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Socio-demographic factors Influencing National Health Insurance Registration for Free Maternal Healthcare among Pregnant Women in a Rural District in Ghana

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Abstract: Access to maternal healthcare services is crucial in reducing maternal mortality rates, particularly in rural areas of developing countries like Ghana. The National Health Insurance Scheme (NHIS) in Ghana offers free maternal healthcare services to registered pregnant women, yet uptake remains low in rural districts. Understanding the socio-demographic factors influencing NHIS registration among pregnant women is essential for targeted interventions to improve maternal health outcomes. A cross-sectional study was conducted in Offinso North District of Ghana, involving 397 pregnant women accessing antenatal care

services. A structured questionnaire was administered to collect socio-demographic data and information on NHIS registration status. Data were analyzed using descriptive statistics and logistic regression to determine factors associated with NHIS registration. The prevalence of National Health Insurance Scheme (NHIS) registration among the interviewed pregnant women was exceptionally high, reaching 98%, with approximately 87% maintaining active NHIS membership. The NHIS registration exhibited statistically significant associations with marital status ($\chi 2$=7.20; p=0.01). Moreover, the maintenance of active NHIS membership was significantly associated with various demographic factors, including age ($\chi 2$=5.00; p=0.03), educational level ($\chi 2$=8.77; p=0.00), marital status ($\chi 2$=5.38; p=0.02), and gestational age of pregnancy ($\chi 2$=5.84; p=0.02). Married respondents demonstrated a twofold likelihood of NHIS registration compared to their unmarried counterparts (AOR=2.05, [95%CI (1.53-39.69)], p=0.013). Conversely, respondents aged over 19 years were 0.5 times less likely to maintain active NHIS membership compared to teenage respondents (AOR=0.95, [95%CI (1.00-6.667)], p=0.050). Notably, respondents in their 35th week of pregnancy exhibited twice the likelihood of maintaining active NHIS membership compared to those with pregnancies below 35 weeks (AOR=2.08, [95%CI (1.03-61.80)], p=0.047). Socio-demographic factors such as age, education level, marital status, and gestational age of pregnancy significantly influenced active membership of National Health Insurance for free maternal healthcare among pregnant women in rural Ghana. These findings underscore the importance of targeted interventions to address socio-demographic disparities and enhance NHIS registration among pregnant women, ultimately improving maternal and child health outcomes in rural Ghana.

Keywords: Antenatal Care, Pregnant Women, Health Insurance, late ANC, Maternal Health, Free Healthcare

1. INTRODUCTION

Pregnancy and childbirth complications present significant global public health challenges, leading to high rates of maternal and neonatal mortality. In 2020, approximately 287,000 women died from pregnancy-related causes, with nearly 95% of these deaths occurring in low and lower-middle-income countries, primarily in Sub-Saharan Africa (World Health Organization (WHO), 2024). Countries in Sub-Saharan Africa, including Ghana, face a disproportionate burden, contributing to an estimated 2.6 million neonatal deaths within the first 28 days of life, representing 45% of global under-five deaths (Thi-thuy-dung et al., 2017). The World Health Organization (WHO) emphasizes comprehensive antenatal care (ANC) to address these challenges, including interventions such as anaemia prevention, malaria prophylaxis, immunization against tetanus and tuberculosis, health education on nutrition and sexually transmitted infections (STIs), and early detection and management of chronic diseases and complications (Manyeh et al., 2020). However, out-of-pocket healthcare expenses remain a major barrier to accessing these essential services, underscoring the importance of pre-financed schemes like health insurance (Bonfrer et al., 2016). In response to these challenges, the Ghanaian government introduced the Free Maternal Health Care Policy (FMHCP) under the National Health Insurance Scheme (NHIS) in 2008, aiming to provide pregnant women with free access to maternal health services and reduce maternal and child morbidity and mortality (Dalinjong et al., 2017). Despite the documented benefits of ANC utilization and WHO-recommended timing for ANC booking, ANC utilization rates remain suboptimal globally, with many women initiating ANC late in pregnancy, particularly in developing countries (Gebrekidan & Worku, 2017). Research conducted in sub-Saharan African nations has consistently revealed a prevalent trend wherein a significant proportion of pregnant women initiate antenatal care (ANC) during the later stages of their pregnancies (Gudayu, 2015).

