Sexual violence affects adolescents’ health and prosocial behaviour beyond other violence exposure

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ABSTRACT

Background: Sexual violence is a public health issue among adolescents globally but remains understudied in Sub-Saharan Africa.

Objective: The present study focused on the association of cumulative exposure to different types of sexual violence with mental and physical health problems and prosocial behaviour.

Method: We conducted a survey with a regionally representative sample of both in-school and out-of-school adolescents, aged 13–17 years, living in south-western Nigeria. Self-reported exposure to sexual violence, behavioural problems, physical complaints, and prosocial behaviour were assessed.

Results: About three quarters of the participants reported the experience of sexual violence (74.6%). Multiple regression models revealed that the more types of sexual violence an individual reported, the more mental and physical health problems, and the fewer prosocial behaviours they reported when controlling for other forms of violence exposure. Latent class analysis revealed three severity classes of sexual violence. Symptoms of mental and physical health indicators were significantly higher as exposure increased by group whereas prosocial behaviours were non-significantly fewer in the opposite direction.

Conclusion: This study revealed a consistent and unique relation between sexual violence exposure and negative health outcomes among adolescents. Further research on sexual violence in Sub-Saharan Africa and its associations is needed.
1. Introduction

Sexual violence (SV) is a public health problem and human rights violation. The WHO defines SV as ‘any sexual act, attempt to obtain a sexual act, or other act directed against a person’s sexuality using coercion, by any person regardless of their relationship to the victim, in any setting’ (WHO, 2022b). About 20% of women and 8% of men worldwide report having experienced SV prior to age 18 (WHO, 2022a), but these numbers likely underestimate the prevalence due to the sensitive nature of the topic and the associated stigma (Kullima et al., 2010). While much research on prevalence, consequences, risk and protective factors associated with SV in minors has been conducted in high-income countries (e.g. Lindert et al., 2014), the topic is understudied in low – and middle-income countries (Simon et al., 2020). The few studies that included data from Sub-Saharan Africa provided evidence that these countries have among the highest prevalence worldwide of SV in childhood and adolescence (Decker et al., 2014). This may be due to poor child protection mechanisms and justice systems unable to prosecute the perpetrators. In Nigeria, every 4th girl and every 10th boy reported experiences of sexual abuse prior to the age of 18 (VACS, 2015). Complex mechanisms such as legal, cultural, and social aspects seem to favour perpetration and underreporting of SV: the age of consent in Nigeria is 18 years and any sexual activity at younger ages is unlawful (Kunnuji & Esiet, 2015). A culture of silence hinders disclosure out of shame, fear of stigmatization, and social rejection. As a result perpetrators are often left unpunished (Achunike & Kitause, 2014). Gender role expectations, persisting rape myths, religious convictions, and the practice of bride price (‘contract where material items […] or money are paid by the groom to the bride’s family in exchange for the bride for the labour and her capacity to produce children’ [Oguli, Oumo, 2004 in Sambe et al., 2020, p. 65]) contribute to the problem (Ajayi et al., 2022). High rates of attrition in school enrolment might be another contributing factor, which is rarely considered in research. Only about half of all Nigerian children of Secondary school age attend school (UNICEF, 2022). Children that drop-out of school at young age often live in precarious circumstances not being able to meet their basic needs, hence being particularly at risk of (sexual) exploitation (Kunnuji & Esiet, 2015).

1.1. Sexual violence and health

SV has serious consequences for mental and physical health (e.g. Decker et al., 2014). A meta-analysis by Lindert et al. (2014) showed that adults reporting experienced child sexual abuse were more likely to suffer from depression, anxiety, and distress than unexposed adults. Recent or ongoing SV has been associated with more sleep disturbances, suicidal ideations and persistent loneliness (Brown, Riley, et al., 2009), post-traumatic stress disorder (PTSD; Carey et al., 2008), depressive symptoms, poor self-rated health (Decker et al., 2014) and internalizing and externalizing behaviour problems (Dunn et al., 2020) in adolescents. In their definition of health, the WHO includes also social well-being (WHO, 1946). Prosocial behaviours, generally defined as voluntary, intentional behavior that results in benefits for another (Eisenberg & Miller, 1987, p. 92), are highly correlated with well-being (Hui, 2022) and therefore often serve as indicator of social well-being. Previous studies showed a negative correlation between adverse childhood experiences (ACEs; e.g. abuse, neglect, household criminality) and prosocial behaviour in children (Bevilacqua et al., 2021) but associations between SV and prosocial behaviour remain understudied.

