

Household dynamics and national health insurance scheme enrollment: Findings from a baseline study in rural Ghana

George Wak¹
Eric Osei²
Livingston Asem³
Prince Kubi Appiah⁴
Isaiah Agorinya⁵
Christopher Tii⁶
Martin Adjuik⁷

¹gwak@uhas.edu.gh

^{1,2,3,4,5,7} Fred N. Binka School of Public Health, University of Health and Allied Sciences, ⁶Ghana Health Service, ^{1,2,3,4,5,6,7} Ghana

<https://doi.org/10.51867/ajernet.7.1.16>

ABSTRACT

The United Nations (UN) Sustainable Development Goal 3 (Target 8) requires that all individuals and communities receive healthcare services without constraints. Several countries have implemented policies aimed at achieving this objective and realizing the universal health coverage (UHC), as espoused by the UN. Over the past few decades, geographical access to healthcare services in Ghana has improved. However, economic access has been a major hindrance to healthcare utilization until the introduction of the National Health Insurance Scheme (NHIS). To subscribe to the NHIS and qualify to access healthcare through the scheme, one must pay a premium and maintain an active subscription through renewed membership. Payment for subscription or retention has been one of the major challenges inhibiting NHIS enrollment, thereby hindering access to healthcare. This study seeks to examine factors that are associated with NHIS enrollment in a rural district of Ghana. This study offers context-specific interventions to enhance NHIS enrollment and improve healthcare access. Data for this study were obtained from a baseline survey for a Health and Demographic Surveillance System (HDSS) in the Afadjato South District in the Volta Region of Ghana. In this baseline survey, all individuals and their households within the Afadjato South District were enumerated. Socio-demographic information was collected on individuals and households. Information on National Health Insurance enrollment was also collected for all individuals. A binary logistic regression method was used to identify factors associated with NHIS enrollment. A total of 11,082 individuals were surveyed in the baseline and therefore included in the analysis, of which 65% had a valid NHIS subscription. The results indicated that higher household socio-economic status (SES) was associated with higher odds of NHIS enrollment. Other variables that showed association with NHIS enrollment included individuals in households where females were household heads, individuals in households with educated household heads. In addition, larger household size, urban residence, and being a female were all found to be associated with higher odds of NHIS enrollment. The study concluded that household characteristics are important predictors of NHIS enrollment. In particular, NHIS registration and renewal are affected by household SES, where poor households are less likely to enroll. Therefore, policies aimed at moving NHIS enrollment towards universal coverage should consider targeting poor and vulnerable households for support, such as premium exemptions or cash transfers to the poor and vulnerable groups in the population. Also, public education on the health benefits of NHIS enrollment should be intensified, targeting rural and uneducated members of the population.

Keywords: Access, Enrollment, Ghana, HDSS, Health Insurance, Healthcare, Household, Premium, Subscription

I. INTRODUCTION

The United Nations Sustainable Development Goal 3 (Target 8), requires that all individuals and communities receive healthcare services without constraints (Adu et al., 2021; Goudge et al., 2012; United Nations: Department of Economic and Social Affairs, 2022). This is in response to the call for universal health coverage (UHC), which requires that all persons who need healthcare should have access without payment difficulties (United Nations: Department of Economic and Social Affairs, 2022). This is particularly important for vulnerable populations who usually have the daunting task of surmounting both geographical and financial barriers to healthcare services (Pablo et al., 2008). This situation is pervasive in rural settings where poverty and limited economic opportunities persist and serve as a major hindrance to healthcare services. Over the past two and a half decades, geographical access to healthcare services in Ghana has improved, following the implementation of the Community-based Health Planning and Services (CHPS) system. Under the CHPS system, healthcare facilities are sited within local communities and manned by Community Health Officers (CHOs) who offer basic health care services to the people within close proximity. This has greatly

reduced challenges associated with geographical access to healthcare services, which has improved maternal and child health indicators (Nguyen et al., 2011).

Apart from geographical access, economic access has been another factor hindering healthcare utilization in most countries. Until the introduction of the NHIS in Ghana, out-of-pocket payment for services and medications was the major means of healthcare financing for individuals and their families. Under this system, individuals needed to pay before receiving the necessary care. Individuals who are unable to pay are denied services, while those who are treated but are unable to pay are detained and only released after payment has been made (Nketiah-Amponsah & Sarkodie, 2014).

In 2003, the NHIS Act (Act 650) was established to replace the “cash and carry” system. This move was aimed at eliminating financial barriers to healthcare services for all Ghanaians and thereby increase access (Basaza et al., 2007; Dixon et al., 2014). In 2012, the NHIS Act (Act 852) replaced the previous act (Act 650), aimed at integrating all hitherto semi-autonomous District-wide Mutual Health Insurance Schemes into a Single Payer System (NHIS, 2013; Sarkodie, 2021). The scheme, as modified, is financed from several sources, which include premium payment by subscribers, 2.5% deductions from workers’ social security contributions, 2.5% levy on Value Added Tax (VAT) of items, among others (Kanmiki et al., 2019).

However, not all individuals are able to pay the required premium to enroll to benefit from the scheme. For instance, the enrollment rate for NHIS in Ghana stood at 34% in 2010, 38% in 2013, 41% in 2015, 35% in 2017 and 54% in 2022 (Nsiah-Boateng et al, 2019; Dake et al., 2011; Kwarteng et al, 2019). However, disparities in enrollment exist among population subgroups, with significantly lower proportions of poor people enrolling into the scheme (Dake et al., 2011; Kwarteng Acheampong & Eyram Avorgbedor, 2017). This tends to defeat the pro-poor objective of the scheme, which is aimed at providing financial buffer for the poor to access healthcare without any hinderance.

The suboptimal NHIS enrollment coverage suggests that there are factors that are responsible for this low coverage. This therefore, requires an examination of the determinants of NHIS enrollment, in order to identify context-specific factors that are associated with low coverage of NHIS enrollment, particularly in rural settings where poverty is pervasive and could deny people access to healthcare services.

