

THE EFFECT OF GHANA'S NATIONAL HEALTH INSURANCE SCHEME ON HEALTH CARE UTILISATION

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SUMMARY

Objectives: The study investigates the effect of Ghana's National Health Insurance Scheme (NHIS) on health care utilisation.

Methods: We provide a short history of health insurance in Ghana, and briefly discuss general patterns of enrolment in Ghana as well as in Accra in a first step. In a second step, we use data from the Women's Health Study of Accra wave II to evaluate the effect of insurance on health seeking behaviour using propensity score matching.

Results: We find that on average individuals enrolled in the insurance scheme are significantly more likely to obtain prescriptions, visit clinics and seek formal health care when sick.

Conclusion: These results suggest that the government's objective to increase access to the formal health care sector through health insurance has at least partially been achieved.

Keywords: Health insurance, health care utilisation, treatment differentials.

INTRODUCTION

Health care financing in Ghana began with a tax-funded system that provided free public health care services to all after independence. As this system gradually became financially unsustainable with economic stagnation in the 1970s, initially low user fees were established for hospital services to discourage unnecessary use, locally recover some costs and generate provider performance incentives. Continued declines in government spending on health through the 1970s and 1980s led to shortages of medicines and supplies and deteriorating quality of care.^{1, 2} Following adoption of structural adjustment reforms in 1983, the Rawlings administration raised and expanded user fees for public health care services in a system that became known as "cash and carry." The user fee system improved operating revenues for some facilities, but it was poorly regulated, inconsistently implemented, and found to have worsened access to care for the poor.³⁻⁵

Starting from the early 1990s, Ghana began to seek other ways of financing health care, including NGO-initiated community-based health insurance schemes (CBHIS). While popular among members and international donors at the time, the schemes were only targeted to specific areas, failed to address key social insurance issues, and were not supported by general government revenue to allow them to cater for the poor. Most importantly, with CBHIS covering only about 1% of the population with limited benefit packages,⁶ the system of user fees remained the predominant means of paying for health care. The highly unpopular "cash and carry" system became a salient political issue and the main opposition party, the National Patriotic Party (NPP), began to call for its abolishment in its manifestos and campaigns—a promise that may have helped the NPP win the 2000 presidential and parliamentary elections.⁷ Ultimately, the National Health Insurance Scheme (NHIS) was established under Act 650 of 2003 by the Government of Ghana to provide a broad range of health care services to Ghanaians through district mutual and private health insurance schemes.⁸

Coming as a consequence of the deleterious effects of user fees, one of the primary goals of Ghana's NHIS was to increase affordability and utilisation of drugs and health services in general, and among the poor and most vulnerable populations in particular. Few studies have tried to investigate whether the NHIS achieved this objective. Witter and Garshong note that the number of outpatient visits per capita in Ghana increased sharply after 2005, the same year NHIS operations began.⁹ Mensah et al find that pregnant women enrolled in the NHIS are more likely to receive prenatal care, give birth in a hospital, and have skilled attendants present at birth.¹⁰ Similar results were found in a recent study tracking health seeking behaviour in two districts before and after NHIS rollout.¹¹

In this paper, we use data collected as part of the Women's Health Study of Accra to evaluate the degree to which enrolment in health insurance is associated

with increased utilisation of drugs and health services in the Accra Metropolitan Area.

We analyse six measures of health care use collected as part of the WHSA-II interview to investigate whether NHIS enrolment is associated with changes in health behaviour in general, and increased use of formal health care in particular. Our main hypothesis is that, conditional on several observable characteristics, being enrolled in NHIS should increase the probability of women seeking care. Women who fall ill without insurance are likely to self-treat themselves if possible in order to avoid incurring external treatment cost. With insurance, the cost of seeking professional treatment decreases, so that increased health care utilisation should be observed.

