

Barriers to Sexual and Reproductive Health Services for Adolescents and Young People with Disabilities in the Bono Region, Ghana: A Cross-Sectional Study

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Research Article

Keywords: Adolescents, Young people with disabilities, Sexual and reproductive health, Healthcare access, Disability stigma, Health inequalities, Disability-inclusive healthcare, Ghana

Posted Date: September 30th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10819650/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background

Adolescents and young people with disabilities (AYPWDs) experience substantial barriers to accessing sexual and reproductive health (SRH) services despite global commitments to equitable healthcare. Evidence quantifying these barriers and their determinants remains limited in Ghana. This study examined barriers to SRH service access, service utilisation and denial among AYPWDs in three municipalities of the Bono Region, Ghana.

Methods

An analytic cross-sectional study was conducted among 440 AYPWDs aged 15–24 years using probability proportional-to-size sampling. Data were collected using a validated 10-item barrier scale (Cronbach's $\alpha = 0.882$) and analysed using descriptive statistics, chi-square tests, one-way ANOVA, exploratory factor analysis (EFA), and multivariable logistic and linear regression.

Results

Overall, 67.3% (296/440) of participants had utilised SRH services during the previous 12 months, while 28.6% (126/440) reported having been denied SRH information or services because of their disability. Lack of information on disability rights to SRH services (mean = 3.24 ± 1.24), fear of stigma or judgement (mean = 3.20 ± 1.07), and concerns regarding privacy and confidentiality (mean = 3.19 ± 1.07) were the highest-rated barriers. EFA identified two reliable barrier dimensions comprising institutional, social and informational barriers (Cronbach's $\alpha = 0.889$) and physical/transport barriers (Cronbach's $\alpha = 0.778$). Compared with participants without formal education, those with tertiary education had significantly higher odds of SRH service utilisation (adjusted odds ratio [AOR] = 5.32, 95% CI: 2.55–11.11) and markedly lower odds of reporting service denial (AOR = 0.12, 95% CI: 0.05–0.27). Severe disability was associated with lower odds of SRH service utilisation (AOR = 0.49, 95% CI: 0.26–0.94), while municipality of residence, disability severity and disability type remained independently associated with perceived barrier scores.

Conclusion

AYPWDs in the three municipalities studied experience multiple interconnected structural, informational, and physical barriers to accessing SRH services. Educational attainment was strongly associated with improved service utilisation and reduced experiences of service denial, whereas disability severity, disability type and geographic location remained important determinants of perceived barriers. These findings provide region-specific evidence to support strengthening disability-inclusive SRH policies,

provider training, communication support, accessible infrastructure and routine disability-disaggregated health information systems in Ghana.

Plain English Summary

Young people with disabilities often find it harder than other young people to get information and care about sex, relationships, and reproductive health. We surveyed 440 young people with disabilities, aged 15-24, in Ghana's Bono Region, to find out what stop them from getting this care and what makes it easier. Two out of three had used sexual and reproductive health services in the past year, but more than one in four said they had been refused services or information because of their disability, the biggest barriers people reported were not knowing their rights to this kind of care, feeling embarrassed or judged, and struggling to talk with health workers about it. People with more education were much more likely to get the care they needed and much has likely be turned away, even after accounted for where they lived, their income, and other factors. People with more severe disabilities, and those without health insurance, faced more difficulty. Based on these findings, we recommend that Ghana strengthen existing disability laws to specifically cover sexual and reproductive health services, extend health insurance to cover transport and other indirect costs, train health workers to communicate better with patients with disabilities, and collect better data on disability so that progress can be tracked over time.

Introduction

Existing evidence suggests that adolescents and youth with disabilities (AYPWDs) in the majority of poor countries often do not receive access to comprehensive sexual and reproductive health care (1–3). This group accounts for almost one-third of the global disabled, with over 80% living in the developing world and facing specific social, systemic, and attitudinal barriers that negatively affect their health as well as basic human rights (4, 5). While global health targets, including the Sustainable Development Goals, promote universal health coverage and accessible SRH for everyone, the situation for AYPWDs in countries like Ghana remains highly disparate. They are confronted with chronic inequalities and a blatant disregard for their distinct needs (6).

Despite more studies, it is difficult to comprehend the complexity that adolescents and youth with disabilities face in seeking sexual and reproductive health services in low-resource settings (3, 6). There is a broad policy-practice divide, and data on the utilisation of SRH services among this group are often intractable or unavailing (2, 7). For example, studies in Ghana's Ashanti region reported that hardly one-third of people with disabilities had ever used SRH services, reflecting a critical unmet need (6). This neglect is partly due to the social misconception that people with disabilities are asexual, which consequently leads to their exclusion from universal SRH programs and discourse (6). This study will bridge this knowledge gap by examining the specific barriers to access to SRH services among AYPWDs in Ghana and, in the process, place this critical issue within the broader discourse on inclusive health systems.

Various barriers prevent adolescents and youth with disabilities from gaining the required sexual and reproductive health services in Ghana. Some of the significant barriers include the physical inaccessibility of health centres, which lack ramps or adequate infrastructure (7). Communication issues are also prevalent; deaf individuals, for example, often lack qualified sign language interpreters, and the blind often lack assistance (7). In addition to such logistic issues, stigma and disability-based discrimination in society deter AYPWDs from seeking care due to fear of being judged or disrespected by professionals and society members (6). In addition, inadequate privacy and confidentiality within SRH facilities compound such problems among deaf individuals. The lack of training among healthcare providers in effectively communicating with and treating individuals with disabilities further complicates these problems (6, 8, 9). Such complex and interconnected problems suggest a health system ill-prepared to address the diverse needs of these individuals.

Such issues are not unique to Ghana but are part of a broader pattern of exclusion in other poor nations. For instance, in South Africa, youths and adolescents with disabilities suffer the same issues despite progressive policies, leading to poorer health (4). According to Ganle et al.'s systematic review of 11 Sub-Saharan African countries, highlighted inaccessible infrastructure and widespread stigma as key hindrances, categorising them at national, healthcare system, individual, community, and economic levels (10). Studies in Nepal, Bangladesh, and Uganda consistently show that women and young people with disabilities struggle to access sexual and reproductive health care due to weak policy, provider stigma, and a lack of adequate social support (11–13). These trends generally indicate a failure of the system to incorporate disability perspectives into sexual and reproductive health programs and training.

