Prevalence of health insurance enrolment and associated factors among persons with disabilities in Ghana

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Abstract: Research into healthcare-financing mechanisms remains an important public health issue and has therefore, received considerable attention in both international and local contexts. However, studies on healthcare-financing mechanisms among vulnerable population including persons with disabilities (PWDs) are under-researched in low- and middle-income countries. Based on this knowledge deficit, this study examined the prevalence of national health insurance scheme (NHIS) enrolment and associated factors among PWDs in Ghana. A cross-sectional survey with quantitative approach-accessed data from 180 PWDs from the Asokwa Municipality using simple random and cluster sampling techniques. Multivariate logistic regressions were used to estimate the demographic, socio-demographic and health-related factors associated with NHIS enrolment among PWDs in Ghana. The study revealed that the majority (80%) of the respondents had enrolled in the NHIS before with 65.3% being classified as active enrollees. The study revealed that 38.9% of the participants paid premium 21–25 cedis. The study found that males (AOR: 0.033, CI: 0.002–0.576, p = 0.019) and those who earned more than 500 cedis a month (AOR: 0.54, CI: 0.005–0.596, p = 0.017) were significantly less likely to enroll in NHIS. Furthermore, the study revealed that participants with primary education (AOR: 1.006, CI: 0.250–1.465, p = .021) and those with

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PUBLIC INTEREST STATEMENT
Evidence suggests that enrollment in a health protection scheme is critical in improving the health status and the general wellbeing of PWDs. In Ghana, PWDs face economic hardships making it difficult for them to afford the cost of healthcare services. Research has shown that one of the surest ways PWDs can get rid of financial barriers to healthcare utilisation is to enroll in NHIS. However, not much research has been conducted on prevalence of NHIS enrollment and associated factors among PWDs in Ghana. The study found that 38.9% of the participants paid premium between 21–25 cedis. Whereas males and those who earned more than 500 cedis in a month were less likely to enroll in NHIS, participants with poor perceived health status and those with primary level of education were more likely to enroll in NHIS. The policy implications of the study have been discussed.
perceived poor health status (AOR: 4.140, CI: 0.275–62.406, p = 0.005) were significantly more likely to enroll in NHIS. In view of the study results, policy recommendations necessary for improving NHIS enrolment among PWDs have been offered.

**Subjects:** Health & Society; Disability; Public Health Policy and Practice

**Keywords:** National Health Insurance Scheme; Persons with Disabilities; Cross-Sectional Survey; Ghana

2. **Introduction**

Disability remains a global public health concern and is likely to affect everybody (World Health Organisation (WHO), 2015). Per Article 1 of the Convention on the Rights of Persons with Disabilities (PWDs), PWDs are those with long-term physical, mental, intellectual, or sensory impairments, which negatively affect their full and effective participation in society on an equal basis with others (WHO, 2015). Globally, PWDs constitute three in twenty of the world’s population (WHO and World Bank (WB), ; WHO, 2015). In developing countries, PWDs are estimated to constitute between 10% and 15% of the population (WHO and WB, 2011; Badu et al., 2016). In Africa, approximately 81.2 million people live with some form of disabilities (WHO, 2015). According to the Ghana Statistical Service (GSS, Ghana Statistical Service), 3% of the Ghanaian population is suffering from some form of disabilities. In Kumasi Metropolis, 2.4% of the population has a disability, including sight, hearing, speech, physical, intellectual, and emotion (GSS, 2014). PWDs are still one of the most marginalised and socially excluded groups in many countries including Ghana. Thus, most of them suffer from poverty and economic hardship (WHO and WB, 2011), making disability is a major development challenge in low—and middle-income countries (LMICs).