Physical health impacts of SV in childhood and adolescence can be both acute (Reza et al., 2009) and long-term (Chartier et al., 2010). Much SV research has been conducted on sexually transmitted infections (STI) and reproductive health (unwanted pregnancy, pregnancy complications, miscarriages, etc.) (Reza et al., 2009). As SV often occurs in the context of other ACE (Hughes et al., 2017), several studies and meta analyzes considered SV in the cumulative effect of ACEs. They found that higher numbers of retrospectively reported ACEs were associated with higher likelihood of respiratory diseases, cancer, heart diseases, poor self-rated health (Hughes et al., 2017), and premature death (Brown, Anda, et al., 2009). Physical and sexual abuse in childhood seem to be particularly detrimental to adult health (Chartier et al., 2010). Overall, there is strong evidence for associations between SV and many mental and physical health problems, but the precise mechanisms remain understudied. Previous studies focused on SV without controlling for relevant covariates (e.g. Downing et al., 2021), not considering the context in which SV occurs.
A few attempts have been made to categorize experience of SV, e.g. by duration, number of types, and intrusiveness (Coohey, 2010), and to associate severity grades with health outcomes. Person-centered approaches acknowledge that trauma exposure is not randomly distributed within a population and enable the identification of subgroups that share similar qualitative and quantitative patterns of trauma exposure (Dumke et al., 2022; O’Donnell et al., 2017). Thereby, the impact of group membership on various health parameters can be analyzed and generalizability can be increased (O’Donnell et al., 2017). There is strong evidence for an association between severity of abuse and psychopathology (Coohey, 2010). However, most studies analyzed data from clinical samples and focused on severe SV types, such as rape (e.g. Abrahams et al., 2013) and did not consider other types, such as non-contact abuse. Therefore, assessing numerous SV types, ranging from mild to severe events, in the general population could help to better understand this link.

1.2. Objectives

The current study focused on adolescents in Nigeria, a population that is largely underrepresented in the international literature. By controlling for other types of violence exposure (e.g. emotional or physical violence) and by differentiating a wide range of SV types including non-contact abuse existing gaps in literature are addressed.

First, we hypothesized that exposure to a wider array of different SV types is associated with more externalizing and internalizing problems, physical complaints, and with fewer prosocial behaviours while controlling for sociodemographic variables and other forms of violence. Second, patterns of pathology between different classes of SV severity were investigated, hypothesizing that higher severity of SV is linked to more behavioural problems, physical complaints, and with fewer prosocial behaviours, while controlling for sociodemographic characteristics and other forms of violence.

2. Methods

2.1. Study design and sampling

A cross-sectional design was adopted. Adolescents of all genders were sampled. Data was collected from May to August 2021 in five states in South-Western Nigeria (Lagos, Ogun, Ondo, Osun, Oyo). Ekiti state was excluded from data collection due to security issues.

In-school adolescents. The study was conducted in public, mixed-gender Junior Secondary Schools (only stage three) and Senior Secondary Schools. A multistage stratified sampling technique was adopted. In the first stage, a list of registered public secondary schools in the respective states was obtained from the Ministry of Education. For each state, at least two mixed-gender schools were randomly selected from urban and two from rural areas. In total, 27 schools were included. Permission was sought from the heads of each school. Class teachers helped to select participants from the class registers. Students were proportionally sampled using systematic random sampling strategy. Fifteen to 45 adolescents were surveyed per school.

Out-of-school adolescents. Sampling of out-of-school adolescents followed a pragmatic approach. Qualitative interviews with four out-of-school adolescents preceding the current study informed the sampling procedures and the assessment. Disadvantaged adolescents in the respective age range who did not attend school were identified in locations where they earned money and spent their time (e.g. transport hubs, street markets). Authorities (i.e. the chairmen of the National Road Transport Workers, managers of local transport stations and markets) and street gang leaders in charge of the respective locations were asked for their approval before inviting adolescents to participate in the study. Other disadvantaged out-of-school adolescents were approached in abandoned buildings and under bridges where they sought shelter, or in other gathering points such as roadsides.

2.2. Sample

In total, 961 adolescents participated in the study, 862 of them were in school and 99 were not in school and belonged to more disadvantaged social classes (see Supplementary Table 1 for details). The mean age was 16.24 (SD = .89) years (range 13-17), 53.9% (n = 518) of the adolescents were female, none identified as non-binary or gender nonconforming. Around three quarters of participants lived in urban settings.

2.3. Procedures

We followed ethical guidelines as outlined by Mathews et al. (2022). Ethical approval was granted by the Institutional Review Board of University College Hospital (UCH), Ibadan (Nigeria) and the University of Konstanz (Germany). Written consent was obtained from all participants themselves and the parents of the in-school sample. Most of the out-of-school adolescents did not live with their parents, and, as a result, parental consent could not be obtained. Illiterate participants gave their consent by fingerprint.

