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Sexual violence victimisation among deaf adolescents: A multi-school-based cross-sectional study from Ghana

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ABSTRACT

Background: Deaf adolescents and other young people with sensory disabilities are at elevated risk of sexual violence victimisation. However, there is scant published evidence on the epidemiology of sexual violence victimisation among deaf adolescents from African countries, including Ghana.
Objective: To describe the 12-month prevalence and associated factors of sexual violence victimisation among school-going deaf adolescents in Ghana.
Methods: This is a cross-sectional self-report survey involving a nationally representative sample of 422 school-going deaf adolescents. Multivariable logistic regression was used to examine the sociodemographic, personal-level, family-related, school-based, and interpersonal-level factors associated with sexual violence victimisation.
Results: The 12-month prevalence estimate of sexual violence victimisation was 17.4% (95% confidence interval [CI] = 14.0–21.3%). Comparable estimates were found between females (16.6%; 95%CI = 11.3–23.0%) and males (17.9%; 95%CI = 13.6–23.0%). Deaf adolescents from polygynous families, those who did paid work, those having a single-parent caretaker, those whose primary caretakers were unemployed, and those in romantic relationships were at increased odds of sexual violence victimisation. Family-related factors such as parental divorce, and conflict with parents were also associated with increased odds of sexual violence victimisation. No (putative protective) factors were identified to be associated with reduced odds of sexual violence victimisation.
Conclusions: The prevalence estimates and associated factors of sexual violence victimisation among school-going deaf adolescents in the current study are comparable to what is known about in-school hearing adolescents in Ghana. The evidence highlights the need to strengthen preventive efforts against the offence in both deaf and hearing adolescents.

1. Introduction

Sexual violence refers to "any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed, against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work".[1] Besides posing a large economic burden to the family, healthcare, justice system, and productivity,[2] the medical challenges and negative mental health outcomes of sexual violence victimisation during childhood and adolescence can be life-long, persisting through adulthood.[3–5] Evidence from high-income countries suggests that, relative to children and other young people without disabilities, deaf adolescents and other young people with sensory disabilities are at elevated risk of sexual violence victimisation and re-victimisation.[6–9] Specifically, compared to children and young people without disabilities, the risk of sexual abuse victimisation is 3.4 times higher among those with disabilities, with a pooled prevalence estimate of 13.7% (95%CI = 9.2–18.9%).[6]

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However, there is scant published evidence on the epidemiology of sexual violence victimisation among deaf adolescents – and other young people and children with (sensory) disabilities – in (sub-Saharan) African countries, including Ghana.[10,11] Extant evidence from Egypt indicates that deaf children are at higher odds of sexual abuse victimisation (OR = 9.1 [95%CI=1.6, 50.6])[12] than hearing young people. In Ghana, published studies on child sexual abuse/exploitation/violence victimisation have paid attention mainly to young people without disabilities. Among high school hearing adolescents, prevalence studies have reported comparable 12-month estimates of sexual violence victimisation in 2015 (overall = 19.4% [95%CI= 15.3, 23.8%]; girls = 27.5% [95%CI= 21.9–33.8%]; boys = 11.3% [95%CI= 6.0–18.8%])[13] and 2021 (overall = 17.6% [95%CI = 15.7, 19.4%]; girls = 24.3% [95% CI = 21.5, 27.3%]; boys = 10.4% [95%CI = 8.3, 13.6%]).[14] We are not aware of any (recently) published study specifically on the epidemiology of sexual violence victimisation among deaf adolescents in Ghana. However, peculiar vulnerability of deaf and hard-of-hearing children and adolescents to sexual violence victimisation could be possible – considering that this young population may be unable to report their victimisation and abusers to significant others outside the family or special school contexts. The language incompatibilities between deaf young people and the hearing-majority world they live in, where most people (including personnel in formal support institutions such as the police service) do not understand and cannot communicate using sign language, making reporting difficult – if not impossible. The additional known challenges such as limited access to health services (including sexual and reproductive care), unequal educational opportunities, and social isolation[15,16] could also predispose this young population to sexual violence victimisation in Ghana.

