



Equity aspects of the National Health Insurance Scheme in Ghana: Who is enrolling, who is not and why?

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ABSTRACT

To improve equity in the provision of health care and provide risk protection to poor households, low-income countries are increasingly moving to social health insurance. Using data from a household survey of 3301 households conducted in 2009 this study aims to evaluate equity in enrollment in the National Health Insurance Scheme (NHIS) in Ghana and assess determinants of demand across socio-economic groups. Specifically by looking at how different predisposing (age, gender, education, occupation, family size, marital status, peer pressure and health beliefs etc) enabling (income, place of residence) need (health status) and social factors (perceptions) affect household decision to enrol and remain in the NHIS. Equity in enrollment is assessed by comparing enrollment between consumption quintiles. Determinants of enrolling in and dropping out from NHIS are assessed using a multinomial logit model after using PCA to evaluate respondent's perceptions relating to schemes, providers and community health 'beliefs and attitudes'. We find evidence of inequity in enrollment in the NHIS and significant differences in determinants of current and previous enrollment across socio-economic quintiles. Both current and previous enrollment is influenced by predisposing, enabling and social factors. There are, however, clear differences in determinants of enrollment between the rich and the poor. Policy makers need to recognize that extending enrollment will require recognition of all these complex factors in their design of interventions to stimulate enrollment.

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Introduction

Equity has long been considered an important goal in the health sector. Yet inequities between the poor and the better-off persist (O'Donnell, Doorslaer, Wagstaff, & Lindelow, 2008). Empirical evidence shows that allocation of spending by governments in low-income countries across services within the health sector may generally not favour the poor (Castro-Leal, Dayton, & Mehra, 2000; Preker & Carrin, 2004; Yazbeck, 2009). Typically the share of the subsidy to the poorest quintile is significantly less than that to the richest 20% (Preker & Carrin, 2004) and the health sector may actually exacerbate inequalities, by serving the wealthiest more

than the poor (Yazbeck, 2009). This has generated a renewed concern for poverty reduction and equity in health and its monitoring and evaluation (Gwatkin, 2000; Yazbeck, 2009).

In recent years, to improve equity in the provision of health care and provide risk protection to poor households, low-income countries are increasingly moving away from "user fees" to pooling arrangements. A critical question for understanding the relationship between pooling arrangements and the poor is, who is covered by health insurance (Yazbeck, 2009). While there is consistent evidence of MHO's in reaching a large number of poor people who would otherwise be excluded, the evidence regarding whether such schemes reach the poorest is mixed (Jakab & Krishnan, 2004; Preker & Carrin, 2004). Whereas some studies show schemes are equitable in terms of enrollment across socio-economic groups (Diop, Yazbeck, & Betran, 1995; Polonsky et al., 2009; Schneider & Diop, 2001) others show the poorest are excluded resulting in low levels of both vertical and horizontal equity (Arhin-Tenkorang, 2001; Bennet, Creese, & Monasch, 1998; Ekman, 2004; Musau, 1999).

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As a long term mechanism for addressing financial access constraints especially for the poor posed by the “user-fee” system the Government of Ghana passed a National Health Insurance Act 650 in 2003 mandating the establishment of district-wide Mutual Health Organizations (MHO) (GOG, 2003). Since then NHIS coverage has expanded significantly and by June 2009 there were a total of 145 District Mutual Health Insurance Schemes (DMHIS) and 55% of the population enrolled. Empirical evidence shows, however, the NHIS may not be pro-poor (Asante & Aikins, 2008; GSS, 2009; Sarpong et al., 2010; Sulzbach, Garshong, & Owusu-Banahene, 2005). There is a need to have more insight as to why this is so, especially given the fact that NHI premiums are relatively low, exemptions are in place to protect the core poor (NHIC, 2007) and since the poor may have no other options to receive health care services. Castro-Leal et al. (2000) in his review of public spending on health care in Africa, concludes that reallocations for public expenditures are not sufficient to reach the poor and that policies must be based on sound understanding of the factors that govern household decisions about health care (Castro-Leal et al., 2000). Furthermore, health policy should be formulated with greater attention to the specific problems of the poor, because of differences in preferences and perceptions between rich and the poor, yet this has rarely been done (Gwatkin, 2000).

Literature shows a wide range of barriers known to impede enrollment such as high cost of premiums, distance to health facilities, place of residence, poor quality of care, timing of premium payments and other behavioural and social factors (Angel, Frias, & Hill, 2005; Basaza, Criel, & Van der Stuyft, 2008; Buor, 2004; Chankova, Sulzbach, & Diop, 2008; Cristancho, Garcés, Peters, & Mueller, 2008; Jutting, 2004; Kamuzora & Gilson, 2007; Nketiah-Amponsah, 2009; Sinha, Ranson, Chatterjee, Acharya, & Mills, 2005). Even though there is ample evidence on determinants of enrollment in MHOs (Basaza et al., 2008; De Allegri, Sanon, & Sauerborn, 2006; Jutting, 2004; Kirigia, Sambo, & Mwase, 2005; Sarpong et al., 2010; Schneider & Diop, 2001; Stock, 1983), to the best of our knowledge, it has not been looked with respect to differences in determinants between socio-economic groups, even though other studies have shown that price elasticities of health insurance differ between the rich and the poor (Wang, Yip, Zhang, Wang, & Hsiao, 2005).