The Ghana National Health Insurance Scheme

Ghana's National Health Insurance Scheme (NHIS) was created by the National Health Insurance Act of August 2003, and is one of very few attempts by a sub-Saharan African country to implement a national-level, universal health insurance program.¹² A newly-created National Health Insurance Authority (NHIA) was commissioned "to secure the implementation of a national health insurance policy that ensures access to basic healthcare services to all residents."¹³ The NHIA licenses and regulates district-level mutual health insurance schemes (DMHISs) as well as other schemes allowed under the Act, accredits providers, determines—in consultation with DMHISs—premium levels, and generally oversees and reports on NHIS operations. There are currently 145 district schemes, including ten that operated in the Greater Accra area during the study period.¹⁴

The NHIS is financed from four main sources: a value-added tax on goods and services, an earmarked portion of social security taxes from formal sector workers, individual premiums, and miscellaneous other funds from investment returns, Parliament, or donors. The 2.5 per cent tax on goods and services, called the National Health Insurance Levy (NHIL), is by far the largest source, comprising about 70 per cent of revenues. Social security taxes account for an additional 23 per cent, premiums for about 5 per cent, and other funds for the remaining two per cent.¹⁵

The NHIS (including all DMHISs) has a single benefit package that is set by Legislative Instrument 1809 and described by the NHIA as covering "95% of disease conditions" that afflict Ghanaians.^{9,16} The NHIS covers outpatient services, including diagnostic testing and operations such as hernia repair; most in-patient services, including specialist care, most surgeries, and hospital accommodation (general ward); oral health

treatments; all maternity care services, including Caesarean deliveries; emergency care; and, finally, all drugs on the centrally-established NHIA Medicines List.¹⁴

The NHIS package *excludes* some very expensive procedures such as certain surgeries, cancer treatments (other than breast and cervical cancer), organ transplants, and dialysis; non-vital services such as cosmetic surgery; and some high profile items such as HIV antiretroviral drugs (which are heavily subsidized by the separate National AIDS Program). Other than the excluded services, there are few formal limits placed on NHIS members' consumption of benefits—there is no cost-sharing beyond premiums (i.e., no co-payments, coinsurance, or deductibles), no annual or lifetime limits and little effective gate-keeping. Benefits were intended to be "portable" from district to district, but actual portability has been mixed and is one reason for the recent introduction of a single, national NHIS identification card to replace district-level cards.

Act 650 technically requires all Ghanaians to enrol in the NHIS or in another health insurance plan. Specifically, Section 31 of Act 650 reads: "(1) A person resident in Ghana other than a member of the Armed Forces of Ghana and the Police Service shall belong to a health insurance scheme licensed under this Act. (2) A person resident in a district, who is not a member of a private health insurance scheme or any other district scheme registered under this Act, shall apply to be enrolled as a member of the district mutual health insurance scheme in the relevant district." However, enrolment is *de facto* voluntary because there is no penalty for failing to enrol, and individuals or households are not automatically enrolled. Ghanaians generally must go in-person to a DMHIS office, complete registration paperwork (often after waiting a substantial amount of time), and pay a small registration fee meant to cover the photo ID and administrative expenses of registration. Even workers who contribute to the NHIS through social security contributions (SSNIT) have to personally enrol and pay registration fees in order to obtain the insurance cards. In addition to SSNIT contributors, broad swaths of the population are exempt from paying premiums (but not registration fees), including:

- People over age 70;
- Children under 18 *whose parents both enrol*;
- The "core poor," defined as being unemployed with no visible source of income, no fixed residence, and not living with someone employed and with a fixed residence¹⁶; and
- Since July 2008, all pregnant women.¹⁷

Ghanaians who are not exempt must pay an annual insurance premium in addition to the registration fees. The official NHIA guidelines call for a range of premiums to be charged according to a person's income or wealth, ranging from 7.2 GhC for the "very poor" to 48 GhC for the "very rich". However, given that accurate income measures are not generally available, many DMHISs have moved to charging a constant premium to all, typically in the GhC 8-10 range. In the Accra Metropolitan Area analysed in this paper, the average premium reported by study respondents was GhC 21.

