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Assessment of availability, accessibility, and affordability of magnetic resonance imaging services in Ghana

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ABSTRACT

Introduction: The aim of this study was to assess the availability, accessibility, and affordability of MRI services to patients in Ghana.
Methods: A descriptive quantitative research method which involve the use of a structured email 3-page survey questionnaire was employed, and addressed to the MRI radiographer-in-charge for completion.
Results: A response rate of 92% was achieved. Sixty-seven percent (8) of the facilities were located in the Greater Accra region of Ghana with most (6[75%]) being private health facilities. The Western, Eastern, Brong Ahafo, Upper East, and Upper West lacked MRI scanners. MRI scanners per million population was 0.5. The mean cost per MRI examination, was lower in the public (i.e. GH₵ 563–GH₵ 686, $p < 0.05$ for non-contrast MRI examinations) compared to the private (i.e. GH₵ 618–GH₵ 775, $p < 0.05$ also for non-contrast MRI examinations). Most facilities (9[75%]) accept card bearers of some private health insurance to access MRI services, but none accepts that of the public-funded health insurance.
Conclusion: There is wide disparity in the distribution of MRI scanners nationwide, with most of them located in the Greater Accra region. With only 5 regions having MRI scanners, it does imply that close to 40% of the general population do not readily have access to MRI services. Government can achieve an increase in availability, accessibility, and affordability of MRI by providing more public health facilities with MRI scanners and reimbursing MRI services via the NHIS (National Health Insurance Scheme).

Introduction

Ghana is a tropical country located in West Africa, with a population of 24,658,823 (see Table 1 for regional distribution of population).[1] Ghana is divided into 10 administrative regions: Greater Accra, Ashanti, Brong Ahafo, Central, Eastern, Northern, Upper East, Upper West, Western, and Volta (see Fig. 1 for Ghana map showing all regions and capitals). The Northern region is the largest of the 10 regions in Ghana (accounting for 29.5 percent of the total land area of Ghana).[2] In 2010, Ghana attained lower–middle income (LMIC) country status at a per capita income of about $1,820, having experienced steadily increasing economic growth of over 7% per year on average since 2005.[3,4] However, the per capita income is considered to be too narrow as experts argued that key socioeconomic and development indicators i.e. infrastructural and human capital development, management of national resources, corruption– all which are crucial factors for effective governance improved productivity and subsequently increase in GDP, were left out.[3–5]

The annual average household expenditure for the country is estimated at GH₵ 9317 with a mean annual per capita expenditure of GH₵ 6337.[6] The total annual household expenditure for the country is GH₵ 61,507 million.[6] It is estimated that about 2.2 million people, consisting of 8.4% of the population, live in extreme poverty in Ghana, and 70% of people with income that falls below the poverty line (= GH₵ 1314) (see Table 2 for poverty and inequality estimates by Region) are found in the northern (Upper East, Upper West and the Northern Region) and savannah areas.[6] The livelihood of the majority of people from northern Ghana is largely dependent on farming.[1] Even though rapid urbanisation has resulted in poverty rates going down, the case is not the same in the northern part of the country.[1]

The health sector is considered to play a pivotal role in socio-economic development and in the national and international development framework. There is a National Health Policy[7]

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Table 1
Distribution of population by region and locality of enumeration, 2010.[1]

Region	Total population	Locality of enumeration		Share of population (%)
		Urban	Rural	
All regions	24,658,823	12,545,229	12,113,594	100%
Western	2,376,021	1,007,969	1,368,052	9.6
Central	2,201,863	1,037,878	1,163,985	8.9
Greater Accra	4,010,054	3,630,955	379,099	16.3
Volta	2,118,252	713,735	1,404,517	8.6
Eastern	2,663,154	1,143,918	1,489,236	10.7
Ashanti	4,780,380	2,897,290	1,883,090	19.4
Brong Ahafo	2,310,983	1,028,473	1,282,510	9.4
Northern	2,479,461	750,712	1,728,749	10.1
Upper East	1,046,545	219,646	826,899	4.2
Upper West	702,110	114,653	587,457	2.8

designed within the global context for health development and aims to provide a comprehensive and holistic framework that builds on progress made in previous years. Ghana's health expenditure; total (% of GDP) slightly increased from 3.1 (1995) to 3.6 (2014).[8] Within the same period, the health expenditure per capita (current US$), and the health expenditure, public (% of GDP) rose from 19 to 58, and from 1.6 to 2.1 respectively.[9,10] These statistics demonstrate Government's commitment to improve quality of care at all levels of its healthcare system through increased spending on