Our study aims first, to add to existing literature by looking at whether the NHIS is reaching the poor. This way we aim to evaluate equity in enrollment in NHIS. Second, using a modification of the socio-behavioural model (Anderson, 1995; Anderson & Newman, 1973) we assess determinants of demand for health insurance separately for socio-economic quintiles. Third, a novel feature of the conceptual model is the introduction of perceptions relating to the three stakeholders of NHIS: providers, schemes and individuals to understand whether differences in preferences or perceptions between the rich and poor account for differences in determinants of health insurance enrollment.

Our first hypothesis is that there is unequal enrollment in the NHI across socio-economic groups. Our second hypothesis is that households with higher education, older age, living in urban towns, with higher incomes and whose perceptions of provider's quality of care, schemes and individual health ‘beliefs and attitudes’ are favourable would be more likely to enrol and remain in the scheme. Our third hypothesis is that the effect of these determinants differs by consumption quintile, because of the differences in perceptions and preferences between the rich and the poor.

Health care financing in Ghana National Health Insurance Scheme

To reduce inequalities in health, to ensure equitable allocation of resources and to increase overall resources to the health sector

Ghana has over time implemented a number of financing reforms. Public user fees were introduced into the public health system in 1985 and were intended to fill the financing gap in the provision of comprehensive health services. However the benefits of user fees were extensively challenged with respect to equity in access of health care especially for the poor (Nyonator & Kutzin, 1999; Waddington & Enyimayew, 1990, 1989).

In the 1990s Ghana started experimenting with various community based health insurance schemes in a series of pilot projects to study the effects and optimal design of CBHI. Subsequently, in fulfilment of the 2000 election campaign promise, the incoming patriotic party passed the National Health Insurance Act (Act 650) in 2003 in a bid to eliminate user fees (associated with the opposition party) and improve access to health care especially for the poor and vulnerable. The Ghana National Health Insurance Scheme (NHIS) is unique in that it is a combination of both Social Health Insurance and Mutual Health Insurance concepts. At the centralized level, the NHIS is regulated by the National Health Insurance Authority (NHIA), which also plays a key role in guiding management of the National Health Insurance Fund (NHIF). The NHIS is funded primarily from a combination of earmarked public revenues (2.5% VAT), contributions from civil servants to Social Security Funds (2.5% SSNIT), and income-adjusted premiums. Revenues from the NHIF are used to provide a reinsurance mechanism for the District Mutual Health Insurance Schemes (DMHIS) and premiums for exempt groups such as children under the age of 18 yrs if both parents are registered, pregnant women, above 70 years and the core poor (LI 1890, 2003).

All MHO's that are not DMHIS government sponsored are classified as private. Private MHO's though recognized as not-for-profit solidarity organizations, and legally entitled to operate, do not receive any financial support from the national health insurance fund or any of the subsidies to cover groups exempt from premium payments such as the elderly and the poor (Agyepong & Adjei, 2008).

The design of the DMHIS has an in-built equity in financial contribution mechanism based on ability to pay and not on need. It requires all persons above 18 years to contribute a minimum of GH c7.20 (\$5) per year to enrol under the scheme. There is some flexibility for district MHO to vary their premiums. Premiums may be more than the statutory US\$ 5 and members do not pay any co-pays or deductibles. Enrollment is mandatory but has faced non-compliance (MOH, 2009).

The NHIA mandates a pre-defined benefits package that covers 95% of the disease burden in Ghana. Every DMHIS contracts accredited providers (public, private and mission) to deliver services to its members and reimburses them after submission of claims for services. This system separates the purchasing and provision functions across different stakeholders to increase transparency. Currently the NHIS reimburses providers based on the Ghana Diagnostic Related Groupings (G-DRGs) and a drug tariff list.

Methods

Study setting, design, variables and data collection

The study was carried out in the Central (CR) and Eastern (ER) regions of Ghana characterised by mixed urban rural populations, with a poverty incidence rates of 0.40 and 0.45 respectively (GLSS 5, 2007). The CR is a coastal region with a population of 1,843,403 with 17 administrative districts. ER has an estimated population of 2,322,030 with 21 administrative districts. Agriculture is the pre-dominant industry in both regions. Whereas both regions are similar in terms of socio-economic characteristics they differ in enrollment coverage with CR showing lower enrollment (23.2%) compared to the 49.6% for ER (GSS, 2009). The research was

subjected to appropriate ethical review in Ghana, by the Ghana Health Service Research Center Ethical Review Committee

The survey sample was drawn using a three-stage sampling procedure. In the first stage 30 districts were randomly selected in both regions. The second stage involved the selection of one census-enumeration area (EA) from the Ghana Statistical Service for each of the districts using a set of computer generated random numbers. Each EA represents a community. Of the 30 EA's, 13 were in the Central Region and 17 in the Eastern Region. The third stage involved the selection of residential structures. All residential structures in selected EA's were mapped and numbered. A total of 110 households were randomly selected in each of the 30 communities. Data was collected from 3301 households with 13,865 individuals in 30 communities in both regions of which 40% were urban and 60% rural.

The household survey was carried out in April 2009 using a structured questionnaire, information was gathered on age, sex, occupation, education, religion, marital status, place of residence, self perceived health status, insurance status, assets, income, expenditure and perceptions. The one-month income was estimated from primary and secondary occupations as well as revenues from farm produce and all other cash income. Expenditures were estimated by summing up detailed expenditure on food, housing (actual and imputed) and non-food expenditure.