Evidence suggests that PWDs have less likelihood to work and hence have high likelihood to be below the poverty level of one dollar a day and to use a public insurance. This is because most PWDs in Ghana have low educational attainment and are without employment opportunities (Slikker, 2009; Sultan & Schrofer, 2008; WHO, 2015). This stems from inadequate skills and the discriminatory nature of the Ghanaian labour market against PWDs. It is further stated that average health costs for PWDs are between 3 and 7 times higher compared with the general population (Kennedy et al., 2017). At the same time, PWDs have a poorer health status (WHO, 2015) and are likely to incur higher healthcare expenditure. Thus, enrolling in the National Health Insurance Scheme (NHIS) could help to reduce their higher healthcare expenditure (Lattof, 2018). The NHIS was introduced in 2003 through an Act of Parliament (Act 650, Amended Act 852) and implemented in 2004 (Agyemang-Duah et al., 2019). The NHIS is a form of national health insurance introduced by the Government of Ghana with the goal of providing equitable access and financial coverage for basic health services to Ghanaian citizens (Adei et al., 2019). In essence, NHIS also seeks to improve healthcare utilisation by removing financial barriers. Every Ghanaian including PWDs who is able to afford the flat premium of NHIS enrollment qualifies to be enrolled in the NHIS. As a result of the difficulty in accessing household income levels in Ghana, a flat premium is charged. The exempt group of the NHIS which includes Social Security and National Insurance Trust (SSNIT) pensioners, people over 70 years, pregnant women, children under 18 and paupers (NHIS, 2018a). Even though the SSNIT beneficiaries are excluded from paying the premium, they are required to pay a registration fees for NHIS card to access healthcare services under NHIS (Kwarteng et al., 2020).

The NHIS covers about 95% of the most common diseases such as malaria, diarrhoea, respiratory tract infections, skin diseases, hypertension, diabetes, asthma, breast and cervical cancers which are reported at the healthcare facilities in Ghana (Agyemang-Duah et al., 2019). The services enjoyed by those who are enrolled in the NHIS include general out-patient and in-patient care, reproductive and maternal care (normal and caesarean delivery), eye, dental and emergency care. Also, a list of essential
drugs pre-qualified by the National Health Insurance Authority is covered. Treatments such as dialysis for chronic renal failure, treatments for cancer (except cervical and breast cancers), organ transplants and cosmetic surgery which are considered expensive are not covered under the NHIS. Further, treatment for Human Immuno-Deficiency Virus/Acquired Immuno Deficiency Syndrome, immunization and family planning services are excluded under the scheme but provided for under other government vertical programmes (Kwarteng et al., 2020). The funding sources include a 2.5% value added tax levied on selected goods and services consumed in Ghana, 2.5% of employees' SSNIT pension fund deductible at source, annual premium and registration fees, returns on investments and support from international donors (Kwarteng et al., 2020). The national enrollment rates of NHIS in Ghana between 2010 and 2017 are as follows. In 2010, 2015 and 2017, enrolment rates of NHIS were 33% (8.2 million), 41% (11.3 million) and 35% (10.3 million), respectively, among the general population (Nsiah-Boateng & Aikins, 2018). Evidence suggests that approximately 64% of PWDs use National Health Insurance subscription as their main source of payment for healthcare (Badu et al., 2015). However, there are scant data on the various socio-demographic and perceived health factors that influence enrolment in the NHIS among PWDs in low- and middle-income countries, particularly in Ghana. The current study examines the predictors of enrollment in NHIS among PWDs in the Asokwa Municipality of Ghana. Findings of this study are critical in informing appropriate recommendations about enrollment in a health protection scheme among PWDs.

3. Methods

3.1. Setting and research design

This study was conducted in the Asokwa Municipality of Ghana. The Asokwa Municipality shares boundaries with Oforkrom to the North, Subin to the northeast, Nhyiaeso to the southwest and Bosomtwe to the south. The municipality covers an estimated land area of 23.04 km square (Asokwa Municipal Assembly, 2020).