The current study focused on school-going deaf adolescents in Ghana, and had two aims: 1) to estimate the 12-month prevalence of sexual violence victimisation, and 2) describe some of the associations of sexual violence victimisation at the personal-, family-, school-, and interpersonal-levels. 'Deaf', in this study, is taken to mean a profound hearing loss which implies very little or no (functional) hearing; deaf people often use sign language for communication.[17]

2. Methods

2.1. Design, setting, and participants

The design and reporting of this research was guided by the agreed recommendations of Strengthening the Reporting of Observational Studies in Epidemiology [STROBE].[18] As the current study is part of a larger study, details of the methods and procedures followed are reported in an earlier publication.[19] In brief, we conducted a cross-sectional survey (using a self-report anonymous questionnaire) among deaf adolescents attending Junior High Schools for the deaf in Ghana. Typically, young people enrolled in schools for the deaf in Ghana have moderate to profound hearing loss. In this study, adolescents refer to young people aged between 10 and 24 years.[20] As at August 2019 (the time of designing this study), the total population of deaf students found within the 13 special Junior High Schools for the deaf in Ghana stood at 1030. A minimum sample size of 288 was predetermined using Yamane's formula for proportions,[21] with .05 level of precision. We applied a two-stage cluster sampling approach. First, using probability proportional to the size of enrolment across the 16 administrative regions of Ghana, we selected 7 Junior High Schools for the deaf. In the second stage, we randomly selected classes to participate in the study. All students in a class randomly selected were eligible to partake in the study. In total, 468 students from the selected classes were approached and recruited for the survey, but 442 students provided complete data included in the final analysis.

2.2. Ethics

The Departmental Research and Ethics Committee (DREC) in the Psychology Department, University of Ghana, Accra, approved this study (protocol reference number: DREC/024/19-20). Besides following the research ethical procedures of the Special Education Unit of the Ghana Education Service (GES), we also obtained permissions from institutional heads of the participating schools. In addition, each participating student was required to sign a written consent before responding to the survey questions and consent was sought for unaged students from their parents/guardians. Students aged 18 years or more signed a written consent form before participation. Those aged 17 years and younger assented to participation, after their parents/guardians had given their consent.

2.3. Variables and measures

2.3.1. Socio-demographic variables

Table 1 shows nine variables related to demographic and social characteristics of the participants: sex (female, male), deafness status (postnatal, congenital), sexual and gender minority status (heterosexual, LGBT), school grade (Junior High School 1, Junior High School 2, Junior High School 3), employment status (only a student, I do paid work), family structure (father has 1 wife, father has >1 wife), primary caretaker (both parents, one parent, no parents), primary caretaker's employment status (employed, unemployed) and romantic relationship (no, yes).

2.3.2. Outcome variable

Sexual violence victimisation was the outcome variable of the current study. We adopted the single-item (yes/no binary response) measure of sexual violence victimisation ['During the past 12 months, did anyone force you (i.e. physically or verbally) to engage in sexual activities against your wish?'] from the 2012 Ghana WHO Global School-based Health Survey [WHO-GSHS].[22]

2.3.3. Exposure variables

As shown in Supplementary e-Table 1, this study included 12 exposure variables grouped under *personal and lifestyle* variables (religious participation, & weekly alcohol use); *family factors* (parental divorce, conflict with parents, parental checking of homework, parental understanding, parental monitoring, and parental intrusion of privacy); *school factors* (schoolwork problems, & truancy); and *interpersonal adversities* (break-up, & conflict with friends). The responses to most of the exposure variables – e.g., alcohol use, parental divorce, conflict with parents, schoolwork problems and break-up were binary (no/yes), and were adopted from the 2012 Ghana WHO-GSHS.[22] The single-item measure of religious participation – 'How often do you attend church or other religious meetings?' – was adopted from the 5-item Duke University Religion Index.[23]

2.3.4. Procedure

To ensure comprehension and readability of the survey, the questionnaire was independently reviewed by a primary school for the deaf English language teacher and a Ghanaian deaf education researcher. We administered the questionnaires to participants in their schools (in classrooms and assembly halls, with sitting arrangement spaced reasonably to ensure privacy). We addressed participants' questions and concerns using the Ghanaian Sign Language, with assistance from three authors. During the process, participants signalled by raising their hand if they had a question or concern requiring clarification. While there were no concerns or questions about the sexual victimisation question, 13 participants asked for clarification regarding the question on sexual and gender orientation (in particular, they wanted to know the difference between the response options, bisexual and transgender). The completion of the questionnaire lasted between 55 and 75 min; the

Table 1
Demographic characteristics of participants, and distribution of exposure variables across the sample.