The section on perceptions consisted of 54 statements/variables. A five point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree" was used by respondents to express their opinions on various variables relating to schemes, providers and individual health 'beliefs and attitudes' and peer pressure. Some variables had to be reversed in their scoring to have similar interpretation before conducting the reliability analysis. Provider related variables covered aspects of service delivery adequacy, quality of care and staff courtesy. Scheme related variables covered aspects of convenience of location and administration, price and benefits of insurance. Individual related peer pressure and health 'beliefs and attitudes' variables covered understanding of health and risk sharing principles of insurance and the influence of opinion leader and peers on decisions to enrol. The details of statements or variables that make up each dimension or factor are provided in Table 3.

Insurance data included insurance status of all individuals living in the household, premium and registration costs. The NHIS identifies three categories of members: *registrants*, who have registered but may not necessarily have paid the full premium for the year or not renewed membership, *members* who have registered and paid the full premium and are awaiting cards and *card holders*, who have paid premiums, hold cards and are eligible to access services. For this study we categorize households as currently enrolled if they are *valid card holders*, previously enrolled if they are *registrants* and never enrolled if they have never registered.

Inequities in enrollment are assessed by the ratio of differences across the five 20% quintiles comparing the poorest to the richest 20% using consumption expenditure.

Conceptual model

Fig. 1 shows the conceptual model used in this study and is based on a socio-behavioural model and its subsequent modifications (Anderson, 1995; Anderson & Newman, 1973; Gelberg & Anderson, 2000). We expand on the Anderson model trying to factor in the complex and multidimensional issues of insurance enrollment. Apart from individual determinants, a countries health care provider structures and processes can also facilitate or discourage enrollment (Anderson, 1995; Kroeger, 1983). Our model proposes that household decision to enrol is a function of 3 groups of factors namely: individual, scheme and health care

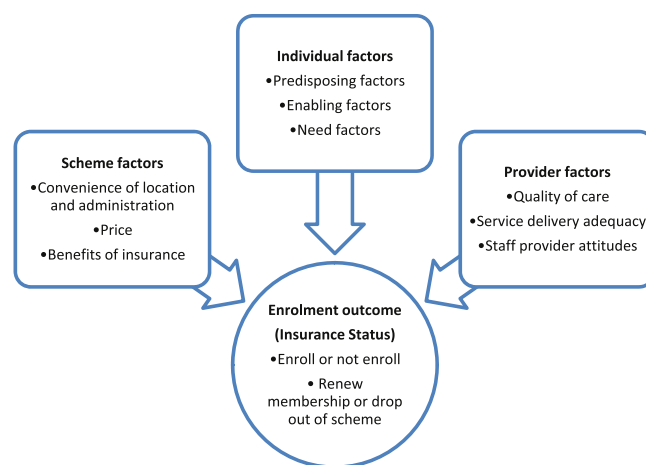


Fig. 1. Conceptual model.

provider factors. Each factor comprises of several variables. Individual determinants include predisposing, enabling and need factors. Predisposing factors influence attitudes about insurance (age, gender, education, home ownership, occupation, family size, marital status, peer pressure and health beliefs and attitudes). Peer pressure could partially cover the influence of political factors on enrollment decisions in Ghana. Enabling factors facilitate or prevent an individuals attempt to enrol (income, place of residence, knowledge of insurance). Perceived health status is our need factor and represents the most immediate cause of health service use. Scheme factors include convenience of scheme location and administration, price and benefits of insurance. Health care provider factors include quality of care, provider staff attitudes and adequacy of service delivery. We presume these complex factors interact with each other to produce an enrollment outcome, which may differ across socio-economic quintiles because of the belief that factors that contribute to the vulnerability of a given population also affect insurance enrollment as well as health care access and use.

Statistical analysis

Two different statistical analyses were used. First, we run Principal Component Analysis (PCA) to evaluate respondent's perceptions. PCA is a multivariate statistical method for reducing a large number of variables to fewer common underlying dimensions or factors (Field, 2009). With PCA we strive to reduce a large group of perception variables to underlying dimensions by looking at which variables seem to cluster together in a meaningful way. Initially, we included all the 54 perception variables using Varimax rotation with Kaiser Normalisation. The Kaiser-Meyer-Olkin measure (KMO) of sampling adequacy and Bartlett test of sphericity were first applied to determine whether this set of 54 variables contains sufficient collinearity to warrant use of PCA. The KMO measure was 0.845 and the Bartlett test was significant ($p = 0.0001$) confirming the data sets amenability to PCA.

From the initial set of 54 variables, 15 factors were extracted based on visual inspection of the Scree plot and Eigenvalues greater than 1. Eigenvalues indicate the importance of a factor and Scree tests plot Eigenvalues against the number of variables to show the relative importance of each factor.

To calculate to what degree variables load onto a factor, Varimax rotation was used. Factor loadings signify the importance of a particular variable to a factor. The factor loading cut-off point was 0.5 and factors with less than two variables were dropped from the analysis. In addition, communalities (proportion of common

variance present in a variable) of variables is important in deciding which, if any, variables may be excluded from the final factor analysis. Variables with communalities of less than 0.5 were dropped from the analysis and PCA rerun. The final model of 23 items extracted 8 factors with a KMO of 0.748.

Cronbachs alpha which measures the internal consistency of variables in a questionnaire to determine its reliability and ranges between zero and one was computed for each variable and then sub-scales. The overall alpha for the scale was found to be 0.745, which is considered very good (Field, 2009).

