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Research Article

Factors associated with violence against women of reproductive age in the Wangata Health Zone, Equateur Province, Democratic Republic of Congo

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Abstract

Introduction: Violence against women of reproductive age in the Wangata Health Zone has severe consequences, including unwanted and early pregnancies and cases of fistula. This study aimed to identify factors associated with such violence in Équateur Province, Democratic Republic of Congo.

Methodology: A cross -sectional analytical study was conducted between January and March 2024, among 369 women living in conjugal households. Participants were selected through four -stage probabilistic sampling. Data were collected via interviews using Android phones with KOBO COLLECT V2021.3.4 and analyzed with SPSS V.25. Prevalence and associated factors were assessed using multivariate logistic regression, calculating Odds Ratios (OR) with 95% confidence intervals.

Results: Nearly 90% of women reported knowledge of different forms of violence. About 64.8% had both heard of and experienced violence, while 35.2% had not. More than half (51.8%) experienced insults or shouting, 40.7% physical violence, 31.2% sexual pressure, and 26.6% forced sexual intercourse. Threats with weapons affected 11.9%. Women in Balako, Bosomba, De la Rive, and De la Ville health areas were less likely to experience violence (ORa=0.16; 0.09; 0.02; 0.13). Conversely, women in free unions (ORa=4.08) and health professionals (ORa=10.94) were more vulnerable. Limited knowledge of violence was also a risk factor (ORa=3.30).

Conclusion: The majority of women in Wangata have experienced violence. Women in free unions and health professionals are particularly at risk, highlighting the urgent need for awareness and targeted prevention strategies to reduce violence.

Keywords: Associated factors, violence, women and girls, Wangata, Congo.

I. Introduction

Violence against women remains a major public health concern and a violation of human rights, undermining women's health, dignity, and autonomy. The World Health Organization (WHO) estimates that nearly one in three women worldwide has experienced physical and/or sexual violence during her lifetime, predominantly by an intimate partner [1,2]. In Africa, the burden remains substantial, although

prevalence varies across countries, populations, and measurement methods [3,4]. Violence against women is associated with physical injuries, depression, anxiety, sexually transmitted infections, and adverse reproductive health outcomes, including unintended pregnancies and pregnancy-related complications [5–8].

Women of reproductive age may face particular vulnerabilities because violence can affect their sexual autonomy, contraceptive choices, healthcare access, and ability to make decisions about their reproductive health [7,8]. In humanitarian and conflict-affected settings, sexual violence may be compounded by insecurity, displacement, economic dependence, and limited access to protection and justice services [9,10]. Beyond its individual consequences, violence also imposes social and economic costs through healthcare expenditure, lost productivity, and reduced participation in community life [11]. In the Democratic Republic of the Congo (DRC), the adoption of legislation addressing sexual violence, including the 2006 legal reforms [12,13], represents an important policy response. Nevertheless, barriers to reporting, limited access to formal services, and reliance on informal dispute-resolution mechanisms may hinder survivors' access to protection and justice.

Despite national and international efforts, evidence on violence against women remains uneven across local settings. Findings from national surveys or other provinces cannot automatically describe the situation in Équateur Province, where social norms, economic conditions, service availability, and community support systems may differ [14–16]. In particular, the extent and forms of violence experienced by women in Wangata Health Zone, Mbandaka, and the factors associated with these experiences have not been sufficiently documented in the available local evidence. This information gap limits the ability of health authorities and community organizations to design and target context-specific prevention and response strategies.

This study therefore aimed to assess violence against women in Wangata Health Zone and identify factors associated with reported experiences of violence. By providing local evidence, it seeks to inform community awareness initiatives, strengthen survivor-centred services, and support locally appropriate prevention strategies [17].

Methodology

Type and period of the study

This was an analytical cross-sectional study conducted from January to March 2024 in Wangata Health Zone, located in Mbandaka, Équateur Province, Democratic Republic of the Congo (DRC).