Several studies have established factors that account for peoples’ inability to enroll into the NHIS. These studies have relied on cross-sectional data at the individual level and their findings have shown varied results (Kanmiki et al., 2019; Kwarteng et al., 2019). Also, to the best of our search, no study has been conducted in this rural setting, to ascertain factors that are responsible for NHIS enrollment. This study, therefore, seeks to contribute to our understanding of household factors that are associated with NHIS enrollment in this rural district of Ghana. The study utilizes population-based data that cover households in three sub-districts of the Afadjato South District of the Volta Region of Ghana.

Our paper starts with an introduction, which provides a background of the topic under study, as well as the research objectives. This is followed by review of literature, which includes theoretical and empirical literature reviews. The methods section follows next, which includes the study design, data source and the analytical technique used. The results, together with discussion section comes next. The paper ends with a section on conclusion and recommendations. We hypothesize that individuals from poor households have a lower probability of enrolling into the NHIS.

1.1 Research Objectives

The general objective of this study is to investigate factors that are associated with NHIS enrollment in the Afadjato South District in Ghana. The specific objectives of the study are as follows:

- i. Assess the level of NHIS enrollment of the people
- ii. Examine household factors that are associated with NHIS enrollment in the District
- iii. Examine other socio-demographic factors that are associated with NHIS enrollment in the District.
- iv. To make recommendations for the improvement of NHIS enrollment in the District and beyond

II. LITERATURE REVIEW

2.1 Theoretical Review

The study relied on the Health Belief Model (HBM), which suggests that health behaviour is influenced by several factors, including what individuals think about their health and the actions taken to improve health. The model provides us with the understanding of factors that influence individuals’ decisions in implementing appropriate behaviours to avoid or ameliorate the impact of any health challenge (McArthur et al, 2018). The model has six elements which relate to certain perceptions or beliefs on certain illnesses and the action or inaction thereof, aimed at dealing with the particular health challenge. The six elements include perceived vulnerability, perceived severity, perceived benefits, perceived barriers, cue to action and self-efficacy (Orji et al, 2012; Bandura, 1977).

In terms of severity, the individual perception of the severity of any disease is likely to influence such individual to take the necessary action. On the other hand, if the individual does not foresee or perceived any serious health risk associated with a particular disease, the individual will not see the need to take any action such as enrollment into the

NHIS to have unrestrained access to healthcare when the need arises. For instance, in their study, Vazini and Barati (2014) showed that an individual who has a high perception of the severity of any disease burden can be influenced to change behavior to avoid or minimize the severity of the disease.

Any behaviour change towards the understanding of a particular health condition, and the necessary action needed to overcome the condition, is related to knowing and having the belief that there are benefit(s) associated with the particular behaviour change or action (Tarkang & Zotor, 2015; Champion & Skinner, 2008). In that sense, minimizing challenges associated with difficulty in accessing healthcare requires a positive change in relation to enrolling or renewing one's NHIS membership. However, this can only happen when the individual has the perception that such action(s) could present some health benefits in terms of having easy access to healthcare services.

Perceived barriers, which reflect obstacles to behaviour change, makes the individual thinks about the difficulty one is likely to encounter in an attempt to take the necessary action to deal with a particular health problem (Tarkang & Zotor, 2015; Orji et al., 2012). These barriers include cost, distance, mistrust, lack of knowledge, among others. These perceived barriers sometimes tend to be real, and can discourage the individual from enrolling into the NHIS. Any individual who believes that any challenge (financial or otherwise) can be overcome, is more likely to take the necessary action to deal with the particular health challenge by enrolling into the NHIS.

Self-efficacy is the individual belief of their ability to perform a certain action effectively to achieve a certain health benefit. The individual's confidence will enable him/her to undertake behaviour change in various forms such as securing financial support from family members or friends. For instance, studies have shown a positive relationship between self-efficacy and positive behavioral change (Fathi et al, 2017; Vahedian-Shahroodi et al, 2019).

Another relevant factor in the Model is Cues to action. This comes about when the individual is motivated to take a particular action to deal with a health problem. Specific cues from friends, relatives, health personnel or through observation can influence the individual's understanding of the seriousness of one's health condition if healthcare is not sought immediately due to failure or inability to enroll into the NHIS (Kaufman et al, 2020; Menon et al, 2007). Figure 1 shows the diagrammatic presentation of the HBM.

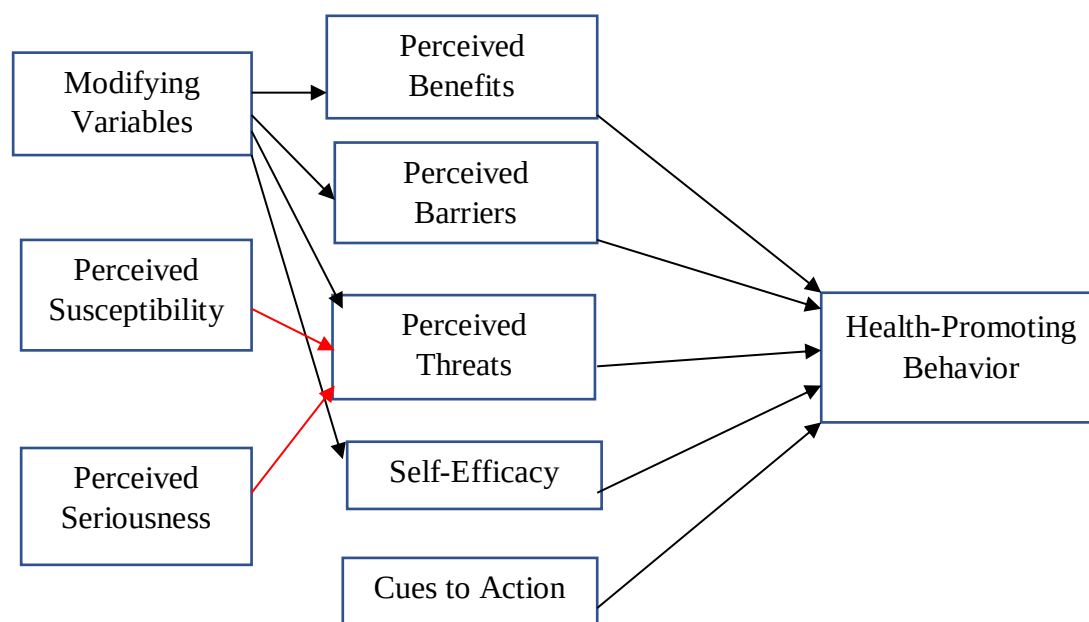


Figure 1
The Health Belief Model

2.2 Empirical Review

To improve economic access to healthcare services in rural settings, where poverty is endemic, there is the need to understand factors militating against such objective. Enrollment into the NHIS has been found to be the surest way of surmounting the difficult task of timely access to healthcare services (Nguyen et al., 2011; NHIS, 2013; Sarkodie, 2021). This study seeks to contribute to our understanding of factors militating against NHIS enrollment in rural setting in Ghana. We seek to review available literature on the subject to provide the context, identify major themes and knowledge gaps, among others.

