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Violence Exposure, Self-Reported Mental Health Concerns and Use of Alcohol and Drugs for Coping among Youth in the Slums of Kampala, Uganda

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Abstract

This study aimed to a) compute the prevalence of violence exposure types, polyvictimization, and self-reported depression, anxiety, and using substances to cope among youth ages 12 to 18 years living on the streets or in the slums of Kampala, Uganda, (b) examine the independent associations among orphan status, violence exposure types, and self-reported mental health concerns, and c) explore the association between polyvictimization and mental health concerns. Data are from a 2014 cross-sectional survey of service-seeking youth ages 12 to 18 years ($N = 1134$) in Kampala, Uganda. Violence exposure types explored in this study were: witnessing family physical violence, direct physical abuse by a parent, any rape history, and physical dating violence. We used descriptive statistics and multivariable logistic regression to test study objectives. Over half of

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the sample (60.5%) reported experiencing at least one type of violence exposure; many youth endorsed self-reported depression (57.8%), anxiety (76.8%), and substance use to cope (37.0%). Exposure to violence was associated with higher odds for self-reported depression, anxiety, and using substances to cope. These findings underscore the urgent need to implement evidence-based interventions among this young, underserved population and their families to prevent violence, improve mental health outcomes, and promote resilience.

Keywords

violence exposure; high-risk youth; youth substance use; orphan; mental health; sub-Saharan Africa

Poor mental health is a growing global health issue due to its long-term physical, social, and economic impacts (Fergusson & Woodward, 2002; Murray & et al, 2012; Ohrnberger et al., 2017; Patel et al., 2008; Shonkoff et al., 2009; World Health Organization, 2019; Yatham et al., 2018) and because of the limited infrastructure to address mental health concerns, particularly in low-resource settings. The global annual economic impact of anxiety and depression is estimated to be \$1 trillion US dollars (World Health Organization, 2019). Further, experts estimate that by 2030, factors related to unipolar depression will be the third leading cause of disease burden in low- and middle-income countries (Mathers & Loncar, 2006). Despite the urgent need for mental health services in low- and middle-income countries (LMICs), a treatment gap continues to exist mainly for children and adolescents (Patel et al., 2008; Yatham et al., 2018) due, in part, to human resource shortages and limited treatment options (Leocata et al., 2021; World Health Organization, 2011).

Even though there is a substantial social and economic burden associated with mental health concerns (Fergusson & Woodward, 2002; Murray & et al, 2012; Patel et al., 2008; Shonkoff et al., 2009; World Health Organization, 2019; Yatham et al., 2018), there is limited research reporting the prevalence of mental health difficulties (e.g., experiencing sadness, lost interest, worry that may or may not meet criteria for a diagnosis) and diagnoses (e.g., depression, anxiety, post-traumatic stress disorder) among youth in LMICs (Yatham et al., 2018). A systematic review of 10 studies of children and adolescents from 6 sub-Saharan African countries (all LMICs) found that 1 in 7 had mental health difficulties, and about 1 in 10 had a specific mental health disorder (Cortina et al., 2012). Experiencing mental health concerns during childhood can increase risk for psychological problems into adulthood including major depression, anxiety disorders, tobacco and alcohol abuse or dependence, and suicidal ideation or attempt (Fergusson & Woodward, 2002; Mathers & Loncar, 2006; Silins et al., 2018). Youth who develop depression in adolescence are also susceptible to experiencing educational challenges, unemployment, and unplanned pregnancies (Fergusson & Woodward, 2002; Hale et al., 2015). Although there has been recent attention to identify and ameliorate mental health challenges among child and adolescent populations in some sub-Saharan African countries (Dorsey et al., 2020; Murray et al., 2013, 2015), more work is needed to understand the populations at greatest risk for negative mental health outcomes and related sequelae (Page & West, 2011). A deeper understanding of these factors could inform the development and adaptation of sustainable, scalable, and efficacious interventions

to prevent and address these outcomes (Page & West, 2011; Patel et al., 2008; Yatham et al., 2018).

Bronfenbrenner's Social Ecological Model posits that factors at the societal-, community-, relational-, and individual-levels contribute independently and collectively to health outcomes and human development (Bronfenbrenner, 1979). This model is particularly useful in categorizing and explaining the interconnected risk factors that may contribute to anxiety and depression among youth (Atilola, 2017). At the societal-level, country age structures, limited human development capacity, and limited enforcement of child protection laws may contribute to poor mental health outcomes (Atilola, 2017). Community-level risk factors for poor mental health outcomes include lacking financial resources, perceptions of neighborhood disorder and strain, community violence, discrimination, and uncontrollable stressors (Caron & Liu, 2010; Hinton et al., 2011; Kemp et al., 2016; Lambert et al., 2010; Landis et al., 2007; Paxton et al., 2004; Stirling et al., 2015; Voisin et al., 2016). Relational-level factors, such as family dysfunction and witnessing domestic violence in the home, bullying, and peer violence have been found to negatively impact youth mental health outcomes (Blanco et al., 2014; Hinton et al., 2011; Kidman et al., 2020; Wormington et al., 2013; Young & Dietrich, 2015).