Official statistics on NHIS registration provided by the National Health Insurance Authority show the increase in enrolment since operations began in late 2005. As Table 1 shows, the total number of active members reportedly increased from 2.4 million in 2006 to 11.1 million in 2009, suggesting that close to 50% of the population was covered by the insurance by 2009. More recently, however, the NHIA changed its methodology for calculating active members and estimated in its 2010 annual report that about 34% of Ghanaians were active enrolees at the end of 2010.¹⁸

Table 1 Members of Ghana's NHIS and percentages of the population enrolled 2006-2009

| Year | Estimated population of Ghana | Total registered members | Total active members | Percentage of population registered | Percentage of population active |
|------|-------------------------------|--------------------------|----------------------|-------------------------------------|---------------------------------|
| 2006 | 21,876,031 | 3,867,862 | 2,422,097 | 18 | 11 |
| 2007 | 22,387,911 | 8,184,294 | 6,674,270 | 37 | 30 |
| 2008 | 22,876,031 | 12,518,560 | 9,969,846 | 55 | 44 |
| 2009 | 23,416,518 | 14,511,777 | 11,132,981 | 62 | 48 |

Note: Reproduced from NHIA, p.3.¹⁸

Theoretical background and empirical hypothesis

A large literature has investigated the behavioural effects of insurance in general, and the effects of health insurance on health seeking behaviour in particular. From a theoretical perspective, being covered by insurance can be expected to affect individual behaviour through several distinct mechanisms. First, individuals may feel safer with insurance, and thus take on more risk in the presence of insurance, a problem commonly referred to as the moral hazard problem in the economics literature.¹⁹ Second, insurance may change the choices individuals make once health problems arise. From the perspective of a rational decision maker, insurance makes formal treatment cheaper in comparison with other treatment modalities, and thus induces a shift towards increased service utilisation. Last, individuals may want to use the insurance to recover parts of the insurance premium already paid, a behaviour which is inconsistent with models of rational choice, but well explained in models of loss aversion as developed by Kahneman and Tversky.²⁰

In the context of health, moral hazard is generally considered of lesser importance, since insurance covers the financial consequences of ill health, but offers only limited protection against the physical and emotional burden of ill health generated by risky behaviour. Changes in relative cost, on the other hand, appear to be of central importance for the rollout of health insurance in general, and in a developing country setting in particular. In the presence of user fees and transaction costs, poor populations may refrain from

seeking professional health care from doctors or hospitals. Health insurance lowers this barrier to access, and is thus designed to increase use of professional medical care in general, and particularly among the poor who may be deterred by often steep user fees. This effect may be even stronger if the poor feel the need to recover some of the initial expenditure on insurance.

The hypothesis we wish to test in this paper is whether insurance affiliation is associated with increased utilisation of formal care. To do so, we look at six different health utilisation variables as described in detail below, and investigate the degree to which each of them is affected by insurance affiliation.

DATA AND METHODS

Data for this analysis are from the second wave of the Women's Health Survey of Accra (WHSa II), conducted from September 2008 to June 2009. As described in other chapters of this volume, the WHSa-II is a prospective, community-based study intended primarily to measure the burden of disease among a representative sample of adult women (age 18 and over in 2003) in the Accra Metropolitan Area.

In order to investigate the effects of NHIS affiliation on health service utilisation, our analysis proceeds in two steps. In the first step, we briefly analyse the patterns of NHIS affiliation. Despite Act 650's intention of universal coverage, only a minority of women reported to be enrolled in the NHIS at the time of the interview

(roughly three years after NHIS started operating). We investigate the relation between NHIS affiliation and socio-demographic characteristics in the first part of our analysis. In the second part, we analyse six variables describing health seeking behaviour. Five variables measure health care utilisation over the 12 months preceding the interview, including: (1) whether the woman received a general health examination, (2) whether the women received a breast examination, (3) whether the woman visited a health clinic or hospital, (4) whether the woman stayed overnight as a patient in a hospital, and (5) the number of drug prescriptions she obtained. The sixth variable is whether the woman's usual reference point when she is sick is in the formal or informal health sector. Formal sector options include: clinic/health centre, doctor's office, hospital emergency room, hospital outpatient department, and maternity home. Informal sector options include: pharmacist/chemical shop, self-medicate, church/pastor, spiritualist, or nowhere.