Study setting

Wangata Health Zone is one of the 18 health zones in the Provincial Health Division. It is bordered by Lilanga Bobangi to the north, Mbandaka to the east and south, and Bolenge to the west. The health zone is relatively isolated, with access primarily by air and river. It covers an estimated area of 250 km² and had a projected population of 22,207 inhabitants in 2024, corresponding to a population density of approximately 89 inhabitants/km². The health system comprises 11 health areas, each served by a health centre or referral hospital, including two referral health centres. The local population depends mainly on agriculture, livestock farming, and artisanal fishing for its livelihood, in a context characterized by widespread poverty. Mongo and Lingala are the main languages spoken in the area.

Sampling procedure

The target population consisted of women aged 15–49 years who had resided in Wangata Health Zone for at least six months before the study and provided informed consent. Women who had lived in the health zone for less than six months and those with mental health conditions that prevented them from responding to the interview questions were excluded.

The sample size was calculated using the single-population proportion formula, assuming a

prevalence of violence against women and girls of 67.8%, a 95% confidence level, and a 5% margin of error. The initial sample size was 335 participants. An additional 34 participants were added to account for an anticipated 10% non-response rate, yielding a target sample of 369 women.

A four-stage sampling procedure was used:

- First, six of the 11 health areas in Wangata Health Zone were randomly selected.
- Second, the selected health areas were subdivided into segments, from which segments were selected according to the sampling plan.
- Third, three streets were selected through a land survey within the selected segments.
- Fourth, households were systematically selected, and eligible women were identified. When several eligible women lived in the same household, only the oldest eligible woman was interviewed for the violence against women and girls module.

The final sample comprised 369 women: Balako (43; 11.7%), Bosomba (62; 16.8%), De la Rive (63; 17.1%), De la Ville (64; 17.3%), Ikengeleke (75; 20.3%), and Wangata (62; 16.8%). Informed consent was obtained before each interview.

Variables of interest

The primary outcome was self-reported experience of at least one form of violence against women and girls during the recall period specified in the questionnaire. Participants reporting at least one qualifying act were classified as having experienced violence; those reporting none were classified as not having experienced violence. Lifetime or previous experiences and experiences during the preceding 12 months were analysed separately. Prevalence was calculated as the number of participants reporting violence divided by the number with valid responses for the relevant outcome, expressed as a percentage, with corresponding 95% confidence intervals (CIs).

Five forms of violence were assessed. Physical violence included acts involving physical force, such as hitting, slapping, kicking, pushing, or beating. Sexual violence comprised forced or coerced sexual intercourse and other sexual acts without freely given consent. Psychological violence included insults, humiliation, intimidation, threats, and other acts intended to cause emotional distress or exert control. Socioeconomic violence referred to restricting access to or control over money, employment, property, or essential resources. Harmful traditional practices included forced marriage and other harmful practices specifically assessed by the questionnaire. A participant was classified as positive for each form if she reported at least one corresponding act.

Independent variables included age, education, religious affiliation, occupation, number of children, household size, income, marital status, relationship with the household head, awareness of violence, knowledge of its forms, and exposure to information.

Data collection

Data collection was conducted through structured interviews using a questionnaire with four sections: general information, sociodemographic characteristics, knowledge about violence, and experiences of violence. A pre-test was carried out in a pilot area to refine the tools. Six interviewers were recruited based on specific criteria (level of education, community experience, integrity), each accompanied by a mother mentor to build the participants' confidence. Supervision ensured quality control during data collection and processing.

Data processing and analysis

Data were collected via Kobo Collect, exported to Excel, and analyzed using SPSS v25. Descriptive analyses generated frequencies, tables, and graphs. Association tests were performed using Pearson's chi-squared test and Fisher's exact test. Finally, multivariate logistic regression was used to identify factors associated with violence, with odds ratios and 95% confidence intervals calculated.

