Household perceptions and their implications for enrolment in the National Health Insurance Scheme in Ghana

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Objective This paper identifies, ranks and compares perceptions of insured and uninsured households in Ghana on health care providers (quality of care, service delivery adequacy, staff attitudes), health insurance schemes (price, benefits and convenience) and community attributes (health 'beliefs and attitudes' and peer pressure). In addition, it explores the association of these perceptions with household decisions to voluntarily enrol and remain in insurance schemes.

Methods First, data from a household survey of 3301 households and 13 865 individuals were analysed using principal component analysis to evaluate respondents' perceptions. Second, percentages of maximum attainable scores were computed for each cluster of perception factors to rank them according to their relative importance. Third, a multinomial logistic regression was run to determine the association of identified perceptions on enrolment.

Results Our study demonstrates that scheme factors have the strongest association with voluntary enrolment and retention decisions in the National Health Insurance Scheme (NHIS). Specifically these relate to benefits, convenience and price of NHIS. At the same time, while households had positive perceptions with regards to technical quality of care, benefits of NHIS, convenience of NHIS administration and had appropriate community health beliefs and attitudes, they were negative about the price of NHIS, provider attitudes and peer pressure. The uninsured were more negative than the insured about benefits, convenience and price of NHIS.

Conclusions Perceptions related to providers, schemes and community attributes play an important role, albeit to a varying extent in household decisions to voluntarily enrol and remain enrolled in insurance schemes. Scheme factors are of key importance. Policy makers need to recognize household perceptions as potential barriers or enablers to enrolment and invest in understanding them in their design of interventions to stimulate enrolment.

Keywords Community-based health insurance, perceptions, assessment, community, determinants

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KEY MESSAGES

- Perceptions vis-à-vis service providers, insurance schemes and community attributes play an important role in households' decisions to voluntarily enrol and remain in insurance schemes, albeit to varying degrees.

- Perceptions related to schemes (price of NHIS, benefits and convenience of administration of NHIS) are most important and have the strongest association with enrolment and retention decisions.

- Policy makers need to recognize community perceptions as potential enablers and barriers to enrolment, and to invest in understanding and addressing them in the design of interventions to stimulate enrolment.

Introduction

In low-income countries health insurance is increasingly recognized as a promising tool for the financing of equitable health care. By pooling risks and resources it promises to ensure better access and provide risk protection to poor households against the cost of illness (Bennett *et al*. 1998; Dror and Jacquier 1999; Preker *et al*. 2002; Ekman 2004; Carrin *et al*. 2005). Other alternatives such as cost-recovery strategies have been criticized on equity grounds of affecting access to health care (Gilson *et al*. 2000).

Currently, Rwanda and Ghana are among the few African countries in sub-Saharan Africa that have taken insurance to great lengths in terms of scope and coverage. Whilst Rwanda has achieved a coverage of 91% from 7% in 2003 (MOH Rwanda 2010), the National Health Insurance Scheme (NHIS) in Ghana has reached a coverage of 66% (15.5 million people) since its establishment in 2003 (NHIA 2010). Despite such strides, recent empirical evidence shows the NHIS is falling short of its equity goals, with lower enrolment among the poor (Sulzbach *et al*. 2005; Aikins and Dzikunu 2006; Asante and Aikins 2008; GSS 2009; Sarpong *et al*. 2010; Jehu-Appiah *et al*. 2011). The recently conducted 2008 Ghana Demographic and Health Survey finds the highest quintiles (43%) are more likely to be enrolled compared with the lowest (23%). In addition, emerging evidence reveals a variety of implementation problems such as the perceived poor quality of care, delays in NHIS card production and distribution, lack of trust in scheme management, long waiting times for insured clients and high enrolment dropout rates, among others (Bruce *et al*. 2008; MOH 2009; NHIA 2010).

Previous literature has identified a range of barriers and determinants known to influence enrolment, with a focus on demographic and socio-economic characteristics (Buor 2004; De Allegri *et al*. 2006a; De Allegri *et al*. 2006b; Sinha *et al*. 2006; Kamuzora and Gilson 2007; Ndiaye *et al*. 2007; Asante and Aikins 2008; Basaza *et al*. 2008; Nunes 2008; Dong *et al*. 2009; Nketiah-Amponsah 2009; Sarpong *et al*. 2010). Few studies have explored community preferences and perceptions and their impact on decisions to enrol in Ghana (Arhinful 2003; Akazili *et al*. 2005) or internationally. De Allegri *et al*. (2006b) observe in rural West Africa that understanding consumer preferences and incorporating them into the design of community-based insurance schemes may result in increased participation rates, ensuring the poor gain better access, but they conclude that this has not been given adequate attention in existing literature. Studies that have explored this have mainly been qualitative in nature (Arhinful 2003; Criel and Waelkens 2003; De Allegri *et al*. 2006a; De Allegri *et al*. 2006b). Although insightful, they do not provide a systematic assessment of the association between perceptions and enrolment, and especially the question of which perceptions are of key importance in the decision to enrol and remain enrolled. Such understanding is necessary for developing policy options and useful for guiding implementation not only for Ghana but for similar schemes across low- and middle-income countries.