A cross-sectional design with quantitative approach was used to examine factors associated with NHIS enrollment among PWDs in Ghana. The use of cross-sectional design with quantitative approach helped to establish an association between demographic, socio-economic and health status variables in relation to enrollment in NHIS. Evidence suggests that cross-sectional survey helps to establish an association between exposure (demographic, socio-economic and health status) and outcome (enrollment in health insurance) variables.

3.2. Study variables

The study variables were dependent and independent. The dependent variable was enrollment in the NHIS. The respondents were asked; have you enrolled in the NHIS scheme? The response was “Yes” or “No”. This was measured as a dichotomous variable. The independent variables were demographic, socio-economic and health-related variables. The demographic and socio-economic variables with their respective measurements were gender (1 = Male, 2 = Female), age (years) (1 = 20 or below, 2 = 21–30, 3 = 31–40, 4 = Above 40), ethnicity (1 = Akan, 2 = Non-Akan), religion (1 = Christian, 2 = Non-Christian), marital status (1 = Married, 2 = Single), education (1 = No formal education, 2 = Basic school education, 3 = High school education, 4 = College/tertiary), employment status (1 = Not employed, 2 = Employed), monthly income (GHS) (1 = below 500, 2 = Above 500 cedis), past illness (3 months) (1 = Yes, 2 = No) and perceived health status (1 = good, 2 = poor).

3.3. Sampling techniques and procedure

Two probability-sampling techniques were used to recruit the study participants. These included simple random and cluster sampling techniques. In applying the cluster sampling techniques, the study area was clustered into four geographical zones: north, east, west and south to ensure representativeness in the study. Then, the simple random sampling technique was adopted as the means of selecting a participant from each clustered zone. Several studies have confirmed the potential of simple random sampling technique in offering equal chances of participants to be
included in a study (Cohen et al., 2013; Denscombe, 2010; Elfil & Negida, 2017; Saunders & Lewis, 2009). The list of the study participants was available and so, employing a simple random sampling technique in this work was scientifically robust coupled with the fact that simple random sampling is mostly used in a medical research (Elfil & Negida, 2017). The use of the simple random sampling technique in recruiting the participants followed several procedures. In the first place, the list of PWDs was taken from the Department of Social Welfare and Community Department, Asokwa Municipal Assembly. According to the Department of Social Welfare and Community Development of the Asokwa Municipal Assembly, 320 PWDs in the Asokwa Municipality have registered with the department. Second, a statistical formula by Miller and Brewer (2003) was used to estimate the required sample size. Based on the calculation, approximated sample size of 180 respondents was obtained for the analysis. Third, the sample size was distributed equally across the four geographical zones demarcated for the study (see Table 1).

Table 1. Geographical location with the respective samples

| Geographical location | Sample allocation |
|-----------------------|-------------------|
| North                 | 45                |
| South                 | 45                |
| East                  | 45                |
| West                  | 45                |

Fourth, a blind folded person was made to choose the required sample size allotted for each study zone without replacement until the assigned sample for the zone was obtained. Lastly, the list of the chosen sampled was sent to the various geographical zones for the data collection exercise to begin. The selection process was thoroughly explained to the respondents before participating in the study.

4. Inclusion and exclusion criteria

All PWDs who consented to participate were included in the study. The study only included PWDs who were registered with the Department of Social Welfare and Community Development of the Asokwa Municipal Assembly. Those with disabilities such as vision impairments and physical disabilities were included in the study. Those who were sick as of the time of the survey were excluded from the study. Lastly, those with disability conditions such as deaf, and intellectual disability were excluded from the study.

4.1. Data collection procedure

A structured questionnaire was used to collect data from the respondents. Due to the quantitative nature of the study, the data collection instrument was purely structured in closed ended questions form. The questions were in English but were converted back to Twi (a local language of the participants) for easy understanding by the participants. Three officers from the Department of Social Welfare and Community Development of the Asokwa Municipal Assembly were recruited and trained to help in the data collection process. Also, they were given adequate training for two days to familiarise themselves with the data collection instruments to ensure quality control. However, the first author monitored the data collection process. The administration of each questionnaire lasted appropriately 30 min on the average.

