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COVID-19 Vaccine Uptake and Associated Factors Among Persons With Disabilities in Ghana's Ashanti Region

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ABSTRACT

Background: Persons with disabilities (PWD) are often marginalized and face barriers to accessing health services. This study aimed to examine the COVID-19 vaccine uptake and its predictors among PWDs in the Ashanti region of Ghana, where about 17% of the population has some form of disability.

Methods: A cross-sectional survey was conducted among 402 PWDs in two districts of the Ashanti Region of Ghana from December 2021 to March 2022. Data were collected using a pretested structured questionnaire and analyzed using descriptive (frequencies and percentages) and inferential statistics (binary logistic regression).

Results: The majority (68.7%) of the respondents had received the COVID-19 vaccine. The vaccine uptake was significantly higher among PWDs with visual impairments (aOR = 1.81; 95% CI = 1.07–3.09; $p = 0.028$), older age groups (aOR = 4.95; 95% CI = 1.86–13.21; $p = 0.001$ for those aged 60 and above), those with junior high school level of education (aOR = 2.21; 95% CI = 1.05–4.64; $p = 0.036$), and those who were employed (aOR = 2.07; 95% CI = 1.07–3.99; $p = 0.031$), compared to their respective reference groups.

Conclusion: The study revealed a moderate level of COVID-19 vaccine uptake among PWDs in the Ashanti region, which may indicate some positive attitudes towards the prevention of the virus. However, there were disparities in the vaccine uptake by disability type, age, education, and employment status, which suggest the need for tailored interventions to address the specific needs and preferences of different subgroups of PWDs. The study also provides a basis for further research on the factors influencing COVID-19 vaccine acceptance among PWDs in Ghana and other similar settings. To enhance the vaccine coverage and equity among the marginalized groups in the region, more practical and inclusive strategies are needed to overcome the barriers and challenges faced by PWDs in accessing the COVID-19 vaccine.

1 | Background

A person with a disability (PWD), according to the United Nations Convention on the Rights of Persons with Disability [1], "is an individual who has a long-term physical, mental, intellectual, or sensory impairment which, in interaction with various barriers may hinder his/her full and effective participation in society on an equal basis with others" [1]. In Ghana, about 8% of the population lives with a hearing, vision, cognition, and/or physical disability, corresponding to approximately 2,098,138 people [2]. PWD's access to timely and effective healthcare is very important, particularly during the period of the SARS-COV-2 virus (COVID-19) outbreak.

Abbreviations: CI, confidence interval; GHS, Ghana Health Service; GSS, Ghana Statistical Service; IRB, Institutional Review Board; JCU, James Cook University; JHS, Junior High School; KATH, Komfo Anokye Teaching Hospital; LB, lower boundary; NHIS, National Health Insurance Scheme; PWD, person with disability; Ref, reference category; SHS, Senior High School; SSA, Sub-Saharan Africa; UNCRPD, United Nations Convention on the Rights of Persons with Disability; UNICEF, United Nations Children's Fund; UB, upper boundary; WHO, World Health Organization.

The unexpected outbreak of the new COVID-19, an infection caused by the SARS-COV-2 virus from late 2019 to early 2020 destabilized the global medical environment. By mid-2020, there were about 34,804,348 active COVID-19 cases, with 1,030,738 mortalities worldwide [3]. As of May 2022, Ghana had recorded 58,460 COVID-19 cases and 1445 mortalities [4]. Given the spread and mortality rates associated with the COVID-19 infection, the World Health Organization (WHO) declared it a global pandemic and called on governments to reduce the transmission and effect of the COVID-19 infection. PWDs face challenges in accessing timely health services including COVID-19 vaccination. Therefore, governments are developing and updating their national health policies to consider the vulnerabilities, risks, and needs of marginalized people including PWDs to improve their access to the COVID-19 vaccine [5].