International and Nigerian researchers co-designed this study together. Data collection was carried out by two male and two female Nigerian native postgraduate
students from the University of Ibadan. They underwent extensive training in procedures of data collection, risk assessment, and ethical protocols. The questionnaire was translated into Yoruba, the most common language spoken in South-West Nigeria, according to scientific guidelines using blind back translation procedures. In-school assessments were carried out within the school premises at two days per school. The class teacher introduced project members to the class and explained the purpose of our research. Assessment of female and male participants took place in separated rooms with gender-matched assessors and seats were placed in such a way that respondents could not see each other’s answers. For in-school children the survey2go application was used. The survey was self-administered by the in-school participants. They only called the attention of assessors when they had questions. Questionnaire completion took about 35 min on average.

For the out-of-school adolescents, since most of them could not read and write fluently, the assessors read the questionnaire in Yoruba and asked them to choose the appropriate options for their answers. Pen-and-paper questionnaires were used for this subgroup for security considerations. It took an average of 60 min for each participant to complete the questionnaire.

Participants who experienced emotional distress during the assessment were referred to school counseling centres or specialized non-governmental organizations. This was the case with five individuals who reported severe ongoing abuse. Research teams as well as participants adhered strictly to existing Covid-19 Protocols.

### 2.4. Measures

**Demographic variables** included gender, age, school status, religious affiliation, living situation, emotional and financial support, and relationship status.

**Experiences of SV** were assessed by nine items (Figure 2), similar to Goessmann et al. (2020). One item assessed passive contact abuse, defined as being touched by another person in a sexual way against one’s will. Three items assessed non-contact abuse such as unwanted exposure to pornographic material, unwanted distribution or publication of intimate pictures on the internet, and harassment. Active contact abuse was defined as being forced to touch someone else in a sexual way against one’s will. Two items on forced intercourse assessed any type of forced penetrative sexual intercourse by threat or pressure. Transactional abuse was defined as having received money or goods in exchange for sexual actions including being forced to prostitute oneself.

**Mental health** was assessed by the self-report version of The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), a well-established screening instrument suitable for low- and middle-income countries (Hoosen et al., 2018). The SDQ consists of 25 items organized on five subscales which are categorized into three sum scores: internalizing problems (emotional symptoms and peer problems subscales), externalizing problems (hyperactivity and conduct problems subscales) and prosocial behaviour. Participants indicate for each statement whether it was ‘not true’ (1), ‘somewhat true’ (2) or ‘certainly true’ (3) within the last month.

**Physical complaints** were assessed by a checklist of eleven binary items. Participants had to answer whether they had suffered from physical complaints and diseases, such as cough, stomach pain, fever, etc. within the last four weeks.

**Violence by parents** was assessed by the Parent–Child-version of the Conflict Tactics Scale (CTSPC; Straus et al., 1998). The CTSPC is a well-established instrument that has been applied to African samples before (Straus & Mickey, 2012). It has 27 items assessing behavioural management strategies used by parents, relatives, or guardians. In this study, only violent forms of discipline were considered (23 items). Participants were asked to indicate exposure frequencies on a 7-point-Likert-Scale from ‘never’ (0) to ‘more than 20 times’ (6) within the past month.

**Peer violence** was measured by the Multidimensional Peer Victimization Scale (MPVS; Mynard & Joseph, 2000), a self-report instrument that consists of 16 items assessing physical and psychological violence among peers during the last month. Each item is rated on a 3-point-Likert-Scale (not at all (1); once (2); more than once (3)). The MPVS has satisfactory psychometric properties (Joseph & Stockton, 2018) and has been validated for a Nigerian sample before (Balogun & Olapegba, 2007).

**Intimate partner violence (IPV)** was assessed by a shortened version of the Adolescent Gender-Based Violence Scale (ESVIGA) that has satisfactory psychometric properties (Penado-Abilleira & Rodicio-Garcia, 2018). Participants were asked to rate 9 items on exposure to violence in their intimate relationship on a 4-point-Likert-Scale (never (0); rarely (1); sometimes (2); often (3)).

**Food insecurity** was assessed by two binary items. Participants were asked whether during the last month, they worried about not having enough food or whether they went without eating for a whole day because of lack of money or resources.

**Economic welfare** was assessed by asking participants about the presence of ten specific household assets (e.g. radio, refrigeration, electricity etc.) in the household in which they were living at the time of assessment.

For all instruments, sum scores were calculated. For the SDQ, the sum scores on internalizing problems
(range 10–30) and externalizing problems (range 10–30) are summarized to a ‘total difficulty score’ (range 20–60; internal consistency in this study α = .70). The remaining items combine for the prosocial sum score (α = .70).