In Ghana, despite the implementation of free maternal health services under the NHIS policy, a significant proportion (40%) of pregnant women initiate ANC in the second and third trimesters, highlighting persistent barriers to timely access to care (Ghana Statistical Service & Ghana Health Service, 2018). However, limited information exists on the factors influencing NHIS registration among pregnant women in Ghana. Therefore, this study assessed the socio-demographic factors influencing

National Health Insurance registration for free maternal healthcare among pregnant women in the Offinso North District of Ghana.

2. MATERIALS AND METHODS

Study Area and Study Type

This study was conducted in the Offinso North District in the Ashanti Region of Ghana. The District has an estimated population of 69,789 (projected from the 2010 population census) with an estimated WIFA (estimated by GHS as 24% of the total projected population) and expected pregnancy (estimated by GHS as 4% of the total projected population) population of 16,749 and 2792 respectively. There are a total of eight (8) health facilities in the district of which only six (6) health facilities provide ANC services except for the only CHPS Compound and the private clinic. An institutional-based cross-sectional descriptive study was conducted to assess socio-demographic factors influencing National Health Insurance Registration for free maternal healthcare among pregnant women making their first ANC visit in both government and private health facilities in the Offinso North District in the Ashanti region of Ghana from October 2021 to January 2022. Before initiating this study within the heterogeneous health facilities, approval was secured from both the Offinso North District Health Directorate and the administrative heads of each health facility. Subsequently, before engaging in the interview process, all participants provided informed consent.

Sample Size and Sampling Techniques

The minimum sample size for this study was determined using the Cochrane equation, with parameters set as follows: n = sample size, z = standard deviation at 95% confidence interval (standard value = 1.96), p = estimated proportion of pregnant women with late uptake of ANC services at 56.1%, and e = desired precision of 5% (0.05), with q = 1 - p. Based on these calculations, the initial sample size required was 378 respondents. To account for potential non-response rates and data errors, the sample size was increased by 5%, resulting in a final sample size of 397 pregnant women initiating their first antenatal booking within their second and third trimesters and consented at the time of the data collection at all six (6) health facilities that provide maternal, child and new-born health services in the district.

All six (6) facilities offering ANC services and reporting into the District Health Information Management System 2 (DHIMS 2) database as of 2019 were purposively included in the study. At each health facility, a simple random sampling technique (balloting method) was employed to select the total allocated sample size for each facility. An equal number (397) of "Yes" and "No" were written on pieces of paper, folded and kept in a bowl. The bowl was then shaken at regular intervals at each health facility. All pregnant women who booked their first ANC services in the second and third trimesters at the time of the study were given equal opportunities to pick one folded sheet after each shuffle. Any pregnant woman who picked "Yes" was interviewed whilst any pregnant woman who picked "No" was excluded from the interview. However, a paper drawn from the bowl was not replaced in other to provide equal opportunities for subjects.

Data Collection Tool and Techniques

An interviewer administered structured questionnaire with both open and closed-ended questions was used to elicit quantitative data from pregnant women making their first ANC visit after the recommended time to make a first ANC booking. The structured questionnaire was sectioned into two parts to elicit information on socio-demographic characteristics and data on National Health Insurance Scheme (NHIS) from pregnant women. The socio-demographic characteristics entailed variables such as age, educational level, marital status, religion, occupation, estimated monthly income, gravidae, parity, and gestational age of pregnant women. The National Health Insurance Scheme (NHIS) variables collected were registration and active membership status. The questions used for the data collection tools were extracted from previous related studies conducted in other countries and modified to suit this present study. The data collection tool was designed in the English language and administered in Twi, English and Hausa by trained research assistants.