Currently, efficient vaccines are available to lessen the spread and lethal consequences of COVID-19 [6]. For example, during the last quarter of 2020, some vaccines were manufactured including the Pfizer BioNTech, with a 95% efficacy, and Astra Zenecca, which has been reported to prevent 70% of people in low/middle-income countries from contracting COVID-19 [7]. Before the introduction of these vaccines, WHO in collaboration with researchers, companies, and health-oriented agencies inaugurated the ACT (Access to COVID-19 tool) to accelerate the response to COVID-19 vaccines. Nonetheless, the successful implementation of vaccination exercises relies on public acceptance as well as the averseness of the population to cause vaccine hesitancy [8], a situation where people intentionally delay in accepting or refusing vaccines even with the availability or readiness of the vaccines [9]. Vaccine hesitancy is mostly associated with new vaccines and is caused by factors such as misconceptions, safety/effectiveness, fear of negative side effects, and insufficient health information among others [10]. A review of the literature on vaccine hesitancy has revealed factors such as people's perceived risk of infection, personal consequences, and ethnicity as main predictors of vaccine hesitancy [11]. These factors slow people's reactions to pandemics and intensify antivaccination complications causing varying degrees of uptake. For example, the initial introduction of the influenza A virus vaccine attracted differing acceptance rates around the world as Hong Kong, the United Kingdom, and the United States recorded 50.5%, 56.1%, and 64%, respectively [8, 12].

The government of Ghana has demonstrated its commitment to fighting against the COVID-19 pandemic by procuring safe and effective COVID-19 vaccines for the populace [8] but literature on the acceptance particularly among marginalized groups is scanty. A review has reported that globally the rate of COVID-19 vaccine uptake among the adult population ranges between 23.6% and 97% [13]. However, it highlighted that studies originating from sub-Saharan Africa (SSA) are inadequate and scarce [13]. Hence, the need to intensify research in that area. Conducting this study could contribute to the existing body of knowledge of COVID-19 vaccine uptake in SSA, specifically Ghana.

The earlier COVID-19 studies conducted in Ghana have investigated the uptake of the COVID-19 vaccine among the Ghanaian adult population and reported that 51%–70% of people within this cohort are likely to accept the COVID-19 vaccine if available [8, 14]. About 30% were indecisive and 21% reported a total rejection of the vaccine [15]. A recent review has shown that the uptake of COVID-19 ranges from 17.5% to 82.6% [16] and highlighted varied rates of uptake in Ghana, as well as the factors associated with its uptake. However, the review failed to exclusively capture the level of uptake among marginalised groups and the demographic characteristics that might influence such uptake [16]. Previous studies on COVID-19 vaccine issues among PWDs have also been conducted in Ghana [17, 18]. However, these studies are limited in scope and focused primarily on acceptance and hesitancy [17, 18]. Given that PWDs are usually marginalised and have higher mortality from COVID-19 compared to the general population [19], this quantitative study extends the scope of earlier studies by examining the uptake of the COVID-19 vaccine among PWDs in the Ashanti region of Ghana. Specifically, the study seeks to address the following research questions: (1) what is the prevalence/uptake of the COVID-19 vaccine among PWDs? (2) What are the predictors of COVID-19 vaccine uptake among PWDs? The availability of such information is essential for Ghanaian policymakers and health managers to formulate or modify COVID-19 health campaign interventions to meet the needs of PWDs since the WHO and UNICEF have advised governments to ensure that PWDs meet the criteria for vaccination and have equal access to the vaccine [20]. As the government of Ghana has commenced the COVID-19 vaccination intervention, the availability of such information might help policymakers to further increase the uptake of the vaccine among vulnerable groups, particularly the PWDs. In addition, knowing the socioeconomic and demographic characteristics that serve as predictors of the vaccine uptake could help in targeting PWDs who fall within groups with the least odds of uptake.

2 | Methods

2.1 | Study Design, Population, and Setting

This study forms part of a larger project that assessed the impact of health policies and interventions on the sexual and reproductive health outcomes among PwDs in the Ashanti region of Ghana. This current study employed a cross-sectional study design to collect data from PWDs in the Ashanti Region (Kumasi Metropolis and Offinso North District). Specifically, the study was conducted among two categories of PWDs thus, physical disability and visual impairment. According to the 2021 Population and Housing Census report on the difficulty in performing an activity, out of the 2,098,138 (8%) PWDs in Ghana, the Ashanti Region has the highest number (363,321; 17.3%) of PWDs [2]. Out of the total number of PWDs in Ghana, the most prevailing types of disabilities are visual/seeing (4.0%) and physical impairment/walking (3.6%). There are also rural (6.5%) and urban (9.5%) variations. These were the reasons that propelled the choice of the study settings and the study population. Details of the study design, population, and setting have been published elsewhere [21, 22].