Youth mental health can be further exacerbated by a relational-level risk factor: exposure to violence, which is the primary focus of the current study. Violence exposure broadly, during childhood in particular, has been found to be associated with poor mental health outcomes (Blanco et al., 2014; Howard & Wang, 2005; Shamagonam James et al., 2017; Juan et al., 2019; Nguyen, Kegler, et al., 2019). These outcomes are especially serious for children and youth who experience polyvictimization, or cumulative exposure to different types of violence (Ames et al., 2019; Oscós-Sánchez, 2017; Perry et al., [in press]; Self-Brown et al., 2021; Voith et al., 2014).

In addition to experiencing negative mental health outcomes, prior research, mostly conducted in high-income countries, has documented associations between violence exposure, especially during childhood or adolescence, and substance use (Crookston et al., 2014; James et al., 2018; Kobulsky et al., 2016; Motley et al., 2017; Ramos de Oliveira & Jeong, 2021; Taylor & Kliwer, 2006; Yoon et al., 2017). One explanation for this association is the drinking-to-cope self-medication model, which posits that people who experience trauma are more likely to use alcohol as a means to cope with negative internal experiences, such as anxiety, depression, and trauma symptoms (Hawn et al., 2020; Khantzian, 1997).

At the individual-level, experiencing the loss of one or both parents, has been implicated as a risk factor for mental health concerns and is another focus of the current study. Experiencing the loss of one (single orphan) or both parents (double orphan) has a significant impact on youth outcomes (Brent et al., 2009; Elklit, 2002). Experiencing this loss can make youth more vulnerable to experiencing a range of adversities (Goldberg & Short, 2016; Morantz et al., 2013), which have lifelong impacts on well-being and mental health (Chapman et al., 2004; Dube et al., 2001). There is a high prevalence of orphans living in sub-Saharan Africa (UNAIDS et al., 2004; UNICEF, 2017). Orphans in sub-Saharan Africa are at a higher

risk for experiencing a range of mental health outcomes, including anxiety, depression, anger, peer relationship problems, post-traumatic stress, delinquency, conduct problems, worry, hopelessness, and suicidal ideation than non-orphans (Atwine et al., 2005; Cluver & Gardner, 2007; Culbreth et al., 2018; Perry et al., 2020; Salifu Yendork & Somhlaba, 2014; Swahn et al., 2017). Orphaned youth are also at an increased risk of substance use compared to non-orphans, with paternal and double orphaned males at greater odds of having consumed alcohol, and paternal orphaned females at greater odds of having ever used drugs than non-orphans (Meghdadpour et al., 2012).

Another individual-level factor, gender differences, most likely due to the socialization process, have been found to be associated with worse mental health outcomes (Aptekar & Ciano-Federoff, 1999; Caron et al., 2012; Kessler et al., 2005; Needham & Hill, 2010; Rosenfield et al., 2000). Age may also be associated with mental health difficulties among youth (Cluver et al., 2012; Perry et al., 2020). For example, Cluver and colleagues (2012) studied a cohort of orphans in South Africa and found that their mental health outcomes worsened with age. Health related factors, such as having a chronic illness (e.g., HIV/AIDS) have also been found to increase the likelihood of a youth experiencing poor mental health outcomes (Arseniou, Arvaniti, & Samakouri, 2014; Do et al., 2014; Gibbie et al., 2006; Hidaka et al., 2008; Swahn, Palmier, Kasirye, & Yao, 2012).

Violence Against Children in Uganda

Uganda is a low-income country in sub-Saharan Africa (The World Bank, 2019). Findings from the Ugandan Violence Against Children Survey (VACS) Country Report indicate that a high prevalence of Ugandan children experience physical and sexual violence (Ministry of Gender Labour and Social Development, 2015). The Uganda VACS survey found that among respondents aged 18–24 years, 1 in 3 women and 1 in 6 men experienced sexual violence during childhood, while 6 in 10 women and 7 in 10 men experienced physical violence exposure during childhood. Further, about one third of 18–24-year-old Ugandan men and women reported experiencing emotional violence in childhood. Youth who reported sexual, physical, and emotional violence in this survey also reported experiencing significantly higher rates of mental distress than youth who did not experience these types of violence (Ministry of Gender Labour and Social Development, 2015). In addition to a high prevalence of violence exposure and mental distress, youth alcohol use is prevalent in Uganda, despite legal restrictions for minors (Ssebunnya et al., 2020).

