

Assessing the Influential Factors on the Use of Healthcare: Evidence From Ghana

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Abstract

A socio-economic inequality in the use of healthcare services in Ghana is investigated in this paper. The data employed in the study were drawn from Global Ageing and Adult Health survey conducted in Ghana by SAGE and was based on the design for the World Health Survey in 2003. Using binarylogistic model in R, the study found that education, insurance, employment, income, and health state are important gradientsto healthcareuse in Ghana. Thus, Ghanaians who are self-employed and those in the informal sector are respectively far more likely to make use of healthcare as opposed to those in the public sector. Again, respondents who have no insurance coverage are relatively far more likely to make good use of healthcare services as against those who have. Also, Ghanaians who are in very good health are literally far less enthused to utilize healthcare as against their other colleagues.

Keywords: Healthcare, BinaryLogit, Enabling factors, Ghana.

1. Introduction

Assuredly, “health is a fundamental human right indispensable for the exercise of other human rights. Every human being is entitled to the enjoyment of the highest attainable standard of health conducive to living a life in dignity” (UN, 2000). Article 25 of the Universal Declaration of Human Rights (UDHR) further indicates that “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, ...medical care ...and the right to security in the event of ... sickness, disability” (UDHR, 1948). Therefore, the right to good health care is not only essential, but also a major responsibility of the government (Constitution of Ghana, 1992).

Defining need is complex and depends on who is making the decision and how need is measured. The Advanced Oxford Dictionary defines need as “a circumstance in which something is lacking or requires to be done”. However, Culyer and Wagstaff (1993) show that the need for health care can be defined in many ways: such as, severity of disease, or the ability to benefit or the minimum amount of resources required to exhaust the capacity to benefit; and goes on to demonstrate that each of these meanings affects the distribution of health services differently. Economists express health need as a “burden of disease” and measure it in terms of years of quality life lost. But this is based on assumptions on individual preferences which are often culture-bound. Health workers express need in terms of mortality or morbidity, but this is influenced by the type of disease and the quality of the data. Parents and political authorities also define need differently. In a study carried out in Northern Ghana, mothers and fathers expressed children’s needs in terms of need for healthy foods, first aid, good water, prevention from mosquito bites, medicines and cleanliness. The Millennium Development Goals (MDGs) and the health sector usually identify health needs from morbidity and mortality perspectives and these are dependent on availability and quality of data. Thus most programs aim at reducing morbidity and mortality. A right, on the other hand, is a person’s entitlement to a good, service or liberty. Thus, a rights-based approach emphasizes advocacy, commitment and action to protect children. In addition, the approach puts the obligation on society rather than a single sector to ensure the health of children (Culyer and Wagstaff, 1993;Bainson et al., 2005).

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Multiple factors are almost certainly involved, as they are with differences in health outcomes, and need to be assessed against each other. Medical care may vary because of the health needs of different groups, or the types of care they seek, prefer, or can afford, or because of insurance coverage, provider behavior, or the policies and procedures of hospitals and health systems. Research attention is desirable across multiple dimensions of health care.

In addition to the governmental health care system, the church is playing a major role in Ghana. Christian Health Association of Ghana (CHAG) is the umbrella organization that co-ordinates the activities of the Christian health institutions and churches' health programs in Ghana. CHAG is coordinating its programs with the Ministry of Health (MOH) and Ghana Health Service (GHS). The members of CHAG predominately focus on the poorest and vulnerable groups and are therefore often located in the most remote areas of the country. Though CHAG is the only relevant health Non Governmental Organization (NGO) in the country, CHAG's position in the health sector has deteriorated since the organization more and more faces other NGO's competing for government resources.

Health Metrics Network, an independent body which undertook a review study of the Ghana health system in April 2005 after two years of implementation, noted that "given the low coverage of vital events registration, statistical analysis of the data is necessarily limited" (HMN, April 2005). 44 per cent of the population is below the age of 15 while only 5 per cent is above the age of 65. There are slightly more women (53 per cent) than men (47 per cent) in the overall population. Life expectancy at birth for a Ghanaian was estimated at 57.7 years: 55 years for males and 59.2 years for females" (MOH, undated, p. 8). "Infant mortality¹ worsened from 64 per 1000 live births in 2003 to 71 in 2006" (US Census Bureau, 2008). Ghana recorded an under-five mortality rate of 111 per 1,000 live births in 2006 (MOH, undated).