Ethical considerations

Ethical approval was obtained from the Ethics Committee of the Kinshasa School of Public Health , along with authorization from the thesis

supervisor and a mission order issued by the ESPK. Before data collection, additional authorization was obtained from the ESPK academic authorities, the health authorities of Wangata Health Zone, and the managers of healthcare facilities in the selected health areas.. Participants aged 18 years and older provided informed consent. For participants aged 15–17 years, consent and assent procedures followed the approved protocol and applicable local requirements, including parental or guardian permission or an ethics-approved waiver, where applicable. Participation was voluntary, and participants could decline questions or withdraw at any time. Interviews about violence were conducted in private to protect participants' safety and confidentiality. Interviewers were trained to administer sensitive questions respectfully and respond to distress. Participants requiring assistance were referred to appropriate health, psychosocial, or protection services, where available, in accordance with study procedures. Data were handled confidentially, with access restricted to authorized research personnel.

III. **Results**

The study results are presented in tables and graphs, in line with the objectives. They describe the sociodemographic and economic characteristics of the participants, the different forms of violence experienced, their consequences, and the associated factors. A total of 369 women and girls were included, representing a 100% response rate.

3.1. Socio-demographic and economic characteristics of the respondents

Table I shows that out of ten people, approximately four are young people aged 15 to 24, three are in the 25 to 34 age group, and the remaining three are adults aged 35 to 49. In terms of education level, six out of ten have an intermediate level, two have a high level, and the other two have a low level. Regarding occupation, nearly six out of ten participants are employed, while four are unemployed. Concerning religious affiliation, three out of ten participants are Catholic, and three belong to the Pentecostal Church. Out of ten households, approximately eight have a low income, and two have a high income. On average, five out of ten participants live in households of seven or more people. Marital status: approximately six out of ten are married or in a civil partnership, three are single, and one is widowed. Out of ten participants, approximately eight are Bantu (Kundo), and two are Indigenous (Batshua). Finally, in terms of parity, four out of ten participants have no children, about three have five or more children, and the remaining three have between one and four children (Table I).

Table I. Sociodemographic and economic characteristics of respondents (N = 369)

Variables	Frequency (n)	Percentage (%)
Age group (years)		
15–24	155	42.0
25–34	113	30.6
35–49	101	27.4
Education level		
Low	64	17.3
Intermediate	219	59.3
High	86	23.3
Occupational status		
Unemployed	156	42.3
Employed	213	57.7
Religious affiliation		
None	34	9.2
Catholic	109	29.5
Muslim	11	3.0
Jehovah's Witness	16	4.3
Kimbanguist	17	4.6
Protestant	52	14.1
Revival church	102	27.6

Other	28	7.6
Household income level		
Low	306	82.9
High	63	17.1
Household size (persons)		
< 7	175	47.4
≥ 7	194	52.6
Marital status		
Married / in a civil union	227	61.5
Single	127	34.4
Widowed	15	4.1
Ethnic group		
Bantu (Kundo)	302	81.8
Indigenous people (Batshua)	67	18.2
Number of children		
None	148	40.1
1–2	58	15.7
3–4	51	13.8
≥ 5	112	30.4

3.2. Respondents' knowledge of different forms of violence

The results in Table II show that almost -all respondents (99.7%) have heard of violence, and nearly nine out of ten (88.6%) are familiar with its different forms. Approximately two out of three women (65%) report having heard of gender-based violence, and a similar proportion (65%) report having experienced it. The main sources of information are the media (58%) and neighbors (50.9%), followed by school or university (28.2%). Institutional channels such as posters/leaflets (5.7%) and other marginal sources (2.2%) remain largely underutilized (Table II).