The Current Study

Prior research among highly vulnerable street and slum youth in Uganda has noted a high prevalence of violence exposure, mental health symptoms, and alcohol use (Culbreth et al., 2018, 2021; Perry et al., 2020; Swahn et al., 2012; Swahn et al., 2020). However, these studies did not explore the individual and cumulative effects of witnessed family violence, parent physical abuse, rape history (tricked and pressured sex), and dating violence victimization on self-reported depression, anxiety, and substance use to cope. Further, there is scarcity of data on these topics in sub-Saharan Africa, a region where youth alcohol use

is prevalent and can lead to serious harm (Culbreth et al., 2021; Kiene et al., 2019; Opong Asante & Kugbey, 2019; Shuper et al., 2017; Swahn et al., 2018).

The current study extends previous literature by examining key risk factors for self-reported depression, anxiety, and using substances to cope in a sample of street and slum-connected youth living in Kampala, Uganda. To our knowledge, no studies have examined the associations between both the type and extent of violence exposure self-reported depression, anxiety, and substance use as a coping strategy among this vulnerable youth population in Uganda. Thus, the purpose of this study was to (a) compute the prevalence of four types of violence exposure, polyvictimization (defined as a summary of the four violence types), and self-reported depression, anxiety, and using substances to cope among youth ages 12 to 18 years living on the streets or in the slums of Kampala, Uganda, (b) examine the independent associations between orphan status, four violence exposure types, and self-reported depression, anxiety, and using substances to cope, and (c) examine the independent association between polyvictimization and the three mental health concerns. We hypothesize that those victimized by violence, and those who have experienced higher levels of polyvictimization, will be more likely to report depression, anxiety, and using substances as a coping strategy. Findings from this study are intended to inform secondary and tertiary prevention strategies among youth to address poor mental health outcomes and enhance coping skills among those most vulnerable to violence in resource constrained settings.

Method

Setting—This study was a secondary analysis of data derived from the “2014 Kampala Youth Survey,” a cross-sectional survey conducted in March and April of 2014 among urban service-seeking youth ages 12–18 years living in the slums or on the streets of Kampala, Uganda (Swahn et al., 2016). The primary purpose of the 2014 Kampala Youth Survey was to examine the prevalence and correlates of alcohol use, sexual risk behaviors, and HIV prevalence among youth seeking services at Uganda Youth Development Link (UYDEL) drop-in centers. UYDEL is an internationally funded non-governmental organization that provides medical services, psychosocial services, and vocational skills training to high-risk youth in Uganda. Recruitment occurred primarily via word of mouth at six drop-in centers and surrounding neighborhoods in Kampala.

Data Collection—Survey methodology has been well-described in previous literature (Culbreth et al., 2018; Swahn et al., 2015; Swahn et al., 2016). The final analytic sample ($N = 1134$) consisted of completed surveys from youth between 12 and 18 years of age (56% girls, 44% boys). UYDEL social workers and peer educators with previous experience working with youth at the drop-in centers were trained on the study methodology and survey questions. We chose to have trained peer educators and social workers with previous experience working with the population of interest to limit experimenter effects and guard against youth underreporting (Davis & Silver, 2003; Davis et al., 2010). The survey was administered in English and Luganda, a local language spoken in Central Uganda. According to Uganda law (Uganda National Council for Science and Technology, 2014; p. 19), youth are considered emancipated if they “cater for their own livelihood” and, therefore, could give consent for themselves without parental consent. Youth who were willing to

participate in the survey either read or were read the consent form and provided verbal consent to participate in the study. The inclusion criteria for this study included youth between the ages of 12 and 18 who were present on the day of the field visit; there were no exclusion criteria. The youth were given a small snack for participating in the study. Institutional Review Board (IRB) approvals were obtained from [removed for peer review] and [removed for peer review] to conduct this study in Kampala.

The 2014 Kampala Youth Survey was created using measures from previously validated survey instruments to assess alcohol use, violence perpetration, violence victimization, the prevalence of alcohol marketing, sexual behaviors, and mental health (Conigrave et al., 1995; de Bruijn, 2011; Eaton et al., 2012; Ministry of Health Uganda & USAID, 2011; National Institute on Alcohol Abuse and Alcoholism, n.d.; Romer et al., 2009; Swahn et al., 2012; USAID, n.d.; World Health Organization, 2013).

Measures

Outcome Variables—The primary outcome variables were self-reported depression (i.e., feeling sad or hopeless), anxiety, and using alcohol and drugs as a coping strategy. All items measuring mental health concerns were obtained from the Youth Risk Behavior Survey (Eaton et al., 2012). These items were not used to diagnose but rather to give a broad indication of whether the youth participant was experiencing or had experienced these types of mental health concerns. We measured self-reported depression using the item, “In the past year, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?” Youth could respond, “*yes*” or “*no*.” Anxiety was measured using the item, “In the past month, how often have you been so worried about something that you could not sleep at night?” Youth could answer “*never*,” “*sometimes*,” or “*often*.” Next, a binary variable for anxiety at night was made by collapsing the “*sometimes*” and “*always*” response options to create the dichotomous response options “*yes*” or “*no*.” Finally, we assessed substance use as a coping strategy using the item, “In the past month how often have you been so worried about something that you wanted to use drugs or alcohol to feel better?” Youth could answer “*never*,” “*sometimes*,” or “*often*.” A binary variable for using alcohol and drugs as a coping strategy for anxiety was made by collapsing the “*sometimes*” and “*often*” response options to create the dichotomous response options “*yes*” or “*no*.”