To begin with, several studies have examined factors associated with NHIS enrollment, with similar findings even though some variations exist (Eze et al., 2015; Dake, 2018; Nsiah-Boateng et al., 2019). Specifically, there is evidence to suggest that household wealth is a major predictor of NHIS enrollment. For instance, studies by Ezech et al (2015) and van der Wielen et al (2018) showed that individuals in wealthy households were more likely to enroll into

the NHIS programme, compared to individuals from poor households. On the contrary, Nsiah-Boateng et al (2019) in their study in Ghana found that NHIS enrollment was higher among poor households.

Another important factor that have been found to impact NHIS enrollment is individual level of education, where higher education has been found to be associated with higher levels of NHIS enrollments (van der Wielen et al., 2018). The reason for this is that education provides individual with knowledge regarding the benefit associated with NHIS enrollment (Antabe et al., 2025). Education also positions the individual for a better paid job from which money is earned for registration and renewal of NHIS.

Place of residence has been recognized to play a significant role in NHIS enrollment. In their study conducted to ascertain whether NHIS is pro-poor in Ghana, Nsiah-Boateng et al. (2019) found that rural dwellers are disadvantaged in terms of NHIS enrollment. This is expected, as most rural dwellers are among the poorest in the population, most of whom are unable to pay for enrollment or renewal of expired membership.

Evidence suggests that household size is a predictor of NHIS enrollment. For instance, in their study in Ghana, Nsiah-Boateng et al. (2019) found that NHIS enrollment increases with increasing household size. Similarly, in her study, Dake (2018) found that individuals in relatively larger households have higher odds of NHIS enrollment. Also, in their systematic review of factors associated with uptake of NHIS in Lower- and Middle-income countries, Adebayo et al. (2015) established that individuals in larger households were willing to pay more for a Community-Based Health Insurance (CBHI) Scheme.

III. METHODOLOGY

3.1 Study Site

The study was conducted in three sub-districts of the Afadzato South District, which is one of the 18 districts and municipalities in the Volta Region of Ghana. The district covers an area of approximately 553.0 square kilometers. According to the 2021 Housing and Population Census, the population of the district as at the end of 2021 was 73,146, with males constituting 49.3 percent. Majority (83.6%) of the people reside in the rural parts of the area. In terms of economy, the population is dominated by farmers who are into crop production mainly for subsistence, with a few others who are into livestock farming. There are two major market centers in the district that promote commercial activities in the area, where women trade in various goods, including food items. Another economic potential of the area is ecotourism, where the famous Afadjato Mountain (the highest in Ghana) is located. In terms of health facilities, there are a number of health centres, clinics and CHPS compounds distributed across the district, which are in close proximity to the people.

3.2 Data Source

The study was designed to do a complete enumeration of all households and their members in the three selected sub-districts to form a baseline census data for the Afadzato South District Health and Demographic Surveillance System (HDSS). Under the system, trained fieldworkers enumerated all compounds in the three sub-districts of the area, namely Leklebi, Liate and Ve. In all, 3,850 compounds were enumerated, out of which 2,450 were visited for interviews. In those compounds, 3,604 household heads were interviewed and individuals in those households were then enumerated. Information collected at the individual level included name, sex, date of birth, educational level, marital status, religious affiliation. Information on National Health Insurance registration status was also collected on all individuals. At the household level, information collected included household characteristics, their assets as well as their rural-urban location. A total of 1400 compounds could not be enumerated because members of those compounds were not met during the course of data collection.

In this study, the aim was to cover all compounds, households and individuals in the study area (complete census). As a result, fieldworkers visited all the 3,850 compounds to collect information on individuals' demographic and socioeconomic status as well as their household characteristics. However, they were able to collect information on 2,450 compounds that contained 3,604 households. Those compounds/households that were enumerated were random across the study area. At the end of the data collection round, 11,082 individuals were registered and included for this analysis. This represented 34% of the expected total population of 32,714 for the entire study area. It is believed that those individuals whose compounds were selected and enumerated were random enough to fairly represent the entire population. Also, being largely rural, most of the communities are homogeneous in several respect, as a result, we believe that the data for the analysis will present no biases in the final results.

3.3 Main Study Variables

The outcome (dependent) variable for this study is NHIS enrollment status. Individuals were asked if they had enrolled with the NHIS. Three responses were elicited. These included those who had registered with valid NHIS membership, those who had ever registered in the past but had not renewed their membership upon expiration, while the third group were those who had never registered at all. These responses were categorized into two, made up of those

who are currently enrolled and those who do not have valid enrollment membership, which include those who have never enrolled and those whose enrollment have expired. The household wealth index was computed using the Principal Component Analysis (PCA) method. The asset list consisted of more than 25 items that ranged from smaller household items (such as radio, fan, phones) to expensive assets (such as motorbikes, vehicles, cows). Each asset (variable) was dichotomized and used for the generation of household quintiles. Eight factors out of 18 were retained, with factor1 being the dominant one, and contained variables such as motorbike, television, fan, radio, fridge, computer, gas stove, sewing machine and type of toilet. Households were then categorized into quintiles of Poorest, Poorer, Middle, Richer and Richest. Other variables included in the analysis were sex of the individual, religious affiliation, sex of household head, household head education, household size, rural/urban location, households with adults (60+ years) and households with children (<5 years).