Despite global conventions such as the United Nations Convention on the Rights of Persons with Disabilities (14), which stipulate that all persons should have equal access to sexual and reproductive health care, their implementation remains a tremendous challenge in most LMICs (4). For instance, Ghana passed its Persons with Disabilities Act 715 in 2006 and ratified the Convention in 2012 (15). However, national research and SRH policies have never addressed the SRH needs of individuals with disabilities (7, 16, 17). The default explanation for that omission is typically a very deep-seated belief that persons with disabilities are asexual, so it becomes exceptionally difficult to integrate their special SRH needs into policy and practice (6). This common misconception disenfranchises young people and adolescents with disabilities, denying them autonomy over their reproductive and sexual lives and opposing the spirit of inclusive development.

Despite increasing recognition of disability-inclusive healthcare within global and national policy frameworks, important evidence gaps remain regarding the nature of barriers experienced by adolescents and young people with disabilities when accessing SRH services within different Ghanaian settings. Existing Ghanaian studies have largely focused on specific disability groups, single service domains or qualitative experiences, with relatively limited quantitative evidence describing the relative contribution of institutional, informational, physical and socio-demographic factors to SRH service access. Furthermore, little empirical evidence exists from the Bono Region to support disability-inclusive planning and service delivery.

This study, therefore, examined barriers to SRH service access among AYPWDs residing in three municipalities of the Bono Region, Ghana. Specifically, the study investigated patterns of SRH service utilisation, experiences of service denial, and socio-demographic and disability-related factors associated with perceived barriers to accessing SRH services. By generating region-specific quantitative evidence, this study aims to contribute to strengthening disability-inclusive SRH, implementation and policy development within Ghana while recognising that the findings are most directly applicable to settings with similar demographic and health system characteristics.

Materials and Methods

Study design and setting

This cross-sectional study was carried out in the Bono Region of Ghana and examined barriers to SRHs and associated patterns of service utilisation and denial, among young people with disabilities. A cross-sectional design was applied, chosen to generate specifically robust, generalizable evidence on these barriers to their socio-demographic and disability-related correlates, evidence considered necessary to directly inform disability-inclusive SRH policy and programming in Ghana. Fieldwork was conducted in three Bono Regional municipalities: Wenchi, Dormaa, and Sunyani, which were chosen for their geographical variation and the presence of specialised institutions serving individuals with disabilities. Using a multi-site approach helps adhere to recommended quantitative survey research techniques for investigating the sexual and reproductive health of individuals with disabilities (15). Carrying out the interviews from October through December 2024 at both health facilities and special schools for individuals with disabilities. The study was conducted in Wenchi, Dormaa and Sunyani municipalities of the Bono Region. These municipalities were purposively selected because they contained specialised institutions serving persons with disabilities and maintained comprehensive Social Welfare registration databases that enabled construction of a reliable sampling frame. Comparable registration data were not consistently available across the remaining districts of the region. Consequently, the study results should be interpreted as representing AYPWDs residing within the selected municipalities rather than the entire Bono Region or Ghana. Nevertheless, the inclusion of municipalities representing different geographical and service contexts enhanced variability within the study population and strengthened the regional relevance of the results.

Participants

Participants were eligible if they had a self-reported or documented disability, were residents of the study setting for at least six months, and were able to obtain informed consent or assent with parental/guardian permission for participants under 18 years. Disability type was classified using participants' documented disability status or self-reported primary functional limitation as recorded by the Social Welfare Department. Disability severity was based on participants' self-reported functional

limitations using the predefined categories of mild, moderate, severe and very severe that were consistently applied throughout data collection.

Sample size determination

The minimum required sample size was calculated using Yamane's (1967) formula: $n = N/(1 + Ne^2)$, where N is the population size and e is the margin of error. Based on an estimated population of 2,159 adolescents and young people with disabilities registered with Social Welfare Services across the three study districts (Wenchi = 525, Dormaa = 412, Sunyani = 1,222), and a margin of error of 5%, the minimum required sample size was $n = 2,159/(1 + 2,159 \times 0.05^2) = 337.5$, rounded up to 338. To account for an anticipated 10% non-response rate, this was inflated to 372. A final sample of 440 participants was recruited, exceeding the minimum requirement and achieving a margin of error of approximately 4.3%, providing additional statistical power for the planned subgroup analyses by district, disability type, and severity.

Allocation

The sample was allocated across districts using Probability Proportion to Size (PPS) sampling, where each district's share of the total sample was proportional to its share of the registered population ($n_i = [\text{district population} / \text{total population}] \times 440$), yielding target allocations of 107 (Wenchi), 84 (Dormaa), and 249 (Sunyani); final counts of 106, 85, and 249, respectively, were achieved, reflecting integer rounding while preserving the total sample size. The final sample of 440 AYPWDs aged 15–24 years from the three municipalities was recruited using PPS sampling for district-level allocation, combined with Multi-stage sampling for individual selection within each district. Multi-stage sampling was used to get a representative sample of people. Unlike other studies, where a modification of the multi-stage sampling method is used, here sampling occurred at three stages. Firstly, three districts were purposely selected to ensure the inclusion of different population categories (urban, peri-urban, and rural). Secondly, two communities from each of the selected districts were selected using simple random sampling. Thirdly, a list of all institutions and disability-related organisations in each community, including special schools and disabled organisations, was made with the help of the Regional Office of the Department of Social Welfare. Finally, individual subjects were randomly selected in proportion to the number of people at each institution.

Data collection methods

Data were collected using interview-administered structured questionnaires, capturing socio-demographic information, including sex, age, education, occupation, income, disability type, severity, and duration. Sexual and reproductive health variables included service utilisation in the past 12 months, denial of services, facility accessibility, affordability, privacy concerns, and information sources. A 10-item Likert-type barrier scale assessed challenges such as stigma, infrastructural barriers, and cost, with

response options from strongly disagree (1) to strongly agree (5). The barrier scale was developed following an extensive review of published literature on disability-inclusive SRH service access in low- and middle-income countries. Items were adapted from previously reported barriers, reviewed by experts in public health and disability research to establish content validity, and pilot-tested among 30 AYPWDs before implementation. The pilot demonstrated excellent internal consistency (Cronbach's $\alpha = 0.882$), supporting its suitability for the present study (See Supplementary Table 4). The identified factor structure should nevertheless be regarded as preliminary and requires validation in independent populations. Data were collected through face-to-face interviews with trained research interviewers, with interpreters for signing and simplified texts provided as necessary. Facility surveys tested accessibility and service readiness.

