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The Prevalence of Sexually Transmitted Infections and Subsequent Association with Exposure to Childhood Violence and Mental Health Outcomes for Adolescents and Young Adults in Zimbabwe

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Abstract

Sexually transmitted infections (STIs) represent a major public health concern for young people in developing nations, impacting approximately two-thirds of individuals below the age of 25. This study examined the prevalence and the association between self-reported STIs, childhood violence exposure, and mental health outcomes among adolescents and young adults (13-24 years old) in Zimbabwe. Secondary data from the 2017 Zimbabwe Violence Against Children and Youth Survey (n=8,715) was utilized. Data analysis was performed using chisquare to determine the prevalence estimates for bivariate. Seven logistic regression models were used to examine the significant association between independent variables and outcomes for multivariate. About 45.5% of adolescents and young adults with self-reported STIs were exposed to multiple forms of childhood violence, 49.8% reported lifetime suicide risk, and 44.9% reported moderate-to-severe mental distress in the past 30 days. Furthermore, logistic regression results indicated that adolescents and young adults with self-reported STI diagnoses were more likely to be exposed to multiple forms of childhood violence, including physical, emotional, and sexual violence, as well as mental distress in the past 30 days and lifetime suicide risk compared to those without STIs. Therefore, this study underscores the importance of implementing comprehensive public health strategies to protect the wellbeing of adolescents and young adults with STIs. Interventions should also prioritize raising awareness, destigmatizing STIs, implementing and strengthening violence prevention policies, and addressing mental health problems through community mental health treatment programs in Zimbabwe.

Keywords: *Childhood violence, Emotional violence, Exposure, Mental distress, Physical violence, Sexual violence, Sexually transmitted infections (STIs), Suicide risk, Zimbabwe.*

Introduction

Sexually transmitted infections (STIs) are the major public health challenges, particularly affecting a large number of young individuals in our society [1]. Despite advancements in detection, treatment, and the widespread acceptance of STI testing, global statistics indicate an increased risk for STIs among individuals aged 13 to 24 [2, 3]. In 2016 alone, there were approximately 376 million recorded cases of STIs among people aged 15 to 49 years old [4, 5]. Young adults engaging in risky sexual behaviors bear the brunt of STIs, with an estimated two-thirds of those under 25 being impacted [6]. The prevalence rate of 18,000 STIs per 100,000 persons presents a substantial public

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health challenge for young people. In Africa, particularly sub-Saharan Africa grapples with an even higher age-standardized incidence rate of STIs with more than 19,000 STIs per 100,000 persons [7]. Zimbabwe, in particular, witnessed a surge in STI cases among young people, with a notable increase of 15,827 cases in 2022 compared to 2021. This surge not only compromises the quality of life for affected young individuals but also places strain on households' resources and national budgets to deal with the increasing risk of STIs [8]. In Zimbabwe, the commonly reported forms of STIs are predominantly gonorrhea and chlamydia, which are often detectable in urethral and vaginal discharge [9]. Also, the STIs often remain asymptomatic or present mild symptoms, posing greater challenges in diagnosis and treatment of the affected individuals [1, 10]. The peak incidence of STIs usually occurs in young adulthood phase, with approximately one-third of reported gonorrhea and chlamydia cases affecting those primarily aged between 20 and 24 years and more than half of STI infections occurs before the age of 25 [11].

Further evidence suggests a connection between the risk of STIs with the exposure to violence, and the development of physical and mental health problems [12]. Previous research has indicated that being exposed to physical, emotional, and sexual violence is strongly linked to adverse health outcomes, increasing the likelihood of contracting STIs [11, 13]. Although, prior studies have shown that experiencing emotional violence entails engaging in harmful behaviors characterized by manipulation, belittlement, undermining, or degrading an individual's emotional well-being and sense of self-worth, leading to significant emotional distress [14-17], there is scarcity of literature showing the direct association between self-reported STIs and emotional violence for adolescents and young adults. Due to enduring stigma and discrimination that is attached to young people diagnosed with STIs, it is possible that adolescents with STIs may be targeted for emotional violence. Other studies have previously found a connection between childhood sexual violence with the later development of STDs and symptoms of mental distress, but not the other way around [18-22]. This relationship may be obvious because most of the STIs are spread through sexual intercourse. However, it remains unknown in many contexts whether those who have been diagnosed with STIs may be target of sexual violence in LMICs.