4.2. Ethical consideration

Ethical approval to conduct the study was granted by the Asokwa Municipal Health Directorate, Kumasi (Reference number: AMHD/MP/RES/13). The purpose of the study was explained to the respondents for their written and verbal consent before data collection started. The respondents were informed that the study was to estimate the prevalence of NHIS enrollment and associated factors among PWDs and that the results are needed to inform appropriate recommendations about their healthcare-financing mechanisms. Respondents were further assured of strict
confidentiality in relation to the data they provided. Participation in the study was strictly voluntary and as such, respondents were free to opt out of the survey anytime they deemed it fit.

4.3. **Data management and analysis**

Data were validated, critically checked for any inconsistencies and cross-reference was made to the original questionnaires for potential modifications and corrections. Data were keyed into a software called SPSS version 20. Both descriptive and inferences statistics were used to analyse the data. Sample characteristics of the participants and enrolment rate in NHIS were analysed descriptively using percentages and frequencies. Inferential statistics such as multivariate logistic regressions were used to determine factors associated with enrolment in NHIS among the participants. The omnibus chi-square tests of model coefficients, Hosmer and Lemeshow Test and proportion of correction classification were used to measure the model fitness. The robustness of models was measured and the outcomes are as follows. The outcome (P > 0.05) of the Hosmer and Lemeshow test of homogeneity shows that the model is a good fit to the data. The Omnibus Tests of Model Coefficients explains a significant difference between the based model (without explanatory variables) and the current model with explanatory variables (P < 0.05) with 83% proportion of correct classification. The test was considered significant at a probability value of 0.05 or less. Data were organised and presented in the form of tables.

5. Results

5.1. **Sample characteristics of the participants**

Table 1 describes the sample characteristics of the participants. Approximately 52% of the respondents were females. The age distribution of the study revealed that 32.3% of the respondents were within the age ranges of 21–30 years. Participants from the Akan ethnic group were the most predominant among the respondents representing a total of 68.3%. This finding is consistent with the idea that the study area is typically the home of the Akan ethnic group and thus there is a higher likelihood they will dominate among the sampled respondents. The religious affiliation of the participants showed that those who professed the Christian faith dominated (77.8%) while 22.2% were non-Christian. The study revealed that most of the study participants (57.8%) were single whereas 42.2% were married.

Those who did not engage in economic activities were 51.1% while 48.9% of the participants engaged in economic activities. While the non-active population (under 15 years and those over 65 years) is somehow significant within the sampled respondents, evidence abounds in Ghana on the low employment opportunities for PWDs. Slightly above 51% of the participants earned less than 500 cedis in a month (see Table 2).

5.2. **Enrolment rate in NHIS among the participants**

Table 3 indicates the prevalence and patterns of NHIS enrolment among the participants. Results indicated that 80% of the respondents have enrolled in the NHIS. We further revealed that 38.9% of the participants sourced information on health insurance from National Health Insurance Authority. With the payment of the NHIS premium, the majority (70.1%) of the participants indicated that they paid it by themselves when they last renewed their health insurance status. Approximately 39% of the participants indicated that they paid 21–25 Ghana cedis when they enrolled in the NHIS.

5.3. **Predictors of enrolment in NHIS among PWDs**

Table 4 demonstrates multivariate logistic regression analysis on factors influencing NHIS enrolment among PWDs. Results indicated that males were 0.033 times less likely to enroll in NHIS compared with their counterparts (AOR: 0.033, CI: 0.002–0.576, p = 0.019). We found that participants with primary level of education 1.006 times more likely to enroll in NHIS compared with those with no level of education (AOR: 1.006, CI: 0.250–1.465, p = 0.021). The study has established
that those who earned above GHS 500 in a month were 0.054 times less likely to enroll in NHIS than those who earned below GHS500 (AOR:0.054, CI: 0.005–0.596, p = 0.017).