Due to their pervasiveness, sanitation related diseases pose a particular problem to the country's health system: The Ghanaian Chronicle reported that 82 per cent of the entire population lacked proper toilet facilities in 2008. The newspaper went on to say that "the country's sanitation coverage stood at 10 per cent as at the end of 2006" (Ghanaian Chronicle, August 21 2008). Basic sanitation related diseases continue to rise. The national health insurance authorities say 80 per cent of the cases burdened on the scheme are sanitation-related (Public agenda, 1 September 2008). Curable illnesses such as malaria continue to be highly fatal for Ghanaians (see chapter 3.1.; IRIN, 11 August 2008). For a population of a little short of 23.5 million people, there are only 1,439 health care facilities (IRIN, 5 August 2008). A study by van den Boom et al. (2004) noted that access to these facilities remained a problem: Medical facilities were not evenly distributed across the country, with most rural areas lacking basic facilities such as hospitals and clinics as well as doctors and nurses. The study further said that "Ghanaians on average live about 16 km from a healthcare facility where they can consult a doctor, but half of the population lives within a 5 km radius. By the same token, the other half cannot consult a doctor within 5 km, which corresponds to a 1 hour walking distance, and one quarter even lives more than 15 km from a facility where a doctor can be consulted." The Government of Ghana embarked on a health sector reform in the early 1990s to improve the accessibility and quality of services. However, "the health situation in Ghana is still far from satisfactory." Many people in the country still rely on self-medication (van den Boom et al., October 2004, p. 1, 4, 20, 21).

Projects to raise accessibility, however, are underway: The Minister of Health told Parliament in December 2007 "that the Ministry has established 176 health infrastructure projects within a period of five years. This includes 50 Health Centers comprising 22 District Hospitals and 26 Community Health Planning Scheme (CHPS)" (Ghana Parliament, 18 December 2007). Data on the progress of this project were not available at the time of research.

The healthcare system is organized under four main categories of delivery systems: public, private-for-profit, private-not-for-profit and traditional systems. Though the former three are mostly associated with healthcare delivery in Ghana, efforts are being made since 1995 to integrate traditional medicine into the orthodox mainstream (Abor; Abekah-Nkrumah; Abor, 2008). The public health care system of Ghana is operated through the National Health Insurance Scheme (NHIS), which permits the operation of three types of insurance schemes, including District-Wide (Public) Mutual Health Insurance schemes in all of the country's 110 districts, private mutual insurance schemes and private commercial insurance schemes. However, only the District-Wide (Public) Mutual Health Insurance schemes are financially supported by the NHIS (Hepnet, 30 June 2007).

The public health system faces a variety of obstacles, among them shortages of personnel (see chapter 6) and funding, as well as an unequal distribution of health workers in the country's regions (van den Boom et al., October 2004, p. 4). The country's most densely populated region, the Western Region, accommodates 10 per cent of the population but only 99 doctors. There are 91 doctors living in the Volta Region and 33 in the Northern Region, compared to 1238 public and private medical as well as dental practitioners in the Great Accra Region (Ghana Home Page, undated; GMA, undated).

Corruption seems to be another major problem in Ghana's public health care system: In its 2006 Global Corruption report, Transparency International (TI) "has identified the health sector of Ghana as a corruption prone area with evidence of bribery and fraud across the breadth of medical services. This is said to have emanated from petty thievery and extortion, to massive distortions of health policy and funding, fed by payoffs to officials in the sector" (Ghanaian Chronicle, 2 February 2006).

A study carried out in selected rural communities revealed that other factors such as traditional beliefs, social stigma, poverty and illiteracy still stand in the way of proper healthcare delivery. For example, in a study on payment of health insurance conducted in the KassenaNankana District in Northern Ghana, some of the respondents said that "contributing money for illnesses yet to come was not appropriate as that in itself could invite more illnesses." (HRU, May 2005a, p. 7). Another study in a district hospital revealed that people with leprosy and tuberculosis defaulted treatments due to social stigma, lack of funds and/or the need to fend for themselves or others (HRU, May 2005b, p. 8).