2.2 | Sample Size and Sampling

Using Lwanga et al. [23] formula for sample size determination, a sample size of 402 was derived for the study. Before the data collection, the list of PWDs in the various disability categories was obtained from their leaders. Based on the list, a systematic sampling approach was adopted to select the respondents. The respondents were then approached through their weekly meetings. Detailed description of the sample size and sampling strategy is published elsewhere [21, 22].

2.3 | Survey Administration and Data Collection

Pretested questionnaires developed from the literature and validated instruments were used for data collection [24]. The survey was mainly administered in the local language, Twi, which is the predominant language in the study area. However, for those who could speak English Language, English was used. Four research assistants who are experienced in data collection from PWDs were recruited from the "Department of Health Promotion, Education and Disability Studies, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, and the Department of Population and Health, University of Cape Coast, Ghana." Before the data collection, the research assistants were trained for 3 days with a developed training manual. During the training, they were exposed to how to ask questions, seek consent, and adhere to all the ethical principles. After the training, a pretest of the questionnaire was carried out at Nkawie among 30 PWDs. After the pretesting, the data collection took place from January 2022 to April 2022.

2.4 | Variables

The outcome variable for the study was the COVID-19 vaccine uptake. This was measured with a single item question: "Have you ever taken the COVID-19 vaccine (s)." The response to this question was Yes or No. Yes, was coded as 1 and No was coded as 0. The independent variables for the study comprised, "Age measured in years (18–29, 30–39, 40–49, 50–59, 60+)," "Disability type (Physical, Visually impaired)," Disability Severity (Mild, Severe), "Sex (Female, Male)," "place of residence (Kumasi Metro, Offinso North)," "Level of education (No formal education, Primary, Junior High School, Senior High School, Tertiary)," "Religious affiliation (Christian, Non-Christian)," "Marital status (Never married, Married, Separated, Widowed, Divorced)," "Ethnicity (Akan, Non-Akan)," "Employment (Not working, Working)," "Income measured in Ghana cedis (Less than 100, 100–299, 300+)" National Health Insurance subscription (No, Yes)" and "Duration to nearest health facility (0–29 min, 30–59 min, 60 and above minutes)."

2.5 | Statistical Analyses

Frequencies and percentages were used to describe the sociodemographic characteristics and the prevalence of COVID-19 vaccine uptake. Bivariate analysis using χ^2 was adopted to present the prevalence of COVID-19 vaccine uptake across the independent variables. Binomial logistic regression analysis was employed to assess the predictors of COVID-19 vaccine uptake among PWDs. Before the regression analysis, the variance inflation factor was used to test for multicollinearity among the independent variables and there was no evidence that the variables were strongly correlated (Mean VIF = 1.32, Max = 1.77; Min = 1.02). The results for the regression analysis were presented as adjusted odds ratios (aOR) with their respective 95% confidence intervals (CIs). In all the analysis, statistical significance was pegged at $p < 0.05$. Stata version 14 was used for all the statistical analysis.

3 | Results

3.1 | Background Characteristics and Prevalence of COVID-19 Vaccine Uptake Among PWDS in the Ashanti Region

Table 1 presents the demographic characteristics of the respondents. About 58% of the respondents were visually impaired, 28.6% were aged 60 or more, and 51.5% were males. With place of residence, 80.4% were from the Kumasi metropolis, 34.3% had SHS/Tertiary level of education while 16.9% had no formal education. The majority (88.6%) were Christians, Akans (82.1%), and NHIS subscribers (96.8%).

The results also showed that 68.7% had received the COVID-19 vaccine. About 73% of the visually impaired had received the vaccine, and 75.7% of those aged 60 and above have also received the vaccine. About 69.1% of males, 70.9% of those in Offinso North, 75.4% of those with a JHS level of education, 69.4% of Christians, and 69.5% of those who are working received the COVID-19 vaccine. The χ^2 analysis revealed statistically significant results in terms of disability type ($\chi^2 = 4.4$, $p = 0.034$), age (22.82, $p < 0.001$), marital status ($\chi^2 = 10.52$; $p = 0.005$) and ethnicity ($\chi^2 = 8.6$, $p = 0.003$), and COVID-19 vaccine uptake (Table 1).