Against this background, this paper uses a novel quantitative methodological approach to systematically assess, rank and compare perceptions of the insured and uninsured households as they relate to providers (quality of care, service delivery adequacy, staff attitudes), insurance schemes (price, benefits and convenience) and community attributes (health 'beliefs and attitudes' and peer pressure). In addition, it explores the association of these perceptions with household decisions to enrol and remain in the scheme. As such the following hypothesis is being tested: household perceptions relating to providers, schemes and community attributes are unequally associated with household's decision to enrol and remain in the scheme.

Ghana's health financing context: the National Health Insurance Scheme

To address financial constraints for the poor and improve equity in access to care, Ghana passed a National Health Insurance law in 2003 (GOG 2003), mandating the establishment of District-wide mutual health insurance schemes (DMHIS) (henceforth called schemes). The Act mandates that all District schemes must charge a minimum premium of roughly US$8 per adult for non Social Security and National Insurance Trust (SSNIT) contributors to cover their premium. Those aged under 18, over 70, pensioners, pregnant women or deemed indigent (core poor) are exempt from premium payments. The NHIS in its design has an in-built mechanism for equity in financial contributions with subscribers paying income-adjusted premiums. In practice, however, subscribers pay a flat rate because incomes are hard to assess. There is no cost-sharing beyond the premiums; members do not pay any co-payments or deductibles. All SSNIT contributors—most of whom are formal sector employees—have their premiums collected at the central level via pay-roll deductions of 2.5% of SSNIT contributions which are proportional to income. However, they still have to pay a registration fee at a DMHIS office to receive a card in order to be enrolled and to access benefits.

Enrolment is legally mandatory but is facing non-compliance, as it is a social policy that is difficult to enforce, given the large

informal sector for which there is no database and the need for formal sector workers (SSNIT contributors) to voluntarily pay a registration fee to be enrolled (MOH 2009). Beyond the premiums collected locally, the NHIS is financed through a National Health Insurance Levy instituted by the Central Government. This 2.5% value added tax (VAT) is collected on most goods and services, but basic foodstuffs and goods predominantly consumed by the poor are exempt.

The National Health Insurance Authority (NHIA) mandates a pre-defined benefits package that covers 95% of the disease burden in Ghana. Services covered include outpatient consultations, essential drugs, inpatient care and shared accommodation, maternity care (normal and caesarean delivery), eye care, dental care and emergency care. The DMHIS contracts accredited providers (public, private and church-based) 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 fee-for-service (FFS) for medicines using a medicines tariff list (MOH 2009).

At the centralized level, the NHIS is regulated by the NHIA which also plays a key role in guiding management of the National Health Insurance Fund (NHIF). Revenues from the NHIF are used to provide a reinsurance mechanism for the District Mutual Health Insurance Schemes (DMHIS) and premiums for exempt groups.

Methods

Study setting, design, variables and data collection

The study was carried out in the Central and Eastern Regions of Ghana characterized by mixed urban rural populations, with poverty incidence rates of 0.40 and 0.45, respectively (GSS 2007). The Central Region is a coastal region with 1.8 million inhabitants and is the region with the highest poverty incidence in the southern belt. The Eastern Region has an estimated population of 2.3 million inhabitants. Agriculture is the predominant industry in both regions. Whereas both regions are similar in terms of socio-economic characteristics, the Central Region had lower NHIS enrolment than the Eastern Region in 2009 (23% vs 50%) (GSS 2009). Both regions were purposively selected because of similarities in their socio-economic and socio-cultural characteristics. It was necessary to have two similar regions that could provide the sum of the 30 districts required for a cluster-randomised trial under a larger study. This study reports data from the baseline of the trial.

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 EAs, 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 EAs were mapped and numbered. A total of 110 households were randomly selected in each of the 30 communities. As a result, 3301 households of 13 865 individuals were selected in 30 communities in both regions. Of these communities, 39.5% were urban, 38.8% semi-urban and 21.8% 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, self-perceived health status, insurance status, assets, income, expenditure and perceptions. The section on perceptions consisted of 54 questions. A five-point Likert Scale ranging from '1 = strongly disagree' to '5 = strongly agree' was used by respondents to express their opinions on statements related to providers' quality of care, insurance scheme and community attributes. Some questions had to be reversed in their scoring to have similar interpretation before conducting the reliability analysis.

Collected insurance data included insurance status of all individuals living in the household. For this study, the 'insured' are members who have registered and paid the full premium, irrespective of whether they are awaiting or holding NHIS identity cards. 'Previously insured' are those who have registered but may not have paid the full premium for the year or have not renewed membership and are not eligible to access services. The 'uninsured' are those who have never registered with the NHIS.

Statistical analysis

First, we ran 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).