2.5. Data analysis
Data was analyzed using IBM SPSS Statistics (Version 29), R Statistics software (R Core Team, 2022) package lavaan (Rosseel, 2012), and Jamovi (Version 2.3; The jamovi project, 2022). Associations between different forms of violence (SV, IPV, violence by parents, and peers) and behavioural problems, physical complaints and prosocial behaviour were tested in a multiple regression model. Age, gender, school status, economic welfare, and food insecurity were considered as covariates. We relied on the following indices to assess goodness of model fit: a non-significant Root Mean Square Error of Approximation (RMSEA) ≤ 0.06, a Standardized Root Mean Square Residual (SRMSR) ≤ 0.08, a Comparative Fit Index (CFI) ≥ 0.95 and a non-significant chi-square-value (Hu & Bentler, 1999). As preliminary analyses showed that assumptions of normality of residuals and homoscedasticity were violated, a robust version of the maximum likelihood estimator was applied (MLR; Yuan & Bentler, 1998). The MLR applies robust chi-squares and sandwich standard errors (Hox et al., 2010) and is robust against outliers (Ibrahim & Mohammed, 2021).

Latent class analysis (LCA) was applied to identify a priori unknown subgroups (latent classes) of SV exposure. Individual cases were categorized according to their answers on nine binary questions assessing exposure to different events of SV. Common information criteria and theoretical considerations were considered to compare LCA solutions and to choose the optimal number of classes (Weller et al., 2020). We relied on multiple information criteria such as Bayesian Information Criterion (BIC), Adjusted Information Criterion (ABIC), Akaike Information Criterion (AIC) and Consistent AIC (CAIC). Lower values indicate better fit. Further, entropy values were considered, higher values indicating better fit. Group differences were tested by Multivariate Analyses of Covariance (MANCOVA). Violence by parents, IPV, peer violence, age, gender, and school-status were considered as covariates. Preliminary analyses showed several outliers and heteroscedasticity. Consequently, we applied percentile bootstrapping with 1000 samples and robust standard errors (heteroscedasticity-consistent HC3). Further, the age range was small in our sample and age was not significantly correlated with the dependent variables. For the sake of parsimony, we excluded age from our model. For post-hoc-tests, the alpha level was Bonferroni-adjusted to avoid inflation of Type-I-errrors. Effect sizes were measured as partial eta squared, with partial η² ≥ 0.01 indicating a small effect, ≥ 0.06 a medium effect and ≥ 0.14 a large effect (Cohen, 1988).

3. Results
Descriptive statistics are summarized in Table 1. In total, 74.6% (N = 717) of participants reported at least one experience of SV (in-school: N = 631, 73.2% out-of-school: N = 86, 86.9%; see Table 2). Prevalence of all SV types was significantly higher among out-of-school adolescents, and they reported a significantly higher health burden than the in-school adolescents.

3.1. Associations of violence with health-related problems
To examine associations between different forms of violence and psychopathology, physical complaints and prosocial behaviour, a multiple regression model with covariates was analyzed. It showed good fit to our data, RMSEA < 0.001, SRMR < 0.001, CFI > 0.99. The chi-square test was significant (χ² = 555.357, p < .001). However, in view of our large sample, we