Variable	Total sample
	n (%)
Socio-demographic variables	
Sex:	
Female	169 (38.2)
Male	273 (61.8)
Deafness status:	
Deaf after birth (postnatal)	164 (37.1)
Deaf from birth (congenital)	278 (62.9)
Sexual and gender minority status:	
Heterosexual	336 (78.3)
LGBT	93 (21.7)
School grade:	
JHS 1	213 (48.2)
JHS 2	72 (16.3)
JHS 3	157 (35.5)
Employment status:	
Only a student	341 (79.5)
I do paid work	88 (20.5)
Family structure:	
Father has 1 wife [monogamous]	312 (72.4)
Father has >1 wife [polygynous]	119 (26.9)
Primary caretaker:	
Both parents	238 (54.1)
One parent	147 (33.4)
No parents	55 (12.5)
Primary caretaker's employment status:	
Employed	375 (84.8)
Unemployed	67 (15.2)
In romantic relationship:	
No	243 (55.6)
Yes	194 (44.4)
Lifestyle variable:	
Weekly alcohol use:	
Never drink alcohol	335 (76.8)
≥ 1 drink	101 (23.4)
Family factors:	
Parental divorce:	
No	291 (66.7)
Yes	145 (33.3)
Conflict with parents:	
No	270 (62.1)
Yes	165 (37.9)
School factors:	
Schoolwork problems:	
No	127 (29.1)
Yes	310 (70.9)
Truancy:	
≤ 5 days	352 (79.6)
> 5 days	90 (20.4)
Interpersonal adversities:	
Breakup:	
No	291 (65.8)
Yes	151 (34.2)
Conflict with friends:	
No	256 (57.9)
Yes	186 (42.1)

survey took place from October 2019 to January 2020. Each student enclosed their answered questionnaire in a provided A-4 size envelope and dropped it in an opaque box before leaving the hall/classroom.

2.3.5. Data analysis

We analysed the data using the Statistical Package for Social Sciences (SPSS version 29.0 for Windows). Missing data were completely deleted using the list-wise strategy, as the loss of cases due to the missing data was less than 5 %[24] (see Supplementary e-Table 1). The analysis proceeded in two stages: 1) descriptive analysis involving frequencies, proportions and the Pearson's Chi-square tests (χ^2) and point-biserial correlation (r_{pb}) tests to examine the bivariate relations between sexual violence victimisation and the exposure variables and socio-demographic factors; and 2) we performed adjusted and unadjusted multivariable logistic regression analyses to examine the associations between sexual violence victimisation and the indicated exposure variables. The socio-demographic were included in the adjusted logistic models as covariates. We determined statistically significant results mainly based on odds ratios and associated 95% confidence intervals (CI) observed in the logistic regression models and their clinical importance,[25,26] although the arbitrary statistical threshold of $p < .05$ also partly informed the judgement of statistical significance of results.

3. Results

3.1. Sample characteristics

Table 1 provides demographic and descriptive information about the participants. Overall, 442 students (aged 13–24 years; mean = 18.2; SD = 2.6) provided complete data included in the final analysis – representing a response rate of 94.4%. There were 169 females (38.2%) and 273 males (61.8%). The majority of the participants (62.9%) were deaf from birth; most of the participants (78.3%) self-identified as heterosexual; 44.4% reported being in a romantic relationship; and 48.2% were in Junior High School 1. Most of the participants (84.4%) reported that their primary caretakers were employed.

3.2. Prevalence estimates of sexual violence victimisation

The overall 12-month prevalence estimate of sexual violence victimisation was 17.4% (95%CI = 14.0–21.3%). Although in terms of absolute values, more males (n = 49; 17.9%; 95%CI = 13.6–23.0%) than female (n = 28; 16.6%; 95%CI = 11.3–23.0%) reported sexual violence victimisation during the previous 12 months, this difference was not statistically significant, as the 95%CIs significantly overlapped between both sexes. Similarly, more participants who were deaf from birth (n = 54) reported sexual violence victimisation (19.4%; 95%CI = 14.9–24.6%) than those whose deafness occurred after birth (n = 23; 14.0%; 95%CI = 9.1–20.3%). However, the overlap of the 95%CIs of these estimates indicates that the difference was not statistically significant.