Initially, we included all the 54 perception questions (labelled items here) using Varimax (orthogonal) rotation with Kaiser normalization. The rationale behind including all items in a single PCA is that PCA identifies meaningful factors of items. It thereby includes items that are interrelated and excludes items that are not related and/or have a large overlap with other items. The Kaiser-Meyer-Olkin measure (KMO) of sampling adequacy and Bartlett test of sphericity were first applied to determine whether this set of 54 items contains sufficient collinearity to warrant use of PCA. The KMO measure was 0.845 and the Bartlet test was significant ($P = 0.0001$) confirming the data sets were amenable to PCA.

In our PCA, 54 perceptions were initially categorized into 15 factors (underlying dimensions). Factors were maintained if their Eigenvalues exceeded 1 (reflecting the importance of a factor), and if their alpha scores exceeded 0.5, and included at least two items. Items were maintained if their factor loading exceeded 0.5 (reflecting the importance of a particular item to a factor), and they did not have communalities (proportion of common variance present in an item) below 0.5. We re-ran the PCA, which resulted in a final model of 23 items categorized into eight factors with a KMO of 0.748. Overall, two to five items loaded onto each factor (see Table 2).

Second, we computed Cronbach's alpha for each of the subscales and alpha coefficients which shows the majority are highly acceptable. The value of the alphas indicates that each of the scales possessed a moderate to high level of internal consistency. The overall alpha for the scale was found to be 0.745, which is considered very good (Field 2009).

Third, we calculated the percentages of the maximum attainable scores for each item of the factors that resulted from the factor analysis, in order to rank them according to their relative importance (see Table 5). The percentages of the maximum attainable scores were calculated in the following way: in a scale of 1 to 5, from 'strongly disagree' to 'strongly agree', we multiplied the responses for each grade in the scale by their corresponding grades (1, 2, 3, 4 and 5) to get the scores. Then we multiplied the sum of the responses by the maximum grade (5) to get the maximum score. We then divided the sum of the score by the maximum score to get the percentage of the maximum attainable score.

Finally, we ran a multinomial logistic regression to determine the association of identified perception factors with household decisions to enrol and remain in the NHIS. We controlled for socio-demographic and economic characteristics with recourse to relevant knowledge and past health insurance demand studies (Kirigia *et al*. 2005; Liu *et al*. 2009). The dependent variable was the household's insurance status: insured, previously insured and uninsured.

Results

Descriptive summary characteristics

The sample population of 13 867 individuals is young; the average age is 25 years with children under 18 representing 49% of the sample (Table 1). The mean household size is 5.6, 52% are female and 67% of all individuals are in some form of employment. Education measured by total years of schooling is low at a mean of 7 years. The mean monthly individual income is GH¢43.70 (US$29). The average annual cost of premiums per individual is GH¢14.00 (US$9.00) and registration fees GH¢3.00 (US$2.00). Thus the estimated cost of individual enrolment would account for 3% of annual individual income.

Socio-demographic characteristics of household heads reveal an average age of 46 years, 35% are female headed, 64% are married, 26% have no education, 90% are employed and most perceived themselves to be relatively healthy (74%). The mean monthly household income and expenditure is GH¢182.00 (US$121.00) and GH¢212.00 (US$141.00), respectively. Inaffordability of premiums was cited as the most common reason for not enrolling (72%) and not renewing membership (61%).

Understanding of NHIS and reasons for enrolling, not enrolling and not renewing membership

All respondents had an equal understanding of NHIS, irrespective of their insurance status. Whereas the majority (58–62%) regards insurance as prepayment for health care, a somewhat smaller proportion considers it as free health delivery by the government. This is not surprising given the political nature and campaign slogans under which insurance was introduced in Ghana (Table 2). Accordingly, financial protection against illness was cited as the main reason they enrolled in the first place (Table 3).

There is a 16% drop out rate from the NHIS and the main reason for not renewing membership was being unable to afford renewal payments (67%). Six per cent were not satisfied

Table 1 Descriptive characteristics at individual and household level

Summary means	Mean (SD)
Individual	
Age (years)	24.5 (19.6)
Total number years of schooling	7.0 (3.9)
Sex, female (%)	52.2
Age <18 years (%)	49.2
Married (%)	29.2
Employed (%)	67.0
Urban (%)	40.6
Monthly income[a]	43.7 (115.3)
Household[b]	
Sex, female (%)	35.0
Age of household head (years)	46.0 (15.5)
Household size	5.6 (2.5)
Urban (%)	40.6
Married (%)	64.0
Good health status (%)[c]	74.0
Education (%)	
None	25.7
Primary	22.0
Secondary	43.0
Tertiary	9.4
Home ownership (%)	
Inherited/rent free	42.0
Rented	28.0
Owned	30.0
Employment (%)	
Farmer/fisherman	37.0
Casual worker	5.7
Self/govt employed	47.0
Unemployed/students	10.0
Monthly income[a]	182 (211.62)
Monthly expenditure[a]	212 (212.58)

[a]Ghana cedis (US$1 = 1.5 GH¢).
[b]Total of 3301 households interviewed.
[c]Self-perceived health status.