Ref = Reference Group = 1.00, AOR = Adjusted Odd Ratio, CI = Confidence Interval, * p < 0.05.

6. Discussion
This study examined the role of demographic, socio-economic and health-related factors in NHIS enrolment among PWDs in Ghana. This study revealed that 80% of the participants were enrolled in NHIS. The rate of health insurance enrolment reported in this study is higher than the 76% reported rate among urban poor in the Ga East Municipality of Ghana (Boamah, 2018). These differences in enrolment rates could be attributed to disparities in health status and healthcare needs. For instance, compared with the urban poor, PWDs may have higher healthcare needs and poor health status. As a result, they (PWDs) may have higher enrollment rate of NHIS compared with the urban poor. In this study, we found that 38.9% of the respondents sourced information on NHIS from the NHIA. This finding suggests that PWDs have trust and confidence in the NHIA in terms of sourcing information on NHIS. This result further implies that the NHIS has been active in engaging the public, especially PWDs on NHIS enrollment. This validates the finding by Wang et al. (2017) that NHIA actively provides

| Table 2. Demographic and socio-economic characteristics of the respondents |
|-----------------------------|-----------------------------|-----------------------------|
| Variables                  | Response | Count (180) | Percentage (%) |
| Gender                     | Male     | 87           | 48.3           |
|                            | Female   | 93           | 51.7           |
| Age                        | Below 20 | 42           | 23.3           |
|                            | 21–30    | 58           | 32.2           |
|                            | 31–40    | 50           | 27.8           |
|                            | Above 40 | 30           | 16.7           |
| Ethnic Group               | Akan     | 123          | 68.3           |
|                            | Non-Akan | 57           | 31.7           |
| Religion                   | Christian| 140          | 77.8           |
|                            | non-Christian | 40       | 22.2           |
| Marital Status             | Single   | 104          | 57.8           |
|                            | Married  | 76           | 42.2           |
| Education                  | No formal education | 40     | 22.2           |
|                            | Basic School education | 72     | 40.0           |
|                            | High School Education | 50     | 27.7           |
|                            | College/Tertiary | 18     | 10.0           |
| Employment status          | Not Employed | 92     | 51.1           |
|                            | Employed | 88           | 48.9           |
| Monthly income             | Less than 500 cedis | 45     | 51.1           |
|                            | 500 or more | 43     | 48.9           |
| Do you receive remittance from family members | Yes | 62 | 34.4 |
|                             | No | 118 | 65.6 |
| Have you been diagnosed of any chronic NCDs | Yes | 61 | 33.9 |
|                             | No | 119 | 66.1 |
| How would you rate your health status | Good | 135 | 75.0 |
|                             | Poor health | 45 | 25.0 |
| Variable(s)                                                                 | Response     | Count (180) | Percentage (%) |
|-----------------------------------------------------------------------------|--------------|-------------|----------------|
| Have you ever enrolled in the National Health Insurance Scheme?             | Yes          | 144         | 80.0           |
|                                                                             | No           | 36          | 20.0           |
| Where do you normally seek information on health insurance?                | Health workers| 13          | 9.0            |
|                                                                             | Family       | 16          | 11.1           |
|                                                                             | Friends      | 12          | 8.3            |
|                                                                             | Media        | 31          | 21.5           |
|                                                                             | Drug stores  | 6           | 4.2            |
|                                                                             | Literature   | 10          | 6.9            |
|                                                                             | NHIA         | 56          | 38.9           |
| Was a fee/premium paid for when last renewed?                               | Yes          | 101         | 70.1           |
|                                                                             | No           | 43          | 29.9           |
| How much did you pay when you enrolled in NHIS?                             | Less than 5 cedis | 6     | 4.2            |
|                                                                             | 5–10 cedis   | 47          | 32.6           |
|                                                                             | 11–15 cedis  | 22          | 15.3           |
|                                                                             | 16–20 cedis  | 13          | 9.0            |
|                                                                             | 21–25 cedis  | 56          | 38.9           |

information and solicits feedback on the services it provides to the Ghanaian populace through periodic surveys or tele-communication applications.