3.2 | Factors Associated With COVID-19 Vaccine Uptake Among Persons With Disabilities in AshantiRegion

Table 2 presents results on the factors associated with COVID-19 vaccine uptake among PWDs. The results showed that compared with the physically challenged, those with visual impairments had higher odds to take up the vaccine [aOR = 1.81; 95% CI = 1.07–3.09, $p = 0.028$]. Those aged 60 and above had 4.95 times higher odds of COVID-19 vaccine uptake [aOR = 4.95; 95% CI = 1.86–13.21; $p = 0.001$] compared with those aged 18–29 years. The study also showed that those with JHS level of education had higher odds to take up the COVID-19 vaccine compared with those who had no formal education [aOR = 2.21; 95% CI = 1.05–4.64; $p = 0.036$]. Those working also had higher odds of COVID-19 vaccine uptake compared to those not working [aOR = 2.07; 95% CI = 1.07–3.99; $p = 0.031$].

TABLE 1 | Background characteristics and prevalence of COVID-19 vaccine uptake among PWDS in the Ashanti Region.

Variable	*n*	%	COVID-19 vaccine uptake (%)		χ^2 (*p* value)
			No [31.3] CI = [26.9–36.1]	Yes [68.7] CI = [63.9–73.0]	
Disability type					4.4 (0.034)
Physical	170	42.3	37.06	62.94	
Visually impaired	232	57.7	27.16	72.84	
Disability severity					1.133 (0.287)
Mild	160	39.80	34.38	65.62	
Severe	242	60.20	29.34	70.66	
Age (years)					22.82 (< 0.001)
18–29	46	11.4	60.87	39.13	
30–39	79	19.7	32.91	67.09	
40–49	73	18.2	28.77	71.23	
50–59	89	22.1	25.84	74.16	
60+	115	28.6	24.35	75.65	
Sex					0.03 (0.850)
Female	195	48.5	31.79	68.21	
Male	207	51.5	30.92	69.08	
Residence					0.23 (0.634)
Kumasi Metro	323	80.4	31.89	68.11	
Offinso North	79	19.7	29.11	70.89	
Level of education					4.6 (0.200)
No formal education	68	16.9	35.29	64.71	
primary	66	16.4	37.88	62.12	
JHS	130	32.3	24.62	75.38	
SHS/tertiary	138	34.3	32.61	67.39	
Religious affiliation					
Christian	356	88.6	30.62	69.38	0.76 (0.383)
Non-Christian	46	11.4	36.96	63.04	
Marital status					10.52 (0.005)
Never married	97	24.1	42.27	57.73	
Married	178	44.3	32.02	67.98	
Separated/widowed/divorced	127	31.6	22.05	77.95	
Ethnicity					8.6 (0.003)
Akan	330	82.1	28.18	71.82	
Non-Akan	72	17.9	45.83	54.17	
Employment					0.12 (0.726)
Not working	199	49.5	32.16	67.84	
Working	203	50.5	30.54	69.46	
Income (GHC)					0.07 (0.968)
Less than 100	203	50.5	31.03	68.97	
100–299	102	25.4	32.35	67.65	
300+	97	24.1	30.93	69.07	
NHIS subscription					
No	13	3.2	38.46	61.54	0.32 (0.556)

(Continues)

TABLE 1 | (Continued)

Variable	*n*	%	COVID-19 vaccine uptake (%)		
			No [31.3] CI = [26.9–36.1]	Yes [68.7] CI = [63.9–73.0]	χ^2 (*p* value)
Yes	389	96.8	31.11	68.89	
Duration to the nearest health facility					0.63 (0.731)
0–29 min	133	33.1	30.83	69.17	
30–59 min	192	47.8	30.21	69.79	
60 and above minutes	77	19.2	35.06	64.94	

Abbreviations: GHC, Ghana Cedis; JHS, Junior High School; NHIS, National Health Insurance Scheme; SHS, Senior High School.

TABLE 2 | Factors associated with COVID-19 vaccine uptake among persons with disabilities in AshantiRegion.