Second, a multinomial logit regression was run to determine how independent variables: individual predisposing, enabling, need factors, scheme and provider factors affect household decisions to enrol and remain in the NHIS, separately for 5 quintiles, which were based on the household consumption level. The dependent variable was the household's insurance status: currently enrolled, previously enrolled and the reference category was never enrolled. The model was specified as follows:

$$\Pr(y_i = j) = \frac{\exp(X_j\beta_j)}{1 + \sum_{j=1}^J \exp(X_i\beta_j)}$$

and

$$\Pr(y_i = 0) = \frac{1}{1 + \sum_{j=1}^J \exp(X_i\beta_j)}$$

For the i th household, y_i is the observed outcome and X_i is a vector of explanatory variables. β_j are the coefficients of the explanatory variables. All analyses were performed in SPSS 16.

Results

Descriptive summary characteristics of study sample

The sample population is young with an average age of 25 yrs and children under 18 yrs representing 49% of the population (Table 1). The mean household size is 5.6 and 67% of all individuals are in some form of employment. Of the sample 52% are female and 48% male. Education measured by total years of schooling is low at a mean of 7 years. The mean monthly individual and household income is GH¢43.70(\$36) and GH¢182.00(\$152) respectively. Mean household expenditure is GH¢ 212.00 (\$176). On average, households spend GH¢ 13 (\$11) on NHIS premium and registration fees.

Table 1
Household and individual characteristics of study sample.

Summary means	Mean (SD)
Individual^a	
Age	24.5 (19.6)
Total number yrs of schooling	7.0 (3.9)
Sex (female, %)	52.2
Age < 18 (%)	49.2%
Married (%)	29.22
Employed (%)	67%
Urban (%)	40.6
Monthly income	43.70 (115.3)
Household^b	
Age HH head	46(15.5)
HH size	5.6 (2.5)
Urban (%)	40.6
Monthly income	182(211.62)
Monthly expenditure	212 (212.58)
Premium costs ^c	13(4.7)

^a Total of 13,857 individuals.

^b Total of 3301 households interviewed, Ghana cedis (\$1 = 1.45 GH¢).

^c Includes premium and registration charges.

Enrollment status and descriptive statistics by socio-economic quintiles

Table 2 summarizes descriptive statistics on socio-demographic characteristics and shows some notable differences across income quintiles. In our sample, 30% are currently enrolled, 14% are previously enrolled and 56% have never enrolled in the NHIS. Households in the richest quintile are significantly ($p = 0.000$) more likely (41%) to enrol compared to the poorest quintile (27%) indicating inequitable access to NHIS (Fig. 2). Interestingly, our findings reveal that among the poor, the core poor (Q1) have slightly better access compared to the poor Q2. Also we find higher current enrollment in rural areas (19.2%) compared to urban areas (10.8%), even though overall 31.9% of rural residents have never enrolled compared to 23% of urban residents. For the currently enrolled, financial protection against illness was cited as the main reason (76%) for enrolling.

Non-renewal is significantly ($p < 0.000$) higher among the richest (17%) compared to the poorest (13%). Inability to afford renewal payments was cited as the main reason, with the poorest households (68%) less able to afford compared to richest households (44%). Low satisfaction with provider care (6%) was another reason for non-renewal with the, households from the highest socio-economic quintile are married more often, have higher secondary and tertiary education, larger families, own homes, live in urban areas, have higher mean monthly incomes and health expenditures. The mean monthly income of the richest households is three times higher than for the poorest households, and although the richest spend more on health, the proportion of total health expenditure is lower for them than for the poorest (9% vs. 15%). There are more female-headed households in the lowest quintile compared to the richest quintile (47% vs. 25%). Household heads perceived themselves to be relatively healthy (74%) across socio-economic quintiles.

Perceptions influencing NHIS enrollment

Table 3 presents factor loadings and the eight factors or dimensions that were categorized as: technical quality of care, service delivery adequacy, provider attitudes, benefits of NHIS, convenience of NHIS, price of NHIS, peer pressure and individual 'health beliefs and attitudes'.

The first and most significant factor accounts for 20% of the variance in the data and indicates the importance of the technical quality of care dimension. Five variables loaded onto it such as providers making a good diagnosis, good quality of drugs and effectiveness of treatment and timeliness in getting the necessary care. The second factor accounts for 11% of variance and shows the importance of facility/service delivery adequacy in terms of availability of equipment and staffing of providers and loaded four variables. The third factor accounts for 9% of the variance and indicates the importance of "benefits of NHIS" with 3 variables such as not needing to borrow money to pay for health care, saving money from paying hospital bills and joining the NHIS being beneficial. The fourth factor "convenience of NHIS" accounts for approximately 8% of the variance, with 3 variables showing the importance of scheme opening hours, location and timeliness of collection of NHIS ID cards. The fifth factor "price of NHIS" accounts for a variance of 6% and deals with affordability.

The sixth factor "provider attitudes" accounts for approximately 6% of the variance and explores quality dimensions, such as attitudes of providers and availability of drugs for insured clients. The seventh factor deals with "peer pressure" from opinion leaders and peers to enrol and accounts for 6% of the variance. The eighth factor accounts for a variance of 5% and can be grouped under "community

Table 2
Descriptive household characteristics by socio-economic quintiles.