The study revealed that gender, educational attainment, income and perceived health status were associated with health insurance enrolment among PWDs in Ghana. Specifically, this study has established that male participants were less likely to enroll in NHIS compared with their female counterparts. The high tendency of females enrolling in the health insurance scheme could be explained by the high healthcare use coupled with poor health status by females relative to males. Evidence suggests that females perceived their health status to be poor and for that matter are likely to utilise healthcare facilities. In order to reduce their healthcare expenditure, therefore, females tend to have higher enrollment in the NHIS compared with their male counterparts. The finding largely concurs with previous studies on NHIS enrolment. For instance, in a national household survey on the determinants of health insurance enrolment in Ghana, Salari et al. (2019) found that women were more likely to enroll in the scheme than males. In their study conducted on the impact of mutual health organisations in West Africa, Chankova et al. (2008) found that women are significantly more likely to enroll in NHIS due to their higher demand for health services in dealing with consequences of ill health than their male counterparts.

The study again revealed that education predicts enrolment in NHIS among the participants. The results showed that participants with primary education were more likely to enroll in NHIS compared with those with tertiary level of education. This finding is consistent with a previous study that has indicated that people with tertiary level of education are less likely to enroll in the NHIS (Akazili, 2010). Those with higher education are less willing to join the health insurance scheme since higher education may imply better employment and higher income and the less inclination towards any risk-sharing schemes like the NHIS.

This study has established a significant association between income and enrolment in NHIS among the participants. Participants who earn above 500 cedis are less likely to enroll in NHIS compared with those who earn below 500 cedis. Akazili (2010) found that high-income earners are
less likely to enroll due to the ability to afford complementary insurance and out of pocket payments. In Ghana, previous studies (Ayanore et al., 2019; Kotoh et al., 2018; Owusu-Sekyere & Chiraaah, 2014) have discovered that income is a predictor of enrolment in the health insurance scheme and the decision to renew membership. Further, the reason for low likelihood of NHIS enrollment among participants with higher income could be that those people believe that they can afford the cost of healthcare services.

| Table 4. Multivariate logistic analysis on determinants of enrolment in the National Health Insurance Scheme |
|------------------------------------------------------------------------------------------------|
| **AOR** | **95% C.I. for EXP(B)** | **Lower** | **Upper** | **p-Value** |
| **Gender** | | | | |
| Female (ref) | 1.00 | | | |
| Male | .033 | .002 | .576 | .019 |
| **Ethnicity** | | | | |
| Non-Akan (ref) | 1.00 | | | |
| Akan | 2.370 | .158 | 35.650 | .533 |
| **Religion** | | | | |
| Christian (ref) | 1.00 | | | |
| Non-Christian | .233 | .026 | 2.105 | .195 |
| **Education** | | | | |
| None (ref) | 1.00 | | | |
| Primary | 1.006 | .250 | 1.465 | .021 |
| Secondary | 1.009 | .320 | 1.424 | .017 |
| Tertiary | 1.131 | .047 | 27.246 | .940 |
| **Income (GHS)** | | | | |
| 500 or below (ref) | 1.00 | | | |
| Above 500 | .054 | .005 | .596 | .017 |
| **Past Illness** | | | | |
| Yes | 1.00 | | | |
| No | .755 | .148 | 3.857 | .736 |
| **Health status** | | | | |
| Good | | | | |
| Poor | 4.140 | .275 | 62.406 | .005 |
| **Model Fitting Information** | | | | |
| Omnibus Tests of Chi-square Model Coefficients (Sig) | 27.780 (0.001) | | | |
| Hosmer and Lemeshow Test (sig) | 5.863 (0.663) | | | |
| 2 Log likelihood | −66.549a | | | |
| Cox & Snell R Square | .271 | | | |
| Nagelkerke R Square | .412 | | | |
| Estimate with correct classification (%) | 83 | | | |
The study revealed that perceived health status predicts enrolment in NHIS among the participants. Specifically, participants who rated their health status as poor were more likely to enroll in NHIS compared with those who rated their health status as good. The finding is consistent with that of Boamah (2018) and Boateng & Awunyvor-Vitor (2013) where participants who perceived their health status as poor were more likely to enroll and renew their membership due to the high rate of healthcare utilisation. The reason could be that persons with poor health status are more likely to incur higher healthcare expenditure (WHO, 2015) and as such, enrolling in the NHIS could help to reduce their higher healthcare expenditure (Lattof, 2018).