Variable	Odds ratio	95% CI		*p* value
		LB	UB	
Disability type				
Physical	Ref			
Visually impaired	1.81	1.07	3.09	0.028
Disability severity				
Moderate	Ref			
Severe	1.29	0.79	2.09	0.305
Age (years)				
18–29	Ref			
30–39	3.63	1.56	8.46	0.003
40–49	3.88	1.55	9.76	0.004
50–59	4.56	1.77	11.78	0.002
60+	4.95	1.86	13.21	0.001
Sex				
Female	Ref			
Male	0.97	0.57	1.62	0.896
Residence				
Kumasi Metro	Ref			
Offinso North	1.25	0.64	2.44	0.522
Level of education				
No formal education	Ref			
Primary	0.97	0.44	2.13	0.937
JHS	2.21	1.05	4.64	0.036
SHS/Tertiary	1.37	0.67	2.78	0.385
Religious affiliation				
Christian	Ref			
Non-Christian	1.47	0.64	3.39	0.37
Marital status				
Never married	Ref			
Married	0.99	0.51	1.90	0.972
Separated/ widowed/divorced	1.49	0.68	3.26	0.318
Ethnicity				
Akan	Ref			
Non-Akan	0.53	0.27	1.05	0.069
Employment				
Not working	Ref			
Working	2.07	1.07	3.99	0.031
Income (GHC)				
Less than 100	Ref			
100–299	0.85	0.44	1.65	0.637
300+	0.71	0.34	1.49	0.370
NHIS subscription				
No	Ref			
Yes	0.71	0.44	1.17	0.178
Duration to the nearest health facility				
0–29 min	Ref			
30–59 min	1.04	0.59	1.84	0.896
60 and above minutes	0.88	0.43	1.80	0.726

Abbreviations: CI, confidence interval; GHC, Ghana Cedis; JHS, Junior High School; LB, lower boundary; NHIS, National Health Insurance Scheme; Ref, reference category; SHS, Senior High School; UB, upper boundary.

4 | Discussion

We conducted a quantitative study to examine the uptake of the COVID-19 vaccine among PWDs in the Ashanti region of Ghana. Generally, the study findings present a positive picture of the uptake of the COVID-19 vaccine among PWDs, as the prevalence of the vaccine uptake was 68.7%, depicting a moderate acceptance of the vaccine. PWDs' acceptance of the vaccine indicates that the opportunity to achieve herd immunity limit (63%–70%) in Ghana could be achieved, especially if ongoing precautionary vaccination interventions are merged

with well-organized health promotion exercises. From the data, it is evident that some demographic characteristics are associated with COVID-19 vaccine uptake. For example, the study shows that disability type, age, level of education, and employment are significantly associated with COVID-19 vaccine uptake among PWDs. The findings are in line with a recent systematic review [16] in Ghana among the general population which showed that various sociodemographic factors including level of education and employment are associated with COVID-19 vaccine uptake. Among PWDs, Atta-Osei et al. [17] also found that PWDs demographics including age and educational level are associated with COVID-19 knowledge and vaccine acceptance.

PWDs aged 60 and above recorded the highest odds of COVID-19 vaccine uptake compared with those aged 18–29 years. Atta-Osei et al. [17] reported that older individuals with disabilities are more likely to receive a COVID-19 vaccine, consistent with the findings of the current study. The increased likelihood of COVID-19 uptake among the aged could be a result of the COVID-19 educational messages that the aged are more susceptible to contracting the COVID-19 virus. Atta-Osei et al. [17] argued that older people are among the most at-risk groups for COVID-19, with a higher fatality rate. Many underlying health conditions that increase susceptibility to COVID-19, such as hypertension and diabetes, are also age-related, which could explain why older PWDs and older people in general are more likely to accept the vaccine.

The results showed that compared with the physically challenged participants, those with visual impairments are more likely to take up the vaccine. Differences in vaccine acceptance has also been reported in previous studies among PWDs. For example, Opoku et al. [18] reported variations in vaccine acceptance among people with hearing impaired, visually impaired and those with physical disability, with those who have hearing impairments being more hesitant to receive the vaccine. The probable reason for those with visual impairment to take up the vaccine is their ability to move easily compared to some of those with physical disabilities. This makes it easy for them to move to the vaccination centers to take up the vaccine compared to their counterparts who might need support before they get to the vaccination centers. This finding however requires further exploration to understand the nuances.