We first examine the unconditional health behaviour differential by simply comparing group averages of women currently enrolled in the NHIS and women not currently enrolled in the NHIS. In the second step, we use propensity score estimation to remove bias generated through differences in observable variables, and to identify conditional differences attributable to NHIS affiliation. All analysis was conducted using Stata© 10.

RESULTS

Demographic characteristics

The 2008 WHSA data was based on household interviews with 2,814 women aged 18 and over in 2003. We restricted our analysis to those women where all key variables are available, which leaves us with a sample of 2,543 women. The average woman in our sample was 41.8 years old at the time of the interview, consistent with the average age of 35 among women 18 and older in 2003 when the original enrolment of women was conducted.

Table 2 Characteristics of the study population

| Variable | N | Mean | Std. dev |
|------------------|------|--------|----------|
| Age | . | 41.791 | 14.877 |
| Married | 1413 | 0.556 | 0.497 |
| Pregnancies | . | 3.601 | 2.718 |
| Working | 1834 | 0.721 | 0.448 |
| No education | 387 | 0.152 | 0.359 |
| Primary | 287 | 0.113 | 0.316 |
| JSS | 1030 | 0.405 | 0.491 |
| SSS | 519 | 0.204 | 0.403 |
| Higher | 313 | 0.123 | 0.329 |
| Qur'anic | 7 | 0.003 | 0.052 |
| Asante | 165 | 0.065 | 0.246 |
| Akwapim | 143 | 0.056 | 0.231 |
| Fante | 316 | 0.124 | 0.330 |
| Other Akan | 231 | 0.091 | 0.287 |
| Ga | 968 | 0.381 | 0.486 |
| Ewe | 367 | 0.144 | 0.352 |
| Excellent health | 311 | 0.122 | 0.328 |
| Good health | 680 | 0.267 | 0.443 |
| Average health | 1226 | 0.482 | 0.500 |
| Fair health | 284 | 0.112 | 0.315 |
| Poor health | 43 | 0.017 | 0.129 |

Notes: Based on 2,543 observations with complete information. All descriptive statistics are based on survey-specific sampling weights.

About fifty-five per cent of women (55.6%) are currently married, with an average number of 3.6 pregnancies. A little over 70 per cent of women (72%) are working. The majority of women in the sample have attained some secondary schooling, while 15 per cent report no schooling and 12.3 per cent report tertiary schooling. Fewer than forty per cent (38%) of respondents are Ga, approximately 35 per cent belong to Asante, Fante or other Akan ethnicities, and about 14 per cent are Ewe. Less than half of women (48%) consider their health average, 13 per cent consider their health below average, and 39 per cent consider their health to be good or excellent (Table 2).

Patterns of NHIS enrolment

Figures 1-3 show NHIS enrolment patterns across educational attainment, self-assessed health status, and age groups. While there is some education gradient in enrolment, the likelihood of NHIS enrolment is nearly equal across the main four attainment groups (i.e. up to senior secondary), and only slightly higher for women with tertiary education. As the confidence intervals in Figure 1 show, the null hypothesis that enrolment is equal across educational groups cannot be rejected at the 95% level.

Even more surprising is the weak relation between enrolment in health insurance and self-assessed health, with women who assess their own health as "poor" only marginally more likely to be enrolled in the NHIS than women who rate their own health as "excellent". Enrolment is highest among the "good" and "fair" health groups. From the three variables analysed, age appears to be by far the best predictor of NHIS enrolment. While less than 25 per cent of women under the age of 30 are enrolled in the NHIS, the same is true for more than 45 per cent of women over the age of 60.