Data Processing and Analysis

The data collected were physically assessed to ensure completeness and consistency to improve

data quality. The data were entered twice in Epi Info version 7 to double-check any discrepancies for the necessary correction and accuracy. Finally, the corrected data were then exported as a Microsoft Excel file to Statistical Package for the Social Sciences (SPSS) version 20 for final analysis. Univariate analysis was conducted on socio-demographic data and summarised as proportions and descriptive statistics. Bivariate logistic regression analysis was carried out to delineate factors associated with NHIS registration and NHIS active status. Variables with a p-value of ≤ 0.05 at the bivariate analysis were further adjusted in the multivariate logistic regression model analysis to control possible confounding to determine predictor variables that were independently associated with the outcome variables. Statistical tests at a P-value of ≤ 0.05 were considered statistically significant.

3. RESULTS

Socio-demographics of Respondents

A total of 397 respondents participated in the study, yielding a response rate of 100%. The majority of respondents fell within the age range of 20-29 years, constituting 53.4% of the sample. The mean age of respondents was 27.5 ± 6.7 years. Regarding educational attainment, the largest proportion of respondents (30.5%) had completed Junior High School (JHS), while 12.6% had attained tertiary education. Additionally, 14.1% of respondents reported having no formal education. In terms of marital status, the majority of respondents were married (61.0%), with single respondents comprising almost 38% of the sample. Christianity was the predominant religion among respondents, accounting for 76.3%. Regarding employment status, 67.5% of respondents reported being employed, while 32.5% were unemployed. The mean monthly income, gravidae, parity, and gestational age for pregnant women interviewed were Gh¢458.8 (± 658.4), 2.6 (± 1.6), 1.7 (± 1.4), and 22 (± 6.9) weeks, respectively (Table 1).

Table 1. Respondents' socio-demographic characteristics

Variables	Frequency (n=397)	Percent (%)	
Age Group			
<20years	39	9.8	
20-29years	212	53.4	
30 years and above	146	36.8	
Educational Level			
No Formal Education	56	14.1	
Primary	92	23.2	
JHS/JSS	121	30.5	
SHS/SSS	78	19.6	
Tertiary	50	12.6	
Marital Status			
Single	150	37.8	
Married	242	61.0	
Divorced	5	1.3	
Religion			
Christian	303	76.3	
Muslim	86	21.7	
Pagan	8	2.0	
Occupation			
Employed	268	67.5	
Unemployed	129	32.5	
Descriptive Outputs	**Minimum**	**Maximum**	**M(SD)**

Income (Gh¢)	0	5,000	458.8(658.4)
Gravidae	1	9	2.6(1.6)
Parity	0	8	1.7(1.4)
Gestational age (Weeks)	13	40	22(6.9)

M = Mean, SD = Standard Deviation

NHIS Registration and Membership Status

Nearly all respondents (98%) included in the study had registered with the National Health Insurance Scheme (NHIS); however, only approximately 87% maintained active NHIS membership (Figure 1).