Data analysis

Quantitative data were analysed using Jamovi (Version 2.6.26; The Jamovi Project, 2025), an open-source statistical platform built on the R statistical language and validated for use in social and health science research (18). Descriptive statistics framed participant demographics and service patterns. Inferential analysis involved chi-square tests of associations between utilisation or denial of sexual and reproductive health services and socio-demographic variables, with Cramér's V measuring effect sizes. Mean scores for barriers were compared across demographics using a one-way ANOVA with effect size (η^2) and Tukey post hoc tests. When assumptions were broken, Kruskal-Wallis tests were used. The internal structure of the 10-item barrier scale was examined using exploratory factor analysis (EFA; principal axis factoring, promax rotation), following confirmation of sampling adequacy (KMO) and factorability (Bartlett's test of sphericity). Because the conventional eigenvalue-over-1 rule applied to the common-factor eigenvalues suggested only one factor while parallel analysis suggested four, the number of factors retained was determined by comparing nested 1-, 2-, and 4-factor solutions on model fit (RMSEA, TLI, BIC, chi-square difference test) and interpretability, rather than relying on either rule alone. Reliability of the retained subscales was assessed with Cronbach's alpha. Bivariate relationships among the resulting factor scores and age were examined using Pearson correlation. At the multivariable level, predictors of SRH service utilisation and of denial of SRH services/information were each determined using multivariable binary logistic regression, with adjusted odds ratios, 95% confidence intervals, and McFadden, Cox-Snell, and Nagelkerke pseudo- R^2 reported; the "prefer not to say" responses ($n = 22$) were excluded from the denial model. Predictors of the two barrier factor scores were determined using multivariable linear regression. Variance inflation factors (VIFs) were examined for all multivariable models to assess problematic multicollinearity, and residual diagnostics (Q-Q and residuals vs fitted plots) were reviewed for the linear regression models. Municipality of residence was included as a covariate in all multivariable models to account for potential differences arising from the multi-site sampling design. Although participants were recruited from three municipalities, the limited number of clusters precluded multilevel modelling.

Ethical consideration

Ethical clearance was obtained from the Ghana Health Service Institutional Review Board (*GHS-ERC*: 007/11/24) and the University of KwaZulu-Natal Biomedical Research Ethics Committee (*BREC*: 007/11/24). Written informed consent was obtained from participants aged 18 or older, and assent and parent/guardian consent were obtained from participants aged 18 or younger. Participants could leave at any time and were free to choose whether to join. Privacy and confidentiality were ensured at all times throughout the research process. Interviews were conducted individually, and participants were randomly and anonymously coded with special identifiers. These data were further secured, with permission granted only to legitimate members of the research team. Careful attention was paid to providing appropriate communication accommodations, including sign language interpretation, while ensuring participants' confidentiality.

Methodological rigour

Various methods improved the study's reliability and validity. Multiple quantitative rigour strategies were used, including questionnaire pre-testing with 30 adolescents with disabilities, assessment of internal consistency (Cronbach's $\alpha = 0.882$; McDonald's $\omega = 0.884$), and standardised interviewer training, drawing on data from a range of participants across several districts. A detailed description of the methodology favours transferability and reproduction. Purposive sampling enabled the inclusion of participants with relevant experience, while the multi-stage quantitative sampling method ensured representativeness. The study followed established standards of inclusive, disability-responsive research practice, engaging individuals with disabilities as active research participants rather than as passive research subjects. Sign language interpreters were also trained in research ethics and confidentiality guidelines to promote data quality and protect participants.

Results

Respondents' characteristics

Table 1 shows the characteristics of study participants. A total of 440 adolescents and young people with disabilities participated in the study. The mean ($\pm$ standard deviation [SD]) age for enrolled participants was 19.6 (± 8.7) years, and the majority (62.0%, $n = 273$) were female and residing in urban areas (80.7%, $n = 355$). Sample distribution across the three study districts reflected the proportional allocation strategy, with over half of participants drawn from Sunyani (56.6%, $n = 249$), followed by Wenchi (24.1%, $n = 106$) and Dormaa (19.3%, $n = 85$). Most participants identified as Christian (61.4%, $n = 270$), followed by Muslim (31.8%, $n = 140$), with small proportions reporting no religious affiliation (5.5%, $n = 24$) or traditional beliefs (1.4%, $n = 6$). In terms of ethnicity, Akan was the most represented group (44.3%, $n = 195$), followed by Mole-Dagbani (16.6%, $n = 73$), Ewe (19.3%, $n = 85$), Other ethnic groups (10.2%, $n = 45$), and Ga-Adangbe (9.5%, $n = 42$).

The majority of participants were single (78.9%, $n = 347$), with the remainder cohabiting (21.1%, $n = 93$). Living arrangements varied: 41.1% ($n = 181$) lived with family, 29.1% ($n = 128$) resided in an institution,

15.0% (n = 66) lived alone, and 14.8% (n = 65) lived with a roommate. Educational attainment was comparatively high, with over a third of participants (35.9%, n = 158) having attained tertiary education, a quarter (25.0%, n = 110) secondary/technical education, 15.9% (n = 70) primary education only, and 23.2% (n = 102) reporting no formal education. With respect to disability profile, physical disability was the most common type (39.1%, n = 172), followed by visual impairment (25.2%, n = 111), speech disability (21.1%, n = 93), and hearing impairment (14.5%, n = 64). Most participants reported mild (41.8%, n = 184) or moderate (33.2%, n = 146) disability severity, while smaller proportions reported severe (18.4%, n = 81) or very severe (6.6%, n = 29) disability. The majority of the sample (90.9%, n = 400) was enrolled in the National Health Insurance Scheme. Regarding the study's primary outcomes, two-thirds of participants (67.3%, n = 296) reported having utilised SRH services in the past 12 months, while just under a third (32.7%, n = 144) had not. Over a quarter of participants (28.6%, n = 126) reported having been denied SRH information or services because of their disability, while 66.4% (n = 292) reported no such denial and 5.0% (n = 22) preferred not to say.