High education levels have been shown to significantly correlate with COVID-19 vaccine uptake. The study found that participants with a junior high school level of education were more likely to receive the vaccine compared to those with no formal education. In line with these findings, Opoku et al. [18] reported that individuals with lower educational attainment were more hesitant to get vaccinated. This aligns with previous research, such as Aberese-Ako et al. [25], which highlighted the positive impact of education on vaccination attitudes. Educated individuals are more likely to have access to information about the vaccine and be more inclined to accept it. This finding, however, contradicts the result of a study by Lamptey et al. [8], where lower odds of the vaccine uptake were established among bachelor's degree holders in Ghana [8].

Another key characteristic that emerged as a predictor of the vaccine uptake among PWDs was employment status. PWDs working had higher inclinations towards COVID-19 vaccine uptake compared to those who were unemployed. A related finding has been recounted in a previous study [8]. Employment status a determinant of financial accessibility has great influence on peoples' health-seeking behavior, which has also been considered as an enabling factor in healthcare utilization proposed by Andersen [26]. Evidence has shown that weakening barriers and creating a conducive atmosphere for vaccination tend to increase the prevalence of vaccine uptake [27]. It is therefore crucial to ensure that vaccines are more accessible to PWDs.

4.1 | Strengths and Limitations

One key strength of this study is that it provides preliminary evidence on the uptake of the COVID-19 vaccine among PWDs in the Ashanti Region, together with the sociodemographic factors associated with the uptake. The selection of participants from two contrasting settings (Kumasi Metropolis and Offinso North District) increases the generalizability of the study findings. Despite these strengths, the study has some limitations. The adoption of a quantitative research approach limited the comprehensiveness of the study as it examined only the prevalence and predictors of the uptake of the COVID-19 vaccine without exploring the issues that might have promoted or hindered the PWDs' quest in receiving the vaccine. Medical and medication history of the participants especially whether they had chronic disease or not was not captured in this study. The cross-sectional nature of the study also limited the interpretation of the findings in terms of associations but not causality. Only a single-item question was used to measure COVID-19 vaccine uptake, which did not capture the number of vaccines taken and/or the type of vaccine received. Social desirability biases are also possible.

5 | Conclusion

Given that higher odds of the COVID-19 vaccine have been associated with age, educational level, employment, disability type, and a moderate uptake of about 68% point to some level of positivity around the control of the virus in Ghana. The study results provide a good avenue for further investigations regarding the uptake of COVID-19 among PWDs. Practical steps need to be adopted in Ghana, particularly in the Ashanti region to further boost the uptake of the COVID-19 vaccine among the marginalised groups in the region. Specifically, it is important to consider the importance of educational level and its impact on COVID-19 vaccine uptake. It is also crucial to ensure inclusive practices and accessible vaccination sites for easy accessibility among PWDs. Future studies should assess the motivation behind the acceptance of the vaccine and the barriers, which might hinder the uptake of the COVID-19 vaccine among PWDs.

Author Contributions

Abdul-Aziz Seidu: conceptualization, data curation, formal analysis, visualization, writing–original draft, methodology, investigation, project

administration, writing–review and editing, software, validation, funding acquisition, resources. **Irene G. Ampomah:** data curation, formal analysis, writing–original draft, methodology, investigation, project administration, writing–review and editing, validation, conceptualization, visualization. **Theophilus I. Emeto:** conceptualization, data curation, formal analysis, visualization, writing–original draft, methodology, investigation, supervision, project administration, writing–review and editing, software, validation, funding acquisition, resources.

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Ethics Statement

The method was approved in terms of compliance with scientific and ethical standards. All methods were performed in line with the relevant guidelines and regulations. The study obtained ethical approval from three places. First approval for the study was obtained from the Ghana Health Service (GHS) Ethics Review Board (GHS-ERC: 005-0621), Komfo Anokye Teaching Hospital (KATH) (KATH-IRB/RR/101/21), and James Cook University (JCU) Human Ethics Committee (H8531). The Regional Health Directorate in Kumasi and the Offinso North District Health Directorate in Akumadan also endorsed the ethics approval forms. Leaders of two disability groups in Kumasi Metropolis and Offinso North District also gave their approval. During the data collection, both verbal and written consent was obtained from all respondents.

Conflicts of Interest

The authors declare no conflicts of interest.

Transparency Statement

The lead author Abdul-Aziz Seidu, affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

Data Availability Statement

The data is available upon reasonable request from the corresponding authors.

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