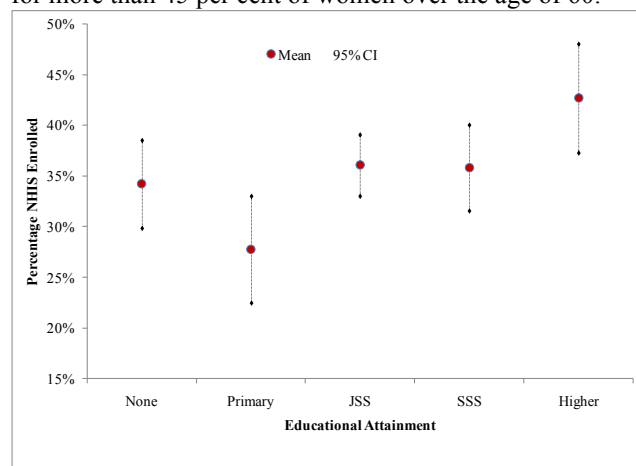


Figure 1 NHIS enrolment by educational attainment

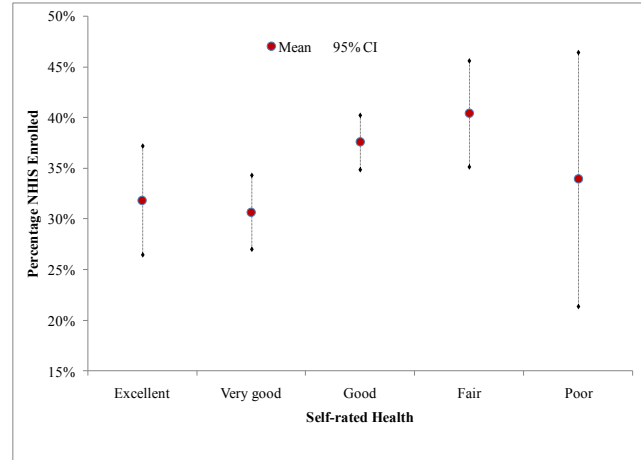


Figure 2 NHIS enrolment by self-assessed health

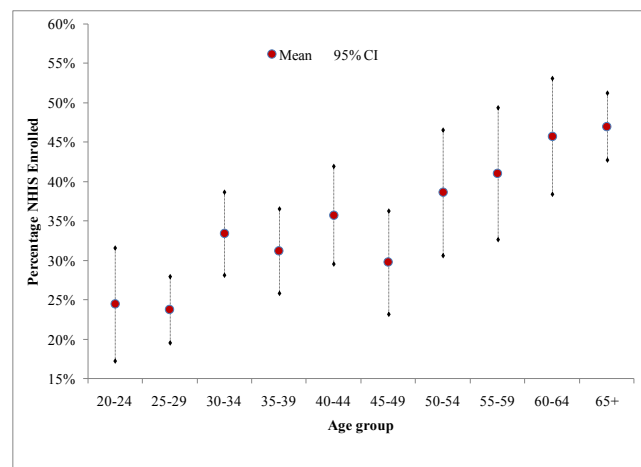


Figure 3 NHIS enrolment by age group

Health care utilisation variables

We analyse six variables capturing respondents' health seeking behaviour. The first two items we analyse capture preventive exams: 15.4 per cent of women indicated having had a general health exam over the last 12 months, and 8 per cent of women indicated that they had had breast examinations (Table 3). The remaining four items capture typical health seeking behaviour as well as the individual experience over the last year: when asked about where they usually go when they get sick, 79.7 per cent of women indicated that they seek care at a "formal" facility (clinic, doctor, hospital, maternity home). When asked whether they had visited a health clinic/centre or hospital over the past 12 months, 57.4 per cent of women stated this to be the case; a remarkably high 9.9 per cent of women reported to have been hospitalized overnight over the previous 12 months. Last, women were also asked whether they had been prescribed medicines by a doctor, such as medication for cholesterol, de-worming pills, antibiotics, vitamins, weight loss or weight gain supplements, malaria treatment, pain killers, birth

control items, hormone replacement therapy, or other health treatments. About a fifth (21 per cent) of women

received prescriptions from a doctor, and the average number of prescriptions was 0.31 (Table 3).