Table 2 Understanding of NHIS

Understanding of NHIS	Insured %	Previously insured %	Uninsured %
Prepayment for health care	57.6	61.9	58.1
Like regular insurance	0.9	1.7	1.3
Paying tax to government	0.2	0.0	0.7
Free health delivery by government	41.3	36.4	39.4

Source: Household survey 2009. Pearson chi-square (0.02).

Table 3 Reasons for enrolling

Reasons	Insured %	Previously insured %
Financial protection against illness	76.0	66.7
Better than OOP	20.6	16.3
Community opinion leader ask me to join	0.2	0.9
A relative asked me to join	1.5	2.7
Other	1.6	11.9

Source: Household survey 2009. Pearson chi-square (0.00).

Table 4 Reasons for not renewing membership

Reasons	Previously insured %
Unable to afford renewal payment	61.0
Not satisfied with provider	5.9
Difficulty in accessing services	3.4
Facility too far	4.4
No transport money	0.2
Inconvenient timing of premium payment	4.7
Had to buy drugs outside facility	1.0
Was given poor quality care	0.7
Covered elsewhere	0.2
Nobody was sick last year	7.6
Other	10.8

Source: Household survey 2009. Pearson chi-square (0.034).

with providers' care, 5% found timing of premium payments to be inconvenient, and 8% gave the reason that they had not used the services in the last year (Table 4). The uninsured cited inaffordability of premiums (72%), being healthy (9%) and no confidence in the scheme (6.8%) as the most common reasons for not enrolling (Table 5).

Household perceptions

Table 6 presents the rotated factor matrix with factor loadings. Our final model includes 23 items that were clustered into eight underlying dimensions or factors. The first extracted factor loaded five items measuring aspects of 'technical quality of care' that deal with effectiveness of treatment, providers making a good diagnosis, quality of drugs and timeliness in getting the necessary care (items 1–5 in Table 6). The second extracted factor loaded four items and is indicative of 'service delivery adequacy' involving availability of equipment and staffing of providers (items 6–9, Table 6). The third extracted factor is indicative of 'benefits of NHIS' with three items: not needing to borrow money to pay for health care, saving money from paying hospital bills and enrolling in the NHIS as being beneficial. The fourth extracted factor, 'convenience of NHIS', deals with scheme opening hours, location and collection of insurance cards. The fifth extracted factor, 'price of NHIS', deals with financial affordability. The sixth factor, 'provider

Table 5 Reasons for never enrolling

Reasons	Uninsured %
Cannot afford premium	71.6
Mostly healthy do not need to insure	9.0
No close facility in the area	1.1
Have private health insurance	0.2
No confidence in the scheme	6.8
Registration point too far	2.1
Employer pays my costs of health care	0.5
Other	8.0

Source: Household survey 2009. Pearson chi-square (0.037).

attitudes', 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. The eighth extracted factor, labelled 'community beliefs and attitudes', explores understanding of health and risk-sharing principles of insurance.

Ranking of perception factors of insured and uninsured households

We ranked clusters of factors according to their relative importance by estimating maximum attainable scores (Table 7). In our interpretation, we arbitrarily considered clusters of factors with percentages above 60% to be positive and below 60% to be negative. Overall, both insured and uninsured households were mostly positive in their perceptions of community 'health beliefs and attitudes' with 90% of the maximum attainable score, followed by the benefits of the NHIS (81%), technical quality of care (78%), service delivery adequacy (72%) and convenience of NHIS administration (63%). Both were negative about the price of the NHIS (51%) and peer pressure (55%), and attitudes of provider staff had the lowest rating (35%).

In general, the insured were more positive than the uninsured in their perceptions of the eight clusters of factors ($P < 0.001$) Table 6. Specifically, ranking scores show that the insured were more positive in their perceptions of benefits of the NHIS (86% vs 76%), convenience of NHIS administration (65% vs 61%) and price (54% vs 49%). On average, the uninsured were more positive in their perceptions of service delivery adequacy (73% vs 70%) and community 'health beliefs and attitudes' than the insured (94% vs 87%).

Association of perception factors with NHIS enrolment

Results of the multinomial logistic regression show four out of eight perception factors are significantly associated with enrolment and retention. Of the four, apart from peer pressure, three relate to schemes: benefits, convenience and price of NHIS (Table 8). The odds of a person enrolling are 1.8 times higher in people who perceive NHIS to be beneficial and 1.2 times higher if it is conveniently located and administered. When the price of NHIS is perceived to be high, the odds of enrolling decrease by 0.8. Previous enrolment is found to be significantly associated with benefits of NHIS, convenience of NHIS and

Table 6 Perception factors and alpha scores ($n = 3286$)