Table 1
Demographic characteristics of sampled participants (N = 440)

Variable	Category	n	%
Age (years)	Mean $\pm$ SD = 19.6 $\pm$ 2.6 (range 15–24)	—	—
Sex	Male	167	38.0%
	Female	273	62.0%
District	Wenchi	106	24.1%
	Dormaa	85	19.3%
	Sunyani	249	56.6%
Religion	No religion	24	5.5%
	Christian	270	61.4%
	Muslim	140	31.8%
	Traditional	6	1.4%
Living arrangement	Alone	66	15.0%
	With family	181	41.1%
	Roommate	65	14.8%
	Institution	128	29.1%
Marital status	Single	347	78.9%
	Cohabiting	93	21.1%
Residence	Rural	85	19.3%
	Urban	355	80.7%
Education	No formal education	102	23.2%
	Primary	70	15.9%
	Secondary/Technical	110	25.0%
	Tertiary	158	35.9%
Ethnicity	Akan	195	44.3%
	Ewe	85	19.3%
	Ga-Adangbe	42	9.5%
	Mole-Dagbani	73	16.6%
	Other	45	10.2%

Variable	Category	n	%
Disability type	Physical	172	39.1%
	Visual	111	25.2%
	Hearing	64	14.5%
	Speech	93	21.1%
Disability severity	Mild	184	41.8%
	Moderate	146	33.2%
	Severe	81	18.4%
	Very Severe	29	6.6%
NHIS enrolment	Yes	400	90.9%
	No	40	9.1%
SRH service utilisation (12 month)	Yes	296	67.3%
	No	144	32.7%
Denied SRH info/services	Yes	126	28.6%
	No	292	66.4%
	Prefer not to say	22	5.0%

Descriptive statistics and frequency distribution of reported barriers to SRH service utilisation

Table 2 presents the descriptive analysis of the 10 barrier items, showing that the most strongly endorsed barrier was lack of information on disability rights to SRH services (B10, $M = 3.24$, $SD = 1.24$, $Var = 1.53$), with 22.5% strongly agreeing and 22.0% agreeing. This was followed by fear of stigma or judgment (B5, $M = 3.20$, $SD = 1.07$, $Var = 1.15$) and concerns about privacy or confidentiality (B8, $M = 3.19$, $SD = 1.07$, $Var = 1.14$). Cost of services (B6, $M = 3.01$, $SD = 0.97$, $Var = 0.93$) and long wait times (B9, $M = 3.02$, $SD = 0.94$, $Var = 0.87$) were also frequently cited, with about 30% of respondents agreeing to each. Transport challenges (B2, $M = 3.00$, $SD = 1.00$, $Var = 1.00$) and lack of disability-adapted services (B7, $M = 2.99$, $SD = 1.09$, $Var = 1.19$) were moderately endorsed, while communication barriers with staff (B3, $M = 2.97$, $SD = 1.14$, $Var = 1.31$) and physical infrastructure barriers (B1, $M = 2.88$, $SD = 1.04$, $Var = 1.08$) received lower mean scores, though still reported by over 25% of participants. The lowest mean score was disrespectful treatment from health workers (B4, $M = 2.86$, $SD = 1.06$, $Var = 1.12$), with nearly half (47.7%) disagreeing that this was a barrier.

The findings suggest that while physical access barriers and provider disrespect (B1, B4) were less prominent, structural and informational barriers remain major challenges. The high endorsement of lack

of rights information (44.5% agreed/strongly agreed), stigma and judgment (43.0%), and privacy concerns (43.4%) highlights the importance of addressing social and informational dimensions of access alongside physical and financial barriers. Variance values across items (0.87–1.53) indicate meaningful differences in response distribution, with particularly wide variability for B10, reflecting diverse experiences regarding awareness of rights.

Table 2

Descriptive statistics and frequency distribution of reported barriers to SRH service utilisation (N = 440)

Barrier Statement	Mean	SD	Variance	SD (%)	D	N	A	SA
Physical infrastructure limits access (e.g., no ramps, narrow doors). (B1)	2.88	1.04	1.08	27 (6.1%)	161 (36.6%)	113 (25.7%)	115 (26.1%)	24 (5.5%)
Transport to SRH facilities is inaccessible or unaffordable. (B2)	3.00	1.00	1.00	13 (3.0%)	155 (35.2%)	113 (25.7%)	135 (30.7%)	24 (5.5%)
Communication barriers with SRH staff (e.g., no sign language). (B3)	2.97	1.14	1.31	12 (2.7%)	201 (45.7%)	72 (16.4%)	98 (22.3%)	57 (13.0%)
Disrespectful treatment from health workers. (B4)	2.86	1.06	1.12	9 (2.0%)	210 (47.7%)	95 (21.6%)	84 (19.1%)	42 (9.5%)
Fear of stigma or judgment from family/community. (B5)	3.20	1.07	1.15	7 (1.6%)	143 (32.5%)	101 (23.0%)	135 (30.7%)	54 (12.3%)
Cost of SRH services (fees, transport, treatment). (B6)	3.01	0.97	0.93	8 (1.8%)	157 (35.7%)	120 (27.3%)	133 (30.2%)	22 (5.0%)
Services not adapted to the needs of people with disabilities. (B7)	2.99	1.09	1.19	6 (1.4%)	197 (44.8%)	82 (18.6%)	106 (24.1%)	49 (11.1%)
Lack of privacy or confidentiality at facilities. (B8)	3.19	1.07	1.14	5 (1.1%)	148 (33.6%)	96 (21.8%)	139 (31.6%)	52 (11.8%)
Long wait times discourage service use. (B9)	3.02	0.94	0.87	6 (1.4%)	148 (33.6%)	137 (31.1%)	128 (29.1%)	21 (4.8%)
Lack of information on disability rights to SRH(B10)	3.24	1.24	1.53	7 (1.6%)	176 (40.0%)	61 (13.9%)	97 (22.0%)	99 (22.5%)

Factors Associated with SRH services among AYPWDs in the Bono Region (N = 440)