Table II. Respondents' knowledge of violence and sources of information (N = 369)

Variables	No, n (%)	Yes, n (%)
Awareness and knowledge		
Had previously heard of violence	1 (0.3)	368 (99.7)
Knew about different forms of violence	42 (11.4)	327 (88.6)
Had heard of gender-based violence (GBV)	130 (35.2)	239 (64.8)
Reported having experienced violence	129 (35.0)	240 (65.0)
Sources of information about violence		
Media	155 (42.0)	214 (58.0)
School / university	265 (71.8)	104 (28.2)
Church	323 (87.5)	46 (12.5)
Neighbours	181 (49.1)	188 (50.9)
Family members	299 (81.0)	70 (19.0)
Posters / leaflets	348 (94.3)	21 (5.7)
Community relay workers	320 (86.7)	49 (13.3)
Other sources	361 (97.8)	8 (2.2)

Note: For information sources, "Yes" indicates that the respondent identified the source. Multiple responses may have been permitted.

Different forms of violence encountered in the Wangata health zone in Mbandaka

Table III reveals that of ten women interviewed, approximately four had experienced rape or sexual violence, two had been victims of physical violence, and one of psychological violence. Approximately one in ten had experienced combined forms of violence, such as rape and physical or psychological violence (Table III).

Table III. Reported forms of violence experienced by respondents in Wangata Health Zone, Mbandaka (N = 369)

Reported form of violence	Frequency (n)	Percentage (%)
Sexual violence only	161	43.6
Physical violence only	69	18.7
Psychological violence only	34	9.2
Rape, physical and psychological violence	34	9.2
Rape and physical violence	41	11.1
Rape and psychological violence	16	4.3
Physical and psychological violence	14	3.9
Total	369	100.0

Various forms of violence perpetrated by husbands/partners over the past 12 months in the Wangata health zone of Mbandaka

The data shows that more than half of the women surveyed (51.8%) experienced insults, reprimands, or shouting from their husband or partner in the past 12 months. Approximately four in ten (40.7%) were victims of slapping, hitting, or physical abuse. Nearly three in ten (31.2%) experienced pressure or insistence on sexual intercourse, and about a quarter (26.6%) were forced to have sex. Threats with a weapon or attempted strangulation affected about one in ten women (11.9%) (Table IV).

Factors associated with violence against women and girls (bivariate and multivariate logistic regression)

Table IV. Different forms of violence perpetrated by husband/partner in the last 12 months in the Wangata health zone in Mbandaka

Forms of violence	No	Yes
Violence suffered in the last 12 months	(n/%)	(n/%)
Insults, reprimands , shouting	178(48.2)	191(51.8)
Slap, blow , brutality physical	219(59.3)	150(40.7)
Threat with a weapon , attempted	325(88.1)	44(11.9)
Pressure exerted on a report sexual	254(68.8)	115(31.2)
Force used for to have of the reports sexual	271(73.4)	98(26.6)

Table V. Factors Associated with Violence Against Women and Girls: Bivariate and Multivariate Logistic Regression Analysis

Variables	ORb (95% CI)	p-value	AOR (95% CI)	p-value
Health area				
Ikengeleke	1		1	
Balako	0.49 (0.21–1.14)	0.096	0.16 (0.03–0.96)	0.045*
Bosomba	0.85 (0.38–1.89)	0.682	0.10 (0.02–0.58)	0.011*
Shore	0.56 (0.26–1.21)	0.137	0.03 (0.00–0.16)	0.001*
City	0.26 (0.12–0.57)	0.001*	0.13 (0.02–0.77)	0.025*
Age of respondent				
25–34 years	1		1	
15–24 years	1.20 (0.72–1.99)	0.482	0.72 (0.29–1.75)	0.464
Respondent's educational level				
Completed primary education	1		1	
No formal education	0.18 (0.07–0.43)	<0.001*	7.06 (0.78–63.77)	0.082
Marital status				