3.4 Method of Data Analysis

The questionnaire for data collection was designed using KoboCollect app. The data were then exported to STATA version 16.0 for analysis. Bivariate analysis was performed to identify factors that were associated with NHIS enrollment. Variables that were found to be statistically significant at a P-value of less than 0.05 were included into a multivariable logistic regression at 95% confidence interval. Adjusted odd ratios were calculated to determine the net contribution of each variable on NHIS enrollment.

3.5 Ethics Considerations

The Ghana Health Services, through the Afadjato South Health Directorate, who were partners in this study, granted approval for data to be collected in the three sub-districts. The University of Health and Allied Sciences also granted approval for data to be collected, based on an already existing protocol, through the Institutional Review Board of the University. Consent was sought from community leaders and household heads prior to data collection. Specifically, community durbars/meetings were organized to inform the chiefs and community members about the study. At these meetings, approvals were obtained from chiefs and their subjects. In addition, consent was obtained at the household level, where household heads gave consent before interviews commenced. Confidentiality and anonymity were guaranteed as individuals' identity were not disclosed anywhere and at any point in time. Also, there were no known risks or harm associated with the study.

IV. FINDINGS & DISCUSSION

4.1 Characteristics of Study Participants

The study sought to examine factors associated with NHIS enrollment in a rural district in Ghana. We begin by examining the characteristics of the study participants and their households, which comprise both the dependent variable (NHIS enrollment) and the independent variables. In all, 11,082 individuals were registered and included in the analysis. About two-thirds (65%) of them were enrolled into the NHIS at the time of the survey. Among those who were not enrolled (35%), some had their registration expired, while the rest had never been registered. In terms of household socioeconomic status, the proportions are fairly distributed across socio-economic groupings, with 20.6% of the study participants found in the poorest households, while 20.5% resides in the richest households. About 52% of the participants are females, whilst most (62.1%) of the household heads are males. About 58% of individuals did not have children under the age of five years in their households. On the other hand, 56.7% of the participants were without individuals aged 60+ years old in their households. In terms of place of residence, the majority (81.5%) of the study participants resided in the rural part of the study area. Table 1 (column 2, in brackets) provides further detailed information on the distribution of the study participants in terms of both the dependent and independent variables.

4.2 Bivariate Analysis of Individual Characteristics and their NHIS Enrollment Status

Table 1 shows the percentage distribution of various socio-demographic characteristics and their association with NHIS enrollment. The results revealed that all the socio-demographic characteristics (independent variables) are associated with NHIS enrollment (dependent variable). Specifically, higher SES is associated with higher proportions of household members who are enrolled into the NHIS. Females recorded a higher proportion of NHIS enrollment compared to males. The results also showed that urban dwellers had higher proportions of NHIS enrollment than their rural counterparts. Higher proportion of NHIS enrollment was also recorded in female-headed households, where 67.8% of individuals are enrolled, compared with 63.2 % for individuals in male-headed households. Household size is also associated with NHIS enrollment as 68.4% of individuals in households with 10+ members are enrolled compared with 66.2% and 63.5% of households with 5-9 and less than 5 members respectively. Other variables that show statistically significant association with NHIS enrollment are as shown in Table 1.

Table 1*Distribution of Study Participants and Percentage Enrolled with NHIS*

Variable	Number N=11,082 (%)	Total NHIS enrollment=7,201 (65%)	P-Value
NHIS Enrollment			
Yes	7,201 (65.0)		
No	3,881 (35.0)		
Household SES		% enrolled	
Poorest	2,284 (20.6)	53.3	<0.001
Poorer	2,180 (19.6)	60.4	
Middle	2,191 (19.8)	64.9	
Richer	2,160 (19.5)	74.1	
Richest	2,267 (20.5)	72.4	
Sex			
Male	5,358 (48.3)	61.4	<0.001
Female	5,724 (51.7)	68.3	
Household age composition (<5 years)			
Yes	4,673 (42.2)	61.3	<0.001
No	6,409 (57.8)	67.7	
Household age composition (>60 years)			
Yes	3,690 (33.3)	72.2	<0.001
No	7,392 (66.7)	61.4	
Location			
Rural	10,138 (91.5)	64.6	<0.001
Urban	944 (8.5)	68.7	
Religious affiliation			
Catholic	4,769 (43.1)	71.3	<0.001
Other Christians	3,149 (28.4)	63.9	
Islam	2,128 (19.2)	61.0	
Others	1,036 (9.3)	47.5	
Household head education			
No education	1,608 (14.5)	62.0	0.008
Some education	9,474 (85.5)	65.5	
Household head sex			
Male	6,882 (62.1)	63.2	<0.001
Female	4,200 (37.9)	67.8	
Household size			
<5	5,455 (49.3)	63.5	0.002
5-9	5,035 (45.4)	66.2	
10+	592 (5.3)	68.4	

4.3 Multivariable Logistic Regression results of the Odds of NHIS Enrollment

The main focus of this paper is to examine household factors and their association with NHIS enrollment. The results revealed that household SES plays an important role in NHIS enrollment. The results as shown in Table 2, show that, individuals from poorer households were about 37% more likely to enroll compared to individuals from the poorest households [$aOR=1.370$; $P\text{-Value}<0.001$; $CI (1.175-1.597)$]. Similarly, comparing the poorest group to the richest, the results showed that members of richest households were about 2.8 times more likely to enroll into the NHIS compared to individuals from the poorest households [$aOR=2.8$; $P\text{-Value}<0.001$; $CI (2.388-3.300)$]. A consistent pattern is observed for all the household SES groupings, where higher SES is associated with higher odds of NHIS enrollment.

The results also showed that individuals in households with 5 to 9 members were 25% more likely to enroll into NHIS compared to individuals in households with fewer than five members [$aOR=1.247$; $P\text{-Value}<0.001$; $CI (1.110-1.401)$]. Similarly, individuals in households with 10+ members were 36.4% more likely to enroll into the NHIS compared to those in households with fewer than 5 members [$aOR=1.364$; $P\text{-Value}=0.017$; $CI (1.058-1.758)$].