3.3. Bivariate associations

Tables 2 and 3 show significant bivariate associations found between sexual violence victimisation and most of the exposure and socio-demographic factors. Although no statistically significant sex difference was observed, older deaf adolescents were more likely than younger deaf adolescents to report sexual violence victimisation during the previous 12 months ($r_{pb} = .14$, n = 442, $p = .002$). As shown in Table 1, participants who reported weekly alcoholic use (χ^2 (1) = 27.09, $p < 001$), parental divorce (χ^2 (1) = 26.72, $p < 001$), being in a romantic relationship (χ^2 (1) = 20.44, $p < ·001$), conflicts with parents (χ^2 (1) = 19.97, $p < 001$), caretaker unemployment (χ^2 (1) = 15.69, $p < 001$), and breakup (χ^2 (1) = 15.09, $p < 001$) were more likely to report sexual violence victimisation in the previous 12 months.

3.4. Multivariable associations

Table 4 shows the findings from the unadjusted and adjusted logistic regression models. Regarding socio-demographic factors, deaf adolescents from polygynous families were at 3.3 times increased odds of sexual violence victimisation compared to those from monogamous families (aOR = 3·33; 95%CI = 1·68, 6·57; $p = ·001$). Participants who did paid work (aOR = 2·61; 95%CI = 1·09, 6·22; $p = ·031$), those having no parent as primary caretaker (aOR = 2·59; 95%CI = ·99, 6·75; $p = ·052$) or having one parent as primary caretaker (aOR = 2·42; 95%CI = 1·21, 4·86; $p = ·013$), those whose primary caretakers were unemployed

Table 2
Chi-square tests of exposure variables, demographic factors and outcome variable.

Variable	Sexual violence victimisation		χ^2	*p*-value
	No	Yes		
	n (%)	n (%)		
Socio-demographic variables:				
Sex			.14	.710
Female	141 (83.4)	28 (16.6)		
Male	224 (82.1)	49 (17.9)		
Deafness status			2.09	.148
Deaf after birth (postnatal)	141 (86.0)	23 (14.0)		
Deaf from birth (congenital)	224 (80.6)	54 (19.4)		
Sexual and gender minority status			**13.12**	**<.001**
Heterosexual	289 (86.0)	47 (14.0)		
LGBT	65 (69.9)	28 (30.1)		
School grade:			2.95	.229
JHS 1	176 (82.6)	37 (17.4)		
JHS 2	64 (88.9)	8 (11.1)		
JHS 3	125 (79.6)	32 (20.4)		
Employment status			**13.37**	**<.001**
Only a student	293 (85.9)	48 (14.1)		
I do paid work	61 (69.3)	27 (30.7)		
Family structure			**9.12**	**.003**
Father has 1 wife [monogamous]	267 (85.6)	45 (14.4)		
Father has >1 wife [polygynous]	87 (73.1)	32 (26.9)		
Primary caretaker			**10.29**	**.006**
Both parents	209 (87.8)	29 (12.2)		
One parent	113 (76.9)	34 (23.1)		
No parents	41 (74.5)	14 (25.5)		
Primary caretaker's employment status			**15.69**	**<.001**
Employed	321 (85.6)	54 (14.4)		
Unemployed	44 (65.7)	23 (34.3)		
In romantic relationship			**20.44**	**<.001**
No	219 (90.1)	24 (9.9)		
Yes	143 (73.7)	51 (26.3)		
Lifestyle variable:				
Weekly alcohol use			**27.09**	**<.001**
Never drink alcohol	294 (87.8)	41 (12.2)		
≥ 1 drink	66 (65.3)	35 (34.7)		
Family factors:				
Parental divorce			**26.72**	**<.001**
No	259 (89.0)	32 (11.0)		
Yes	100 (96.0)	45 (31.0)		
Conflict with parents			**19.97**	**<.001**
No	240 (88.9)	30 (11.1)		
Yes	119 (72.1)	46 (27.9)		
School factors:				
Schoolwork problems			2.21	.137
No	110 (86.6)	17 (13.4)		
Yes	250 (80.6)	60 (19.4)		
Truancy			2.75	.097
≤ 5 days	296 (84.1)	56 (15.9)		
> 5 days	69 (76.7)	21 (23.3)		
Interpersonal adversities:				
Breakup			**15.09**	**<.001**
No	255 (87.6)	36 (12.4)		
Yes	110 (72.8)	41 (27.2)		
Conflict with friends			**1.75**	**<.001**
No	226 (88.3)	30 (11.7)		
Yes	139 (74.7)	47 (25.3)		

Note: χ^2 = Chi square.