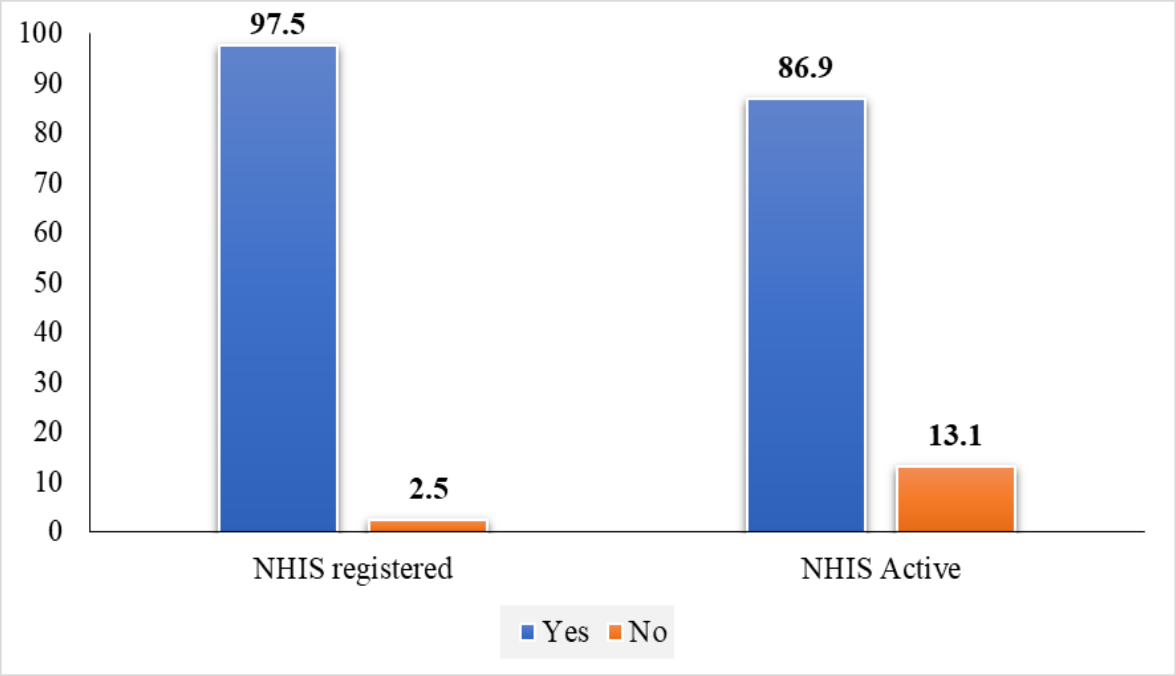

Figure 1: NHIS registration and active status among pregnant women

Socio-demographic Variables Associated with NHIS Ownership and NHIS Active Status Among Pregnant Women

The majority of respondents aged over 19 years (88.2%) were found to have enrolled with the National Health Insurance Scheme (NHIS), with approximately 80% maintaining active NHIS status. Among respondents without any prior children, the NHIS registration rate was 100%, with approximately 86% maintaining active status. Similarly, among unemployed respondents, 95.3% had registered with the NHIS, with about 84.5% maintaining active status. Among respondents affiliated with at least one religion, approximately 96% were registered with the NHIS, with about 84% maintaining active status. Among married respondents, 61% had enrolled in the NHIS, with approximately 90% maintaining active status. Statistical analysis revealed a significant association between marital status and NHIS registration ($\chi 2=7.20$; $p=0.01$). However, NHIS registration did not exhibit statistically significant associations with age, gravidae, parity, occupation, income level, religion, or educational level. Conversely, maintaining active NHIS status was statistically associated with age ($\chi 2=5.00$; $p=0.03$), educational level ($\chi 2=8.77$; $p=0.00$), marital status ($\chi 2=5.38$; $p=0.02$), and gestational age of pregnancy ($\chi 2=5.84$; $p=0.02$), as outlined in Table 2.

Table 2. Socio-demographic variables associated with NHIS ownership and NHIS active status among pregnant women

Variables		NHIS Registered n=397(%)		X^2	(P-value)	NHIS Active n=397(%)		X^2	(P-value)
		Yes	No			Yes	No		
Age	<20yrs	37(9.3)	2(0.5)	0.96	0.33	29(7.3)	10(2.5)	5.00	**0.03***
	20yrs or more	350(88.2)	8(2.0)			316(79.6)	42(10.6)		
Gravidae	First pregnancy	99(24.9)	3(0.8)	0.10	0.76	89(22.4)	13(3.3)	0.02	0.90
	2nd or more pregnancies	288(72.5)	7(1.8)			256(64.5)	39(9.8)		
Parity	No child	65(16.4)	0(0.0)	3.63	0.06	56(14.1)	9(2.3)	0.04	0.85
	One or more child	322(81.1)	10(2.5)			289(72.8)	43(10.8)		
Occupation	Unemployed	123(31.0)	6(1.5)	3.26	0.07	109(27.5)	20(5.0)	0.95	0.33
	Employed	264(66.5)	4(1.0)			236(59.4)	32(8.1)		
Income	Gh500 or less	278(70.0)	6(1.5)	0.63	0.43	245(61.7)	39(9.8)	0.36	0.55
	>Gh500	109(27.5)	4(1.0)			100(25.2)	13(3.3)		
Educational level	Below tertiary	338(85.1)	9(2.3)	0.07	0.80	296(74.6)	51(12.8)	8.77	**0.00***
	Tertiary	49(12.3)	1(0.3)			49(12.3)	1(0.3)		
Marital status	Not married	147(37.0)	8(2.0)	7.20	**0.01***	127(32.0)	28(7.1)	5.38	**0.02***
	Married	240(60.5)	2(0.5)			218(54.9)	24(6.0)		
Gestational age	<35weeks	348(87.7)	10(2.5)	2.10	0.15	307(77.3)	51(12.8)	5.84	**0.02***
	35weeks or more	39(9.8)	0(0.0)			38(9.6)	1(0.3)		
Religious Status	One religion	379(95.5)	10(2.5)	0.41	0.52	339(85.4)	50(12.6)	0.84	0.36
	No religion	8(2.0)	0(0.0)			6(1.5)	2(0.5)		