Items	Perception factor loadings							
	1 Technical quality of care	2 Service delivery adequacy	3 Benefits of NHIS	4 Convenience of NHIS	5 Price of NHIS	6 Provider attitudes	7 Peer pressure	8 Health beliefs and attitudes
1. Treatment is effective for recovery and cure	**0.848**	0.112	−0.111	0.079	0.016	0.004	−0.037	−0.016
2. The quality of drugs is good	**0.832**	0.12	−0.066	0.104	0.025	0.017	−0.051	−0.052
3. The provider makes a good diagnosis	**0.747**	0.182	−0.092	0.074	0.008	−0.086	0.016	0.118
4. The doctors do a good clinical examination	**0.611**	0.229	−0.09	−0.021	−0.017	−0.113	0.018	0.169
5. I can get immediate care if I need it	**0.573**	0.15	−0.115	0.232	0.051	0.191	−0.053	0.059
6. There are sufficient good doctors	0.161	**0.776**	−0.021	0.029	0.01	0.049	0.017	0.023
7. The doctors for women are adequate	0.128	**0.769**	0.059	−0.003	0.022	0.002	−0.008	0.036
8. The medical equipments is adequate	0.188	**0.756**	−0.064	0.107	0.019	0.032	0.061	−0.056
9. The rooms are adequate	0.174	**0.754**	−0.1	0.088	0.037	−0.015	0.069	−0.045
10. Will save money from paying hospital bills	−0.156	−0.054	**0.881**	0.012	−0.042	0.022	0.029	−0.13
11. Will not need to borrow money to pay for hospital care	−0.137	−0.066	**0.855**	−0.038	−0.019	−0.011	0.031	−0.149
12. Joining the scheme will benefit me	−0.099	0.003	**0.8**	−0.118	−0.074	0.084	0.046	−0.039
13. The district scheme office location is convenient	0.089	0.003	−0.037	**0.835**	−0.043	0.013	−0.019	0.038
14. The district scheme office opening hours are convenient	0.071	0.076	−0.166	**0.769**	0.0	−0.012	0.023	0.14
15. The collection of insurance cards is convenient	0.176	0.121	0.064	**0.697**	0.093	0.045	−0.064	−0.143
16. The registration fee is too high (R*)	0.027	0.049	−0.081	0.019	**0.945**	0.0	0.041	0.046
17. The premium for the package is too high (R*)	0.027	0.028	−0.046	0.021	**0.944**	0.036	0.07	0.06
18. Attitude of health staff should be improved (R*)	0.018	0.038	0.004	0.028	0.02	**0.881**	0.04	−0.007
19. Availability of drugs should be improved (R*)	−0.043	0.016	0.085	0.013	0.012	**0.878**	−0.005	−0.079
20. Opinion leaders in my community affect my decision to enrol	−0.041	0.083	−0.03	−0.022	0.057	0.022	**0.859**	0.038
21. Experience of others with health insurance affects my decision to enrol	−0.034	0.032	0.125	−0.032	0.044	0.012	**0.846**	−0.001
22. Buying insurance may bring bad luck and illness (R*)	0.061	−0.02	−0.108	0.026	0.059	−0.024	−0.049	**0.834**
23. Health is a matter of fate (in the hands of God) and insurance cannot help me deal with its consequences (R*)	0.118	−0.014	−0.163	0.016	0.041	−0.06	0.092	**0.8**
Eigenvalues	4.51	2.45	1.97	1.76	1.47	1.43	1.34	1.1
% of Variance	19.59	10.64	8.58	7.68	6.41	6.23	5.84	4.75
Cronbach's Alpha (α)	0.81	0.8	0.83	0.68	0.9	0.6	0.73	0.6

Note: (R*) are reversed scored items.

peer pressure. Even though the previously enrolled perceive NHIS to be beneficial and convenient overall, it may be that they saw fewer advantages in NHIS than originally expected. Provider factors, such as technical quality of care, service delivery adequacy and staff provider attitudes were not significantly associated with enrolment and retention decisions, though the hypothesized sign was in the right direction. Control variables that were found to be significant are education, religion, sex, age above 60 years, urban residence, household size, clerical and managerial employment, and income.

Discussion

Our study demonstrates that scheme factors have the strongest association with voluntary enrolment and retention decisions in the NHIS. This is an important finding as it suggests that