(aOR = 2·19; 95%CI = 1·02, 4·69; p = ·044), and those in romantic relationships (aOR = 2·11; 95%CI = 1·01, 4·38; p = ·046) were at increased odds of sexual violence victimisation. Family-level factors associated with increased odds of sexual violence victimisation were parental divorce (aOR = 2·09; 95%CI = 1·07, 4·05; p = ·030), and conflict with parents (aOR = 1·74; 95%CI = ·87, 3·48; p = ·114). Conflict with friends (aOR = 1·86; 95%CI = ·94, 3·69; p = ·076), alcohol use (aOR = 1.72; 95%CI = ·83, 3·57; p = ·143), and religious participation (aOR = 1·28; 95%CI = 1·06, 1·54; p = ·010) were also associated with increased odds of sexual violence victimisation. In the unadjusted model, sexual and gender orientation was associated with increased odds of sexual violence victimisation (uOR = 1.95; 95%CI = 1·02, 3·73; p = ·044).

Table 3
Point-biserial correlation tests.

Variable	Sexual violence victimisation in the previous 12 months		
	n	r_{pb}	p-value
Socio-demographic variables:			
Age	**442**	**.146**	**.002**
Personal and lifestyle variables:			
Religious participation	432	−.004	.929
Family factors:			
Parental checking of homework	435	.008	.869
Parental understanding	439	−.007	.887
Parental monitoring	437	.041	.389
Parental intrusion of privacy	438	.036	.450

Note: r_{pb} = point biserial co-efficient.

4. Discussion

To our knowledge, this is the first nationally representative study that attempts to estimate the 12-month prevalence of sexual violence victimisation and describe some of the associated factors among school-going deaf adolescents in Ghana. Approximately, 2 out of 10 school-going deaf adolescents (representing nearly 1.8 out of 10 males, and 1.6 out of females) reported sexual violence victimisation during the previous 12 months. This estimate is comparable to prevalence rates reported in previous studies involving adolescents with sensory disabilities[8,27,28] and adolescents without hearing (sensory) disabilities.[9] However, in the light of evidence from recent studies using the same measure of sexual violence victimisation among hearing in-school adolescents in Ghana,[13,14] the estimate of the current study suggests that nearly 2 in 10 deaf boys are more likely to be sexually violated relative to 1 in 10 hearing boys, and about 1.7 in 10 deaf girls are likely to report sexual violence victimisation compared to 2 in 10 hearing girls. This is similar to the 2022 estimate from the Ghana Demographic and Health Survey that 14% of women aged 15–49 have ever experienced sexual violence victimisation by any perpetrator, and about 6% of women experienced sexual violence in the previous 12 months.[29]

Taken together, estimates from the current study support the concern that sexual violence victimisation among young people is a global concern requiring prevention and intervention among children and adolescents, including boys, marginalised, minoritised, out-of-school young people, and young people living with disability.[1,14,30–32] Generally, children and adolescents – regardless of their disability status – are vulnerable to sexual violence victimisation.[1,31] However, the communicative barriers between deaf and hard-of-hearing young people and their social contexts elevate their vulnerability to sexual violence victimisation.[33] In principle, the evidence from previous studies suggesting that over 90% of the perpetrators of sexual violence against deaf and hard-of-hearing young people are hearing, often known to the victim, and come from outside of the family context[33,34] also suggests an elevation of the vulnerability to and aggravates the disclosure process of sexual violence victimisation in deaf and hard-of-hearing children and adolescents. Typically, perpetrators exploit the non-familial context in which they encounter or interact with the victim, the communicative barriers being experienced by the victim, and the victim's needs for attention; that way, the perpetrators draw in the victim and in the process (sexually) abuse them.[33] The finding also implies that (deaf) children and young people in family with weaker bonds are more likely to be vulnerable (than those in families with stronger social and emotional bonds) to sexual violence perpetrators – who are typically found outside the family context.