Table 3 Health care utilisation variables

| Variable | Number of cases | Mean | Std. dev | Min | Max |
|-----------------------------------|-----------------|-------|----------|-----|-----|
| Had a general exam last year | 392 | 0.154 | 0.361 | 0 | 1 |
| Had a breast exam last year | 205 | 0.080 | 0.272 | 0 | 1 |
| Seeks formal care when sick | 2028 | 0.797 | 0.402 | 0 | 1 |
| Visited clinic/hospital last year | 1461 | 0.574 | 0.495 | 0 | 1 |
| Hospitalized overnight last year | 252 | 0.099 | 0.299 | 0 | 1 |
| Number of prescriptions last year | 784 | 0.308 | 0.698 | 0 | 6 |

Notes: Based on 2,543 observations with complete information. Reported means and standard deviations represent sampling weight adjusted averages. The mean for the first five variables represents the proportion of respondents who reported having/seeking the given health care variable.

Health care utilisation by NHIS enrolment

Table 4 shows the six health care seeking variables for non-enrolled and enrolled women, respectively. The mean value of all six variables is higher in the NHIS-enrolled group, and the difference between the two groups is significant at the 99 per cent confidence level in all variables except for the breast exam, where the absolute likelihood is below 10 per cent for both groups. The difference between the two groups is largest for the clinic visits and prescriptions: 76.3 per cent of women enrolled in NHIS visited a health clinic or hospital during the twelve months preceding the

interview, compared to just 50.2 per cent of women without insurance. The relative differences appear to be particularly large for hospitalization and prescriptions. While only 7.4 per cent of women not enrolled in the NHIS report a hospitalization during the 12 months preceding the interview, the same was true for 12.7 per cent of women enrolled in NHIS. Similarly, women with NHIS insurance report on average 0.576 prescriptions, which is more than twice as many as women who were not enrolled at the time of the interview (0.274 prescriptions on average).

Table 4 Unconditional health care utilisation differences

| | Not Enrolled | Enrolled | Difference | p-value |
|-----------------------------------|--------------|----------|------------|---------|
| Had a general exam last year | 14.7% | 20.7% | 6.0% | 0.000 |
| Had a breast exam last year | 7.5% | 9.3% | 1.8% | 0.115 |
| Seeks formal care when sick | 75.5% | 90.5% | 15.0% | 0.000 |
| Visited clinic/hospital last year | 50.2% | 76.3% | 26.1% | 0.000 |
| Hospitalized overnight last year | 7.4% | 12.7% | 5.3% | 0.000 |
| Number of prescriptions last year | 0.274 | 0.576 | 0.302 | 0.000 |

Notes: Based on a sample of 2543 women. P-values based on a simple two-sided t-test.

Given that women with NHIS enrolment on average appear to be more educated and older than women without health insurance, the increased use of health services among insured women reported in Table 4 may reflect differences in respondent characteristics rather than true differences generated by health insurance. In order to reduce the risk of confounding, we use propensity score matching to compare enrolled women to non-enrolled women conditional on all observable characteristics. The matching algorithm we use takes into account all socio-economic

characteristics reported in Table 2, which means that the estimated differences reflect observed differences keeping age, marital status, number of pregnancies, work status, ethnicity, education, wealth quintile, and self-assessed health the same.

The results of the propensity score matching estimation are displayed in Table 5. The elimination of observable differences attenuates the observed differentials a bit, but does not substantially change the picture obtained from Table 4.

Conditional on all observable characteristics, women enrolled in the NHIS appear to be substantially more likely to seek formal care and to go to a clinic. Keeping all other factors constant, NHIS-enrolled women are 40 per cent more likely to have attended a clinic over the

past year, and they have about 57 per cent more prescriptions. Most remarkably, NHIS-enrolled women appear nearly twice as likely (83 per cent more likely) to have stayed overnight at a hospital than non-enrolled women.

Table 5 Propensity score matching results

| Group | Not enrolled | Enrolled | Differences | | |
|-----------------------------------|--------------|----------|-----------------|-----------|----------|
| | | | Matched control | Treatment | Absolute |
| Assignment | | | | | |
| Had a general exam last year | 18.7% | 20.7% | 2.0% | 10.6% | 0.238 |
| Had a breast exam last year | 7.9% | 9.3% | 1.4% | 18.0% | 0.242 |
| Seeks formal care when sick | 78.6% | 90.5% | 11.9% | 15.1% | 0.000 |
| Visited clinic/hospital last year | 54.5% | 76.3% | 21.8% | 40.0% | 0.000 |
| Hospitalized overnight last year | 6.9% | 12.7% | 5.8% | 83.1% | 0.000 |
| Number of prescriptions last year | 0.366 | 0.576 | 0.210 | 57.5% | 0.000 |

Notes: Based on a sample of 2,543 women. All estimation results control for age, marital status, number of pregnancies, employment status, education category, wealth quintile, ethnicity and self-rated health.