Married	1		1	
Single	0.41 (0.12–1.34)	0.140	2.11 (0.88–5.10)	0.097
Cohabiting (free union)	0.80 (0.24–2.67)	0.716	4.08 (1.38–12.05)	0.011*
Respondent's occupation				
Other professions	1		1	
Student	0.25 (0.11–0.57)	0.001*	0.84 (0.16–4.30)	0.834
Healthcare profession	0.27 (0.12–0.57)	0.001*	10.94 (1.84–65.15)	0.01*
Religion				
Other denominations	1		1	
No religion	0.33 (0.09–1.24)	0.102	0.34 (0.05–2.20)	0.255
Spouse's educational level				
Other educational levels	1		1	
No formal education	0.49 (0.27–0.87)	0.016*	0.55 (0.06–5.25)	0.602
Primary not completed	0.76 (0.26–2.21)	0.610	0.31 (0.06–1.51)	0.148
Knowledge of violence				
Yes	1		1	
No	2.27 (1.85–2.78)	<0.001*	3.31 (2.69–4.05)	<0.001*

* p<0,05

Based on the multivariate logistic regression analysis presented in Table V, several factors remained significantly associated with violence against women and girls. Compared with respondents from the Ikengeleke health area, women residing in Balako (AOR = 0.16; 95% CI: 0.03-0.96; p = 0.045), Bosomba (AOR = 0.10; 95% CI: 0.02-0.58; p = 0.011), Shore (AOR = 0.03; 95% CI: 0.00-0.16; p = 0.001), and City (AOR = 0.13; 95% CI: 0.02-0.77; p = 0.025) were significantly less likely to experience violence. Regarding marital status, women living in a cohabiting relationship (free union) had significantly higher odds of experiencing violence compared with married women (AOR = 4.08; 95% CI: 1.38-12.05; p = 0.011). In addition, respondents employed in healthcare professions were more likely to experience violence than those in other occupations (AOR = 10.94; 95% CI: 1.84-65.15; p = 0.01). Knowledge of violence was also independently associated with the outcome. Women who lacked knowledge of violence had over three times higher odds of experiencing violence compared with those who reported having such knowledge (AOR = 3.31; 95% CI: 2.69-4.05; $p < 0.001$) (Table V).

IV. **Discussion**

Key findings of the study

This study demonstrates that violence against women and girls remains a major public health and social concern in the Wangata Health Zone. Although most respondents were aware of the various forms of violence, a substantial proportion reported either witnessing or experiencing such acts. Psychological violence, particularly insults and verbal abuse by intimate partners, emerged as the most commonly reported form, followed by physical violence and sexual coercion. Severe forms of violence, including threats with weapons and attempted strangulation, were also reported, highlighting the persistence of high-risk behaviors within intimate relationships. Multivariate logistic regression analysis identified several independent factors associated with violence. Compared with women residing in Ikengeleke, those living in Balako, Bosomba, Shore, and City health areas were significantly less likely to experience violence. Conversely, women in cohabiting relationships were at significantly higher risk than married women. Employment in healthcare professions was also associated with increased odds of experiencing violence. Furthermore, women who lacked knowledge about violence were more likely to experience violence than those who were informed about its different forms and manifestations. These findings emphasize the need for strengthened prevention strategies, community awareness campaigns, and targeted interventions aimed at vulnerable groups to reduce violence and

promote safer living environments for women and girls in the Wangata Health Zone.

Proportion of violence experienced in the Wangata Health Zone

In the Wangata Health Zone, 64.8% of respondents reported having experienced violence, while 35.2% reported no such experience. The most frequently reported forms were insults or shouting (51.8%), physical abuse (40.7%), sexual coercion (31.2%), forced sexual intercourse (26.6%), and serious threats (11.9%). These findings indicate a substantial burden of violence among the women surveyed. However, comparisons with international estimates should consider differences in definitions, populations, and reference periods.

The World Health Organization (WHO) estimates that approximately one in three women worldwide has experienced physical and/or sexual violence by an intimate partner or sexual violence by a non-partner during her lifetime [18,19]. These estimates provide context but are not directly comparable with the Wangata prevalence because the present study includes psychological violence. Research in the Democratic Republic of the Congo (DRC) has also documented challenges related to intimate partner violence and help-seeking, including limited use of formal support services [20]. Together, these findings highlight the importance of strengthening locally adapted prevention and response mechanisms.