Predictor Variables—We explored four violence exposure types as predictors of interest and risk factors for self-reported mental health concerns: witnessing parental violence, parental physical abuse of youth, any rape history, and dating violence victimization. All items measuring violence exposure were obtained from the Youth Risk Behavior Survey (Eaton et al., 2012). Witnessing parental violence was measured using the item, “Did you ever see or hear your parents beating each other?” Youth could answer, “*yes*” or “*no*.” Parental physical abuse of youth was measured using two items: “Did your parents ever beat you so hard you had bruises or marks?” and “Did a parent beat you when they were drunk?” For both items, youth could answer, “*yes*” or “*no*.” If a youth endorsed at least one of these items, they were considered to have experienced physical abuse by a parent.

Any rape history was assessed using 3 items and included 9 types of unwanted, non-consensual sexual encounters, including rape, forced sex, persuaded sex, and tricked sex. The inclusion of a broader range of items for rape history aligns with the legal definition of rape in Uganda (International Centre for Missing and Exploited Children, 2018). Further, best practices recommend the use of behaviorally-based items to assess sensitive topics, such as unwanted sexual experiences (Fricker et al., 2003; Self-Brown et al., 2018; Tourangeau, 2000; Tourangeau & Smith, 1996). The 3 items considered for this variable included: “Has someone ever raped you or forced you to have sex with him or her?” Youth could answer “yes” or “no.” Youth were also asked about their first sexual experience with the item, “Which of the following best describes the FIRST time you had sexual intercourse?” Youth could select all the following that applied: “*I was persuaded,*” “*I was tricked,*” “*I was forced,*” “*I was raped,*” and “*I was willing.*” Youth were also asked these same items about their *last* sexual encounter. We excluded youth who reported that they had willing sexual encounters. If a youth endorsed at least one of the 9 types of unwanted, nonconsensual sexual encounters (i.e., first or last sexual encounter being rape, forced sex, persuaded sex, and tricked sex; or lifetime experience of rape or forced sex) they were considered to have “any rape history.”

Dating violence victimization was measured using the item, “In the past year, did your boyfriend/girlfriend hit, slap, or hurt you?” Youth could answer “yes” or “no.” We also created a summary variable to assess *polyvictimization*, defined as the cumulative exposure to each of the four violence variables included in this analysis. Responses for this summary ranged from 0 (did not report experiencing any violence types explored) to 4 (experienced all four types of violence).

In addition to the violence-related risk factors, we also assessed orphan status (how many parents currently living: 0, 1, 2) as a potential risk factor for experiencing mental health difficulties. Youth with no parents alive were considered double orphans and youth with one parent alive were considered single orphans. Prior research has documented varying effects on mental health diagnoses and trajectories for people exposed to intentional trauma (e.g., assault) and non-intentional trauma (e.g., earthquake, motor vehicle accident; Santiago et al., 2013). Therefore, for the current study, we selected only intentional trauma types (i.e., witnessing parental violence, parental physical abuse of youth, any rape history, and dating violence victimization) for inclusion in the polyvictimization summary. We considered losing a parent as a non-intentional trauma and treated this as a separate concept from the violence exposures explored.

Demographic Characteristics—Demographic characteristics explored in the analyses were sex (“*male*” or “*female*”), age, and education. To assess the education level of participants, youth were asked, “what level of education did you complete?” We collapsed the 7 response options for this item into three levels (i.e., “*less than primary,*” “*completed primary,*” and “*completed secondary school or higher*”) based on the distribution of the data.

Data Analysis

We used descriptive statistics to assess our first objective of computing the prevalence of violence exposure types, polyvictimization, and self-reported depression, anxiety, and substance use to cope. To assess our second objective, we computed bivariate and three multivariable logistic regression models to determine the independent associations between orphan status, four violence exposure types, and self-reported depression, anxiety, and using substances to cope. Predictor variables included in each multivariable model for Aim 2 included the four violence types, orphan status, age, sex, and education. Finally, we used bivariate and multivariable logistic regression analyses to assess our third objective of exploring the independent association between polyvictimization on the three outcomes of interest (self-reported depression, anxiety, and using substances to cope). Predictor variables included the multivariable models for Aim 3 included the polyvictimization summary, orphan status, age, sex, and education. All statistical analyses were conducted using SAS software version 9.4 (SAS Institute Inc.) and results were considered statistically significant at the $\alpha = .05$ level.

