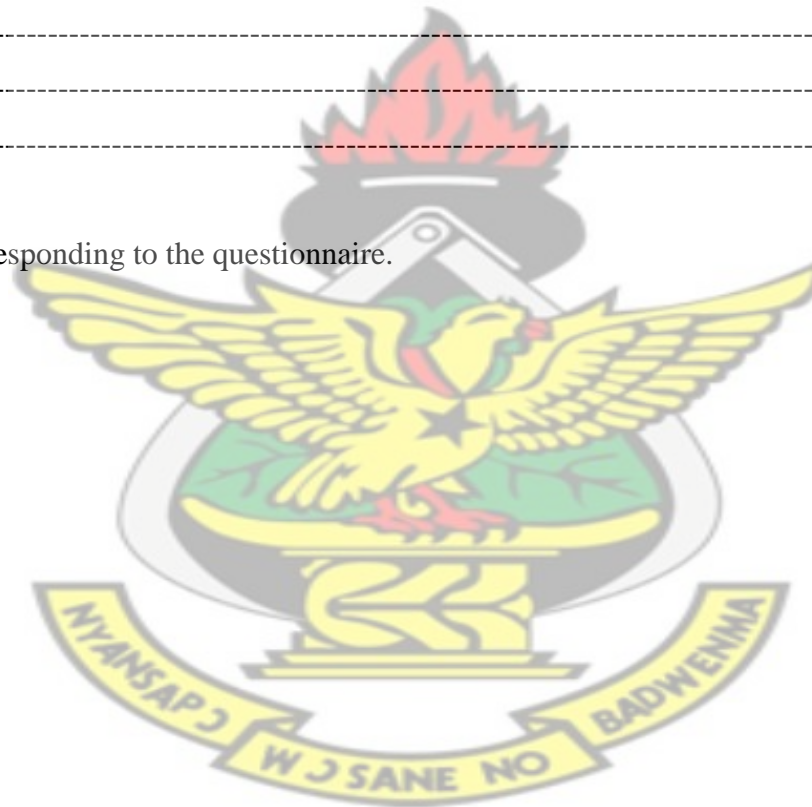
Yes ☐

No ☐

KNUST

5. If yes, state them-----

Thank you for responding to the questionnaire.



APPENDIX THREE
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
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M.Sc. DEVELOPMENT POLICY AND PLANNING PROGRAMME

**TOPIC: ASSESSING THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN
THE EASTERN REGION OF GHANA**

QUESTIONNAIRE

(For NGOs in the health sector)

This interview is strictly for academic purpose. No respondent or the organization he/she represents will be identified by name in the report without his/her consent. Your input to the discussion in the following areas regarding the distribution of health facilities would be highly appreciated.

1. Name of organization-----
2. How many health facilities does your organization have in the Eastern Region?
3. How many districts do you have health facilities in the Eastern Region? -----
4. What types of facilities do you have in the region?-----

5. Do you think there is inequality in the distribution of health facilities in the region?
Yes ☐ No ☐
6. If yes, state them-----

7. If no, give reasons-----

8. What challenges do you encounter in the distribution of health facilities in the region?

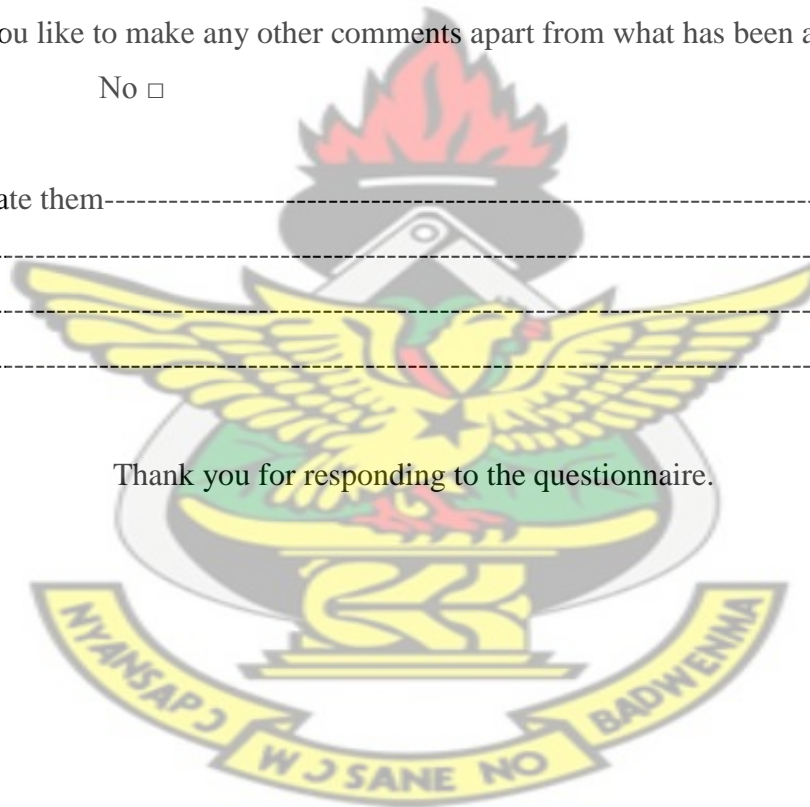
9. What measures do you propose to address the challenges stated above?

10. Would you like to make any other comments apart from what has been asked?

Yes ☐ No ☐

11. If yes, state them-----

Thank you for responding to the questionnaire.



APPENDIX FOUR
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
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M.Sc. DEVELOPMENT POLICY AND PLANNING PROGRAMME

**TOPIC: ASSESSING THE SPATIAL DISTRIBUTION OF HEALTH FACILITIES IN
THE EASTERN REGION OF GHANA**

QUESTIONNAIRE

(Ghana Statistical Service- Eastern Regional Office)

This interview is strictly for academic purpose. No respondent or the organization he/she represents will be identified by name in the report without his/her consent. Your input to the discussion in the following areas regarding the distribution of health facilities would be highly appreciated.

1. What are the distances to access health care from various health facilities in the Eastern Region?

2. Do think these distances affect accessibility to health facilities in the Eastern Region?

3. Yes, state them-----

4. If no, give reasons-----

5. Would you like to make any other comments apart from what has been asked?

Yes ☐

No ☐

6. If yes, state them-----

Thank you for responding to the questionnaire.