	Q1st (GHc < 100)	Q2nd (GHc100-139)	Q3rd (GHc139-187)	Q4th (GHc187-270)	Q5th (GHc270-2731)	Total	Pearson's X ²
Insurance status							
Currently insured	27.20%	25.10%	28.20%	29.60%	40.50%	30.10%	0.000
Previously insured	12.80%	15.50%	13.10%	13.70%	16.50%	14.30%	
Uninsured	60.00%	59.40%	58.70%	56.80%	42.90%	55.60%	
Employment status							
Farmer/fisherman	37.30%	36.00%	37.80%	35.40%	38.80%	37.10%	0.001
Professional	36.20%	35.70%	36.40%	39.00%	35.10%	36.50%	
Casual worker	18.90%	19.90%	14.40%	14.70%	13.10%	16.20%	
Unemployed	5.30%	6.40%	8.30%	8.30%	11.20%	7.90%	
Marital status							
Never married	14.60%	10.90%	7.80%	6.20%	5.90%	9.10%	0.000
Married	42.10%	59.70%	64.50%	75.60%	78.00%	64.00%	
Divorced/widowed	43.30%	29.40%	27.80%	21.10%	15.60%	27.90%	
Sex							
Male	52.60%	61.20%	62.80%	71.50%	75.00%	64.60%	0.000
Female	47.40%	38.80%	37.20%	28.50%	25.00%	35.40%	
Religion							
Christian	82.40%	88.30%	86.90%	86.90%	90.60%	87.00%	0.000
Muslim	6.80%	4.90%	5.90%	6.70%	5.90%	6.00%	
Traditional	10.8%	6.80%	7.20%	6.4%	3.5%	7.00%	
Age							
0–18	0.90%	0.20%	0.00%	0.30%	0.00%	0.30%	0.000
19–39	36.80%	43.20%	40.70%	39.20%	32.50%	38.50%	
40–59	31.80%	37.40%	41.30%	44.8%	49.60%	41.00%	
60–69	12.00%	8.50%	9.60%	9.40%	11.20%	10.10%	
70+	18.50%	10.80%	8.50%	6.20%	6.70%	10.10%	
Home ownership							
Rent free	59.70%	49.70%	46.10%	35.80%	25.00%	43.30%	0.000
Rented	15.80%	27.10%	27.50%	32.80%	36.10%	27.80%	
Owned	24.50%	23.30%	26.40%	31.40%	38.80%	28.90%	
Family size							
0–5	91.20%	82.50%	71.80%	61.50%	54.20%	72.20%	0.000
6–10	8.70%	17.30%	27.20%	37.20%	41.60%	26.40%	
11+	0.20%	0.20%	1.10%	1.40%	4.20%	1.40%	
Education							
None	41.40%	26.70%	27.50%	17.8%	14.9%	25.7%	0.000
Primary	23.00%	24.60%	23.70%	23.8%	14.8%	22.0%	
Secondary	33.20%	43.30%	43.70%	48.9%	44.6%	42.7%	
Tertiary	2.00%	5.30%	5.20%	9.4%	25.3%	9.4%	
Residence							
Rural	13.5%	13%	12%	11.7%	9.1%	59.6%	0.000
Urban	6.6%	7.1%	7.9%	8.3%	10.8%	40.7%	
Household welfare							
Mean monthly income ^a (SD)	90(79)	131(98)	144(106)	190(146)	355(365)	182(211)	0.000
Mean Monthly expenditure ^a (SD)	75(18)	119(11)	162(14)	224(24)	480(351)	212(213)	
Mean Health expenditure ^a (SD)	11(11)	14(19)	18(29)	25(36)	44(94)	25(55)	
Proportion of THE spent on health	15.00%	12.00%	11.00%	11.00%	9.00%	12.00%	
Self perceived health status							
Good/very good	73.90%	74.70%	75.2%	72.8%	75.2%	74.4%	0.489
Fair	16.50%	16.00%	13.4%	18.2%	14.1%	15.6%	
Poor/very poor	9.60%	9.30%	11.4%	9.0%	10.6%	10.0%	
Reasons for enrolling							
Financial protection against illness	77.80%	76.10%	81.70%	73.80%	72.10%	76.00%	0.100
Reasons for not renewing membership							
Could not afford renewal payment	68.00%	61.70%	71.80%	61.30%	44.20%	61.00%	0.161
Not satisfied with the provider	2.70%	8.50%	2.60%	6.70%	8.10%	5.90%	
Reasons for never enrolling in the NHIS							
Cannot afford premiums	76.40%	75.80%	74.30%	70.80%	53.80%	71.50%	0.000
No confidence in the scheme	3.7%	4.7%	4.9%	9.6%	13.9%	6.8%	

^a Ghana cedis (\$1 = 1.45 GHc).

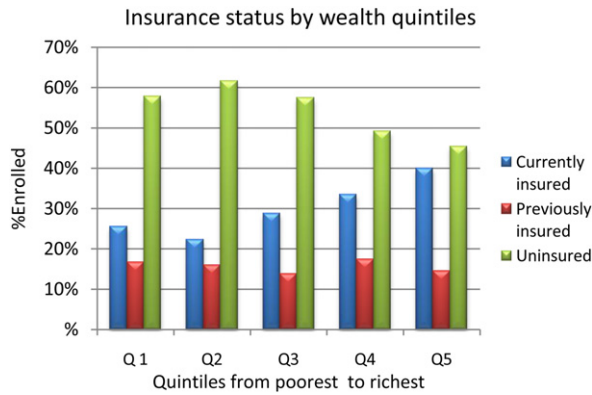


Fig. 2. Insurance status by wealth quintiles.

health beliefs and attitudes” which explores the respondents understanding of health and risk sharing principles of insurance.

The overall Cronbach’s alpha was 0.75 and each of the sub-scales possessed a moderate to high level of internal consistency.

Determinants of current and previous NHIS enrollment

Table 4 presents odds ratios for the multiple factors that determine current and previous enrollment across socio-economic groups. Generally, across all socio-economic quintiles, older age, higher education, religion, a female-headed household, and perceiving NHIS as beneficial, increase the odds of enrolling and remaining in the scheme and are significant at the 1% confidence level. The estimated odds ratio for urban residence is negative and significant at the 1% confidence level for all income groups, indicating urban residence decreases the odds of enrollment.