Results

Slightly over half of the sample was female (56.1%) with an average age of 16.2 years (standard deviation = 1.8). Over a third (35.5%) had not completed primary and over half had completed primary (54.6%). Most of the youth in our sample were orphans; 37.5% had lost one parent and 22.1% had lost both parents. In our study, 57.8% of youth self-reported depression (54.6% among boys and 60.3% among girls; Table 1). Similarly, man youth endorsed self-reported anxiety (Total sample: 76.8%; 75.9% among boys and 77.4% among girls) and substance use to cope (Total sample: 37.0%; 37.5% among boys and 36.6% among girls). Nearly 30% of the sample reported that they had ever witnessed family violence (28.9%) and over a third (36.1%) reported they experienced physical abuse by a parent in their lifetime. When we descriptively compared the frequencies of those who endorsed the item asking directly about rape (ever experienced rape or forced sex) to the variable we created that defined rape history more broadly, 16.8% ($n = 191$) endorsed the item that directly asked about rape/forced sex and 29.7% ($n = 336$) reported that they experienced the broader definition of rape. Approximately 14% ($n = 156$) reported that they had experienced dating violence victimization in the past year. Over half of the sample (60.5%, 684 of 1131) reported that they had experienced at least one type of violence and 32.7% (370 of 1131) reported experiencing two or more types of violence.

The findings from the bivariate and multivariable logistic regression analyses for Aim 2 are presented in Table 2. Age, being a double orphan, witnessing parental violence, experiencing parental abuse, and experiencing dating violence were associated with self-reported depression in the multivariable, adjusted model. Those that completed secondary school or higher were at a reduced odds of reporting depression (Adjusted odds ratio [AOR] = 0.60, 95% Confidence Interval [CI] [0.37, 0.95]) compared to those who had not completed primary school. Similar findings emerged when anxiety was the outcome; age, being a double orphan, experiencing parental abuse, rape, and dating violence were independently associated with self-reported anxiety in the multivariable, adjusted model. Finally, in the model exploring self-reported substance use to cope as the outcome, age,

being a single or double orphan, experiencing parental abuse, rape, and dating violence victimization were associated independently with substance use to cope in the multivariable adjusted model. In this same model, those who completed primary as well as those who completed secondary school were at a reduced odds of using substances to cope compared to youth who had not completed primary school.

The findings from the bivariate and multivariable logistic regression analyses for Aim 3 are presented in Table 3. A statistically significant association between polyvictimization and self-reported depression, anxiety, and substance use to cope emerged. For the model with self-reported depression as the outcome, people who reported experiencing all 4 types of violence were at 4.62 (95% CI [1.82, 11.71]) times the odds of reporting depression compared to those who did not report experiencing any of the violence types explored. Interestingly, the adjusted odds ratio for youth reporting four types of violence was lower than the odds ratio for reporting two types (AOR = 4.88 (95% CI [3.37, 7.07]) and three types of violence (AOR = 6.11 (95% CI [3.52, 10.61])). Those who reported all four violence types were at 5.31 (95% CI [1.23, 22.97]) times the odds of reporting anxiety compared to those who did not report experiencing any of the four types of violence explored. Lastly, in the model with substance use to cope as the outcome, youth who reported all four violence types were at 8.61 (95% CI [3.70, 20.05]) times the odds of reporting wanting to use substances to cope compared to those who did not report experiencing any of the four types of violence explored.

Discussion

The purpose of this study was to a) compute the prevalence of prevalence of four types of violence exposure, polyvictimization, and self-reported depression, anxiety, and using substances to cope, and to examine the associations between violence exposure ([b] individual types and [c] polyvictimization), orphan status, and self-reported depression, anxiety, and using substances to cope among a unique population of youth living in the slums and on the streets in Uganda. We hypothesized that those victimized by violence and those who experienced the loss of one or both parents would report experiencing depression, anxiety, and the use of substances as a coping strategy. Similarly, we hypothesized that those with higher levels of polyvictimization would be more likely to self-report experiencing depression, anxiety, and the use of alcohol and drugs as a coping strategy. Our hypotheses were partially supported.

Our findings show that youth in our sample reported relatively high levels of self-reported depression (57.8%), anxiety (76.8%), and substance use to cope (37.0%), which are higher than what has previously been reported among nationally representative samples of youth in Uganda and other sub-Saharan African countries (Cortina et al., 2012; Ministry of Gender Labour and Social Development, 2015). For example, findings using data from the Uganda VACS survey indicate that 7% of males and 13% of females aged 13 to 24 years experienced severe sadness in the last 30 days (Cohen et al., 2020). Further, when looking at general mental distress among those exposed to violence, findings from the VACS survey suggest that the prevalence of mental distress ranged from 48.8% to 53.9% (Ministry of Gender Labour and Social Development, 2015). In our study, the proportion of those

with self-reported depression or anxiety ranged from 68.8% (reported any rape history) to 90.4% (reported dating violence victimization). These findings corroborate previous research indicating high levels of mental distress among violence-exposed youth in Uganda (Ministry of Gender Labour and Social Development, 2015).