Knowledge about the different forms of violence

Nearly 90% of respondents reported having heard of violence and being familiar with its different forms. The media was the most frequently reported information source (60%), followed by neighbours (50%), school or university (30%), family members (20%), and posters or leaflets (5%). These results suggest relatively widespread awareness, although exposure to information varies across communication channels.

Studies in Nigeria and Ethiopia have examined women's knowledge, attitudes, and experiences of domestic or intimate partner violence, highlighting the relevance of awareness and sociodemographic characteristics to prevention efforts [21,22]. Nevertheless, awareness alone may be insufficient to prevent violence. WHO and UN Women emphasize the importance of improving the collection and use of information on violence against women to guide prevention and service planning [23,24]. In Wangata, media campaigns and community education should therefore be complemented by interventions addressing harmful social norms, relationship inequalities, barriers to disclosure, and access to survivor-centred services.

Factors associated with violence against women and girls

Multivariate logistic regression identified significant associations between violence and health area of residence, marital status, occupation, and knowledge of violence. Compared with women residing in Ikengeleke, those living in Balako (AOR = 0.16; 95% CI: 0.03–0.96; p = 0.045), Bosomba (AOR = 0.10; 95% CI: 0.02–0.58; p = 0.011), Shore (AOR = 0.03; 95% CI: 0.00–0.16; p = 0.001), and City (AOR = 0.13; 95% CI: 0.02–0.77; p = 0.025) had lower adjusted odds of reporting violence. These differences suggest geographical variation, although the mechanisms underlying this pattern were not directly assessed.

Women living in cohabiting relationships had higher adjusted odds of reporting violence than married women (AOR = 4.08; 95% CI: 1.38–12.05; p = 0.011). This association warrants further investigation into relationship dynamics, economic dependence, and access to social support. However, the cross-sectional design does not establish that cohabitation causes violence.

Women employed in healthcare professions also had higher adjusted odds of reporting violence than women in other occupations (AOR = 10.94; 95% CI: 1.84–65.15; p = 0.010). The wide confidence interval indicates uncertainty about the magnitude of this association. Differences in occupational exposure, recognition of violence, or willingness to disclose experiences are possible explanations, but these remain hypotheses.

Women who lacked knowledge of violence had higher adjusted odds of reporting violence than

knowledgeable women (AOR = 3.31; 95% CI: 2.69–4.05; $p < 0.001$). This finding supports the importance of improving women's ability to recognize violence, understand their rights, and identify available support services. Nevertheless, the temporal relationship between knowledge and violence cannot be established from these cross-sectional data.

Research in the DRC highlights the importance of considering violence within broader patterns of vulnerability, including the co-occurrence of intimate partner violence and child abuse [25]. Evidence concerning stigma and psychosocial outcomes among survivors also emphasizes the importance of support that extends beyond immediate clinical care [26]. These findings provide contextual justification for integrating psychosocial assistance into prevention and response programmes, although they do not explain the specific associations observed in Wangata.

Implications for prevention

The findings support comprehensive, locally adapted prevention strategies. The WHO's RESPECT framework recommends strengthening relationship skills, empowering women, ensuring accessible services, reducing poverty, creating safe environments, preventing abuse among children and adolescents, and transforming harmful attitudes and norms [23]. In Wangata, these priorities could inform community education, confidential reporting mechanisms, accessible health and psychosocial services, and coordination between health facilities and community organizations.

The DRC's broader health and development priorities provide a policy context for strengthening services for women and girls [27]. However, policy documents should not be interpreted as direct evidence of the prevalence or determinants of violence in Wangata. Prevention programmes should be adapted to local needs and evaluated using indicators of service accessibility, referrals, and survivor support. Improved data collection is also essential for monitoring violence and assessing programme effectiveness [24].