The odds of enrolling and remaining in the scheme increase with higher education, female-headed households and favorable perceptions relating to schemes factors (benefits and convenience of scheme administration, location and timeliness of card collection).

Table 3
Perception dimensions and factor loadings (N = 3286).

Factors/dimensions	Variables	Factor loadings	Eigenvalues	% Of variance	Cronbach’s alpha (α)
Benefits of NHIS	Will save money from paying hospital bills.	0.881	1.97	8.58	0.83
	Will not need to borrow money to pay for hospital care.	0.855			
	Joining the scheme will benefit me.	0.8			
Convenience of NHIS	The district scheme office location is convenient.	0.835	1.76	7.68	0.9
	The district scheme office opening hours are convenient.	0.769			
	The collection of insurance cards is convenient.	0.697			
Price of NHIS	The registration fee is too high (R*).	0.945	1.47	6.41	0.68
	The premium for the package is too high (R*).	0.944			
Technical quality of care	Treatment is effective for recovery and cure.	0.848	4.51	19.59	0.81
	The quality of drugs is good.	0.832			
	The provider makes a good diagnosis	0.747			
	The doctors do a good clinical examination	0.611			
	I can get immediate care if I need it.	0.573			
Service delivery adequacy	There are sufficient good doctors.	0.776	2.45	10.64	0.8
	The doctors for women are adequate.	0.769			
	The medical equipments is adequate.	0.756			
	The rooms are adequate.	0.754			
Provider attitudes	Attitude of health staff should be improved	0.881	1.43	6.23	0.6
	Availability of drugs should be improved	0.878			
Peer pressure	Opinion leaders in my community affect my decision to enrol.	0.859	1.34	5.84	0.73
	Experience of others with health insurance affects my decision to enrol.	0.846			
Health beliefs & attitudes	Buying insurance may bring bad luck and illness	0.834	1.1	4.75	0.6
	Health is a matter of fate (in the hands of God) and insurance cannot help me deal with its consequences	0.8			

*(R) are reversed score items.

These effects are stronger for the poor than for the rich. For example, taking the effect of tertiary education on enrollment, the odds of enrolling increase by 29 for the first poorest quintile compared to 9.12 and 2.4 for the third and fourth quintile. The odds of enrolling decrease significantly ($p < 0.000$) by 0.8 if price is perceived to be high for poorer households.

For the richest quintiles, the odds of current enrollment increase with mean age above 70, female-headed households, perceived benefits of NHIS, and are significant at the 5% level. In contrast, large household size and peer pressure significantly decreases the odds of enrollment. The estimated odds ratio for price of NHIS is also negative for the rich, but fails to be significant at even the 10% level. Again, for the rich negative community health ‘beliefs and attitudes’ decrease the odds of remaining in the scheme at the 1% and 5% confidence level.

The odds of being previously enrolled increase with education, religious affiliation, negative provider attitudes, ill health, technical quality of care, perceived benefits and convenience of NHIS and are significant at the 1% level.

Discussion

We find compelling evidence of inequity in enrollment in the NHIS. There is generally lower enrollment from the poorest socio-economic quintiles than the richest, confirming our first hypothesis. We find that, across all socio-economic quintiles, perceptions relating to scheme, health care providers and individual predisposing, enabling and need factors influence household decisions to enrol on NHIS. While the odds of enrolling and remaining in the scheme increase with positive perceptions on technical quality of care, NHIS benefits, NHIS convenience and community health beliefs and attitudes, they decrease with negative perceptions of price, provider attitudes and peer pressure. Regression analysis shows seven out of eight perception factors are significant determinants of enrollment to varying degrees across socio-economic quintiles. Below, we elaborate on these findings in general and in detail for each of the socio-economic groups.

Table 4
Determinants of current and previous enrollment across socio-economic quintiles.