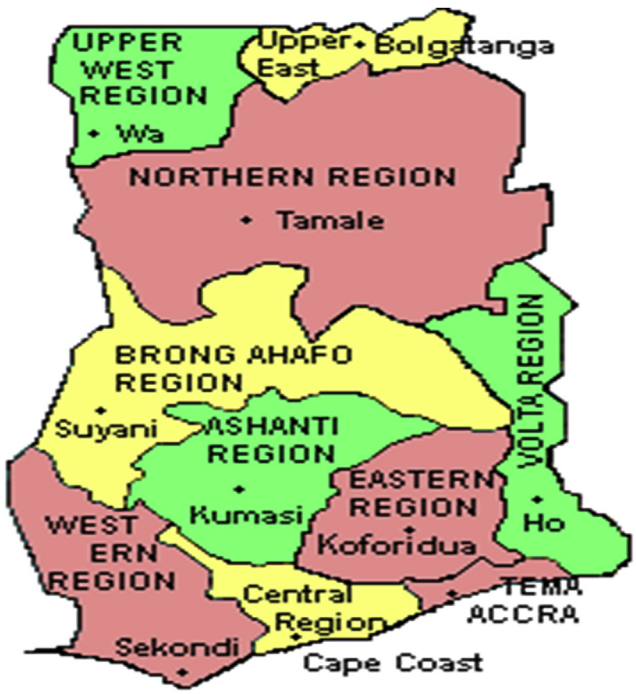

Figure 1. Ghana map showing all regions and capitals.[20]

Table 2
Poverty and inequality estimates by Region (Poverty line = GH₵ 1314).[6]

Region	poverty Head count	Poverty depth
Western	19.2	5.5
Central	19.6	5.7
Greater Accra	6.6	1.8
Volta	33.3	11.8
Eastern	22.0	6.1
Ashanti	13.6	3.8
Brong Ahafo	28.6	9.5
Northern	44.2	15.5
Upper East	45.9	22.2
Upper West	69.4	35.8

the provision of quality health care. Health providers in the public and private sectors as well as the formal and informal sectors, continue to make significant contributions to health interventions. Despite these increased investments, a large number of the population still lack access to basic quality health services, particularly those in rural areas and deprived communities. The factors responsible for this poor geographic access include inadequate investments in health facilities relative to need, hard-to-reach communities, sub-optimal spatial distribution of health facilities and lack of communication equipment.[7] Other barriers include health services are financial, organization of service delivery and broad socio-cultural barriers, including gender.

In Ghana, costs for health services can be reimbursed via 'Cash and Carry', National Health Insurance Scheme (NHIS), or a Private Health Insurance Scheme (PHIS). The 'Cash and Carry' system of paying for health services still remains a financial barrier to health care access, particularly among the poor.[7] To address this problem of financial barrier to health care access, in 2001, the Government through the Ghana Poverty Reduction Strategy (GPRS) introduced the National Health Insurance Scheme (NHIS) (under the National Health Insurance Act 2003, Act 650) as a social protection policy with the objective to deliver accessible, affordable, and good quality health care services to all Ghanaians especially the poor and most vulnerable in society.[7,11] The NHIS is largely funded by the National Health Insurance Levy (NHIL), which is 2.5% levy on goods and services collected under the Value Added Tax (VAT), 2.5 percentage points of Social Security and National Insurance Trust (SSNIT) contributions per month, return on National Health Insurance Fund (NHIF) investments, and premium paid by informal sector subscribers.[12] Medical service fees which includes services for consultation, diagnostic exams within the diagnosis related-groups (DRG), surgeries, and treatment are to be covered under the NHIS, provided one is registered and of good standing on the scheme. Registered members of the NHIS can access health care services from either public or private health facilities provided the facilities are also registered with the scheme. Health facilities can then be reimbursed on a fee-for-service basis, however up to a predefined cap of expenses. An alternative is to register with a private health insurance institution so as to be able to access medical services at health facilities registered to provide services.

There is lack of written or published national health technology policy yet in Ghana, but there are existing policies that have been established for health technology.[13] The Government of Ghana (GoG) continues to make significant investment in the equipment needs of the health sector by allowing health facilities to procure sometimes, and the Clinical Engineering Department of the MoH also to procure some of the capital equipment especially for the turnkey projects.[13] Over the years, the GoG in parallel with support from the private sector have contributed significantly to the acquisition of diagnostic imaging equipment due to the increasing demand for radiology services. While modalities such as general X-ray, ultrasound, computed tomography scanners, and Mammography are relatively common, little is known about the availability of MRI (magnetic resonance imaging). In recent times, the availability of MRI is now synonymous with quality of medical care, even within the rural hospital setting.[14] This is because it has become a very valuable non-invasive and even indispensable diagnostic tool capable of revealing structure and function of the human body with a level of detail due to its inherent sensitivity to a wide range of tissue properties. MRI plays an important role not only in the diagnostic work-up of diseases and injuries, but also in the monitoring of disease progression and treatment success.[15] As an important diagnostic tool, the first MRI scanner ever in the history of Ghana was acquired by the GoG, and commenced operation in 2006 at the Korle-bu Teaching Hospital, in the Greater Accra region

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