A limited body of research has shown direct and indirect association between experiencing physical or witnessing violence and health-related outcomes related to sexual risk outcomes, but no direct link between STI and exposure to physical violence [22-25]. A study conducted by London et al., [11] stated that during adolescence, the self-reported prevalence of STIs such as chlamydia, gonorrhea, or trichomoniasis was 1.7%. However, after accounting for other factors, specific traumatic experiences were strongly associated with STIs. For instance, witnessing violence was significantly associated with the traumas linked to STIs [11]. On the other hand, previous studies found a proportional connection between exposure to multiple forms of violence and self-reported STIs for males and females [26, 27]. Several other studies involving adolescents and youth have identified a connection between mental health problems and STIs [28-30]. For example, individuals diagnosed with mental health conditions such as depression were found to be susceptible to contracting STIs [31, 32]. Additionally, a Canadian study revealed that 6.7% of STI patients reported experiencing suicidal thoughts and mental health needs within the preceding 12 months [33].

Finally, although several literatures suggest that being diagnosed with an STI is often associated with stigma and discrimination [34-36], there is a limited understanding of the relationship between having an STI diagnosis and its negative consequences with exposure to multiple forms of childhood violence [37]. This

gap in the existing literature is particularly evident in Zimbabwe. Therefore, this study aims to address these gaps by answering the following questions:

1. *What are the prevalence of self-reported sexually transmitted infections (STIs) in relation to exposure to childhood violence and mental health outcomes among adolescents and young adults in Zimbabwe?*
2. *Is there a relationship between self-reported STIs and mental health outcomes (i.e., suicide risk and mental distress) among adolescents and young adults in Zimbabwe?*
3. *Is there a relationship between self-reported STIs and exposure to childhood violence among adolescents and young adults in Zimbabwe?*

In view of the above research questions and evidence from the prior literature, we hypothesize that adolescents and young adults with self-reported diagnosis of STIs will be more likely to report having experienced childhood violence (i.e., emotional, physical or sexual violence) and mental health problems (i.e., mental distress and suicide ideations or attempts) relative to those without STI diagnosis.

Methods

Study Design and Population

This study employed a cross-sectional design, utilizing secondary data from the 2017 Zimbabwe Violence Against Children Survey (ZVACS). The survey targeted individuals aged 13 to 24 and was designed as a nationally representative household survey [38]. The survey employed a three-stage, cluster-randomized approach. In the first stage, 1,000 female Enumeration Areas (EAs) and 118 male EAs were randomly selected from a total of 29,365 EAs, with selection probability proportional to the size of the EAs in terms of household presence. During the second stage, survey data collection teams mapped and listed all structures and households in the selected EAs. Moving to the third stage, one eligible participant aged 13 to 24 (either male or female based on the EA) was randomly chosen using a computer program built with CSPro. This participant was then interviewed. The study employed a split-sample approach to maintain confidentiality and align with World Health Organization (WHO) guidelines. Each EA was designated to survey either females or males, preventing simultaneous interviews of a sexual violence perpetrator and victim of the opposite sex in the same community. For the male sample, 3,445 individuals were surveyed across 118 randomly selected EAs, with 803 males completing individual questionnaires. In the female sample, 29,635 households in 1,000 EAs were surveyed, resulting in 7,912 females completing individual questionnaires. The response rates were 66% for males and 72% for females, leading to a total sample size of 8,715 participants aged 13 to 24 in Zimbabwe [38].