**statistically significant at p-value <0.05, X^2= Chi-square value, n=number of respondents*

In the multivariate binary logistic regression analysis, respondents who were married exhibited a twofold increased likelihood of enrollment with the National Health Insurance Scheme (NHIS) in comparison to those who were unmarried (AOR=2.05, 95% CI [1.53-39.69], p=0.013). Respondents aged nineteen and above were 0.5 times less likely to maintain active NHIS membership compared to teenagers (AOR=0.95, 95% CI [1.00-6.667], p=0.050). Respondents in their 35th week of pregnancy were twice as likely to sustain active NHIS enrollment compared to those below 35 weeks of gestational age (AOR=2.08, 95% CI [1.03-61.80], p=0.047) (see Table 3).

Table 3. Bivariate and multivariate analysis of Socio-demographic variables influencing NHIS registration and NHIS active status among pregnant women

Variables		n=397(%)		COR (CI 95%)	P-value	AOR (CI 95%)	P-value
		Yes	No				
NHIS Registered							
Marital Status	Not married	147(37.0)	8(2.0)	1		1	
	Married	240(60.5)	2(0.5)	1.88(1.37-31.17)	**0.019***	2.05(1.53-39.69)	**0.013****
NHIS Active							
Age	<20yrs	29(7.3)	10(2.5)	1		1	
	20yrs or more	316(79.6)	42(10.6)	0.95(1.18-5.70)	**0.018***	0.95(1.00-6.667)	**0.050****
Education Level	below tertiary	296(74.6)	51(12.8)	1		1	
	tertiary	49(12.3)	1(0.3)	2.13(1.14-62.51)	**0.037***	1.93(0.91-52.60)	0.062
Marital Status	Not married	127(32.0)	28(7.1)	1		1	
	Married	218(54.9)	24(6.0)	0.69(1.11-3.60)	**0.021***	0.48(0.84-3.087)	0.150
Gestational Age	<35weeks	307(77.3)	51(12.8)	1		1	
	35weeks or more	38(9.6)	1(0.3)	1.84(0.85-47.00)	**0.020***	2.08(1.03-61.80)	**0.047****

**statistically significant in bivariate analysis, **statistically significant in the multivariate analysis, COR=Crude Odds Ratio, AOR= Adjusted Odds Ratio, n=number of respondents, CI=Confidence Interval*

4. DISCUSSION

The present study investigated the socio-demographic determinants affecting enrollment in the National Health Insurance Scheme (NHIS) for free maternal healthcare among pregnant women who initiated antenatal care (ANC) late. The efficacy of free maternal healthcare, recognized as a pivotal strategy in enhancing maternal health service accessibility, has been extensively documented in numerous studies (Bonfrer et al., 2016; Ali et al., 2018). Notably, nearly all pregnant women surveyed in this study were enrolled in the NHIS, a proportion higher than that reported in similar Ghanaian studies (Abdulai et al., 2019; Ameyaw et al., 2021). The high initial NHIS registration rate (98%) among respondents underscores widespread awareness and acceptance of the NHIS for accessing maternal healthcare (Twum et al., 2018). However, the lower rate of active NHIS membership (approximately 87%) suggests challenges in maintaining continuous coverage. Addressing barriers to sustaining active membership is crucial to ensure consistent access to maternal healthcare services.