Primary health care in Ghana is structured to serve the rural and urban population according to priority. The rural areas which are mostly deprived of permanent health infrastructures have been prioritised with programmes such as the Community Health Planning Service (CHPS), which aims to "transform [...] clinic- based primary health care and reproductive health services to community-based health services". Most CHPS workers are mobile and move from community to community to educate community members on preventive practices as well as administer curative services (Ghana CHPS, 2009a). Ghana has embarked on training health workers especially for the need of rural areas. The Kintampo Rural Health Training School (KRHTS), situated in the middle of the rainforest region of BrongAhafo, Navrongo Health Research Centre (NHRC) situated farther in the north-east of the country, and others of their kind in other regions of the country train community health workers, nurses and health administrators for deployment into rural areas (Ghana CHPS, 2009a; Ghana CHPS, 2009b).

Secondary and tertiary care is classified as purely curative and offers a range of hospital services, depending on the defined status of the institutions. The secondary and tertiary health care level is sub-divided into several different categories depending on their range of service. A teaching hospital, for example, takes both referral cases and serves as a first point of contact. The military and police hospitals of Ghana serve as tertiary healthcare infrastructures, serving both as first point of contact and referral institutions but do not serve as teaching hospitals. Secondary and tertiary health care delivery in Ghana is mostly an income generating area of health. Most of the services in these institutions are available at the cost of patients only. These tertiary institutions also operate on private bases as profit making institutions by offering curative services to non-insured people on a cash-and-carry basis.

Improvements in health care by themselves are unlikely to either eliminate social inequalities in health or achieve optimal levels of population health (House and Williams, 2000; Kaplan et al., 2000). Such stereotypes can be activated, and affect behavior, under conditions of time pressure, when quick judgments must be made on complex tasks, with cognitive overload and in the presence of such emotions as anger and anxiety (van Ryn, 2002). In the typical health care encounter, some of these conditions are present, particularly cognitive complexity and time pressure.

The possibility that some health care providers may hold particular stereotypes is suggested by a few studies in which physicians were found to view their black patients more negatively than white patients (Finucane and Carrese, 1990; van Ryn and Burke, 2000). For instance, van Ryn and Burke (2000) found that even after adjusting for patient age, sex, socioeconomic status, sickness or frailty and overall health, and patient availability of social support—physicians viewed black patients, compared with whites, as less kind, congenial, intelligent, and educated, less likely to adhere to medical advice, and more likely to lack social support and to abuse alcohol and drugs.

Experimental studies of physicians (Schulman et al., 1999; Weisse et al., 2001) and medical students (Rathore et al., 2000) provide evidence that the experimental manipulation of hypothetical patients' characteristics such as race can lead to variations in provider perceptions.

But do stereotypes actually affect patient care? There is little evidence on this issue, though one may hypothesize various possibilities. For instance, a health care provider may interpret symptoms in line with beliefs about group differences. These beliefs might be based on generalizations from clinical experience (Satel, 2000, 2001-2002), or a provider may also select treatments based on stereotypical assumptions about patient behavior. Some research tackles this latter possibility. Other factors, from socioeconomic status to differences in cultural beliefs relating to fatalism (Nelson et al., 2002) also complicate the picture. Kales et al.(2000) found that blacks with substance abuse disorders have more psychiatric visits than whites. In addition, blacks and Hispanics are reported to distrust health care providers and expect discriminatory treatment more often than whites (LaVeist et al., 2000; Lillie-Blanton et al., 2000), but whether this affects their acceptance of recommended treatments or compliance with prescribed regimens has not been clearly demonstrated.

However, medical care may have a greater effect on the health status of vulnerable populations, such as racial and ethnic minorities and low-status groups among older adults, than on the population in general (Williams, 1990). Hertzman(2004) asserted that early life events may somehow set one on a pathway that results, possibly many years later, in impaired or enhanced health. Such experiences as early schooling may not immediately affect health but may decisively influence one's eventual level of completed education and foreclose certain career paths, affecting experiences and later behavior in ways that eventually affect health. Pathways may involve cumulative effects but are not determinate, since health and development are subject to many influences. The plasticity of these relations means that a person's late-life health status is not certain but depends on numerous contingencies (Rutter, 1996).