The finding from the current study that deaf adolescents from

Table 4
Multivariate associations between exposure variables and sexual violence victimisation during the previous 12 months.

Variables in model	Unadjusted logistic model				Adjusted logistic model			
	β	uOR	95% CI	*P*-value	*β*	aOR	95% CI	*P*-value
Socio-demographic variables:								
Sex	-·009	·99	·54, 1·83	·976	·143	1·15	·57, 2·34	·692
Age	**·128**	**1·14**	**1·01, 1·28**	**·032**	·119	1·13	·99, 1·29	·080
Deafness status	·412	1·51	·80, 2·85	·203	·468	1·59	·77, 3·32	·210
sexual and gender minority status	**·667**	**1·95**	**1·02, 3·73**	**·044**	·437	1·55	·69, 3·44	·284
School grade:								
JHS 1	Reference				Reference			
JHS 2	-·925	·39	·14, 1·12	·081	-·971	·38	·12, 1·18	·095
JHS 3	·005	1·01	·53, 1·91	·987	-·170	·84	·40, 1·78	·655
Employment status	**·645**	**1·91**	**·98, 3·72**	**·059**	**·959**	**2·61**	**1·09, 6·22**	**·031**
Family structure	**·968**	**2·63**	**1·44, 4·82**	**·002**	**1·202**	**3·33**	**1·68, 6·57**	**·001**
Primary caretaker:								
Both parents	Reference				Reference			
One parent	**·891**	**2·44**	**1·30, 4·55**	**·005**	**·884**	**2·42**	**1·21, 4·86**	**·013**
No parents	**·688**	**1·99**	**·85, 4·67**	**·114**	**·950**	**2·59**	**·99, 6·75**	**·052**
Primary caretaker's employment status	**·875**	**2·39**	**1·21, 4·76**	**·012**	**·784**	**2·19**	**1·02, 4·69**	**·044**
In romantic relationship	**·928**	**2·53**	**1·39, 4·59**	**·002**	**·746**	**2·11**	**1·01, 4·38**	**·046**
Personal and lifestyle variables:								
Religious participation	·107	1·11	·95, 1·30	·187	**·244**	**1·28**	**1·06, 1·54**	**·010**
Weekly alcohol use	**1·009**	**2·74**	**1·49, 5·06**	**·001**	**·544**	**1·72**	**·83, 3·57**	**·143**
Family factors:								
Parental divorce	**·897**	**2·45**	**1·38, 4·35**	**·002**	**·735**	**2·09**	**1·07, 4·05**	**·030**
Conflict with parents	**·620**	**1·86**	**1·03, 3·36**	**·041**	**·556**	**1·74**	**·87, 3·48**	**·114**
Parental checking of homework	-·122	·88	·70, 1·12	·306	-·036	·96	·73, 1·28	·801
Parental understanding	·068	1·07	·84, 1·36	·576	-·038	·96	·73, 1·27	·790
Parental monitoring	·054	1·05	·84, 1·32	·642	·082	1·09	·83, 1·42	·550
Parental intrusion of privacy	-·020	·98	·79, 1·21	·854	-·015	·99	·77, 1·26	·908
School factors:								
Schoolwork problems	-·076	·93	·46, 1·85	·829	-·524	·59	·27, 1·31	·197
Truancy	·321	1·38	·70, 2·71	·351	·011	1·01	·41, 2·49	·982
Interpersonal adversities:								
Breakup	·457	1·58	·87, 2·85	·129	·221	1·25	·61, 2·53	·541
Conflict with friends	**·566**	**1·76**	**·99, 3·15**	**·056**	**·621**	**1·86**	**·94, 3·69**	**·076**
Nagelkerke pseudo R^2						·36		
Cox & Snell R^2						·22		
Hosmer-Lemeshow GOF test (sig·)						3·69 (·884)		
Overall percentage correctly classified						85·3		

Note: *β* = beta value; uOR = unadjusted odds ratio; aOR = adjusted odds ratios; CI = Confidence Interval; GOF = goodness of fit.