Consistent with prior research in Ghana by Bonfrer et al., (2016; Twum et al., (2018) and Salari et al., (2019), our findings indicate that married respondents were more inclined to register with the NHIS compared to their unmarried counterparts. This tendency may stem from the financial support or encouragement married women receive from their spouses, facilitating their utilization of the free healthcare policy. Policies should consider targeted outreach and support for unmarried women to enhance their NHIS enrollment and retention rates. Conversely, respondents beyond their teenage years exhibited a reduced likelihood of maintaining active NHIS membership compared to teenagers, potentially due to limited financial resources. Consequently, maintaining NHIS coverage emerged as a way for teenagers to manage healthcare expenses previously covered under the scheme. The study's findings underscore the

significant links between age, educational attainment, and the ability to maintain active NHIS enrollment, highlighting socioeconomic factors that influence access to healthcare. Tailored approaches like financial literacy initiatives and focused educational campaigns have the potential to enhance awareness and utilization of NHIS benefits across diverse demographic segments. Pregnant women typically undertake comprehensive preparations, both financially and materially, as their due dates approach. In line with this, those in their 35th week of pregnancy were more inclined to maintain active NHIS membership, aiming to secure adequate financial resources for the imminent childbirth expenses covered by the NHIS.

In line with the objective of the National Health Insurance Scheme (NHIS) to augment the utilization of healthcare services among pregnant women by offering free maternal healthcare, this investigation unveiled supplementary expenses unaccounted for by the NHIS, such as charges associated with maternal health cards and specific laboratory tests, which contributed to delays in the initiation of Antenatal Care (ANC). This observation aligns with findings from previous studies conducted by Pell et al., (2013); Dalinjong et al., (2017); Kotoh & Boah, (2019) and Warri & George, (2020), underscoring the pervasive impact of financial impediments on ANC commencement despite NHIS enrolment. This institutional-based cross-sectional study did not include pregnant women from communities who had not initiated ANC, potentially limiting generalizability to the broader population. Future research should consider broader sampling to better understand perceptions and challenges among all pregnant women in the study area regarding NHIS enrollment and healthcare access.

5. CONCLUSION AND RECOMMENDATIONS

In conclusion, this study highlights the complex dynamics influencing National Health Insurance Scheme (NHIS) enrollment and retention among pregnant women initiating antenatal care late. While NHIS registration rates were high, maintaining active membership posed challenges, particularly among older respondents. Financial constraints emerged as a significant barrier, affecting healthcare access despite policy provisions. Targeted interventions, including financial literacy programs and tailored educational campaigns, are essential to enhance NHIS utilization and address disparities in healthcare access among diverse socio-demographic groups. Future research should expand sampling to encompass broader community perspectives for a comprehensive understanding of NHIS effectiveness in maternal healthcare provision. Based on the results of the study the following recommendations are made:

a. Financial Assistance for Teenage Pregnant Women: The Ministry of Gender, Children and Social Protection should develop targeted financial assistance programs or subsidies specifically for teenage pregnant women to alleviate the financial burden associated with maintaining NHIS membership and accessing maternal healthcare services.

b. Educational Campaigns on NHIS Benefits: The Ministry of Health should launch educational campaigns targeting pregnant women in their teenage years and older, highlighting the benefits of maintaining active NHIS membership throughout pregnancy and emphasizing the coverage provided for maternal healthcare services.

c. Streamlining Administrative Processes: The National Health Insurance Authority (NHIA) should simplify administrative processes within the NHIS to reduce bureaucratic hurdles and ensure seamless enrollment and continuity of coverage for pregnant women, especially those in their teenage years and beyond.

d. Addressing Additional Charges: The Parliamentary Health Committees should advocate for policy changes or interventions to eliminate or reduce additional charges not covered by the NHIS, such as maternal health cards and certain laboratory investigations, to minimize delays in ANC initiation among NHIS members.

e. Enhanced Monitoring and Evaluation: The Ghana Health Service (GHS) should implement robust monitoring and evaluation mechanisms to track the

effectiveness of NHIS enrollment and continuity initiatives among pregnant women, particularly those in different demographic groups, to inform future policy decisions and interventions.

f. Collaboration with Community Stakeholders: The Local Health Facilities should foster partnerships with community leaders, healthcare providers, and other stakeholders to strengthen support networks for pregnant women, providing them with the necessary resources and assistance to navigate NHIS enrollment and maternal healthcare access effectively.

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