Supplementary Table 1 presents the factors associated with SRH services among AYPWDs. In the Bivariate analysis, district, education level, and disability severity were significantly associated with utilisation of SRH services in the past 12 months, while sex and disability type did not show statistically significant associations.. District of residence was a strong determinant ($\chi^2=17.7$, $df = 2$, $p<.001$, Cramer's $V = 0.201$), with utilisation highest in Sunyani Municipality (63.5%) compared to Wenchi (19.9%) and Dormaa (16.6%). Education had the largest effect ($\chi^2=69.7$, $df = 3$, $p<.001$, $V = 0.398$), where those with tertiary education were far more likely to have used SRH services (47.0%) compared to respondents with no formal education (16.2%). Disability severity was also important ($\chi^2=37.6$, $df = 3$, $p<.001$, $V = 0.292$). Respondents with mild and moderate disabilities reported higher utilisation (45.9% and 37.8%, respectively), while those with severe (12.2%) and very severe (4.1%) disabilities had the lowest levels of utilisation. In contrast, sex ($\chi^2=3.05$, $p = 0.081$, $V = 0.083$) and disability type ($\chi^2=7.10$, $p = 0.069$, $V = 0.127$) were not significantly associated with SRH utilisation. Taken together, the findings suggest that education, location, and severity of disability are the strongest predictors of SRH service utilisation among young people with disabilities, pointing to inequities in access that may be linked to structural and knowledge-related barriers. Regarding denial, the chi-square results show that denial of SRH services among adolescents and young people with disabilities in the Bono Region was significantly associated with district of residence, education level, ethnicity, NHIS status, and sex. The district had the strongest relationship ($\chi^2=98.4$, $df = 4$, $p<.001$, Cramer's $V = 0.334$), with denial more common in Wenchi and Dormaa than in Sunyani. Education also showed a large effect ($\chi^2=91.1$, $df = 6$, $p<.001$, $V = 0.322$), with respondents with no formal education and those with only primary education reporting higher denial rates than those with tertiary education. Similarly, denial was more frequent among ethnic minority groups compared to Akan respondents ($\chi^2=23.4$, $df = 8$, $p = 0.003$, $V = 0.163$). NHIS enrolment was strongly protective ($\chi^2=25.2$, $df = 2$, $p<.001$, $V = 0.239$), as those without NHIS were far more likely to be denied services than those with coverage. Although the effect size was weaker, sex was also significant ($\chi^2=6.33$, $df = 2$, $p = 0.042$, $V = 0.120$), with males slightly more likely than females to report denial.

One-way ANOVA results comparing mean barrier scores across demographic characteristics

Table 3 presents one-way ANOVA results showing that mean barrier scores differed significantly across nearly all examined demographic characteristics. Education had the strongest association with barrier scores ($F(3,436) = 55.2$, $p<.001$, $\eta^2=0.275$), accounting for nearly 28% of the variance in perceived barriers. Post-hoc tests revealed that respondents with tertiary education reported significantly lower barrier scores than those with no formal education, primary, or secondary education, suggesting that education may buffer against perceived barriers to SRH services. District of residence also had a large effect ($F(2,437) = 54.3$, $p<.001$, $\eta^2=0.199$). Participants in Sunyani reported significantly fewer barriers than those in Wenchi and Dormaa, highlighting geographic disparities in access. Similarly, disability severity showed a strong influence ($F(3,436) = 35.0$, $p<.001$, $\eta^2=0.194$), with individuals with severe and very severe disabilities reporting markedly higher barrier scores compared to those with mild or moderate disabilities. Disability duration ($F(6,433) = 7.93$, $p<.001$, $\eta^2=0.099$) and disability type ($F(3,436) = 13.2$, $p<.001$, $\eta^2=0.084$) also mattered, with individuals who had disabilities since birth and those with visual

impairments reporting the greatest barriers. Smaller but significant effects were observed for NHIS status ($F(1,438) = 38.0, p < .001, \eta^2 = 0.080$) and sex ($F(1,438) = 11.6, p < .001, \eta^2 = 0.026$). Those without NHIS reported higher barriers, while females perceived more barriers than males. Ethnicity had the weakest but still significant effect ($F(4,435) = 4.16, p = 0.003, \eta^2 = 0.037$), with Akan participants reporting fewer barriers than some minority groups.

Table 3
One-way ANOVA results comparing mean barrier scores across demographic characteristics

Variable	df (between, within)	F	p-value	η^2	Significant Post-hoc Comparisons (Tukey)
Sex	(1, 438)	11.6	< .001	0.026	Females > Males (MD = 0.25, $p < .001$)
Disability Type	(3, 436)	13.2	< .001	0.084	Visual > Physical (MD = 0.52, $p < .001$); Visual > Hearing (MD = 0.32, $p = 0.024$); Visual > Speech (MD = 0.47, $p < .001$)
District	(2, 437)	54.3	< .001	0.199	Wenchi > Sunyani (MD = 0.61, $p < .001$); Dormaa > Sunyani (MD = 0.73, $p < .001$)
Education	(3, 436)	55.2	< .001	0.275	Tertiary > No formal (MD = 0.89, $p < .001$); Tertiary > Primary (MD = 0.90, $p < .001$); Tertiary > Secondary (MD = 0.50, $p < .001$); Secondary > No formal (MD = 0.39, $p < .001$); Secondary > Primary (MD = 0.40, $p < .001$)
Ethnicity	(4, 435)	4.16	0.003	0.037	Akan > Ga-Adangbe (MD = 0.25, $p = 0.026$); Akan > Mole Dagbani (MD = 0.27, $p = 0.057$, marginal); Akan > Other (MD = 0.40, $p = 0.009$)
NHIS	(1, 438)	38.0	< .001	0.080	NHIS Yes < No (MD = - 0.73, $p < .001$)
Disability Severity	(3, 436)	35.0	< .001	0.194	Severe > Mild (MD = 0.60, $p < .001$); Severe > Moderate (MD = 0.58, $p < .001$); Very Severe > all other categories ($p < .001$)
Disability Duration	(6, 433)	7.93	< .001	0.099	Since birth > 1–2 yrs (MD = 0.56, $p < .001$); Since birth > 3–4 yrs (MD = 0.49, $p < .001$); Since birth > 5–6 yrs (MD = 0.38, $p = 0.002$); Since birth > 7–8 yrs (MD = 0.44, $p = 0.027$)