Similar to the mental health concerns, youth in our sample reported substantive rates of exposure to violence, ranging from 13.8% for dating violence to 36.1% for parental physical abuse. The Uganda VACS report indicated that 45.3% of females and 48.5% of males reported experiencing physical abuse by a parent or adult relative (versus 36.1% in our sample). The Uganda VACS reported on violence perpetrated by parents and adult relatives together, while we only assessed violence perpetrated by parents, which may partially explain some of these differences in these rates. We also found a higher prevalence of dating violence victimization in our sample compared to the Uganda VACS report (Current study: 13.8%; VACS country report: 6.3% for females and 2.6% for males). The prevalence of forced or pressured sex found in the total sample in the current study is nearly triple the rate reported in the Uganda VACS (29.7% versus 10.7%, respectively; Nguyen, Padilla, et al., 2019) which used household survey methods, thus likely including a more diverse and potentially less vulnerable sample than youth living in the slums. Further, a considerable number of youth experienced polyvictimization; nearly one third of youth in our sample experienced two or more of the four types of violence explored in this study.

It is also important to note that the current study used a more inclusive, behaviorally based approach for defining rape compared to previous studies using the 2014 Kampala Youth Survey (16.9% vs 29.7% in the current study; Culbreth et al., 2018; Swahn et al., 2015). Using behaviorally based items (i.e., persuaded sex and tricked sex), in addition to specific items (i.e., rape, forced sex) to assess sensitive topics such as unwanted sexual experiences aligns with best practices and published literature (Fricker et al., 2003; Self-Brown et al., 2018; Tourangeau, 2000; Tourangeau & Smith, 1996) and can give us a better understanding of the extent of youth exposure to unwanted sex.

Our hypothesis that the individual violence exposure types would be associated with all three mental health concerns explored were partially supported. Witnessing family violence, parent abuse of youth, and dating violence victimization were significantly associated with youth self-report of depression in the multivariable adjusted models. However, an adjusted association between any rape history and self-reported depression did not emerge. Similarly, in the adjusted models, parent abuse of youth, rape history, and dating violence victimization were associated with both self-reported anxiety and using substances to cope; but associations between witnessing family violence and these two outcomes did not emerge. Similar associations between violence exposure types and mental distress and alcohol use have been found among youth populations in other LMICs (Nguyen, Kegler, et al., 2019; Ramos de Oliveira & Jeong, 2021). The findings emphasize the critical importance of measuring various forms of violence exposure, especially in research with populations who may experience high rates of vulnerabilities, given the unique mechanistic pathways that emerge between different forms of violence exposure and related mental health outcomes.

Being a double orphan was also independently associated with self-reported depression and anxiety, which corroborates previous literature (Atwine et al., 2005; Cluver et al., 2007, 2012; Perry et al., 2020). Interestingly, in the multivariable model, both single and double orphan status was statistically significantly associated with substance use to cope. These findings warrant further investigation, as statistically significant associations have not emerged among this population in previous research (Swahn et al., 2017). While it is not surprising that orphans are at greater odds of self-reported mental health concerns, these findings provide further evidence for the urgent need of interventions tailored to youth who have lost one or both parents and their caregiver to prevent future violence victimization (Goldberg & Short, 2016; Kidman & Palermo, 2016; Swahn, Palmier, et al., 2012), help bolster social support, and facilitate their resilience in the context of significant loss (Hamby et al., 2020, 2021).

Our second hypothesis, that higher levels of polyvictimization would be associated with self-reported depression, anxiety, and substance use to cope was supported, with adjusted odds ratios ranging from 1.53 (95% CI [1.08, 2.18]; exposure to one type of violence versus none) in the model with self-reported anxiety as the outcome to 8.61 (95% CI [3.70, 20.05]; exposure to four types of violence versus none) in the model with using substances to cope as the outcome. These findings corroborate previous research documenting associations between exposure to multiple types of violence and worse mental health outcomes (Cyr et al., 2014; Finkelhor et al., 2011; Nguyen, Padilla, et al., 2019; Perry et al., [in press]; Ramos de Oliveira & Jeong, 2021; Self-Brown et al., 2021; Turner et al., 2010; Voith et al., 2014).

The proportion of self-reported depression, anxiety, and substance use to cope, and violence exposure found in the current study, compared to previous research from both high and low resource settings (Caron & Liu, 2010; Cortina et al., 2012; Ministry of Gender Labour and Social Development, 2015; Ramos de Oliveira & Jeong, 2021), suggests that youth living in urban slums in LMICs like Uganda, may be at particularly high risk for experiencing violence, adversity, and related risk factors for mental health concerns. Future longitudinal research is needed to better understand the temporal relationship between violence exposure, adversity, and self-reported depression, anxiety, and substance use for coping. Research exploring individual and cumulative factors (e.g., poly-strengths, positive childhood experiences) that buffer the negative effects of adversity and violence exposure among this population is clearly warranted (Hamby et al., 2020, 2021). These findings also underscore the need to adapt scalable evidence-based prevention programs to address mental health difficulties and related risk factors and enhance resilience among youth living in challenging conditions in low-resource settings.