The sex of the household head was found to be an important factor in NHIS enrollment. The results showed that individuals in female-headed households were more likely to be enrolled into the NHIS compared to their counterparts in male-headed households. Specifically, members of female-headed households were 14.4% more likely to enroll into the NHIS compared to individuals in male-headed households [$aOR=1.144$; $P\text{-Value}=0.034$; $CI (1.010-1.295)$]. The educational level of the household head was found to be a factor in NHIS enrollment, as the results revealed that individuals in households where the head of the household had some education were 17.4% more likely to enroll compared to individuals in households where the head has no education [$aOR=1.174$; $P\text{-Value}=0.049$; $CI (1.000-1.378)$].

The results also showed that individuals in households without younger individuals (less than 5 years) have higher enrollment for NHIS compared to individuals in households with children less than 5 years old. For instance, individuals in households without a member less than five years old were about 49% more likely to enroll compared with individuals in households with children under-five years old.

On the other hand, individuals in households without a member aged 60+ years were about 42% less likely to enroll compared to those whose households had someone age 60+ years.

Also, the results showed an urban advantage in respect of NHIS enrollment, as urban residents were about 44% more likely to enroll into the NHIS compared to their rural counterparts [*aOR*=1.441; *P-Value*<0.001; *CI* (1.184-1.753)]. The results also revealed that females had a high probability of NHIS enrollment, where females were about 63% more likely to enrolled into the NHIS compared to their male counterparts.

Finally, religion has been found in this study to have an association with NHIS enrollment. Compared to Catholics, all other religious denominations had lower odds of NHIS enrollment. The details of these results are shown in Table 2.

Table 2
Odds Ratios of Predictors of NHIS Enrolment

Variable	Adjusted Odds Ratio	P-value	95% CI
Household SES			
Poorest	1.000		-
Poorer	1.370		1.175-1.597
Middle	1.765	<0.001	1.512-2.061
Richer	2.519		2.143-2.961
Richest	2.807		2.388-3.300
HH Size			
Less than 5 members	1.000		-
5-9 members	1.247	<0.001	1.110-1.401
10+ members	1.364	0.017	1.058-1.758
HH head sex			
Male	1.000		-
Female	1.144	0.034	1.010-1.295
HH head Education			
No education	1.000		-
Some education	1.174	0.049	1.000-1.378
<5 years in household			
Yes	1.000		-
No	1.491	<0.001	1.322-1.681
60+ years in household			
Yes	1.000		-
No	0.580	<0.001	0.518-0.650
Location			
Rural	1.000		-
Urban	1.441	<0.001	1.184-1.753
Sex			
Male	1.000		-
Female	1.625	<0.001	1.449-1.823
Religion			
Catholics	1.000		-
Other Christians	0.789	<0.001	0.698-0.892
Islam	0.799	0.001	0.696-0.917
Other	0.470	<0.001	0.389-0.567

4.2 Discussion

This study examined household factors that are associated with NHIS enrollment in a predominantly rural community in Ghana. The results showed that household SES was a significant predictor of NHIS enrollment. The odds of NHIS enrollment increase significantly with higher household socioeconomic status. This finding is consistent with previous studies, where results showed that households with higher SES were more likely to enroll in health insurance programmes (Eze et al., 2015; van der Wielen et al, 2018). This suggests that the NHIS may not be effectively reaching the most vulnerable populations, who are often in the poorest households (Basaza et al., 2007). Due to poverty and inability to pay the required fee for registration or renewal, most individuals from poor households are left out, and thus defeating the pro-poor objective of the health insurance scheme. As a result, targeted interventions such as exemptions

of poor households from paying premium are needed to ensure that these vulnerable individuals are registered to have unrestrained access to healthcare services. Exemption can also include providing the poor with direct unconditional financial support to enable them pay the premium (Cashin et al., 2017; Lagard et al., 2007). For instance, in Ghana, some category of people (pregnant women, children, the aged) are exempted for payment of the premium. In Ghana, the Livelihood Empowerment Against Poverty (LEAP) programme was introduced to provide poor households with some financial support for various purposes, including payment for the enrollment into the NHIS (Akazili et al., 2014; Kanmiki et al., 2014). These exemption policies have gone a long way to improve healthcare access in many respects (NHIS, 2013; Sarkodie, 2021). However, expanding the policy to cover more needy households will further reduce economic barriers to healthcare access and increase healthcare utilization. A similar policy in Madagascar saw an increase in healthcare utilization of about two-thirds for all patients and more than half for children under five years (Garchitorena et al., 2017).

The results also showed that individuals in households with 5+ members were more likely to enroll into the NHIS compared to individuals in households with less than 5 members. This finding is consistent with previous studies that have shown that members of larger households are more likely to enroll into health insurance programmes (Dake, 2018; Nsiah-Boateng et al., 2019). This could be due to increased demand for healthcare services and greater need for some protection from health shocks for individuals in larger households (Idris et al., 2023; Wodajo et al., 2017). On the contrary, other research findings show that members of larger households are less likely to enroll into the NHIS (Adjei-Mantey & Horioka, 2022). This could emanate from the Household Resource Dilution Hypothesis (Downey, 2001), which posits that, given a finite household resources, increases in the number of its members lead to decline in household resource per person. For such households, there is little or nothing left for other investments, including payment for NHIS enrollment. These contrasting findings means that any policy aimed at improving NHIS enrollment should consider context-specific factors pertaining to a particular setting, such as those revealed by the findings of this study with respect to the Afadjato South District.

According to the results, individuals in female-headed households have statistically significant higher odds of NHIS enrollment compared to individuals in male-headed households. Previous studies have reported mixed findings regarding this association (Jehu-Appiah et al., 2011; Nsiah-Boateng & Aikins, 2018; Salari et al., 2019). One plausible reason for the higher odds of NHIS enrollment among members of female-headed households is that women may be more likely to prioritize healthcare for themselves and their families and may have better knowledge and awareness of healthcare services and health insurance options. This finding underscores the importance of considering household head sex as a potential factor in health insurance enrollment and healthcare access to household members. As a result, further studies are needed to thoroughly understand why members of male-headed households are less likely to register for the NHIS.