Reliability

The reliability analysis of the 10-item barrier scale indicates strong internal consistency (see Supplementary Table 2). The overall Cronbach's α was 0.882, and McDonald's ω was 0.884, both exceeding the commonly accepted threshold of 0.70, suggesting that the items reliably measure the same underlying construct. With a mean item score of 3.04 (SD = 0.74), participants expressed moderate agreement with the barrier statements, and the high reliability values confirm that the scale is suitable for further statistical analyses, such as factor analysis and regression. As detailed below, exploratory factor analysis further indicated that this 10-item scale comprises two reliable subscales rather than a single

undifferentiated construct: an 8-item institutional, social and informational barriers subscale ($\alpha = 0.889$, mean = 3.06) and a 2-item physical/transport access barriers subscale ($\alpha = 0.778$, mean = 2.94). Sampling adequacy for factor analysis was confirmed (Kaiser-Meyer-Olkin measure = 0.866; Bartlett's test of sphericity $\chi^2 = 2171$, $df = 45$, $p < .001$). Applying the conventional eigenvalue-over-1 rule to the principal-axis-factoring eigenvalues suggested retaining a single factor, whereas parallel analysis suggested four factors; the four-factor solution, however, produced no primary loading on its fourth factor and cross-loadings on a fifth item, indicating over-extraction. A two-factor solution was therefore compared against the one-factor solution on model fit: the two-factor solution fit significantly better ($\Delta BIC = 181.6$; $\Delta\chi^2 = 236$, $\Delta df = 9$, $p < .001$; Supplementary Table 3) and produced a clean, interpretable pattern of loadings with no meaningful cross-loadings (Table 4), and was retained. Fit indices for the two-factor solution (RMSEA = 0.119, TLI = 0.867) remained below conventional thresholds for excellent fit, a limitation discussed further below. Items B3, B4, B5, B6, B7, B8, B9, and B10 loaded on Factor 1, labelled institutional, social and informational barriers ($\alpha = 0.889$); items B1 and B2 loaded on Factor 2, labelled physical and transport access barriers ($\alpha = 0.778$). The two factors were moderately correlated ($\phi = 0.41 - 0.55$ across rotations), consistent with distinct but related constructs.

Table 4
Exploratory factor analysis loadings (principal axis factoring, promax rotation)

Item	Description	Factor 1	Factor 2	Uniqueness
B1	Physical infrastructure inaccessible	—	0.835	0.387
B2	Transport inaccessibility	—	0.822	0.379
B3	Communication barriers with staff	0.817	—	0.322
B4	Disrespectful treatment	0.897	—	0.323
B5	Fear of stigma/judgment	0.619	—	0.622
B6	Cost of services	0.463	—	0.603
B7	Services not adapted	0.856	—	0.328
B8	Lack of privacy	0.683	—	0.521
B9	Long wait times	0.337	—	0.701
B10	Lack of information on disability rights to SRH	0.819	—	0.365

Model fit comparison for 1-factor vs. 2-factor solutions

The two barrier factors showed a markedly different predictor profile. Factor 1 (institutional, social and informational barriers) was predicted by a broad range of socio-demographic factors: age, district of residence, education, disability type, and disability severity were all independently significant, and the model explained a substantial proportion of variance ($R^2 = 0.412$). Factor 2 (physical and transport access barriers), by contrast, was predicted almost exclusively by disability characteristics themselves - disability type (visual impairment) and disability severity (very severe) - with none of the socio-

demographic or district variables reaching significance, and the model explained substantially less variance overall ($R^2 = 0.183$) (See Supplementary Table 3). This divergence suggests that institutional, social and informational barriers are shaped by structural and socio-demographic circumstances that are, in principle, addressable through education access, provider training, and district-level programming, whereas physical and transport barriers are driven primarily by the nature and severity of the disability itself and may require disability-specific infrastructure investment rather than broader socio-demographic interventions.

Correlation among barrier measures and age

Age correlated negatively with both barrier factors (Factor 1: $r = -0.418$, $p < .001$; Factor 2: $r = -0.250$, $p < .001$), indicating fewer reported barriers among older participants. Factor 1 and Factor 2 were moderately, positively correlated ($r = 0.542$, $p < .001$), confirming that they represent related but distinguishable constructs rather than a single dimension (See Supplementary Table 3).

Multivariable regression analysis

To identify independent predictors while accounting for potential confounding among the socio-demographic correlates identified in the bivariate analyses (Supplementary Tables 3 & Table 4), multivariable logistic regression models were fitted for SRH service utilisation and for denial of SRH services/information, and multivariable linear regression models were fitted for each of the two barrier factor scores. Variance inflation factors for all predictors in all four models ranged from 1.03 to 1.33, indicating no problematic multicollinearity.

Table 5
Multivariable logistic regression predicting denial of SRH services/information due to disability

Predictor	OR	95% CI	p
Sex: Male vs Female	0.94	0.57–1.57	.815
District: Dormaa vs Wenchi	2.40	1.23–4.69	.010
District: Sunyani vs Wenchi	0.37	0.19–0.69	.002
Education: Primary vs No formal	0.70	0.35–1.38	.301
Education: Secondary/Technical vs No formal	0.36	0.18–0.69	.002
Education: Tertiary vs No formal	0.12	0.05–0.27	< .001
Ethnicity: Ewe vs Akan	1.19	0.59–2.38	.631
Ethnicity: Ga-Adangbe vs Akan	2.03	0.84–4.87	.114
Ethnicity: Mole-Dagbani vs Akan	0.85	0.42–1.69	.632
Ethnicity: Other vs Akan	1.19	0.50–2.81	.700
NHIS: No vs Yes	1.09	0.48–2.47	.843

Model: N = 418 (excludes "prefer not to say", n = 22); $\chi^2 = 122$, df = 11, $p < .001$; McFadden $R^2 = 0.239$, Cox-Snell $R^2 = 0.254$, Nagelkerke $R^2 = 0.276$. The reference category for the outcome is "No" (denial = Yes, modelled).

Education was the strongest and most consistent independent predictor across both outcomes, showing a clear dose-response pattern: compared with no formal education, tertiary education was associated with over five times the odds of service utilisation (OR = 5.32) and an 88% reduction in the odds of denial (OR = 0.12). Disability severity (severe vs mild) and lack of NHIS enrolment independently reduced the odds of utilisation, but neither remained a significant predictor of denial. Conversely, district of residence was not an independent predictor of utilisation once education, NHIS, and disability severity were accounted for, despite being significant in the bivariate analysis (Supplementary Table 1), but remained a strong independent predictor of denial (Table 5), with Dormaa residents having over twice the odds of reporting denial relative to Wenchi and Sunyani residents having substantially lower odds. Similarly, NHIS enrolment and ethnicity, both significant bivariate correlates of denial (Supplementary Table 1), did not remain significant after accounting for education and district. These patterns indicate that several bivariate associations reported in Supplementary Table 1 were confounded by education and, for denial, by district of residence.