Table 7 Score ranking

	Ranking scores				
	All (n = 3295)	SD	Insured (n = 1461)	Uninsured (n = 1834)	Difference
Technical quality of care					
Treatment is effective for recovery and cure	0.79	0.92	0.78	0.78	0.00
The quality of drugs is good	0.79	0.97	0.8	0.77	0.03
The provider makes a good diagnosis	0.79	0.82	0.75	0.82	0.07
The doctors do a good clinical examination	0.84	0.84	0.85	0.82	0.03
I can get immediate care if I need it	0.71	1.33	0.71	0.71	0.00
Total	**0.78**	**0.97**	**0.78**	**0.78**	**0.00**
Service delivery adequacy					
There are sufficient good doctors	0.78	1.13	0.71	0.84	0.13
The doctors for women are adequate	0.67	1.08	0.66	0.67	0.01
The medical equipment is adequate	0.70	1.09	0.71	0.69	0.02
The rooms are adequate	0.73	1.12	0.73	0.73	0.00
Total	**0.72**	**1.10**	**0.70**	**0.73**	**0.03**
Benefits of NHIS					
Will save money from paying hospital bills	0.84	0.87	0.87	0.8	0.07
Will not need to borrow money to pay for hospital care	0.82	0.90	0.85	0.78	0.07
Joining the scheme will benefit me	0.78	0.99	0.85	0.71	0.14
Total	**0.81**	**0.92**	**0.86**	**0.76**	**0.10**
Convenience of NHIS					
The district scheme office location is convenient	0.64	1.20	0.66	0.62	0.04
The district scheme office opening hours are convenient	0.70	0.95	0.72	0.68	0.04
The collection of insurance cards is convenient	0.55	1.23	0.56	0.54	0.02
Total	**0.63**	**1.13**	**0.65**	**0.61**	**0.04**
Price of NHIS					
The premium for the package is too high	0.53	1.37	0.55	0.5	0.05
The registration fee is too high	0.50	1.39	0.52	0.47	0.05
Total	**0.51**	**1.38**	**0.54**	**0.49**	**0.05**
Provider attitude					
Attitude of health staff should be improved	0.37	0.88	0.37	0.36	0.01
Availability of drugs should be improved	0.33	0.80	0.32	0.34	0.02
Total	**0.35**	**0.84**	**0.35**	**0.35**	**0.00**
Peer pressure					
Opinion leaders in my community affect my decision to enrol	0.50	1.35	0.48	0.51	0.03
Experience of others with health insurance affects my decision to enrol	0.60	1.43	0.59	0.61	0.02
Total	**0.55**	**1.39**	**0.54**	**0.56**	**0.02**
Community health beliefs & attitudes					
Health is a matter of fate (in the hands of God) and insurance cannot help me deal with its consequences	0.90	0.78	0.91	0.89	0.02
Buying insurance may bring bad luck and illness	0.90	1.13	0.82	0.98	0.16
Total	**0.90**	**0.95**	**0.87**	**0.94**	**0.09**

efforts to improve enrolment and retention should focus on these factors. Our findings are in contrast to previous qualitative research that cites quality of care as most important (Criel and Waelkens 2003; Dong *et al*. 2009). It may be that these differences are related to differences in quality of care and/or client expectations or both in these different study settings.

At the same time, households hold both positive and negative perceptions relating to providers and community attributes, and these also merit attention to improve overall satisfaction with health care service delivery and the NHIS. Below, we proceed to further interpret these findings in detail for each of the three main stakeholders: schemes, providers and communities.

Perceptions related to schemes

Price (including premium and registration fees), convenience and benefits of NHIS are all scheme factors that are significantly associated with enrolment and retention. First, our observation that price is a barrier to enrolment is in line with other qualitative and quantitative studies (Musau 1999; Bennett et al. 1998; Jakab et al. 2001; Arhinful 2003; Jütting 2004; De Allegri et al. 2006c; Schmidt et al. 2006; Basaza et al. 2007; Asante and Aikins 2008; Chankova et al. 2008). Our regression analysis validates this point more clearly and predicts that the probability of enrolment decreases if the price is perceived to be high. To address this, a possible solution could lie in better implementation of premium exemptions or waivers for the indigent poor that have been suggested to guarantee equitable participation (Jakab and Krishnan 2004; Aryeetey et al. 2010; Jehu-Appiah et al. 2010). In addition, in Burkina Faso, De Allegri et al. found institutional rigidities of payment modalities to be a greater barrier than the premium per se (De Allegri et al. 2006b) and this indicates the need for policy makers to consider what methods of payment best suit households.

Secondly, on convenience, scheme administrative arrangements may be a potential barrier and under the Ghana NHIS may be unduly inconvenient for clients. To increase people's overall satisfaction, scheme administrators should be responsive to community preferences (Carrin et al. 2005) by addressing the operational difficulties that appear to hamper enrolment (De Allegri et al. 2009). For Ghana, this would mean addressing the current delays associated with NHIS identity card production and distribution.

Thirdly, both the insured and uninsured hold positive perceptions on the benefits of the NHIS. Similar findings were reported by Arhinful (2003) in a qualitative study in Ghana where the uninsured also attested to the economic, psychological and social benefits of insurance (Arhinful 2003). Still, the uninsured and previously insured are somewhat less positive on scheme benefits, and this may be associated with their decision not to enrol and renew membership. Further qualitative research is warranted to qualify this. To enhance enrolment and retention, policy makers need to be more responsive to consumer preferences to ensure that the NHIS meets their expectations.