The study has both strengths, policy implications and limitations, which must be remarked upon. Concerning the strength, this is the first study in Ghana to examine the prevalence of health insurance enrolment and associated factors among PWDs in Ghana. Considering this, this study has contributed to the literature on health insurance enrolment among PWDs in Ghana. Specifically, the study has estimated the prevalence of NHIS enrolment among PWDs. Also, the study has established factors influencing enrolment in the NHIS PWD. Therefore, the study has implications for the formulation of policy on NHIS in Ghana. With regard to factors associated (gender, income, education and perceived health status) with health insurance enrolment among PWDs, this study provides the key findings to healthcare providers and policy makers to consider when planning for health insurance coverage among PWDs. Specifically, the development of policy in relation to health insurance policy should consider gender, income, health status and education level of the PWDs. Even though we reported a higher (80%) enrolment of NHIS among the PWDs, the NHIA should consider streamlining measures to intensify education on enrolment in NHIS for PWDs in Ghana. Our findings also suggest that a nationally representative survey on health insurance enrolment among PWDs in Ghana is needed to provide a national data and evidence that can inform and guide the design and formulation of health insurance policy.

Despite the above, we acknowledge four main limitations associated with this study. In the first place, the study was limited to only one district in Ghana hindering the generalisability and representativeness of the study results. The inclusion of more districts in Ghana could have broadened the scope of the study to paved way for the generalisation of the study findings. That notwithstanding, the findings can be generalised among PWDs who share similar socio-economic, demographic, and health characteristics with the participants involved in this study. The second limitation associated with this study is the use of a quantitative approach. As a result of the use of the quantitative approach, the researcher could not seek in-depth views of the study participants in relation to their NHIS enrollment. Thirdly, due to the use of the cross-sectional design, the researchers could not establish a causal relationship among the study participants. There was also possible social desirability or recall bias due to the cross-sectional nature of the study. There is the possibility of over-reporting or under-reporting of enrolment in NHIS among the participants. Due to this reason, the authors carefully checked and rechecked the questionnaires by referring to the data entered in the SPSS. This reduced the potential errors to ensure accurate estimation of prevalence and patterns of health insurance enrolment among PWDs in Ghana. Lastly, the other potential limitation of this study was the exclusion of disability-related variables in the multivariate analysis. Inclusion of disability-related variables could have also produced some interesting results to inform policy decisions about health insurance enrollment. For this reason, we suggest that future study should examine the association between disability-related variables and health insurance enrollment among PWDs in Ghana.

7. Conclusion
This study examined the prevalence of health insurance enrolment and associated factors among PWDs in Ghana. The study found that 80% of the respondents were enrolled in the NHIS. The study revealed that gender, income, education and perceived health status were associated with NHIS enrolment among the participants. The findings suggest the need to include gender, income, education and health status in the formulation of health insurance policy in Ghana.
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List of Abbreviations
GSS-Ghana Statistical Service
NHIA-National Health Insurance Authority
NHIS-National Health Insurance Scheme
PWDs-Persons with Disabilities
SPSS-Statistical Package for the Social Sciences
WHO-World Health Organisation

Competing Interests
The authors declare that they have no competing interests.

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