One possible mediating mechanism is access to and use of health care. Differences in health care between white and minority children and their mothers have been documented (Institute of Medicine, 2002). This may be relevant to late-life health status and mortality, though the effects of prenatal care on fetal growth and birthweight are now in dispute. The relevance of other aspects of health care—less use of prescribed medications, fewer visits to physicians, poorer compliance with vaccination schedules—has not been confirmed.

Another mediating mechanism, much more complex and virtually unexplored, involves the mutual dependence of health and socioeconomic status (discussed earlier as a possible selection process). If impoverished early environments are associated with worse health, this may limit one's opportunities in life, which in turn may expose one to greater health risks. Health differences in adulthood could be exacerbated by such a mechanism. Some research has attempted to model the influences involved (Palloni and Milesi, 2002; Power et al., 1986), and other research has sought to determine the magnitude of the effects (Hack et al., 2002; Lundberg, 1991; Nystrom Peck, 1992; Nystrom Peck and Lundberg, 1995; Nystrom Peck and Vagero, 1987; Power et al., 1990). But these efforts have met only limited success (Palloni and Milesi, 2002), and the skeptical tone of early evaluations is still appropriate today (Blane et al., 1993). The extent to which such a mechanism may account for racial and ethnic differences is unknown.

Differences in the receipt of medical procedures are consistent with a larger literature, generally for earlier years, which find systematic racial and ethnic differences in the receipt of a broad spectrum of therapeutic interventions (Geiger, 2002; Institute of Medicine, 2002; Mayberry et al., 2000). Blacks and sometimes other minorities are less likely to receive a diverse range of procedures, ranging from high-technology interventions to basic diagnostic and treatment procedures, and they experience poorer quality medical care than whites.

Some differences in quality of care may reflect the particular institutions and health care providers on which minorities depend. Some evidence also suggests that minority patients are more likely than whites to be treated by less proficient physicians (Mukamel et al., 2000). To achieve the aim of this research, the binary logit model was applied.

2. Methods

Arguably, for this paper to realize its goal, data employed in this study were drawn from Global Ageing and Adult Health survey conducted in Ghana by SAGE. The survey was conducted in 2007 and collected data on socio-economic characteristics and other variables of the individuals interviewed

The data set contains information on predisposing, need(health status) and mainly enabling factors. The input variables considered in this paper include age, education, employment status, income level, insurance status and health status. For healthcare use (i.e. the output variable) a model is specified to determine the need and receiving healthcare or otherwise based on the explanatory variables considered.

Due to the binary outcome of the output variable: the need and receiving healthcare or otherwise, the appropriate generalized linear model considered for the analysis was *Binary Logistic Regression* (binary logit) model.

2.1. Model Specification

For the use of healthcare, a model is specified to determine the need and receiving healthcare or otherwise given the predisposing, need and enabling factors available. The paper specifies a binary logit model for need and receiving healthcare or otherwise. The binary logit model is a member of the generalized linear models and is the most widely used for categorical response with two possible outcomes. If P is the probability of an individual

who needs and receive healthcare and $1 - P$ is the direct opposite, then $\frac{P}{1 - P}$ is the ratio of the probability of an individual who needs and receive healthcare to probability of an individual who needs but does not receive healthcare. The binary logit model is defined as (Agresti, 2007):

$$\logit(P) = \ln\left(\frac{P}{1 - P}\right) = \alpha + \beta x$$

where x is a vector of input variables explaining the variation in the output variable, α is a constant term and β is a vector of coefficients determining the contribution of each influential variable. The parameters in the binary logit model are estimated using the maximum likelihood approach. The selected binary logit model for any data can be evaluated similarly as in other generalized linear models. The most common problem associated with the binary logit model is the problem of over/under dispersion. Nevertheless, the problem can be checked using chi-square test.

The interpretation of the estimated model is usually based on *odds ratio*. The reason is that the model is based on link function called logit. The logit can be described as the log transform of the dependent variable.

3. Logistic Regression Model Specification

To determine the significant effect of the influential factors on healthcare use, a binary logistic regression model was employed using R software, version 2.13. In the fitted model healthcare use that is considered as output variable was treated as either utilized or not. The healthcare use considered as the output variable is being used along side the influential factors as the input variables in the model. Using maximum likelihood estimation techniques, the parameters for each categorical covariate are estimates relative to the selected base-level category. Table 1 presents the estimated odds ratio from the logit model. The fit statistics of the fitted model as shown in the last column of Table 2, indicates a significant fit of the model. For instance, all the p-values from the likelihood ratio test comparing the fitted model to the null model were found to be less than 0.05.