Perceptions related to providers

The credibility of the health care system in relation to quality of care factors is a decisive factor in the way people perceive health insurance (Arhinful 2003). Although not found to be significantly associated with enrolment decisions, our study finds that provider attitudes were perceived negatively and hence merit attention to improve overall satisfaction with being enrolled. Negative provider attitudes and interpersonal relationships have been documented in other countries (De Allegri et al. 2006c; Dong et al. 2009; Kyomugisha et al. 2009) and are a longstanding concern in public health facilities in Ghana, having become more pronounced with increased utilization since the establishment of the NHIS (Asenso-Okyere et al. 1999; Osei-Akoto 2003; MOH 2009). The increased service utilization that has accompanied the removal of the financial barrier by the NHIS has not been matched by a commensurate increase in already inadequate human resources, infrastructure, equipment and supplies (MOH 2009). The growing dissatisfaction of insured clients who perceive they are given poorer quality of care and wait longer compared with fee-paying clients (Bruce et al. 2008) needs to be urgently addressed to retain and attract new members.

Part of the solution lies in addressing the resource constraints. However, the existing provider payment mechanism may also not promote quality of services. The NHIS reimburses providers based on Ghana Diagnostic Related Groupings that are essentially a capitated rate per patient visit, which motivates providers to reduce costs and potentially under-provide needed services, thus compromising quality of care. In addition, public providers, who are paid a salary, may have no incentive to provide more or better care. Mechanisms to reimburse providers are potent instruments that mould incentives for facility managers and individual providers (Yazbeck 2009). Thus provider payment reforms may be needed to set up financial incentives to influence provider behaviour towards insured clients. This may first entail overcoming the resistance of health providers and is an area that needs further research (De Allegri et al. 2006c).

In addition, from the patients' perspectives, a constant supply of essential drugs is a prerequisite for the credibility of the scheme and for the quality of health care provided (Mamadani and Bangser 2004). The frequent delays in reimbursing providers are affecting the availability of drugs in public facilities. With frequent stock-outs, insured clients are made to buy drugs in the open market, decreasing the benefit of insurance and falling short of people's expectations. Urgent efforts by the NHIS to reimburse providers more quickly should improve the purchasing and availability of drugs and restore confidence in the schemes.

In contrast to provider attitudes, technical quality of care and service delivery were perceived positively in our study. Previous studies have shown the influence of quality of care on enrolment (Criel et al. 1998; Haddad et al. 1998; Atim and Sock 2000; Chee et al. 2002; Criel and Waelkens 2003; Musau 2004; Baltussen and Ye 2006; De Allegri et al. 2006c; Kamuzora and Gilson 2007; Ndiaye et al. 2007; Basaza et al. 2008). Our findings show that both insured and uninsured households had positive perceptions of technical quality of care, and probably trust the capabilities of health workers but dislike their attitudes, as found in previous studies (Baltussen and Ye 2006; De Allegri et al. 2006c).

Perceptions related to community attributes

Our findings highlight the fact that a household's decision to enrol is influenced by community attributes such as health beliefs, attitudes and peer pressure. Research highlights the importance of peer context on individual differences (Daddis 2010), which is in turn influenced by factors such as prevailing ideas about insurance, past experiences of members, credibility of scheme management and prevailing context of health services among others (Arhinful 2003).

Peer pressure was found to be negatively associated with enrolment. Information spreads fast in communities, people listen to one another and perceptions of individuals can have a cumulative effect within a community. If negative experiences