Many studies, primarily in high-income countries, have pointed to the frequent use of alcohol and drugs to cope with stressful and adverse life experiences (Crookston et al., 2014; Kobulsky et al., 2016). The current study helps to address the scarcity of data on this topic in sub-Saharan Africa, a region with a high prevalence of alcohol use (Culbreth et al., 2021; Kiene et al., 2019; Opong Asante & Kugbey, 2019; Shuper et al., 2017; Ssebunnya et al., 2020; Swahn et al., 2018). Further, individual-level interventions to address alcohol use are rare (Francis et al., 2020). Levels of anxiety and depression in this population already remain highly prevalent. As such, additional experiences such as violence and abuse, combined with

contextual and environmental factors related to multidimensional poverty may be key drivers for alcohol and drug use. These findings need to be explored in future research with stronger measures to better inform culturally informed secondary and tertiary prevention strategies. Further, integrated interventions targeting alcohol use and exposure to violence are urgently needed among this population (Francis et al., 2020).

Limitations—There are several limitations that should be considered when interpreting these findings. Most importantly, due to the cross-sectional nature of this survey, causal and temporal relationships cannot be inferred. These data were also collected from a convenience sample of help-seeking youth, which limits generalizability. However, convenience samples are advantageous when collecting data from hard-to-reach populations such as urban street and slum youth, methods which have been effectively used in previous research to reach this population (Swahn et al., 2015; Swahn, Gressard, et al., 2012; Swahn, Palmier, et al., 2012).

Some of the measures used were not previously validated in this specific population. The items measuring the three mental health concerns were obtained from existing survey instruments and were assessed using one question each. The response options for the two items assessing self-reported substance use to cope and anxiety were collapsed from 3 levels to 2 levels. While this approach ignores the nuances of the data, we chose to collapse the response options for both items because a) using substances at any frequency for youth is concerning and illegal and b) prior research has found a high comorbidity between sleep problems and anxiety among youth (Peterman et al. 2015). Further, the item assessing anxiety only referred to anxiety experienced at night. Whereas this may impact validity, these items were not used to diagnose or substantiate, but rather to give a broad indication of whether the youth participant was experiencing or had experienced these types of mental health difficulties. Our findings are based on self-report data and should be interpreted with appropriate caution as youth may have under-reported responses to sensitive questions or due to cultural differences in terminology used to describe the mental health difficulties explored in this study.

Further, it is well known that stigma or stereotypes surrounding mental health are a great concern in both reporting of mental health issues and with help-seeking (Cruz et al., 2008; McCann et al., 2016; Tilahun et al., 2017). The youth in our survey were all help-seeking at Uganda Youth Development Link which may explain some of these findings, as they may be more willing to disclose mental health concerns and substance use to their peer educators than youth in other settings. Despite these limitations, this is the first study to our knowledge to examine the relationships between these violence types and polyvictimization on mental health concerns in a relatively large sample of youth living in the slums or on the streets, an understudied population.

Conclusions and Future Directions—Young people living on the streets and in the slums of Kampala may endorse high levels of self-reported depression, anxiety, and substance use to cope. Further, exposure to individual violence types, polyvictimization, and being an orphan may be predictive of the mental health concerns explored in this study. These findings underscore the urgent need for interventions to address and prevent anxiety

and depression, and in particular, the need to use substances as a coping strategy. As a start, we need to better understand the cumulative strengths and positive childhood experiences among this population, which may help buffer the effects of violence and adversity (Hamby et al., 2020, 2021). Next, we need to identify youth who need to build and enhance coping skills and resilience for adverse childhood experiences and violence. To accomplish this, we need to test and adapt screening tools for this population that can be delivered by peer educators in these low-resource settings. Longitudinal assessments of mental health outcomes, violence, and resilience factors using validated measures for this population are also needed to understand temporality of these associations

Uganda Youth Development Link, the organization that currently serves these youth, provides psychosocial support services; however, funding for tailored and scaled-up efforts are necessary to adequately address the scope and unique psychosocial needs of this underserved population. Furthermore, current mental health services in Uganda are limited; 8% of girls and 5% of boys from the Ugandan VACS Country Report reported receiving the support or services they needed after experiencing sexual violence (Ministry of Gender Labour and Social Development, 2015), which may help to explain the need for using counterproductive coping strategies such as alcohol and drugs as we reported in this study. Also, there is only one nationally funded government mental health hospital in Uganda, and it is incredibly under-resourced. Although there have been increased efforts to improve mental healthcare in Uganda by integrating mental health services into primary care visits in some hospitals, funding for and knowledge of the availability of these services remain disproportionately low (Ministry of Gender Labour and Social Development, 2015).

In alignment with Strategy 5.3 (Child Care and Protection) in the Uganda National Child Policy framework published in 2020 (Government of Uganda & Ministry of Gender Labour and Social Development, 2020), future research, building on evidence-based strategies and interventions to develop or adapt culturally relevant (Iwelunmor et al., 2014) peer-led interventions for delivery in low-resource settings such as urban slums to address the effects of violence and negative mental health outcomes is imperative. If found to be effective, these evidence-based interventions can then be scaled-up to expand reach of these services in similar low-resource settings.