Inclusion Criteria

Participants included in the survey had to meet the following criteria: (1) must live in a selected household in Zimbabwe, (2) be between 13 and 24 years old at the time of the survey, and (3) be fluent in English, Shona, or Ndebele. Survey administration in these languages was consistent with previous national surveys in Zimbabwe. The chosen age range was deemed appropriate for understanding childhood violence, considering the maturity required to answer survey questions, especially those related to potential risk and protective factors. The upper age limit of 24 aimed to minimize recall bias for childhood experiences. Additionally, individuals with cognitive impairment or significant physical disabilities hindering their understanding of survey questions were not included [38].

Data Collection Procedures

Privacy was a priority during survey administration. Interviewers conducted interviews in safe and private locations such as community areas, schools, churches, or appropriate places within households or yards.

Before initiating survey work in a new community, team leaders sought guidance from community leaders to identify suitable interview locations. Participants, parents, and household members' comfort with the interview location was confirmed by interviewers. If no private location was available, interviews were rescheduled while the survey team remained in the community. Employing a split-sample design with separate male and female EAs, participants were interviewed by an interviewer of the same sex. Only the interviewer and participant were present during the interview, ensuring the privacy of minors. The duration of participant interviews ranged from 20 to 60 minutes [38].

Measures

Dependent Variables

The dependent variables encompassed exposure to multiple forms of childhood violence, such as childhood physical violence, emotional violence, sexual violence, and witnessing physical violence during childhood. These variables were selected based on previous studies utilizing the Violence Against Children Surveys (VACS) [39-41]. The items used in the VACS were derived from validated scales, including the ISPCAN Child Abuse Screening Tool Retrospective, which assessed experiences of physical and sexual violence from any perpetrators [42], and the Juvenile Victimization Questionnaire, which assessed witnessing physical violence [43, 44].

Childhood emotional violence involved respondents indicating whether, as a child, their caregiver had told them that they were not loved, did not deserve love, wished they had never been born, or were ridiculed or put down before the age of 18. Response options ranged from 'never' to 'don't know/declined,' and this variable was dichotomously coded as either 'no' (never experienced emotional violence) or 'yes' (experienced emotional violence).

Childhood physical violence was assessed by asking the respondents whether they had experienced physical violence inflicted by any perpetrator prior to 18 years old: (1) being punched, kicked, whipped, or beaten with an object, (2) being choked, smothered, subjected to drowning attempts, or intentionally burned, and (3) facing the use or threat of a knife or other weapons. The responses were recoded for each type of perpetrator, including (1) intimate partners, (2) peers, (3) parents, adult caregivers, or other adult relatives, and (4) adults in the neighborhood. The response options were 'yes,' 'no,' and 'don't know/declined.' Physical violence was recoded dichotomously as 'yes '(never experienced physical violence) and yes (experienced physical violence).

Childhood sexual violence was assessed by asking the respondents whether they had experienced any sexual violence prior to 18 years old: (1) being offered favors, gifts or food in exchange for engaging in sexual acts, (2) being involved in a sex video or photo or coerced to display their sexual body parts on webcam, (3) experiencing unwanted sexual touching, such as pinching, grabbing, fondling, or touching of their sexual body parts, (4) facing unsuccessful attempts of forced sexual intercourse against their will, (5) being physically forced to engage in sexual acts, and 6) being coerced into sexual acts through harassment, threats, or manipulation. The response options provided were 'yes,' 'no,' and 'don't know/declined.' The responses were subsequently dichotomously coded as 'no' (no exposure to sexual violence) or 'yes' (exposure to sexual violence).

Witnessed childhood physical violence was assessed by asking the respondents whether they had ever heard or seen a parent being punched, kicked, beaten up by the other parent, or their boyfriend or girlfriend before they were 18 years old. The response categories were never, once, a few times, many times, and don't know/declined. The responses were subsequently dichotomously coded as 'no' (never witnessed physical violence), or 'yes' (once, a few times, or many times; witnessed physical violence).