Household head's education level is an important factor for NHIS enrollment, with results showing that higher levels of enrollment are associated with members in households whose heads have some level of education. While several studies have found that individuals' education is significantly associated with health insurance enrollment (Akazili et al., 2014; Ayanian et al., 2000; Cutler & Lleras-Muney, 2012), little or no study has established the association between education of household head and NHIS enrollment of members. The impact of household head education on NHIS enrollment could be explained by the fact that education is associated with better knowledge and awareness of the importance of health insurance. Additionally, education may be associated with higher incomes for the payment of the required premium and renewal for household members. Location of residence was a significant predictor of NHIS enrollment, with individuals living in urban areas having higher odds of enrollment than those living in rural areas. This finding is consistent with previous studies, which have shown that urban dwellers are more likely to enroll with the scheme (Kanmiki et al., 2014; Kwarteng Acheampong & Eyram Avorgbedor, 2017). This may reflect the generally higher socioeconomic status associated with urban dwellers who are able to pay the premium to enroll. Households without a child under 5 years old were more likely to enroll into the NHIS compared to households with a child under five years. Similar findings have emerged from other studies. For instance, a study in Nigeria found that having young children in the household was associated with lower likelihood of health insurance enrollment (Karpman et al., 2015). These findings may suggest that households with children under five years could be facing competing demands on their resources, such as childcare expenses, which may make it difficult for them to afford payment of the premium to enroll into the NHIS. In contrast, some studies have found that having young children in the household was associated with higher likelihood of health insurance coverage (Voorhoeve et al., 2014). These contrasting findings suggest that the relationship between young children and health insurance enrollment could be complex and context-specific, and are influenced by many other factors. Policymakers and healthcare providers should take these factors into account when designing policy interventions to improve health insurance coverage for households with young children.

Urban dwellers are generally enlightened and have a better understanding of the benefits associated NHIS enrollment (Karpman et al., 2015). Policymakers could consider offering subsidies or other financial incentives to encourage NHIS enrollment among individuals in rural areas who may have limited financial resources for registration or renewal. Health promotion efforts should also be intensified to create awareness regarding benefits associated with

NHIS enrollment. This have been found to contribute in bridging the equity gap in health services between rural and urban residents (Quartey et al., 2023).

Sex of the individual was a significant predictor of NHIS enrollment, with females having 62.5% higher odds of NHIS enrollment compared to their male counterparts. This finding is consistent with previous studies, which showed that women are more likely to enroll in health insurance programmes than men (Eze et al., 2015; Voorhoeve et al., 2014). This could be explained by the fact that women find themselves more vulnerable and perceive their health to be relatively poor, hence the need to have some insurance in order to have access to healthcare in times of ill-health (Wiredu et al., 2021). In view of this, there is the need for some sensitization that target men in order to increase awareness regarding benefits associated with NHIS, which will go a long way to push up enrolment levels of NHIS among men.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study sought to examine the factors that are associated with NHIS enrollment in a predominantly rural community in Ghana. From the results, we conclude that household SES, age of household members, household size, religion, sex of the individual, sex and educational level of household head, and place of residence are significant predictors of NHIS enrollment in the Afadzato South District of Ghana. These results have implications for policymakers and health planners in Ghana.

5.2 Recommendations

Based on these findings, the following recommendations are made for policy intervention to increase NIHS enrollment in the study area and beyond:

For the NHIS to achieve its pro-poor objective, the National Health Insurance Authority should consider abolishing premium payment for individuals from poorer households to enable more individuals to enroll into the scheme. Alternatively, there should also be deliberate and periodic cash transfers by government or local authorities to poor and vulnerable households of the population, such as the LEAP programme in Ghana, to enable such households pay premium to enroll into the NHIS. In this light, government, through the local assemblies adopt a community context-specific approach to identify the most vulnerable members of the population to provide some support to enable them enroll and get access to healthcare

Authorities should pay attention to rural households with pro-poor programmes as enrollment levels are low in such areas due to the high levels of poverty. Similar interventions such as exemptions or cash transfers to support poor households in those areas should be implemented in these poor rural settings. Households whose heads have no education should be targeted for appropriate interventions such as educating them on the benefits associated with NHIS enrollment. Also, such households should be provided with financial support for NHIS registration, as those households typically will fall in the lower SES status and will lack the needed money for enrollment. Also, Attention should also be paid to households with young children, with policies that could soar up NHIS enrollment in those households. Even though there are policy exemptions for younger and elderly people, its implementation has not yielded the needed results. However, it is worthy of note that enrollment of children less than five years is usually tied to their parents' enrollment. Therefore, efforts to improve general enrollment levels in the population will go a long way to improve enrollment levels of children under five years.

Above all, an important policy intervention is for the Ghana Health Service, in collaboration with the NHIA and the local assemblies to intensify public health education on the importance of enrolling into the NHIS as a buffer to health risks. Education should target men as well as members of male-headed households, since men who usually feel they are not so much at risk and so fail to register. We believe that implementing these interventions could lead to increases in NHIS enrollment in the Afadzato South District in particular and Ghana at large. While results from this study have identified several factors that inhibit NHIS enrollment, with the accompanying recommendations, further research, particularly qualitative research, is needed to bring out more and detail context-specific factors, such as social, cultural, religious, personal beliefs, as well as health system factors that contribute to people's inability or unwillingness to enroll into the NHIS in the area.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