Table 6
Multivariable linear regression predicting barrier factor scores

Predictor	Factor 1 (B)	Factor 1 (p)	Factor 2 (B)	Factor 2 (p)
Age	-0.054	< .001	-0.036	.077
Sex: Female vs Male	-0.035	.483	0.017	.841
District: Dormaa vs Wenchi	0.210	.005	-0.191	.141
District: Sunyani vs Wenchi	-0.225	.001	-0.130	.269
Education: Primary vs No formal	-0.150	.086	0.101	.502
Education: Secondary/Technical vs No formal	-0.283	< .001	-0.177	.179
Education: Tertiary vs No formal	-0.304	< .001	-0.080	.547
Disability type: Visual vs Physical	0.156	.018	0.336	.003
Disability type: Hearing vs Physical	0.099	.183	-0.058	.649
Disability type: Speech vs Physical	0.026	.682	-0.095	.390
Disability severity: Moderate vs Mild	0.048	.384	0.077	.417
Disability severity: Severe vs Mild	0.176	.015	0.116	.349
Disability severity: Very Severe vs Mild	0.498	< .001	1.017	< .001
NHIS: No vs Yes	0.068	.463	-0.070	.663

Model: N = 440 for both. Factor 1 (institutional/social/informational barriers): $R^2 = 0.412$, adjusted $R^2 = 0.393$, $F(14,425) = 21.3$, $p < .001$. Factor 2 (physical/transport barriers): $R^2 = 0.183$, adjusted $R^2 = 0.156$, $F(14,425) = 6.80$, $p < .001$.

Discussion

This study examined barriers to sexual and reproductive health (SRH) service access among adolescents and young people with disabilities (AYPWDs) residing in three municipalities of the Bono Region, Ghana. The results demonstrate that access to SRH services is influenced by multiple interconnected structural, informational, social and disability-related factors rather than by individual characteristics alone. Importantly, several socio-demographic associations identified in the bivariate analyses did not remain statistically significant after adjustment for potential confounding factors, underscoring the importance of multivariable analyses when identifying independent determinants of SRH service access. Although the findings are not intended to be nationally representative, they provide important region-specific evidence to support disability-inclusive SRH planning and service delivery in Ghana and similar low-resource settings.

Educational attainment emerged as the strongest independent factor associated with SRH service utilisation and denial of services. Participants with tertiary education had substantially higher odds of utilising SRH services and significantly lower odds of experiencing service denial than those without formal education, even after adjusting for municipality of residence, disability severity, disability type, age and NHIS enrolment. These findings suggest that education may improve health literacy, awareness of available services, self-efficacy and confidence when navigating healthcare systems. Similar associations have been reported in Ghana and Cameroon, where higher educational attainment was associated with improved utilisation of HIV and SRH services among persons with disabilities (7, 19). However, education alone did not eliminate barriers, as disability severity and disability type remained independently associated with perceived barriers. This finding indicates that improving educational attainment should be complemented by disability-inclusive health system reforms, strengthened provider capacity and effective implementation of existing disability policies.

Lack of accessible information regarding disability rights to SRH services was the most strongly endorsed barrier reported by participants. Communication barriers with healthcare providers, concerns regarding privacy and confidentiality, stigma, inadequate adaptation of services and long waiting times also loaded strongly onto the institutional, social and informational barrier dimension identified through exploratory factor analysis. Collectively, these findings suggest that exclusion frequently arises through inadequate communication, limited awareness of disability rights and institutional practices that fail to accommodate the needs of young people with disabilities, rather than through overt discrimination alone. Similar findings have been reported in Ghana and other sub-Saharan African countries where inadequate provider training, poor communication and inaccessible services remain important barriers to equitable SRH care (6, 20). These findings reinforce the need for disability-inclusive provider education that extends beyond awareness raising to include practical communication skills, rights-based care and reasonable accommodation within SRH services.

Geographic disparities in SRH service access were also evident across the three participating municipalities. Participants residing in Sunyani generally reported better utilisation of SRH services and lower perceived barriers than those residing in Wenchi and Dormaa. However, after adjustment for education, disability severity and NHIS enrolment, municipality of residence was no longer independently associated with overall service utilisation, although it remained significantly associated with experiences of service denial and institutional, social and informational barriers. These findings suggest that the observed geographic differences are partly explained by underlying socio-demographic characteristics while also reflecting contextual differences in health service organisation, provider practices and local resource availability. Similar urban-rural inequalities have been reported elsewhere in sub-Saharan Africa, where disparities in infrastructure, transportation and service availability continue to affect access to healthcare among persons with disabilities (2, 4)(21).

Fear of stigma and judgement from family and community members was among the most frequently reported barriers, highlighting the continued influence of social attitudes on SRH service utilisation. Previous studies have similarly demonstrated that misconceptions regarding the sexuality of persons

with disabilities often undermine their autonomy and restrict access to SRH information and services (2, 4)(4, 7, 22). Although family gatekeeping was not directly measured in this study, the prominence of stigma-related barriers suggests that broader social and cultural norms remain important determinants of healthcare-seeking behaviour. Future research incorporating direct measures of family support, caregiver attitudes and community perceptions would provide greater insight into these relationships.

An important contribution of this study is the identification of two distinct but related dimensions of barriers to SRH service access. Institutional, social and informational barriers were independently associated with age, municipality of residence, education, disability type and disability severity, whereas physical and transport barriers were primarily associated with disability characteristics, particularly visual impairment and very severe disability. These findings suggest that different mechanisms underlie these dimensions of access barriers and that they are likely to require different intervention strategies. Institutional and informational barriers may be more responsive to health system strengthening, provider training and policy implementation, whereas physical and transport barriers may require disability-specific infrastructure improvements and transportation support.

Although exploratory factor analysis supported the proposed two-factor structure and demonstrated good internal consistency, the retained model showed an RMSEA above conventionally recommended thresholds. The decision to retain the two-factor solution was therefore based on the combined evidence from improved comparative model fit, acceptable reliability estimates, meaningful factor loadings, absence of problematic cross-loadings and theoretical interpretability rather than reliance on a single goodness-of-fit index. Consequently, the proposed factor structure should be regarded as preliminary and warrants validation using confirmatory factor analysis in independent populations.