polygynous families are three times more likely (than those from monogamous families) to report sexual violence victimisation is consistent with evidence from some parts of Africa and other low- and middle-income countries suggesting that children and adolescents from polygynous and non-nuclear families are at increased risk of physical and sexual abuse victimisation.[35] Polygynous family structures are generally associated with negative behavioural and mental health outcomes (e.g., neglect, depression, anxiety, low self-esteem, problem gambling) among children and adolescents.[36–38] Considering the high incidence of poverty (and low quality of life) in polygynous families in Ghana, and generally across sub-Saharan Africa,[39] this evidence could also be pointing at the possibility of deaf adolescents from polygynous families experiencing a strong sense of neglect and other social adversities in their families – which in turn could increase their risk for sexual abuse victimisation. Other family-related factors showed increased odds of sexual violence victimisation among school-going deaf adolescents: having no parent as primary caretaker, having a single-parent caretaker, having an unemployed primary caretaker, parental divorce, and conflict with parents. Put together, these family-related factors could be described broadly (but cautiously and arguably) as 'household chaos' – characterised by high level of disorganisation in the home environment that increases risks for many adverse family and child (health) outcomes.[40] Studies suggest that family discord and conflictual family environment could result in heightened self-blame and reduced self-esteem among children and adolescents, and increase their vulnerability to sexual exploiters and abusers.[1]

The finding that sexual and gender orientation is associated with increased odds of sexual violence victimisation is to be expected, considering that non-heterosexuality is still a crime and taboo in Ghana, coupled with high stigma and strong negative attitudes, widespread discrimination and social hostilities. Evidence suggests that more young people without hearing disabilities identifying as sexual and gender minority attending senior high schools in Ghana tend to report sexual violence victimisation – compared to their heterosexual school- and classmates.[41] It is common knowledge that in many proscriptive contexts where nonheterosexuality is criminalized, non-heterosexual individuals are sometimes raped or sexually assaulted as a way of punishment by some community members. While the sexual and gender orientation of some young deaf adolescents may be a crime in Ghana, the state still has a responsibility to ensure that these young people are protected against all forms of violence victimisation.

The evidence that deaf adolescents in romantic relationships were at increased odds of sexual violence victimisation could be lending support to the well-documented finding in Ghana that romantic relationships and marriages are still key avenues where intimate partner sexual violence perpetration and victimisation occur.[42,43] What is, however, not clear from the current study is whether the (plausible) perpetration of intimate partner sexual violence occurred in one or both hearing-to-deaf and deaf-to-deaf romantic relationships.

Interestingly, although we expected some of the exposure variables (e.g., parental checking of homework, parental monitoring, and parental understanding) to present as 'protective factors', the final adjusted logistic model found no (putative protective) factors to be associated with reduced odds of sexual violence victimisation. The absence of a statistically significant association with factors related to the intrafamilial relationships contrasts with the strong association with factors related

with the family structure observed. Plausibly, this observation is an artefact of the study; future studies could (use robust qualitative approaches to) explore the protective potentials of other personal, familial and extra-familial factors (e.g., parent-child communication about sexuality, knowledge on responsible sexual activities, disclosure of abuse, community support system).

In terms of policy and practice, the key findings of the current study could be pointing to a need to consider the creation of professional, specialist support arrangements for deaf adolescent survivors of sexual violence. Given that most of the factors associated with the increased odds of sexual violence victimisation exist within the family environment, it stands to argue that interventions aimed at protecting the various social contexts surrounding school-going deaf adolescents and ameliorating familial adversities should be prioritised.

Several implications of our study for policy and quality of life can be identified. Firstly, the findings necessitate the formulation of inclusive health policies that recognise and address the unique vulnerabilities of deaf adolescents (for example, the familial and school contexts of deaf and hard-of-hearing young people that elevate their vulnerability to various social adversities and negative psychosocial outcomes, including sexual violence victimisation). Policies aimed at preventing sexual violence in this population must be grounded in empirical evidence, incorporating measures that enhance their safety net and family support, restricted access to alcohol use, and responsiveness of support systems. Educational and health services must be tailored to meet the care needs of sexually abused deaf adolescents, ensuring they have access to information, support, and resources necessary to navigate risks and seek help effectively.