DISCUSSION

In this paper, we analysed data from wave II of the Women's Health Study of Accra to investigate the association between NHIS insurance enrolment and health seeking behaviour among women in the Accra Metropolitan Area. We demonstrated that on average women enrolled in the insurance scheme are more likely to seek formal care when sick, have a larger number of prescriptions, are more likely to have visited a clinic or hospital in the year prior to the interview, and are substantially more likely to have experienced an overnight stay at a hospital in the last year. These differences are partially explained by the fact that women enrolled in insurance are on average older, more educated, and in slightly poorer health. However, even when all observable characteristics are controlled for, insurance affiliation appears to be positively associated with health care usage in this sample.

The notion that insurance increases usage is consistent with our theoretical priors as well as a few previous attempts to quantify the effects of the NHIS on access to health care.^{9,10} However, while the empirical associations between NHIS enrolment and health service usage appear strong, the cross-sectional nature of our analysis does not allow us to directly interpret the observed differences as causal effects of the insurance itself. Given that NHIS enrolment is voluntary, women enrolled may differ from those not-enrolled with respect to their health needs or health seeking preferences. Even though we use a large number of control variables to adjust for individual differences, we cannot rule out that some of the

observed differences in behaviour may reflect differences in unobservable characteristics rather than a true causal effect of insurance on health seeking behaviour. Given the consistently positive effects found across studies and the substantial size of the effects for outpatient visits, prescriptions, and hospitalizations, it appears unlikely, however, that such selection effects would entirely account for the associations found here. Still, further research will be needed to more closely identify the true causal impact of the NHIS on health seeking behaviour.

Another limitation of the current study is that the results are not necessarily generalizable outside of the study population. The Accra Metropolitan Area is likely to differ from other regions with respect to the number of potential treatment locations as well as the locally available health resources, so that populations outside of Accra may be differentially affected by NHIS enrolment. On the one hand, one could argue that a larger absolute number of facilities and medical professionals locally available should make it easier for individuals to take advantage of the benefits provided by the NHIS. On the other hand, one could argue that the relatively high incomes of Accra make the local population particularly sensitive to the time cost associated with using accredited facilities, so that the insurance impact may be smaller than in other locations. Similarly, children and men's use of health care may respond differently to insurance than did the adult women studied here.

Beyond the question of causal effect size, the limited reach of the NHIS to date has raised concerns regarding equity and the sustainability of the scheme.²¹ The main equity concern is that wealthier Ghanaians are currently better able and more likely to enrol than poorer Ghanaians, despite premiums that were supposed to vary by income, but in practice are fixed at one level for all in general, and premium exemptions for the “core poor”.²²

Sustainability concerns stem from self-selection of less healthy individuals into the scheme, which tends to raise average costs as long as coverage remains less than universal; and from increasing utilization that must be paid for from the mostly tax-based financing sources, which may grow more slowly than enrolment and consequent use grow.⁹

Our results served to underline both of these concerns—enrolees were older and therefore very likely costlier to insure than average; and enrolment did appear to increase utilization substantially as originally intended. Despite limitations of generalizability of our results, it is relatively clear from this and prior studies that adjustments to the NHIS will be needed over the coming years to reach comprehensive and continued health care coverage for the entire population in the medium to long run.

CONCLUSION

This study analysed cross-sectional data and employed propensity score matching to estimate the effect that NHIS enrolment had on six measures of health care use among a sample of urban, adult Ghanaian women. The overall results suggested that the NHIS's goal of improving access to health care has been achieved at least among adult women living in the Accra Metropolitan Area.

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