Overall, violence against women and girls remains an important public health concern in Wangata. The observed associations with health area, marital status, occupation, and knowledge identify contexts requiring further investigation. Combining community awareness, survivor-centred services, and institutional coordination may strengthen prevention and response efforts. Further qualitative research could clarify barriers to disclosure and help-seeking and inform interventions suited to the local context.

Strengths and limitations

This study has strengths and limitations. Its strengths include a 100% response rate, multivariable logistic regression to identify factors associated with violence, and the assessment of multiple information sources. However, the sample of 369 women may limit statistical precision, particularly for subgroups, while volunteer participation may have introduced selection bias. Self-reported data are also susceptible to recall and social desirability biases, potentially leading to underreporting or misclassification. Although lower odds of reported violence in certain health areas and higher odds among healthcare workers were observed, the study cannot establish the underlying mechanisms. Differences in participant characteristics, disclosure patterns, or unmeasured contextual factors are possible explanations requiring further investigation. The cross-sectional design also prevents determining whether knowledge or other associated factors preceded or followed experiences of violence.

Conclusion

This study highlights the severity of violence against women in the Wangata Health Zone. The majority of participants had not only heard of the violence but had also experienced it. The findings show that women in common-law relationships and those working in healthcare are particularly vulnerable, while insufficient awareness of the violence increases the risk of experiencing it. To reduce this violence, it is essential to strengthen relationship skills, promote empowerment, improve access to support services, combat poverty, create safe

environments, and maintain awareness campaigns tailored to local realities.

What is known from the study

Violence against women and girls is a major public health problem in sub-Saharan Africa. Numerous studies have shown its negative impact on the physical, mental, and reproductive health, as well as on the -social and economic well-being of victims.

What the study revealed

In the Wangata Health Zone, the majority of women have not only heard of violence but have also experienced it. The findings indicate that women in common-law relationships and those working in healthcare are particularly vulnerable. Furthermore, insufficient knowledge about the different forms of violence increases the risk of experiencing them, highlighting the importance of community awareness and education.

Author contributions

In this study, Irène Mbolo Fabienne served as the lead author, designing the protocol, analyzing the data, and writing the manuscript. Bernard Kennedy Nkongolo contributed to the statistical analysis and critical review of the text. Junias Kabele supervised the development of the protocol and participated in editing the discussion. Finally, Desiré Mashinda Kulimba acted as facilitator, coordinating the entire process and validating both the main protocol. This complementary approach strengthened the scientific rigor and relevance of the results.

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Conflicts of interest

The authors declare that they have no competing financial or non-financial interests.

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Ethical considerations

Ethical approval was obtained from the Ethics Committee of the Kinshasa School of Public Health (Approval No. ESP/CE/010/2024), along with institutional research authorizations from the academic leadership of ESPK, the Wangata Health Zone authorities, and the administrators of the healthcare facilities across the selected health areas. Written (or witnessed thumbprint) informed consent was obtained from all adult participants aged 18 years and older prior to interview administration. For adolescent participants aged 15–17 years, assent was systematically obtained alongside informed consent from a parent, legal guardian, or adult household authority in accordance with the ethics-approved protocol. Participation was strictly voluntary, anonymous, and confidential; participants could refuse any specific question or discontinue the interview at any time without consequence. All interviews addressing experiences of violence were conducted in auditory and visual privacy to ensure participant safety and confidentiality. Interviewers were trained to administer sensitive queries empathetically and safely, and established referral pathways to local healthcare, psychological, and protection support services were made available for participants requiring assistance.

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

During the preparation of this manuscript, the authors utilized generative artificial intelligence and large language model assistance solely for language editing, grammar correction, translation review from the original working

draft, and reference formatting. Following the use of these tools, the authors thoroughly reviewed, edited, and verified all text, statistical figures, and citations. The authors take full responsibility for the integrity, validity, and accuracy of the final content presented in this publication.

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