Predictor variables	Q1		Q2		Q3		Q4		Q5	
	Odds ratio's									
	Curr. enrolled	Prev. enrolled	Curr. enrolled	Prev. enrolled	Curr. enrolled	Prev. enrolled	Curr. enrolled	Prev. enrolled	Curr. enrolled	Prev. enrolled
Household characteristics										
Female-headed (base: male)	1.29	1.76	2.29***	1.94***	1.30	1.20	1.51	1.83	1.97***	0.98
Age	1.06***	1.03	1.04	1.02***	1.03***	1.05***	1.03***	1.01	1.04***	1.01
Mean age > 5	2.67	0.67	1.48	0.67	0.39	1.24	1.07	0.16**	0.65	0.59
Mean age 60–69	2.00	2.78	2.60	0.05	0.83	0.22	3.58	1.79	2.42	1.72
Mean age 70+	2.12	2.43	3.42	1.31	2.18	0.70	13.67**	5.63	2.43	3.00
Married (base: divorced)	0.68	0.37	2.41	1.36	0.95	1.18	0.62	1.47	1.63	0.78
Christian (base: none)	2.92***	1.13	2.65	11.11***	3.10**	3.39	4.89***	0.50	3.34	3.11
Muslim (base: none)	3.44***	1.62	2.84	3.31	6.76***	10.83***	3.73	0.86	1.98	2.08
Traditional (base: none)	4.42**	3.20	1.25	6.30	0.00	1.68	4.05	0.38	0.68	2.69
Own home (base: none)	6.04	1.30	6.4***	0.17	0.59	0.43	3.3	1.6***	0.67	2.5***
Rent home (base: none)	6.68	0.87	6.4	0.28	0.61	0.44	4.8	1.6	0.99	2.9
Healthy (base: neutral)	0.66	2.26**	0.78	0.84	1.51	1.07	1.01	0.92	1.04	0.72
Poor health (base: neutral)	0.64	2.64**	1.03	2.20**	2.44**	0.73	1.52	0.96	0.59	0.63
Household size	0.95	1.14	0.95	1.01	0.99	1.07	0.91	1.02	0.87***	0.93
Log expenditure	1.44	0.99	0.54	0.13	0.59	0.98	2.13	2.99	1.07	0.78
Education (base: none)										
Primary	1.83	1.05	1.15	1.19	1.29	1.97	0.90	1.22	0.57	1.16
Junior Sec. School	2.71***	1.49	2.66***	1.50	1.85***	1.78	1.00	1.03	1.88***	1.32
Senior Sec. School	5.13***	0.42	2.70	1.79	2.63**	2.02	2.06**	2.70**	1.66	2.37
Technical	1.33***	0.32	1.18	1.18	1.17**	1.26***	1.10**	1.04	1.07**	1.00
Tertiary	29.05***	5.56	11.08	3.67	9.12***	3.05	2.44**	4.05***	4.64	4.14***
Community characteristics										
Urban (base: rural)	0.44***	0.95	0.43***	0.49***	0.46***	0.64	0.56***	0.71	0.56***	1.01
Employment (Base: none)										
Farmer	0.80	0.93	0.80	0.81	1.06	1.35	1.28	1.33	1.01	0.58
Fisherman	0.98	1.16	0.38***	0.83	1.65	0.86	1.24	1.72	0.67	2.72***
Trader	1.00	1.37	0.76	1.13	1.28	1.15	0.69	1.43	0.70	0.90
Clerical	2.15	10.40	1.99	1.17	9.04**	16.83	0.91	0.89	0.66	1.93
Managerial	1.43	0.00	0.67	1.11	0.34	0.27	0.15	0.44	0.17	0.42
Professional	0.49	0.89	0.67	0.80	0.90	1.44	1.20	1.31	0.69	0.69
Perceptions										
Technical quality of care	1.02	0.94	0.87	0.94	1.16	1.12	1.06	1.24**	0.91	1.23
Service adequacy	1.08	1.07	1.01	0.96	1.04	0.92	0.93	0.81	0.87	1.13
Benefits of NHIS	2.19***	1.89***	2.10***	1.38***	1.89***	1.44***	2.08	1.43***	1.50***	1.65***
Convenience of NHIS	1.26***	0.91	1.56***	1.20	1.24***	1.38***	1.10	1.09	1.03	0.92
Price of NHIS	0.78***	1.09	0.89	1.06	0.73***	1.07	0.77	1.00	0.89	0.87
Provider attitude	0.97	1.09	1.19	1.18	1.09	1.40***	0.91	0.88	0.93	0.91
Peer pressure	1.05	0.94	0.91	0.82	1.01	0.84	0.93	0.92	0.73***	0.85
Community beliefs	0.92	0.97	1.11	1.01	1.03	0.95	1.09	0.86	1.07	0.69***
Pearson's χ^2	0.002		0.005		0.002		0.087		0.422	
2likelihood ratio test	0.000		0.000		0.000		0.000		0.000	
Pseudo R^2 (Cox & Snell)	0.331		0.286		0.281		0.243		0.295	
Pseudo R^2 (Nagelkerke)	0.401		0.337		0.331		0.285		0.338	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Reference category: never enrolled.

First, our study has demonstrated that the NHIS is not reaching the poor in general, consistent with existing literature that shows low enrollment among the poor to be a problem facing health insurance schemes in low-income countries (Asante & Aikins, 2008; Basaza et al., 2008; Bennet et al., 1998; Bruce, Narh-Bana, & Agyepong, 2008; Musau, 1999; Preker & J.C., 2005) including Ghana (Asante & Aikins, 2008; Chankova et al., 2008; GSS, 2009; Sarpong et al., 2010). Income has a fundamental influence on demand for health insurance which is a “normal good”, implying higher income increases the affordability of health insurance premiums (Basaza et al., 2008; Castro-Leal et al., 2000; Dong, Gbangou, De Allegri, Pokhrel, & Sauerborn, 2008). Our findings thus present a serious concern on the effectiveness of NHIS in its potential of reducing vulnerability and increasing access to health care for the poor. We draw attention to the poor who fall between the poorest of the poor “indigents” and those able to pay the minimum premium representing 28.5% of the population living

below the poverty line (GSS, 2007). Obviously this group requires special protection arrangements and policy options may not only involve rearranging public subsidies, but could also address the constraints that prevent them from enrolling. Nonetheless, a key achievement of the NHIS is that it appears to be better at reaching the core poor (Q1) compared to the poor (Q2). One likely explanation may be attributed to the fact that the core poor value the protection insurance offers against catastrophic events more. However, it may also be due to improved identification by schemes of the “indigents” and effectiveness of the exemption policy that has financial incentives in place where for every indigent person identified, premiums are paid centrally from the NHIF to the schemes.