Table 1. Participants’ sociodemographic characteristics and descriptive statistics of model variables in the total sample and subsamples of in-school and out-of-school adolescents.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total sample</th>
<th>In-school</th>
<th>Out-of-school</th>
<th>Significance test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>M = 16.24</td>
<td>M = 16.27</td>
<td>M = 16.02</td>
<td>t(959) = 2.63</td>
</tr>
<tr>
<td></td>
<td>SD = .89</td>
<td>SD = .84</td>
<td>SD = 1.25</td>
<td>p = .009</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>n = 518</td>
<td>n = 482</td>
<td>n = 36</td>
<td>χ² (1, n = 961) = 13.663</td>
</tr>
<tr>
<td></td>
<td>(53.9%)</td>
<td>(55.9%)</td>
<td>(36.4%)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Male</td>
<td>n = 443</td>
<td>n = 380</td>
<td>n = 163</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(46.1%)</td>
<td>(44.1%)</td>
<td>(63.6%)</td>
<td></td>
</tr>
<tr>
<td>Economic welfare</td>
<td>M = 5.58</td>
<td>M = 5.74</td>
<td>M = 3.62</td>
<td>t(75) = 8.60</td>
</tr>
<tr>
<td></td>
<td>SD = 1.75</td>
<td>SD = 1.63</td>
<td>SD = 1.99</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Household assets</td>
<td>Md = 6</td>
<td>Md = 6</td>
<td>Md = 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n = 930)</td>
<td>(n = 930)</td>
<td>(n = 690)</td>
<td></td>
</tr>
<tr>
<td>Food insecurity</td>
<td>M = .79</td>
<td>M = .73</td>
<td>M = 1.35</td>
<td>t(116) = -6.93</td>
</tr>
<tr>
<td></td>
<td>SD = .79</td>
<td>SD = .75</td>
<td>SD = .86</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Sexual violence</td>
<td>M = 2.44</td>
<td>M = 2.30</td>
<td>M = 3.67</td>
<td>t(121) = -5.79</td>
</tr>
<tr>
<td></td>
<td>SD = 2.26</td>
<td>SD = 2.22</td>
<td>SD = 2.25</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Peer violence</td>
<td>Md = 2</td>
<td>Md = 2</td>
<td>Md = 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n = 631)</td>
<td>(n = 631)</td>
<td>(n = 462)</td>
<td></td>
</tr>
<tr>
<td>Intimate partner</td>
<td>M = 4.22</td>
<td>M = 3.84</td>
<td>M = 7.52</td>
<td>t(115) = -5.77</td>
</tr>
<tr>
<td></td>
<td>SD = 5.39</td>
<td>SD = 5.17</td>
<td>SD = 6.10</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Peer violence</td>
<td>Md = 2</td>
<td>Md = 2</td>
<td>Md = 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n = 631)</td>
<td>(n = 631)</td>
<td>(n = 462)</td>
<td></td>
</tr>
<tr>
<td>Total difficulty scorea</td>
<td>M = 32.29</td>
<td>M = 31.82</td>
<td>M = 36.35</td>
<td>t(959) = -7.49</td>
</tr>
<tr>
<td></td>
<td>SD = 5.86</td>
<td>SD = 5.62</td>
<td>SD = 6.31</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Physical complaints</td>
<td>M = 2.66</td>
<td>M = 2.47</td>
<td>M = 4.27</td>
<td>t(113) = -7.10</td>
</tr>
<tr>
<td></td>
<td>SD = 2.09</td>
<td>SD = 1.96</td>
<td>SD = 2.44</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Peer violence</td>
<td>Md = 2</td>
<td>Md = 2</td>
<td>Md = 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n = 631)</td>
<td>(n = 631)</td>
<td>(n = 462)</td>
<td></td>
</tr>
<tr>
<td>Total number</td>
<td>N = 961</td>
<td>n = 862</td>
<td>n = 99</td>
<td></td>
</tr>
</tbody>
</table>

aInternalizing and externalizing problems.
We analyzed model solutions consisting of two to five classes. Model fit indices are summarized in Supplementary Table 4. In the present study, AIC and BIC led to different conclusions. As there is some agreement that among different fit statistics, BIC may have the best reliability (Nylund et al., 2007), we based our decision on this criterion, parsimony, and interpretability. CAIC and the entropy value supported our decision for a model with 3 classes. Percentages of exposure to different forms of SV in the groups are shown in Figure 2. Group 1 was the smallest group (9.3%, n = 89) with the highest exposure rates in all items, therefore called high exposure group. Group 2 (47.7%, n = 458) showed lowest exposure rates on all items, therefore called low exposure group. In group 3 (43.1%, n = 414),

4. Forced intercourse
5. Transactional
6. Forced intercourse
7. Forced prostitution
8. Non-contact
9. Non-contact
Any form of sexual violence

Table 2. Prevalence of sexual violence in the total sample, in-school-, out-of-school-, female and male subsample.