Secondly, our study underscores the need for policy frameworks that promote the quality of life for individuals with disabilities through the lens of health equity. This includes advocating for comprehensive sexual education programmes that are accessible to deaf adolescents, enhancing their ability to form healthy relationships and recognise signs of abuse. Additionally, interventions should aim to strengthen family and community support systems, creating environments that foster open communication, understanding, and protection against violence.

Future studies (using, for example, robust qualitative approaches) could include the 'voices' of deaf adolescent survivors of sexual violence to nuance our understanding of the individualised meanings, first-hand accounts, disclosure of the abuse, and coping of deaf adolescent survivors of sexual violence victimisation.[44] Findings of such future studies would benefit policy and practice but also inform preventive, interventive, protective and promotive training programmes for (mental) health professionals, teachers and parents (families).

A notable strength of the current study is that it is the first study from Ghana to recruit a nationally representative sample of school-going adolescents to respond to a self-report survey on sexual violence victimisation. The current study provides a useful point of departure for more expansive studies on sexual violence victimisation in this young population in Ghana. However, some limitations of the current study must be noted. First, the highly stigmatised status of sexual violence victimisation in the Ghanaian society might have led some of our participants to provide evasive, socially desirable or guarded responses (false negatives) to our question assessing sexual violence victimisation. In research, retrospective reporting of sexual violence victimisation can be susceptible to recall error, social desirability, diminished self-worth, and feelings of shame and guilt that could increase nondisclosure; children and young people may feel traumatised, and demotivated from reporting, openly discussing or revisiting their victimisation.[1] A critical implication of this challenge is that our reported prevalence estimate could be an underestimation of the actual extent of the problem among this young population. It is notable that the unavailability of data on sexual violence victimisation among adolescents of similar age without hearing disabilities across Ghana makes a comparative analysis difficult.

The association we found between religious participation and sexual victimisation in the adjusted logistic regression analysis was not significant in unadjusted analysis. This suggests some correlations between the data or a problem with the missingness. The one-off cross-sectional survey approach used does not allow for causal interpretations of the findings. Also, we applied a single-item measure of sexual violence victimisation which might have been inadequate and less encompassing in capturing all the key nuances of sexual violence victimisation in young people. Future studies could benefit from using multi-item measures validated with satisfactory psychometric properties and contextual relevance. To avoid under-powered studies, future research using the same or similar approach as the current study need to consider estimating the intra-cluster correlation of the observations when sampling through clusters of participants. While the evidence of the current study may apply to school-going deaf adolescents, the findings are not necessarily applicable to out-of-school and non-school-going deaf adolescents in Ghana. We believe deaf adolescents who are not attending school could be at a relatively elevated risk of sexual violence victimisation.

5. Conclusions

The prevalence estimates and associated factors of sexual violence victimisation among school-going deaf adolescents in the current study are comparable to what is known about in-school hearing adolescents in Ghana. The key evidence on the associated factors suggests that while the creation of professional, specialist support arrangements for deaf adolescent survivors of sexual violence may be useful, interventive efforts aimed at ameliorating familial and social adversities surrounding school-going deaf adolescents should be prioritised. While the findings point to a need for similar studies involving out-of-school, non-school-going deaf adolescents, the key findings also underscore the need to strengthen preventive efforts against the offence in both deaf and hearing adolescents. In the light of these considerations, advancing the health outcomes and quality of life for deaf adolescents necessitates concerted efforts from a broad spectrum of societal actors (including policymakers, educators, healthcare providers, parents and family heads, and community leaders).

CRediT authorship contribution statement

Emmanuel Nii-Boye Quarshie: Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Daniel Fobi:** Writing – review & editing, Writing – original draft, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Cyril Mawuli Honu-Mensah:** Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Formal analysis, Data curation. **Emma Eyison Appiah:** Writing – review & editing, Writing – original draft, Methodology, Data curation. **Ethel Obeng:** Writing – review & editing, Writing – original draft, Validation, Methodology, Data curation. **Irene Nyarkoah Bokpin:** Writing – review & editing, Writing – original draft, Validation, Data curation. **Curwyn Mapaling:** Writing – review & editing, Writing – original draft, Validation, Data curation. **Kwaku Oppong Asante:** Writing – review & editing, Writing – original draft, Validation, Investigation, Data curation.

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors declare that we have not used generative AI and AI-assisted technologies in the writing process of this manuscript.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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