Second, for the poor, our findings show that older age, religious affiliation, above primary education, female-headed household, employment, rural residence and scheme factors are significant determinants of current enrollment. All the former increase the odds of enrollment except price, which decreases the odds of

enrolling. Economic theory predicts that as individuals age their health stock depreciates and they tend to increase investments in health including health insurance. Existing literature also predicts employment and education increase the odds of enrollment as both increase knowledge about the advantage of health insurance as well as income to afford premiums (Chankova et al., 2008). Households headed by women are also more likely to enrol as they are probably more likely to deal with consequences of ill health resulting in more expenses on health than men (Chankova et al., 2008). Residential remoteness plays a determining role in MHO enrollment as shown by a number of studies in Ghana (Sarpong et al., 2010) Nigeria (Stock, 1983) and internationally (Bennett, Creese, & Monasch, 1998; Criel, Van der Stuyft, & Van Lerberghe, 1999; Jong et al., 2004; Nemet & Bailey, 2000). However, whereas some studies in Ghana show lower enrollment in rural areas (Chankova et al., 2008; GSS, 2009) our study and that of Akazili (2010) find the opposite to be true. This finding may be explained by the pro-poor and decentralised design of the NHIS to district levels. District schemes are more effective in encouraging enrollment in rural areas where community durbars, door-to-door and solidarity campaigns are much easier to organize. Previous literature has examined price as a determinant of health insurance in terms of premium (Asante & Aikins, 2008; Chankova et al., 2008) but more specifically in terms of loading (administrative) charges (Kamuzora & Gilson, 2007). If the loading fee or as in the case of Ghana registration fee is unaffordable it can negatively affect demand and prevent people from enrolling, as in the case of the elderly and other vulnerable groups, who are required to pay registration fees even though they are exempt from premiums fees. Our regression analysis confirms people actually do what they say and do not purchase insurance when price is perceived to be high, which was cited as a main reason for not enrolling, in line with other studies (Akazili, 2010; Asante & Aikins, 2008; Chankova et al., 2008). However, perceived benefits and convenience of NHIS are as important as price and have stronger predictor effects on enrollment for the poor compared to the rich. Specifically, perceived benefits of NHIS have a three-fold higher predictor effect and convenience of NHIS a two-fold higher predictor effect on enrollment decisions compared to perceptions about price.

Third, for the rich, mean age above 70, female-headed households, religion, education and perceived benefits of NHIS increase the odds of current enrollment. Peer pressure, household size and urban residence decrease the odds of current enrollment. The finding of household size having a negative effect on enrollment is intuitively sensible since any increase in household size reduces per capita expenditure, holding income constant. Urban residence decreases the odds of enrollment for the rich probably because they can afford to pay out-of-pocket for health care. Though perceptions on quality of care are not significant even at the 10% level, our findings indicate twice as many rich households were not satisfied with the quality of care they received as compared to poor households. This may be because they are more knowledgeable and therefore critical about quality of care and their "rights" (Agha & Do, 2009). Previous studies report that demand for health care is sensitive to the quality of service provided and that even poor households limit their demand for health care when the services are poor quality, but are less sensitive to changes in quality of service (Alderman & Levy, 1996; Castro-Leal et al., 2000). Our estimates of odds ratios support this assertion and indicate that the rich are more sensitive to changes in quality of care than the poor. To retain the rich policy options should thus focus on quality improvements as well as on giving opportunities to experience the benefits of NHIS that meet their expectations. In exploring the influence of political factors we find no discernible association between peer pressure and enrollment except for the richest

quintile in which it negatively influences enrollment. This could mean that perceptions on health insurance at the community level are on average low, so that those who are influenced by political and other leanings of opinion leaders and peers will lower their demand for health insurance.

Fourth, determinants of previous enrollment may be both indicative of why people were enrolled in the first place and why they failed to renew membership. Negative provider attitudes and community health 'beliefs and attitudes', ill health and technical quality of care all increase the odds of not renewing membership. Nevertheless, it appears the previously enrolled still have relatively positive perceptions about the convenience and benefits of NHIS though not as strongly as the currently enrolled probably because not all their expectations were fulfilled. The previously enrolled cited high cost of premiums and lack of confidence in the schemes as the main reasons for not renewing membership. Yet, as shown by other studies, trust is a *sine qua non* for enrollment (De Allegri et al., 2006; Schneider, 2005). Schemes should focus their efforts on carrying their work ethically and professionally. To minimise non-renewals health policy should focus on the relative importance of these determinants.

Limitations

This study did not examine all the possible factors influencing enrollment. First, distance to health facilities as a determining factor was omitted from our model. However, we control for distance to the nearest hospital by including village dummies in our model. In addition we factored in urban, rural place of residence spatial variables as proxies. Second, we did not explicitly include political factors in our model to assess their influence on enrollment decisions but rather used proxies. Given the politically sensitive nature of health insurance in Ghana, to ensure neutrality and dispel speculation, questions relating to political affiliation could not be posed to respondents. Omitting variables that influence insurance enrollment can lead to possible omitted variable bias and may slightly overestimate the magnitude of the effect of all the other determinants.

Conclusion

The estimation of parameters clearly shows that most of our hypotheses are confirmed, and the following policy implications can be drawn. First, for the equity goal of the NHIS to be achieved better identification of the poor is needed and provision of premium exemptions needs to be more aggressively pursued. Second, to stimulate voluntary enrollment of the poor, policy should note that scheme factors have the strongest influence on decisions to enrol. Third, to attract and retain the rich policy should focus on provider factors such as quality of care in addition to scheme factors. Fourth, to retain members policy should allow flexibility of premium payments to make insurance more affordable to poor households. Finally, given that both current and previous enrollment are influenced by determinants differentially across socio-economic quintiles extending enrollment will require recognition of all these multiple factors as precursors to more effective interventions to stimulate enrollment.

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