<table>
<thead>
<tr>
<th>Type of sexual violence</th>
<th>Total (n = 961)</th>
<th>In-school (n = 862)</th>
<th>Out-of-school (n = 99)</th>
<th>Chi-square in-school vs. out-of-school</th>
<th>Female (n = 518)</th>
<th>Male (n = 443)</th>
<th>Chi-square female vs. male</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Passive</td>
<td>44% (n = 423)</td>
<td>41.9% (n = 361)</td>
<td>62.6% (n = 62)</td>
<td>( \chi^2 (1, n = 961) = 15.511; ) ( p &lt; .001 )</td>
<td>33.4% (n = 173)</td>
<td>56.4% (n = 250)</td>
<td>( \chi^2 (1, n = 961) = 51.421; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>2. Non-contact</td>
<td>58.3% (n = 560)</td>
<td>56.3% (n = 468)</td>
<td>75.8% (n = 75)</td>
<td>( \chi^2 (1, n = 961) = 13.877; ) ( p &lt; .001 )</td>
<td>45.2% (n = 234)</td>
<td>73.6% (n = 326)</td>
<td>( \chi^2 (1, n = 961) = 79.293; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>3. Active</td>
<td>30.2% (n = 290)</td>
<td>28.1% (n = 242)</td>
<td>48.5% (n = 48)</td>
<td>( \chi^2 (1, n = 961) = 17.577; ) ( p &lt; .001 )</td>
<td>18.7% (n = 97)</td>
<td>43.6% (n = 193)</td>
<td>( \chi^2 (1, n = 961) = 69.930; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>4. Forced</td>
<td>16.8% (n = 161)</td>
<td>15% (n = 129)</td>
<td>32.3% (n = 32)</td>
<td>( \chi^2 (1, n = 961) = 19.185; ) ( p &lt; .001 )</td>
<td>15.1% (n = 78)</td>
<td>18.7% (n = 83)</td>
<td>( \chi^2 (1, n = 961) = 2.316; ) ( p = .128 )</td>
</tr>
<tr>
<td>5. Transactional</td>
<td>10.6% (n = 102)</td>
<td>10.1% (n = 87)</td>
<td>15.2% (n = 15)</td>
<td>( \chi^2 (1, n = 961) = 2.395; ) ( p = .088 )</td>
<td>7.7% (n = 40)</td>
<td>14% (n = 62)</td>
<td>( \chi^2 (1, n = 961) = 79.293; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>6. Forced</td>
<td>14.7% (n = 141)</td>
<td>13% (n = 112)</td>
<td>29.3% (n = 29)</td>
<td>( \chi^2 (1, n = 961) = 18.845; ) ( p &lt; .001 )</td>
<td>10% (n = 52)</td>
<td>20.1% (n = 89)</td>
<td>( \chi^2 (1, n = 961) = 19.271; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>7. Forced prostitution</td>
<td>10.1% (n = 97)</td>
<td>8.7% (n = 75)</td>
<td>22.2% (n = 22)</td>
<td>( \chi^2 (1, n = 961) = 17.891; ) ( p &lt; .001 )</td>
<td>9.5% (n = 49)</td>
<td>10.8% (n = 48)</td>
<td>( \chi^2 (1, n = 961) = .498; ) ( p = .480 )</td>
</tr>
<tr>
<td>8. Non-contact</td>
<td>21.4% (n = 206)</td>
<td>20.3% (n = 175)</td>
<td>31.3% (n = 31)</td>
<td>( \chi^2 (1, n = 961) = 6.394; ) ( p &lt; .001 )</td>
<td>8.7% (n = 45)</td>
<td>36.3% (n = 161)</td>
<td>( \chi^2 (1, n = 961) = 108.447; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>9. Non-contact</td>
<td>38.2% (n = 367)</td>
<td>36.9% (n = 318)</td>
<td>49.5% (n = 49)</td>
<td>( \chi^2 (1, n = 961) = 5.971; ) ( p &lt; .05 )</td>
<td>28.2% (n = 146)</td>
<td>49.9% (n = 221)</td>
<td>( \chi^2 (1, n = 961) = 47.643; ) ( p &lt; .001 )</td>
</tr>
<tr>
<td>Any form of sexual violence</td>
<td>74.6% (n = 717)</td>
<td>73.2% (n = 631)</td>
<td>86.9% (n = 86)</td>
<td>( \chi^2 (1, n = 961) = 8.756; ) ( p &lt; .01 )</td>
<td>64.7% (n = 335)</td>
<td>86.2% (n = 382)</td>
<td>( \chi^2 (1, n = 961) = 58.584; ) ( p &lt; .001 )</td>
</tr>
</tbody>
</table>

*Asymptotic significance 2-sided, †unwanted exposure to pornographic material, ‡given money in exchange for doing sexual things, 
§by threat/pressure, ‡unwanted transfer of intimate pictures to others/publication on internet, ¶molestation (verbal/by email/short message service).
individuals reported high rates of non-contact abuse (86.7% on item 2, 31% on item 8, 59% on item 9) and passive abuse (67%), moderate rates of active abuse (44.1%) and relatively low rates on transactional sex (5.9% on item 5, 8.7% on item 7) and forced intercourse (17.9% on item 4, 14.6% on item 6). This group was called predominately passive/non-contact abuse (medium exposure group).

The MANCOVA showed a statistically significant difference between the SV classes in the dependent variables, after controlling for gender, school status, IPV, parental violence, and peer violence, $F(6, 1902) = 10.070$, Wilk’s $\Lambda = .939$, $p < .001$, partial $\eta^2 = .031$. Univariate tests showed a significant difference in behavioural problems, $F(2, 953) = 19.18$, $p < .001$, partial $\eta^2 = .039$, and physical complaints, $F(2, 953) = 18.68$, $p < .001$, partial $\eta^2 = .038$. The groups did not differ significantly in prosocial behaviours. Mean sum scores of the dependent variables in the three severity groups are shown in Table 3 and results of post-hoc pairwise comparisons in Table 4. Post-hoc tests revealed significantly higher scores in behavioural problems and physical complaints from low to medium to high severity of SV and a non-significant tendency for lower scores of prosocial behaviour from low to medium to high severity.