Exposure to multiple forms of childhood violence. This was assessed by summing a total score for anyone who responded to have experienced emotional violence, physical violence, and sexual violence. A summative scale of cumulative any childhood violence was coded as a continuous variable with a range of 0 indicating 'no' (if never experienced any emotional, physical, or sexual violence) to 3 indicating 'yes' (if the respondents experienced any emotional, physical or sexual violence). Finally, this was dichotomously coded as 0=no (no exposure to multiple forms of violence) and 1= 'yes' (exposure to multiple forms of violence) for the final analysis.

Mental distress was assessed using the Kessler-6 (k-6) non-specific psychological scale [45]. Six questions were asked about how often the respondents in the past 30 days felt the following: (1) nervous, (2) hopeless, (3) restless, (4) so sad that nothing could cheer you up, (5) that everything was effortless, and (6) worthless about everything. Based on a 5-point Likert-type scale, each response had a possible score range of 0= none of the time to 4= all the time with a total possible score ranging from 0 to 24. Based on the reliability and valid scale and clinically proven cut-off points of Kessler-6 in measuring psychological distress in various contexts, including LMICs, respondents with scores of 5 to 24 were categorized as having moderate or severe mental distress and respondents with scores of 0 to 4 were categorized as having no mental distress [45].

Suicide risk was assessed by asking the respondents: (1) have you ever had thoughts about killing yourself? (2) have you attempted suicide? and (3) have you tried to kill yourself? The available response options were 'yes,' 'no,' and 'don't know/declined.' Suicide risk was categorized as 0 = no suicide risk or 1= with suicide risk (*suicidal thoughts or attempts)* based on the distribution of the data.

Independent Variable

Sexually transmitted infections (STIs) was assessed by asking participants: (1) have you ever been diagnosed with a sexually transmitted infection?' (2) have you ever been diagnosed with genital ulcers? These two items were summed up for a total score and were dichotomously coded as 'no' (if the respondents reported no STI diagnosis) and 'yes' (if the respondents reported to have been diagnosed with STIs).

Control Variables

Sociodemographic characteristics such as sex, age, highest level of education completed, marital status, and being close to biological parents were included as control variables in the sample.

Data Analysis

Descriptive characteristics were conducted using frequencies and percentages, considering the categorical nature of the variables. Chisquare analysis was conducted to derive weighted frequencies and percentages (prevalence estimates), establishing significant associations for bivariate analysis. Additionally, seven logistic regression models were employed to determine the significant associations between the primary independent variable (self-reported STIs) and seven dependent variables (multiple exposures to childhood violence, sexual violence, emotional violence, physical violence, witnessing physical violence, mental distress, and suicide risk), while controlling for sociodemographic characteristics in the sample. A significant level of 0.05 was applied to both bivariate and multivariate analyses, with SPSS version 29.0 used for statistical data analysis.

Ethical Considerations

This study employed secondary data that was not subject to ethical clearance from Lewis University. The survey protocol and informed consent documents underwent scrutiny and received approval from both the U.S. Center for Disease Control and Prevention (CDC) and the Zimbabwe Ministry of Health and Childcare during the initial survey [46].

Results

The Descriptive Characteristics of the Participants

Table 2 below shows the descriptive characteristics of the participants in the sample. Out of 8,715 participants, 43.5% were male, 56.5% were young adults (18-24 years), 72.2% completed at least secondary or higher levels of education, 68.0% were never married, and 94.0% were close to their biological parents (94.0%). Additionally, 28.9% of the participants were exposed to multiple forms of childhood violence, 20.5% experienced childhood physical violence, 75.6% experienced childhood emotional violence, 7.6% experienced childhood sexual violence, and 28.1% witnessed physical violence in childhood. On the other hand, 28.5% of the participants reported moderate/severe mental distress in the past 30 days, and 31.8% reported suicidal thoughts or attempted suicide during their lifetime.