From the estimated adjusted odds ratios as shown in Table 2, the odds of receiving healthcare is decreased by a factor of 0.9 with a one-ghana cedi (GHC1) gain in income. From the results shown in the table, after adjustment, respondents who attained *less than primary school* are 0.69 as likely to receive healthcare as compared to their counterparts with *no formal education*. Also respondents who have *no formal education* are 44% more likely to receive healthcare as opposed to their counterparts who have *completed primary school*. Again, respondents who have *completed Junior high School* are 62% less likely to receive healthcare as opposed to their counterparts who have *no formal education*.

Persons who have *mandatory insurance*, *voluntary insurance* and *both* are respectively 0.18, 0.64 and 0.16 as likely to receive healthcare when they needed it as compared to their counterparts who do not have.

Ghanaians who are *self-employed* and *informally employed* are respectively 66% and 111% more likely to receive healthcare when they need it as opposed to those in the *public sector*.

In another development, Ghanaians whose health state are reported to be *good*, *moderate*, *bad* and *very bad* are respectively 2.73, 1.98, 2.22 and 2.23 as likely to receive healthcare as to their counterparts who reported *very good*.

4. Discussion

In this cross-sectional study, which has numerical strength of 5573, we sought to determine whether enabling and need (health status) factors by Ghanaians are associated with their healthcare usage status after adjustment for predisposing factors.

Our study has indeed established the strong relationship between those who have *no formal education* and their healthcare use as against those who have attained education up to *Junior high school level*. This goes to confirm the vulnerability of those with no formal education. Interestingly, Ghanaians who have no insurance coverage are 36% more likely to utilize healthcare than those who have voluntary coverage. Again, same cannot be said about those who have mandatory insurance because a gargantuan 82% are more likely to utilize healthcare in favour of Ghanaians without insurance coverage. Almost the same can be said about those who have both mandatory and voluntary insurance coverage (84% are more likely to utilize healthcare in favor of Ghanaians without insurance coverage). This is likely to make those who have no insurance to become destitute and helpless.

In a related development, Ghanaians who are self-employed and those in the informal sector are respectively far more likely to make use of healthcare as opposed to those in the public sector. Finally, the overall respondents who are in very good health are literally far less enthused to utilize healthcare as against their colleagues in the rest of the other categories.

Our study nevertheless fails to point out why age could not contribute to the debate.

5. Conclusion

The identification of possible gradients like education, insurance, employment, income and health state in the utilization of healthcare is of great importance. In this study, we have investigated and realized a potential correlation between utilization of healthcare and the predictor variables of Ghanaians.

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Table 1: Estimated Odds Ratio for Healthcare Utilization Model

Variables	crude OR	adj. OR	P-value
Age	1.0011	0.9983	0.636
Income	0.84	0.9***	0.002
Education			
<i>no formal education</i>	Ref	---	0.001
<i>less than primary school</i>	0.7	0.69**	0.012
<i>primary school completed</i>	0.651	0.56***	0.001
<i>Junior high school completed</i>	0.48	0.62**	0.036
<i>high school (or equivalent) completed</i>	0.8304	1.0078	0.95
<i>college/university completed</i>	0.6	1.2	0.529
<i>post-graduate degree completed</i>	0	0	0.962
Insurance			
<i>none</i>	Ref	---	0.001
<i>Mandatory</i>	0.14	0.18**	0.016
<i>Voluntary</i>	0.59	0.64***	0.001
<i>both mandatory and voluntary insurance coverage</i>	0.14	0.16***	0.01
Employment			
<i>public</i>	Ref	---	0.003
<i>private</i>	1.13	0.96	0.909
<i>self-employed</i>	2.07	1.66**	0.011
<i>informal employment</i>	2.69	2.11***	0.002
Health Status			
<i>Very good</i>	Ref	---	0.001
<i>Good</i>	2.6	2.73***	0.001
<i>Moderate</i>	1.94	1.98**	0.004
<i>Bad</i>	2.29	2.22**	0.002
<i>Very Bad</i>	2.19	2.23**	0.029

Note: ***, ** and * indicates 1%, 5% and 10% significance level respectively