### Table 3. Comparison of latent classes.

<table>
<thead>
<tr>
<th></th>
<th>Severity group</th>
<th>M</th>
<th>SD</th>
<th>Md</th>
<th>95% CI Lower Bound</th>
<th>95% CI Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total difficulty score</td>
<td>High</td>
<td>35.91</td>
<td>5.52</td>
<td>36.00</td>
<td>34.75</td>
<td>35.98</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>33.51</td>
<td>5.72</td>
<td>33.00</td>
<td>32.98</td>
<td>34.03</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>30.17</td>
<td>5.30</td>
<td>30.00</td>
<td>29.65</td>
<td>30.68</td>
</tr>
<tr>
<td>Physical complaints</td>
<td>High</td>
<td>4.07</td>
<td>2.49</td>
<td>4.00</td>
<td>3.54</td>
<td>4.59</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>2.98</td>
<td>2.05</td>
<td>3.00</td>
<td>2.79</td>
<td>3.17</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>2.00</td>
<td>1.78</td>
<td>2.00</td>
<td>1.83</td>
<td>2.17</td>
</tr>
<tr>
<td>Prosocial behaviour</td>
<td>High</td>
<td>12.79</td>
<td>2.54</td>
<td>14.00</td>
<td>12.25</td>
<td>13.32</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>13.38</td>
<td>1.95</td>
<td>13.90</td>
<td>13.20</td>
<td>13.56</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>13.55</td>
<td>1.97</td>
<td>13.90</td>
<td>13.36</td>
<td>13.74</td>
</tr>
</tbody>
</table>

**Figure 2.** Percentage of exposure to different forms of sexual violence in the severity of sexual violence groups. a Passive (1), unwanted exposure to pornographic material (2), active (3), forced intercourse (4), given money in exchange for doing sexual things (5), forced intercourse by threat/pressure (6), forced prostitution (7), unwanted transfer of intimate pictures to others/publish on internet (8), molestation (verbal/by email/short message service) (9).

4. Discussion

The high prevalence of self-reported SV supports evidence that SV is a widespread issue in Nigeria. According to our first hypothesis, we found that SV was associated with externalizing and internalizing problems, physical complaints, and with fewer prosocial behaviours. In line with our second hypothesis, we identified 3 classes of SV exposure that differed in exposure severity. Higher exposure severity was linked to more behavioural problems and physical complaints, and to a limited extent also to fewer prosocial behaviours.

Our findings are consistent with previous studies that reported associations between SV and negative health outcomes in adolescents (Carey et al., 2008) and with studies indicating increased risk of mental health problems through cumulative exposure to traumatic event types (Wilker et al., 2015). Contrarily to Kong et al. (2023), SV exposure was negatively correlated with prosocial behaviours in this study, indicating a decrease of social well-being. This finding is particularly alarming as prosociality in children has wide reaching effects, e.g. on later educational achievement (Caprara et al., 2000).

The present study further contributes to the literature by assessing nine different types of SV and by considering multiple physical health indicators besides mental health problems. In addition to previously
well-studied direct consequences of SV on reproductive and physical health (Reza et al., 2009), we found associations between SV exposure types and rather unspecified physical complaints which corresponds to previous findings on associations between SV and immune system deterioration (Ghosh et al., 2018) and somatization (Farley & Keaney, 1997). In line with previous evidence for a general harmful effect of interpersonal violence on mental and physical health (Dunn et al., 2020), we found that adverse mental and physical health outcomes were associated with all forms of violence assessed. However, our findings suggest a unique effect of SV exposure beyond other adversity for various health outcomes, implying an impairment of health and psychosocial well-being.

Furthermore, our findings implying a significant increase of mental and physical health problems from low to medium to high severity are in accordance with previous studies suggesting that more severe forms of abuse, especially those including penetration, predict poorer health (Priebe et al., 2010). In the medium exposure group, 86.7% reported unwanted exposure to pornographic material and 67% reported exposure to passive abuse. Their scores of mental and physical problems and prosocial behaviour were between those of the high exposure and low exposure group. These findings are important as previous studies and media attention predominantly focus on the effects of severe forms of SV (e.g. Abrahams et al., 2013) whereas the effects of other forms of SV are rarely studied and discussed.