Table 1. The Descriptive Characteristics of the Participants (n=8715)

Variables	**N**	**%**
Sex		
Male	5124	43.5
Female	3567	41.0
Age (years)		
13-17	3793	43.5
18-24	4922	56.5
Highest education completed		
Primary or less	1389	27.8
Secondary or higher	3602	72.2
Marital status		
Never married	5925	68.0
Married	2787	32.0
Close to biological parents		
No	506	6.0
Yes	7951	94.0
Exposure to multiple childhood violence		
No	6199	71.1
Yes	2516	28.9
Childhood physical violence		
No	6930	79.5
Yes	1782	20.5
Childhood emotional violence		
No	223	24.4
Yes	690	75.6
Childhood sexual violence		
No	8052	92.4

Yes	658	7.6
Witnessed physical violence		
No	2943	71.9
Yes	1148	28.1
Mental distress (past 30 days)		
No mental distress	6229	71.5
Moderate or severe mental distress	2478	28.5
Lifetime suicide risk		
No suicide risk	5938	68.2
Suicidal thoughts or attempts	2772	31.8

The Prevalence of Self-Reported STIs Across Childhood Violence and Mental Health Outcomes

Table 2 shows the prevalence of self-reported STIs across multiple forms of childhood violence and mental health outcomes. Participants who experienced childhood sexual violence had a higher STI prevalence rate of 12.3%. Additionally, those who witnessed physical violence in childhood, experienced childhood physical violence, experienced emotional violence, and were exposed to multiple forms of violence during childhood exhibited STI prevalence rates of 9.9%, 8.7%, 8.6%, and 8.5%, respectively. In contrast, 9.1% of participants who reported moderate/severe mental distress in the past 30 days, and 9.1% who had suicidal thoughts or attempted suicide reported a diagnosis of STIs during their lifetime.

Table 2. The Prevalence of STIs Across Childhood Violence and Mental Health Outcomes

Variables	**No STIs**	**With STIs**	**Total**
	N (%)	**N (%)**	
Exposure to multiple childhood violence* **			
No	5901 (95.3)	290 (4.7)	6191
Yes	2297 (91.5)	214 (8.5)	2511
Experienced childhood physical violence* **			
No	6575 (95.0)	349 (5.0)	6924
Yes	1622 (91.3)	155 (8.7)	1777
Experienced childhood emotional violence* **			
No	205 (92.3)	17 (7.7)	222
Yes	630 (91.4)	59 (8.6)	689
Experienced childhood sexual violence* **			
No	7620 (94.7)	423 (5.3)	8043
Yes	576 (87.7)	81 (12.3)	657
Witnessed physical violence in childhood* **			
No	2785 (94.7)	155 (5.3)	2940
Yes	1033 (90.1)	113 (9.9)	1146
Mental distress (past 30 days)* **			
No mental distress	5946 (95.5)	277 (4.5)	6223
Moderate or severe mental distress	2249 (90.9)	226 (9.1)	2475
Lifetime suicide risk * **			

No suicide risk	5679 (95.7)	253 (4.3)	5932
Suicidal thoughts or attempts	2518 (90.9)	251 (9.1)	2769

Note: Chi-square tests were used to calculate the prevalence estimates. *= p <.05, **= p<.01, ***p<.001

The Prevalence of Childhood Violence and Mental Health Outcomes Across STIs

Table 3 shows the prevalence of childhood violence and mental health outcomes across self-reported STIs. Among the participants with self-reported STIs, 42.5% were exposed to multiple forms of childhood violence, 30.8% experienced childhood physical violence, 75.4% experienced childhood emotional violence, 16.1% experienced childhood sexual violence, and 42.2% witnessed physical violence in childhood, 44.9% had moderate/severe mental distress in the past 30 days, and 49.9% lifetime suicidal thoughts or attempted suicide.