Table 8 Effects of identified perception factors on NHIS enrolment

Predictor variables	Insured				Previously insured			
	B (SE)	95% CI for Odds Ratio			B (SE)	95% CI for Odds Ratio		
		Lower	Odds Ratio	Upper		Lower	Odds Ratio	Upper
Constant	−5.07***				−3.25***			
Household characteristics								
Education								
Primary	0.05	0.75	1.05	1.47	0.20	0.84	1.23	1.79
Junior secondary	0.59***	1.45	1.81	2.28	0.34**	1.06	1.40	1.84
Senior secondary	0.95***	1.74	2.59	3.84	0.67***	1.21	1.95	3.14
Technical	0.13***	1.08	1.14	1.20	0.08***	1.01	1.08	1.15
Tertiary	1.79***	3.91	5.99	9.11	1.34***	2.32	3.83	6.32
Religion								
Christian	1.00***	1.64	2.73	4.56	0.48***	0.94	1.61	2.76
Muslim	0.94***	1.40	2.55	4.73	0.54	0.91	1.73	3.48
Traditional	0.33	0.58	1.41	3.41	0.44	0.62	1.56	3.92
Socio-demographics								
Sex (female)	0.59***	1.81	1.44	2.29	0.46***	1.19	1.58	2.08
Marriage (married)	0.14	0.77	1.15	1.67	0.02	0.79	1.02	1.31
Age	0.04***	1.03	1.04	1.05	0.03***	1.01	1.03	1.04
<5 years	0.04	0.60	1.04	1.91	−0.32	0.35	0.72	1.50
60–69 years	0.73***	1.17	2.06	3.83	−0.06	0.40	0.94	2.19
>70 years	1.01***	1.34	2.76	5.48	0.58	0.75	1.78	4.29
Urban residence	−0.59***	0.46	0.55	0.67	−0.23***	0.64	0.8	1.00
Household size	−0.05***	0.91	0.95	0.99	0.01	0.95	1.00	1.06
Expenditure (log)	0.28***	1.12	1.32	1.56	0.06	0.86	1.06	1.31
Health status (self perceived)								
Good health	0.01	0.78	0.99	1.27	0.05	0.77	1.04	1.41
Poor health	0.12	0.79	1.13	1.60	0.21	0.80	1.23	1.89
Employment								
Farmer	−0.07	0.68	0.93	1.27	−0.05	0.64	0.95	1.41
Fisherman	−0.28	0.49	0.76	1.18	0.29	0.82	1.35	2.22
Artisan	−0.10	0.61	0.90	1.32	0.02	0.63	1.02	1.65
Trader	−0.21	0.58	0.81	1.13	0.12	0.74	1.11	1.67
Clerical	0.54	0.70	1.71	4.18	1.00***	1.12	2.74	6.70
Managerial	−1.07***	0.14	0.34	0.82	−0.87	0.14	0.42	1.28
Professional	−0.23	0.54	0.79	1.15	−0.03	0.61	0.97	1.55
Perception factors								
Quality of care	0.01	0.92	1.01	1.10	0.081	0.97	1.08	1.21
Facility adequacy	−0.03	0.9	0.97	1.07	−0.01	0.89	0.99	1.10
Benefits of NHIS	0.60***	1.65	1.82	2.01	0.39***	1.32	1.48	1.67
Convenience of NHIS	0.18***	1.09	1.20	1.31	0.09**	0.99	1.10	1.22
Price of NHIS	−0.18***	0.76	0.83	0.91	0.02	0.91	1.02	1.13
Provider attitude	0.01	0.92	1.01	1.10	0.07	0.97	1.08	1.20
Peer pressure	−0.10***	0.82	0.9	0.99	−0.13***	0.79	0.88	0.97
Community beliefs	0.03	0.94	1.03	1.13	−0.09	0.82	0.92	1.02
−2 Likelihood ratio test	786***				Reference category − Uninsured			
Pseudo R^2 (Cox & Snell)	0.216							
Pseudo R^2 (Nagelkerke)	0.253							

Notes:

***$P < 0.05$; **$P < 0.0$.

Dependent variable (1 = Insured, 2 = Previously insured, 3 = Uninsured).

of opinion leaders or peers outweigh positive experiences then peer pressure will negatively affect people's decision to enrol. The reverse also holds. It appears that in the study setting, the negative individual perceptions outweigh the positive, creating a cumulative negative influence on individual decisions. Our logistic model supports this assertion and finds peer pressure to be significantly associated with enrolling and remaining in the scheme. Interventions should thus be geared towards striving to meet people's expectations of the benefits of NHIS in order to minimize dropouts and attract new members, recognizing that success or failure in addressing perceptions will have a cumulative effect (positive or negative) on enrolment.

Community 'health beliefs and attitudes', values and knowledge that people have about health and risk sharing concepts of health insurance may influence household perceptions on need and participation in health insurance, and have been found in other literature to be significant determinants of accurate knowledge and practice (Lee *et al.* 2010). Community 'health beliefs and attitudes' rated positively, in the sense that households showed a good understanding of the principles and risk sharing concepts of insurance and health, in line with findings from previous research in Ghana (Akazili 2010). The uninsured were more positive in their understanding, demonstrating that low enrolment is not necessarily the result of failure to understand the concept of health insurance, but is more likely a result of other factors, such as household preferences.

Our study has a number of limitations. Due to the geographical, socio-cultural and socio-economic differences between regions, our results are merely indicative and not necessarily generally applicable to the whole of Ghana. Secondly, one can question the validity of asking the never-insured their perceptions of benefits and convenience of insurance, since they will not be based on actual experiences but expectations only. We argue that it is valid as it is the individual's expectations that will determine their decision to enrol. Finally, given the cross-sectional nature of our study, it is impossible to know whether perceptions preceded or followed the action of enrolling, therefore inferences from the findings should be interpreted with caution.

Conclusion

Our findings suggest that perceptions play an important role in household decisions to voluntarily enrol and remain enrolled in insurance schemes, albeit to varying degrees. They confirm our starting hypothesis that a household's decision to enrol and remain in the NHIS is influenced unequally by perceptions relating to providers, insurance schemes and community attributes. Perceptions relating to schemes are found to be most important. Policy makers need to recognize household perceptions as potential barriers or enablers to enrolment, and to invest in understanding them in their design of interventions to stimulate enrolment. For it is only when community preferences, shaped by social, cultural and economic contexts as well as experience, are well understood and addressed in scheme design that community-based insurance is likely to provide solutions to the problem of health care financing in low-income countries (De Allegri *et al.* 2006b). However, we

acknowledge that recognizing and addressing community perceptions and the factors that shape them will only provide a partial solution to the complex problem of voluntary enrolment. Maximizing enrolment will require understanding all these multiple factors using a variety of methodological approaches and addressing them through multifaceted interventions.

Conflict of interest

None declared.

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