### 4.1. Strengths and limitations

This study included a sample of disadvantaged out-of-school adolescents, a population that is difficult to recruit and understood. Moreover, we included all genders, whereas many studies on SV focus on females only (Campbell et al., 2009). Assessment of a range of SV types (including passive and non-contact abuse) and important covariates yielded relevant findings. Nevertheless, some limitations must be considered: First, the cross-sectional design did not allow for causal conclusions. Second, due to cultural taboo and memory bias underreporting of SV exposure cannot be ruled out completely. Third, the size of our out-of-school subsample was relatively small, and we did not explore reasons why they dropped out of school. Our cross-sectional design does not allow any conclusions about whether SV leads to school drop-out or the other way around or whether other factors (e.g. poor family background, being orphan) may explain the observed differences. Fourth, we did not assess whether participants perpetrated SV. Finally, though we based our decision for a three-class solution on model fit indices, parsimony, and interpretability, we cannot rule out that other class solutions may have been possible, too, and acknowledge that class solutions are always sample-dependent and thus hardly generalizable.

### 4.2. Implications for research and prevention

Given the high prevalence of SV in adolescents, its far-reaching consequences, and the lack of research on this topic in Sub-Saharan Africa and other understudied populations world-wide, further research is needed. Future studies should include larger samples of the particularly vulnerable population of out-of-school adolescents. The role of SV for dropping out of school might be an important piece of the puzzle to better understand the social consequences of SV. Moreover, previous studies indicate that SV is often perpetrated by peers (Idowu Ajayi et al., 2023; Nguyen et al., 2021). Future studies investigating SV among peers, need to consider this and focus on victimization as well as perpetration as it is likely to co-occur in this population. Furthermore, it is recommended to involve the affected adolescents themselves in the preparation and design of the study within a framework of participative research. This helps to ask questions that are optimally adapted to the context, to anticipate ethical challenges and to give the people affected a stronger voice.

---

**Table 4. Bootstrapped pairwise comparisons of total difficulty score, physical complaints, and prosocial behaviour between severity groups of sexual violence.**

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Severity of sexual violence groups</th>
<th>Mean difference (B)</th>
<th>Robust Standard Error*</th>
<th>t-value</th>
<th>Significanceb (p-value)</th>
<th>Partial eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total difficulty score</td>
<td>High vs. medium</td>
<td>1.33</td>
<td>.661</td>
<td>2.01</td>
<td>&lt; .001</td>
<td>.043</td>
</tr>
<tr>
<td></td>
<td>High vs. low</td>
<td>3.43</td>
<td>.705</td>
<td>4.87</td>
<td>&lt; .001</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>Low vs. medium</td>
<td>–2.10</td>
<td>.376</td>
<td>–5.60</td>
<td>&lt; .001</td>
<td>.032</td>
</tr>
<tr>
<td>Physical complaints*</td>
<td>High vs. medium</td>
<td>.78</td>
<td>.285</td>
<td>2.73</td>
<td>.01</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>High vs. low</td>
<td>1.43</td>
<td>.301</td>
<td>4.76</td>
<td>&lt; .001</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>Low vs. medium</td>
<td>–6.55</td>
<td>.142</td>
<td>–4.61</td>
<td>&lt; .001</td>
<td>.022</td>
</tr>
<tr>
<td>Prosocial behaviour</td>
<td>High vs. low</td>
<td>–.61</td>
<td>.315</td>
<td>1.92</td>
<td>.048</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Low vs. medium</td>
<td>.16</td>
<td>.145</td>
<td>1.14</td>
<td>.245</td>
<td>.001</td>
</tr>
</tbody>
</table>

*HC3 method.

aAlpha level was adjusted by a Bonferroni correction.

Sexual violence affects adolescents’ health and prosocial behaviour beyond other violence exposure.
As international research has shown, SV is universally related to negative health outcomes (Decker et al., 2014). However, there is a lack of cross-cultural comparative studies (Stoltenborgh et al., 2011). A particular focus should be put on cultural and social aspects that might moderate the exposure to and consequences of SV, such as social taboos around sexuality, stigmatization and victim blaming. Further, future research should investigate whether legal regulations such as strict age regulations for sexual activity contribute to SV and prevent disclosure and support for victims.

In view of the unique and consistent effect of SV on adolescents’ health shown in this study, age-appropriate prevention programs such as awareness and education campaigns should be developed, implemented, and tested. Contrary to the media attention that mostly focusses on extreme cases, our findings suggest that less severe forms of SV are much more common but also relate to negative health outcomes. Prevention programs should address non-contact abuse, given its high prevalence and relevance due to the progressing digitalization of communication and the associated risk for more severe forms of SV (Peter & Valkenburg, 2016).

4.3. Conclusion

Our findings contribute to the evidence that SV is a widespread problem among Nigerian adolescents with a unique and consistent burden on mental and physical health, as well as prosocial behaviours. The cumulative exposure to SV and the severity of events are associated with impairments of health and well-being. Low-threshold preventative interventions and mental, physical, and social health care for victims of SV are needed to tackle this societal issue.

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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