Association Between Self-Reported STIs and Childhood Violence

Table 4 shows the logistic regression results between self-reported STIs and exposure to childhood violence. Participants with self-reported STIs were more likely to be exposed to multiple forms of childhood violence (AOR=1.77, 95% CI=1.41-2.23), experienced childhood physical violence (AOR=1.78, 95% CI=1.38-2.28), experienced childhood sexual violence (AOR=2.26, 95% CI=1.67—3.05), and witnessed physical violence during childhood (AOR=1.69, 95% CI=1.35-2.11) compared to those without self-reported STIs. Despite this, self-reported STIs was not significantly associated with experiencing childhood emotional violence among the participants in the sample.

Association Between Self-Reported STIs and Mental Health Outcomes

Table 5 shows the results of an association between self-reported STIs and mental health outcomes (i.e., mental distress and suicide risk). Participants who reported STIs diagnosis were more likely to report moderate/severe mental distress in the past 30 days compared to those without STIs (AOR=1.69, 95% CI=1.35-2.11). On the other hand, participants who reported STIs were more likely to report having suicidal thoughts or attempted suicide during their lifetime compared to those without STIs (AOR=1.77, 95% CI=1.42-2.21).

Table 3. The Prevalence of Childhood Violence and Mental Health Across Self-reported STI

Variables	Multiple childhood violence	Experienced PV	Experienced EV	Experienced SV	Witnessed PV	Mental Distress	Suicide Risk
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
STIs							
No	2297 (28.0)***	1622 (19.8)***	205 (24.6)	576 (7.0)***	1033 (27.1)***	2249 (27.4)***	2518 (30.7)***
Yes	214 (42.5)***	155 (30.8)***	630 (75.4)	81 (16.1)***	113 (42.2)***	226 (44.9)***	251 (49.8)***

Note: Sample sizes are different for each outcome based on recorded responses. Chi-square tests (cross tabulations) were used to calculate the prevalence estimates. *= p <.05, **= p<.01, ***p<.001. STI = Sexually transmitted infections, PV=physical violence, and SV=sexual violence, and EV= emotional violence

Table 4. Association of Self-Reported STIs with Childhood Violence Types

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
	Multiple forms of violence	Experienced PV	Experienced EV	Experienced SV	Witnessed PV
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Sex					
Male	Ref	Ref	Ref		
Female	1.07 (0.94—1.22)	1.03 (0.89—1.20)	0.92 (0.59 –1.43)	1.00 (0.81—1.23)	1.12 (0.99—1.27)
Age (years)					
13 - 17	Ref	Ref	Ref	Ref	Ref
18 - 24	0.54 (0.46—0.65)***	0.52 (0.43—0.63)***	1.36 (0.81—2.27)	0.58 (0.43—0.75)***	1.43 (1.19—1.72)***
Marital status					
Never married	Ref	Ref	Ref	Ref	Ref
Married	1.22 (1.06—1.40)***	1.17 (1.00—1.38)	0.77 (0.48—1.25)	1.66 (1.32—2.09)***	1.13 (0.99—1.28)
Highest education completed					
Primary or less than primary	Ref	Ref	Ref	Ref	Ref
Secondary education or higher	0.93 (0.80—1.08)	0.88 (0.74—1.03)	1.29 (0.82—2.02)	0.96 (0.77—1.21)	1.00 (0.87—1.16)***
Close to biological parents					
No	Ref	Ref	Ref	Ref	Ref
Yes	0.54 (0.43—0.69)***	0.69 (0.53—0.90)***	0.55 (0.27--1.13)	0.67 (0.47—0.95)*	0.58 (0.46—0.73)***
Self-reported STIs					
No	Ref	Ref	Ref	Ref	Ref
Yes	1.77 (1.41—2.23)***	1.78 (1.38—2.28)***	1.26 (0.58—2.73)	2.26 (1.67—3.05)***	1.69 (1.35—2.11)***

*= p <.05, **= p<.01, ***p<.001. STI = Sexually transmitted infections, PV=physical violence, and SV=sexual violence, and EV= emotional violence, AOR = adjusted odd ratios