- Adebayo, E. F., Uthman, O. A., Wiysonge, C. S., Stern, E. A., Lamont, K. T., & Ataguba, J. E. (2015). A systematic review of factors that affect uptake of community-based health insurance in low-income and middle-income countries. *BMC Health Services Research*, 15, 543. <https://doi.org/10.1186/s12913-015-1179-3>
- Adjei-Mantey, K., & Horioka, C. Y. (2023). Determinants of health insurance enrollment and health expenditure in Ghana: An empirical analysis. *Review of Economics of the Household*, 21, 1269–1288. <https://doi.org/10.1007/s11150-022-09621-x>
- Adu, J., Mulay, S., & Owusu, M. F. (2021). Reducing maternal and child mortality in rural Ghana. *Pan African Medical Journal*, 39(1), 45. <https://doi.org/10.11604/pamj.2021.39.263.30593>
- Akazili, J., Welaga, P., Bawah, A., Achana, F. S., Oduro, A., Awoonor-Williams, J. K., Williams, J. E., Aikins, M., & Phillips, J. F. (2014). Is Ghana's pro-poor health insurance scheme really for the poor? Evidence from Northern Ghana. *BMC Health Services Research*, 14(1), 637. <https://doi.org/10.1186/s12913-014-0637-7>
- Antabe, R., Anfaara, F. W., Sano, Y., & Amoak, D. (2025). Ghana's National Health Insurance enrollment: Does the intersection of educational and residential status matter? *PLoS ONE*, 20(2), e0318202. <https://doi.org/10.1371/journal.pone.0318202>
- Ayanian, J. Z., Weissman, J. S., Schneider, E. C., Ginsburg, J. A., & Zaslavsky, A. M. (2000). Unmet health needs of uninsured adults in the United States. *JAMA*, 284(16), 2061–2069. <https://doi.org/10.1001/jama.284.16.2061>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Basaza, R., Criel, B., & Van Der Stuyft, P. (2007). Low enrolment in Ugandan community health insurance schemes: Underlying causes and policy implications. *BMC Health Services Research*, 7, 105. <https://doi.org/10.1186/1472-6963-7-105>
- Cashin, C., Sparkes, S., & Bloom, D. (2017). Earmarking for health: From theory to practice. *Health Financing Working Paper* (Issue 5). <http://bit.ly/3mmdgTq>
- Champion, V. L., & Skinner, C. S. (2008). The Health Belief Model. In *Health behavior and health education: Theory, research, and practice* (pp. 45–65). Hoboken, NJ: John Wiley & Sons.
- Cutler, D. M., & Lleras-Muney, A. (2012). Education and health: Insights from international comparisons. *NBER Working Papers*. <http://ideas.repec.org/p/nbr/nberwo/17738.html>
- Dake, F. A. A. (2018). Examining equity in health insurance coverage: An analysis of Ghana's National Health Insurance Scheme. *International Journal for Equity in Health*, 17(1), 139. <https://doi.org/10.1186/s12939-018-0793-1>
- Dake, F. A. A., Tawiah, E. O., & Badasu, D. M. (2011). Sociodemographic correlates of obesity among Ghanaian women. *Public Health Nutrition*, 14(7), 1285–1291. <https://doi.org/10.1017/S1368980010002879>
- Dixon, J., Tenkorang, E. Y., Luginaah, I. N., Kuuire, V. Z., & Boateng, G. O. (2014). National Health Insurance Scheme enrolment and antenatal care among women in Ghana: Is there any relationship? *Tropical Medicine & International Health*, 19(1), 98–106. <https://doi.org/10.1111/tmi.12223>
- Downey, D. B. (2001). Number of siblings and intellectual development: The resource dilution explanation. *American Psychologist*, 56(6–7), 497–504. <https://doi.org/10.1037/0003-066X.56.6-7.497>
- Eze, C. U., Adeleye, O. A., Onwujekwe, O. E., Uzochukwu, B. S., & Okoronkwo, I. L. (2015). Enhancing universal coverage and health financing in Nigeria: A study of demand-side perspectives. *International Journal for Equity in Health*, 14(1), 1–9. <https://doi.org/10.1186/s12939-015-0261-7>
- Fathi, A., Sharifirad, G., Gharlipour, Z., Hakimelahi, J., & Mohebi, S. (2017). Effects of a nutrition education intervention designed based on the health belief model (HBM) on reducing the consumption of unhealthy snacks in sixth-grade primary school girls. *International Journal of Pediatrics*, 5(2), 4361–4370.
- Garchitorena, A., Miller, A. C., Cordier, L. F., Ramananjato, R., Rabeza, V. R., Murray, M., Cripps, A., Hall, L., Farmer, P., Rich, M., Orlan, A. V., Rabemampionona, A., Rakotozafy, G., Randriantsimaniry, D., Gikic, D., & Bonds, M. H. (2017). In Madagascar, use of health care services increased when fees were removed: Lessons for universal health coverage. *Health Affairs*, 36(8), 1443–1451. <https://doi.org/10.1377/hlthaff.2016.1419>
- Goudge, J., Akazili, J., Ataguba, J., Kuwawenaruwa, A., Borghi, J., Harris, B., & Mills, A. (2012). Social solidarity and willingness to tolerate risk- and income-related cross-subsidies within health insurance: Experiences from Ghana, Tanzania and South Africa. *Health Policy and Planning*, 27(Suppl. 1), i55–i63. <https://doi.org/10.1093/heapol/czs008>
- Idris, I. B., Hamis, A. A., Bukhori, A. B. M., Hoong, D. C. C., Yusop, H., Shaharuddin, M. A. A., Fauzi, N. A. F. A., & Kandayah, T. (2023). Women's autonomy in healthcare decision making: A systematic review. *BMC Women's Health*, 23(1), 2792. <https://doi.org/10.1186/s12905-023-02792-4>