The findings have important implications for disability-inclusive SRH policy and practice in Ghana. Strengthening implementation of the Persons with Disabilities Act (Act 715) (23) and integrating disability-inclusive standards within national SRH policies and clinical guidelines may improve equitable access to service (24). Similarly, expanding disability-inclusive provider training, improving communication support services, strengthening disability-responsive infrastructure and considering mechanisms to reduce indirect financial barriers, including transportation costs, may contribute to improving access for AYPWDs(25, 26). Although some of these recommendations extend beyond the variables directly measured in this study, they are consistent with the broader evidence on disability-inclusive health systems and represent reasonable policy considerations arising from the observed findings.

Future research should build on these findings through longitudinal and mixed-methods studies capable of examining causal pathways and changes in SRH service access over time. Nationally representative studies involving diverse disability groups and geographic settings are needed to determine the extent to which these findings are applicable across Ghana. In addition, confirmatory factor analysis is required to validate the two-factor barrier structure identified in this study, while studies examining healthcare provider attitudes, facility accessibility and family support would further strengthen understanding of the mechanisms influencing SRH service access among young people with disabilities.

Strengths and Limitations

This study has several important strengths. It is among the few quantitative studies to comprehensively examine barriers to SRH service access among AYPWDs in Ghana using a relatively large sample recruited from multiple municipalities. The study employed a psychometrically robust barrier scale with excellent internal consistency and used exploratory factor analysis to identify distinct dimensions of access barriers. Furthermore, the application of multivariable regression analyses enabled the identification of independent factors associated with SRH service utilisation, denial of services and perceived barriers while accounting for potential confounding, thereby providing more robust evidence than bivariate analyses alone.

Nevertheless, several limitations should be considered when interpreting the findings. First, the cross-sectional design precludes causal inferences regarding the observed associations. Second, participants were recruited from Social Welfare registration databases, schools and health facilities within three purposively selected municipalities; consequently, adolescents and young people with disabilities who were not registered, socially isolated, out of school or not accessing health services were likely underrepresented. The findings may therefore underestimate the magnitude of barriers experienced by the wider population of AYPWDs and should not be considered nationally representative. Third, individuals with intellectual, developmental and multiple disabilities were excluded because of the communication and methodological requirements of the survey, limiting the applicability of the findings to these groups. Fourth, data on service utilisation, denial and perceived barriers were self-reported and may be subject to recall and social desirability bias. Finally, although exploratory factor analysis supported a two-factor barrier structure, confirmatory factor analysis was not undertaken; therefore, the proposed measurement model requires validation in independent populations. Nonetheless, this provides important quantitative evidence regarding disability-inclusive SRH service access within a region where empirical evidence has previously been limited.

Conclusion

This study demonstrates that AYPWDs residing in three municipalities of the Bono Region experience multiple, interconnected structural, informational, social and physical barriers to accessing SRH services. Educational attainment was independently associated with improved service utilisation and reduced experiences of service denial, while disability severity, disability type and municipality of residence remained important determinants of perceived access barriers. The identification of two distinct barrier dimensions further suggests that disability-inclusive interventions should combine health system strengthening, provider capacity building and improved communication with disability-specific investments in accessible infrastructure and transportation.

Although the findings are not intended to represent all young people with disabilities in Ghana, they provide important region-specific evidence to support the implementation of disability-inclusive SRH policies and programmes. Strengthening the implementation of existing disability legislation, integrating

disability-inclusive standards into SRH services, improving provider competencies and communication support, and routinely collecting disability-disaggregated health information may contribute to reducing inequities in SRH service access. Future nationally representative and longitudinal studies are warranted to validate these findings, confirm the proposed barrier structure and evaluate interventions aimed at improving equitable SRH service access for young people with disabilities.

Abbreviations

AOR

Adjusted odds ratio

AYPWDs

Adolescents and young people with disabilities

BIC

Bayesian information criterion

CI

Confidence interval

CRPD

Convention on the Rights of Persons with Disabilities

df

Degrees of freedom

EFA

Exploratory factor analysis

GHS-ERC

Ghana Health Service Ethical Review Committee

KMO

Kaiser-Meyer-Olkin (measure of sampling adequacy)

NHIS

National Health Insurance Scheme

OR

Odds ratio

RMSEA

Root mean square error of approximation

SD

Standard deviation

SRH

Sexual and reproductive health

TLI

Tucker-Lewis index

UKZN

University of KwaZulu-Natal

VIF

Declarations

Ethics approval and consent to participate

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical clearance was obtained from the Ghana Health Service Ethical Review Committee (Protocol No. GHS-ERC: 007/11/24) and the University of KwaZulu-Natal's ethics committee, with additional approval from the relevant District Health Directorates and the Bono Regional Health Directorate. Informed consent was obtained from participants aged 18 and above; for minors, parental/guardian consent was obtained alongside participant assent. Participation was voluntary, with an explained right to withdraw at any time without consequence.

Consent for publication

Not applicable. This manuscript does not contain any individual person's data, images, or identifiable information; only aggregated, de-identified survey data are presented.

Competing interests

The authors declare that they have no competing interests.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author Contribution

LO and DK conceptualised the study. LO designed the study, led participant recruitment and data collection, contributed to data analysis and interpretation, and drafted the original manuscript. SO assisted in data collection and conducted the statistical analysis. MAM reviewed and revised the initial draft manuscript prior to submission to the secondary supervisor. TGG provided secondary supervision, critically reviewed the manuscript for important intellectual content, and approved the analytical approach. DK provided primary supervision, contributed to the conceptualisation and design of the study, critically reviewed and revised the manuscript, and oversaw the overall research process. All authors read and approved the final manuscript.

Acknowledgement

The authors wish to thank the adolescents and young people with disabilities who participated in this study for their time and openness. We are grateful to the leadership and staff of the schools and health facilities in the Wenchi, Dormaa, and Sunyani municipalities of the Bono Region for facilitating access to study participants, and to the Ghana Health Service and the respective District Health Directorates for their institutional support and approval. We also acknowledge the contribution of the research assistants and sign-language interpreters involved in data collection, and the University of KwaZulu-Natal for the institutional support of this research.

Data Availability

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical clearance was obtained from the Ghana Health Service Ethical Review Committee (Protocol No. GHS-ERC: 007/11/24) and the University of KwaZulu-Natal's ethics committee, with additional approval from the relevant District Health Directorates and the Bono Regional Health Directorate. Informed consent was obtained from participants aged 18 and above; for minors, parental/guardian consent was obtained alongside participant assent. Participation was voluntary, with an explained right to withdraw at any time without consequence.

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