Table 5. Association of Self-reported STIs with Mental Health Outcomes

Variables	Model 1	Model 2
	Mental distress (past 30 days)	Suicide Risk (lifetime)
	AOR (95% CI)	AOR (95% CI)
Sex		
Male	Ref	Ref
Female	1.12 (0.99—1.27)	1.13 (1.00—1.28)
Age (years)		
13 - 17	Ref	Ref
18 - 24	1.43 (1.19—1.72)***	1.41 (1.17—1.68)***
Marital status		
Never married	Ref	Ref
Currently married	1.13 (0.99—1.29)	1.22 (1.07—1.38)***
Highest level of education completed		
Primary or less than primary education	Ref	Ref
Secondary education or higher t	1.00 (0.87—1.16)	0.99 (0.86—1.14)
Close to biological parents		
No	Ref	Ref
Yes	0.58 (0.46—0.73)***	0.55 (0.44—0.70)***
Self-reported STIs		
No	Ref	REf
Yes	1.69 (1.35—2.11)***	1.77 (1.42—2.21)***

*=p<.05, **=p<.01, ***=p<.001. Sex, age, marital status, education, and close to biological parents were used as control variables, AOR = adjusted odds ratios, "Ref = reference group"

Discussion

This study estimated the prevalence of self-reported STIs diagnosis and their association with exposure to childhood violence and mental health outcomes among adolescents and young adults in Zimbabwe. The prevalence estimates of "STIs" among adolescents and young adults exposed to childhood violence, mental distress, and suicide ideations or attempts were generally modest in Zimbabwe. These findings align with previous studies in the United States [27, 47], suggesting a plausible consistency in prevalence ranges for young people. Specifically, in our study, only 8.5% of adolescents and young adults were exposed to multiple forms of childhood violence, 8.7% experienced childhood physical violence, 8.6% experienced child emotional violence, 12.3% experienced childhood sexual violence, and 9.9% witnessed physical violence reported having been diagnosed with STIs in Zimbabwe. In this regard, the highest self-reported STI prevalence rates were observed among those who experienced sexual violence, aligning with findings in Fan et al., [48] study with young women in Malawi. It is unsurprising that a significant number of individuals experiencing sexual violence, primarily women, might face an increased susceptibility to contracting STDs/STIs. The trauma linked to sexual violence can lead to engaging in unsafe sexual practices, including unprotected intercourse, multiple sexual partners, or participation in high-risk activities, and vice versa. [49, 50]. While the prevalence rates of self-reported STI diagnoses among adolescents and young adults exposed to multiple forms of childhood violence were modest, they aligned with the hypothesized direction in the present study. It is crucial to recognize that the self-reported nature of STIs and exposure to specific forms of violence and mental health, particularly sexual violence,

might have been underreported due to the fear of stigma and discrimination associated with knowing one's STI status. Consequently, it is plausible to argue that the rates of STIs may be higher than anticipated, particularly in the context of the present study.

We further found that adolescents and young adults with self-reported STI diagnoses were more likely to have experienced childhood sexual and physical violence as well as witnessed physical violence during childhood compared to those without self-reported STIs. This study validates the findings from prior research, such as the CDC-Kaiser ACE Study [51], associating STIs with exposure to multiple forms of childhood violence in Zimbabwe. For example, Wang [52] contends that being exposed to various forms of violence, such as childhood maltreatment or abuse, is significantly associated with early sexual initiation, having multiple sexual partners, engaging in transactional sex, unprotected sexual activities, and other risky behaviors. This, in turn, increases the likelihood of contracting STIs. Likewise, individuals diagnosed with STIs face an elevated risk of experiencing stigma and discrimination, making them susceptible to various forms of violence. Thus, there exists a reciprocal relationship between STIs and exposure to a wide range of violence. The prevalence of self-reported STIs linked to multiple forms of violence in this study highlights the importance of implementing strategies and programs aimed at improving STI testing, treatment, and prevention among adolescents and young adults [53].