- Jehu-Appiah, C., Aryeetey, G., Spaan, E., de Hoop, T., Agyepong, I., & Baltussen, R. (2011). Equity aspects of the National Health Insurance Scheme in Ghana: Who is enrolling, who is not and why? *Social Science & Medicine*, 72(2), 157–165. <https://doi.org/10.1016/j.socscimed.2010.10.025>
- Kanmiki, E. W., Bawah, A. A., Agorinya, I., Achana, F. S., Awoonor-Williams, J. K., Oduro, A. R., Phillips, J. F., & Akazili, J. (2014). Socio-economic and demographic determinants of under-five mortality in rural northern Ghana. *BMC International Health and Human Rights*, 14(1), 24. <https://doi.org/10.1186/1472-698X-14-24>
- Kanmiki, E. W., Bawah, A. A., Akazili, J., Awoonor-Williams, J. K., Phillips, J. F., & Adongo, P. B. (2019). Cost of implementing Ghana's National Health Insurance Scheme: A case study of the Upper East Region. *Ghana Medical Journal*, 53(1), 40–47.
- Karpman, M., Kenney, G. M., Long, S. K., & Zuckerman, S. (2015). QuickTake: Children's health insurance coverage. Urban Institute. <https://www.urban.org/research/publication/quicktake-childrens-health-insurance-coverage>
- Kaufman, A. R., Twesten, J. E., Suls, J., McCaul, K. D., Ostroff, J. S., Ferrer, R. A., & Brewer, N. T. (2020). Measuring cigarette smoking risk perceptions. *Nicotine & Tobacco Research*, 22(11), 1937–1945. <https://doi.org/10.1093/ntr/ntz213>
- Kwarteng Acheampong, G., & Eyram Avorgbedor, Y. (2017). Determinants of under five mortality in Ghana: A logistic regression analysis using evidence from the Demographic and Health Survey (1988–2014). *American Journal of Public Health Research*, 5(3), 70–78. <https://doi.org/10.12691/ajphr-5-3-4>
- Kwarteng, A., Akazili, J., Welaga, P., Dalinjong, P. A., Asante, K. P., Sarpong, D., Arthur, S., Bangha, M., Goudge, J., & Sankoh, O. (2019). The state of enrollment on the National Health Insurance Scheme in rural Ghana after eight years of implementation. *International Journal for Equity in Health*, 19(1), 1113. <https://doi.org/10.1186/s12939-019-1113-0>
- Lagarde, M., Haines, A., & Palmer, N. (2007). Conditional cash transfers for improving methods. *JAMA*, 298(16), 1900–1910.
- McArthur, L. H., Riggs, A., Uribe, F., & Spaulding, T. J. (2018). Health belief model offers opportunities for designing weight management interventions for college students. *Journal of Nutrition Education and Behavior*, 50(5), 485–493. <https://doi.org/10.1016/j.jneb.2017.09.010>
- Menon, U., Champion, V., Monahan, P. O., Daggy, J., Hui, S., & Skinner, C. S. (2007). Health belief model variables as predictors of progression in stage of mammography adoption. *American Journal of Health Promotion*, 21(4), 255–261.
- Nguyen, H. T., Li, L. P., Pham, V. T., & Nguyen, T. X. (2011). Progress in maternal and child health in remote and underserved areas of Vietnam. *Journal of Global Health*, 1(2), 180–192. <https://doi.org/10.7189/jogh.01.020409>
- NHIS. (2013). National Health Insurance Authority. <https://www.nhis.gov.ng/2022/05/24/national-health-insurance-authority-nhia-news-release/>
- Nketiah-Amponsah, E., & Sarkodie, E. A. (2014). Exploring the determinants of healthcare utilization in Ghana: What role does payment method play? *European Journal of Business and Social Sciences*, 3(10), 53–68.
- Nsiah-Boateng, E., & Aikins, M. (2018). Trends and characteristics of enrolment in the National Health Insurance Scheme in Ghana: A quantitative analysis of longitudinal data. *Global Health Research and Policy*, 3(1), 8. <https://doi.org/10.1186/s41256-018-0087-6>
- Nsiah-Boateng, E., Prah Ruger, J., & Nonvignon, J. (2019). Is enrolment in the National Health Insurance Scheme in Ghana pro-poor? Evidence from the Ghana Living Standards Survey. *BMJ Open*, 9(7), e029419. <https://doi.org/10.1136/bmjopen-2019-029419>
- Orji, R., Vassileva, J., & Mandryk, R. (2012). Towards an effective health interventions design: An extension of the health belief model. *Online Journal of Public Health Informatics*, 4(3), 4321. <https://doi.org/10.5210/ojphi.v4i3.4321>
- Pablo, A., Lao, C. K., & Ryan, J. (2008). Access to health services among vulnerable populations in the Philippines. *Asia Pacific Journal of Public Health*, 20(Suppl. 1), 184–193. <https://doi.org/10.1177/1010539508323722>
- Quartey, T., Peprah, C., & Morgan, A. K. (2023). Determinants of national health insurance enrolment among people at risk of statelessness in the Awutu Senya East Municipality and Gomoe East District of Ghana. *BMC Health Services Research*, 23(1), 8738. <https://doi.org/10.1186/s12913-022-08738-0>
- Salari, P., Akweongo, P., Aikins, M., & Tediosi, F. (2019). Determinants of health insurance enrolment in Ghana: Evidence from three national household surveys. *Health Policy and Planning*, 34(8), 582–594. <https://doi.org/10.1093/heapol/czz079>
- Sarkodie, A. O. (2021). Effect of the National Health Insurance Scheme on healthcare utilization and out-of-pocket payment: Evidence from GLSS 7. *Humanities and Social Sciences Communications*, 8(1), 9847. <https://doi.org/10.1057/s41599-021-00984-7>
- Tarkang, E. E., & Zotor, F. B. (2015). Application of the health belief model (HBM) in HIV prevention: A literature review. *Central African Journal of Public Health*, 1(1), 1–8. <https://doi.org/10.11648/j.cajph.20150101.11>

- United Nations Department of Economic and Social Affairs. (2022). *The Sustainable Development Goals Report 2022*. <https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf>
- Vahedian-Shahroodi, M., Tehrani, H., Robat-Sarpooshi, D., Aval, M. G., Jafari, A., & Alizadeh-Siuki, H. (2019). The impact of health education on nutritional behaviors in female students: An application of health belief model. *International Journal of Health Promotion and Education*, 59(2), 70–82.
- van der Wielen, J., Falkingham, J., & Channon, A. A. (2018). Determinants of national health insurance enrolment in Ghana across the life course: Are the results consistent between surveys? *International Journal for Equity in Health*, 17(6), 49. <https://doi.org/10.1186/s12939-018-0760-x>
- Vazini, H., & Barati, M. (2014). The health belief model and self-care behaviors among type-2 diabetic patients. *Iranian Journal of Diabetes and Obesity*, 6(3), 107–113.
- Voorhoeve, A., Ottersen, T., & Norheim, O. F. (2014). Making fair choices on the path to universal health coverage: A précis. *Health Economics, Policy and Law*, 11(1), 71–77. <https://doi.org/10.1017/S1744133114000541>
- Wiredu, D. N. A., Peprah, C., & Agyemang-Duah, W. (2021). Prevalence of health insurance enrolment and associated factors among persons with disabilities in Ghana. *Cogent Medicine*, 8(1), 1901379. <https://doi.org/10.1080/2331205x.2021.1901379>
- Wodajo, S., Banteyerga, H., Tilahun, H., Melesse, B., & Girmay, M. (2017). Determinants of enrollment and renewal in Ethiopia's community-based health insurance. *International Journal of Health Planning and Management*, 32(3), 333–345.