Furthermore, there is a critical need for health authorities and relevant stakeholders in Zimbabwe and other Sub-Saharan African countries to develop and implement policies and programs that can facilitate easy access to STI prevention and treatment services for adolescents and young adults. Moreover, the literature review [54, 55] emphasizes that exposure to childhood violence contributes to various diseases and mental health problems for young people, a perspective further supported by the findings of this study.

Regarding the relationship between STIs and mental health outcomes among adolescents and young adults, our results revealed a strong association. In our study, 44.9% of adolescents and young adults with STIs reported moderate to severe mental distress. In comparison, 49.9% of adolescents and young adults with STIs reported suicide ideations or attempted suicide at some point during their lifetime. These results corroborate earlier studies [13, 54, 56], consistently identifying a strong link between indulging in sexual risk behaviors that may lead to STIs. For instance, several studies involving both adolescents and young adults also draw connections between mental health problems and STIs [29, 30, 57]. Young individuals diagnosed with mental health conditions, such as depression, have shown a heightened susceptibility to contracting STIs [31, 32]. In comparison to their non-depressed counterparts, depressed children and adolescents often exhibit weaker social connections and may demonstrate increased emotional responses during peer interactions, potentially contributing to greater engagement in risky behaviors related to STIs [55]. Another study by Merrick et al., [56] in southern California found emotional abuse, emotional neglect, and household mental illness to be the three most significant risk factors for attempted suicide among adults. However, our study in Zimbabwe highlighted that the most substantial risk factors for mental health outcomes (i.e., suicidal ideation and attempts) among adolescents and young adults were exposure to multiple forms of childhood violence, experiencing emotional and physical violence, and witnessing physical violence during childhood. This study underscores the potential benefits of early mental health interventions in mitigating the impact of violence among adolescents and young adults in Zimbabwe.

Efforts should focus not only on preventing and treating STIs but also on addressing the

underlying factors contributing to violence, as well as providing support for those who have experienced violence. Public health interventions that consider these interconnections can be more effective in promoting the overall well-being of individuals exposed to childhood violence in Zimbabwe.

Limitations of the Study

This study was a cross-sectional design, making it impossible for the establishment of causal relationships among variables. Sensitivity around discussing STIs, especially related to sexual health, led some participants to withhold information due to fear and stigma associated with the diagnosis of STI. Self-reported diagnosis of STIs, without confirmatory tests, may introduce bias, highlighting the need for future studies to prioritize objective testing of STIs in the clinical settings. This study did not distinguish between different types of STIs (e.g., syphilis, gonorrhea, chlamydia, etc.) but was reported in general terms, which makes it challenging to understand which of the STIs were more prevalent than others or could have a higher risk than others for both childhood violence and mental health problems. Finally, the current study focused on household surveys, limiting generalizability to the broader adolescent and young adult population living in the streets, orphanages, and other forms of institutional cares in Zimbabwe.

Conclusions

This study has shown that self-reported diagnosis of STIs increases the risk of exposure to multiple forms of violence and mental health problems (i.e., mental distress and suicidal ideations) for adolescents and young adults in Zimbabwe. There is a crucial need for health authorities and relevant stakeholders to formulate and implement policies and programs facilitating easy access to STI prevention and treatment services for adolescents and young adults in Zimbabwe.

Additionally, the study underscores the potential benefits of early mental health interventions in mitigating the impact of violence among adolescents and young adults who are already diagnosed with STIs across all regions in Zimbabwe. Understanding the intersection between STIs and violence is crucial for designing comprehensive public health programs. Efforts should focus not only on preventing and treating STIs but also on addressing the underlying factors contributing to violence, as well as providing support for adolescents and young adults who have either experienced or been exposed to any form of violence during childhood. Public health interventions that consider these interconnections can be more effectively promote the mental well-being and improve the quality of life of vulnerable adolescents and young adults in Zimbabwe.

Conflict of Interest

The author(s) have no conflicts of interest regarding this article's research, authorship, and publication.

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