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Table 1 Demographic Characteristics, Violence Exposures, and Self-Reported Depression, Anxiety, and Substance Use to Cope Among Youth Living in the Slums of Kampala, Uganda

	Depression		Anxiety		Substance use to cope		Total ^a
	No <i>n</i> = 477 (42.2%)	Yes <i>n</i> = 652 (57.8%)	No <i>n</i> = 262 (23.2%)	Yes <i>n</i> = 866 (76.8%)	No <i>n</i> = 711 (63.0%)	Yes <i>n</i> = 417 (37.0%)	
Sex, <i>n</i> (%)							
Male	224 (45.4%)	269 (54.6%)	119 (24.1%)	375 (75.9%)	309 (62.6%)	185 (37.5%)	497 (43.9%)
Female	252 (39.7%)	383 (60.3%)	143 (22.6%)	491 (77.4%)	402 (63.4%)	232 (36.6%)	636 (56.1%)
Age, Mean (SD)	15.8 (1.9)	16.4 (1.6)	15.6 (2.0)	16.3 (1.7)	15.9 (1.9)	16.6 (1.5)	16.2 (1.8)
Education, <i>n</i> (%)							
No primary	169 (42.7%)	227 (57.3%)	94 (23.7%)	303 (76.3%)	234 (58.9%)	163 (41.1%)	397 (35.5%)
Completed primary	248 (40.8%)	360 (59.2%)	140 (23.1%)	466 (76.9%)	396 (65.4%)	210 (34.7%)	611 (54.6%)
Completed secondary school or higher	56 (50.5%)	55 (49.6%)	27 (24.3%)	84 (75.7%)	75 (67.6%)	36 (32.4%)	112 (10.0%)
Orphan status, <i>n</i> (%)							
Both parents alive	220 (48.1%)	237 (51.9%)	128 (28.1%)	327 (71.9%)	334 (73.3%)	122 (26.8%)	458 (40.4%)
One parent alive	179 (42.4%)	243 (57.6%)	99 (23.5%)	323 (76.5%)	246 (58.4%)	175 (41.6%)	425 (37.5%)
None parents alive	78 (31.2%)	172 (68.8%)	35 (13.9%)	216 (86.1%)	131 (52.2%)	120 (47.8%)	251 (22.1%)
Witnessed family violence, <i>n</i> (%)							
Yes	82 (25.2%)	243 (74.8%)	53 (16.3%)	272 (83.7%)	167 (51.5%)	157 (48.5%)	325 (28.8%)
No	395 (49.1%)	409 (50.9%)	209 (26.1%)	593 (73.9%)	543 (67.2%)	260 (32.4%)	805 (71.2%)
Parental physical abuse, <i>n</i> (%)							
Yes	102 (25.1%)	304 (74.9%)	64 (15.7%)	343 (84.3%)	204 (50.2%)	202 (49.8%)	407 (36.1%)
No	374 (51.9%)	347 (48.1%)	198 (27.6%)	520 (72.4%)	505 (70.2%)	214 (29.8%)	721 (63.9%)
Any rape history, <i>n</i> (%)							
Yes	105 (31.3%)	231 (68.8%)	43 (12.8%)	293 (87.2%)	155 (46.3%)	180 (53.7%)	336 (29.7)
No	371 (46.8%)	421 (53.2%)	218 (27.6%)	573 (72.4%)	555 (70.8%)	237 (29.9%)	794 (70.3)
Dating violence victimization, <i>n</i> (%)							
Yes	26 (16.7%)	130 (83.3%)	15 (9.6%)	141 (90.4%)	51 (32.7%)	105 (67.3%)	156 (13.8%)
No	451 (46.4%)	520 (53.6%)	247 (25.5%)	722 (74.5%)	657 (67.8%)	312 (32.2%)	972 (86.2%)
Polyvictimization, <i>n</i> (%) ^b							
0 types	268 (60.1%)	178 (39.9%)	148 (33.3%)	296 (66.7%)	352 (79.1%)	93 (20.9%)	447 (39.5%)
1 type	133 (42.5%)	180 (57.5%)	67 (21.3%)	247 (78.7%)	192 (61.1%)	122 (38.9%)	314 (27.8%)
2 types	52 (22.4%)	180 (77.6%)	35 (15.1%)	197 (84.9%)	125 (53.9%)	107 (46.1%)	232 (20.5%)

	Depression		Anxiety		Substance use to cope		Total ^a
	No n = 477 (42.2%)	Yes n = 652 (57.8%)	No n = 262 (23.2%)	Yes n = 866 (76.8%)	No n = 711 (63.0%)	Yes n = 417 (37.0%)	
3 types	18 (17.0%)	88 (83.0%)	10 (9.4%)	96 (90.6%)	33 (31.4%)	72 (68.6%)	106 (9.4%)
4 types	6 (18.7%)	26 (81.3%)	2 (6.25%)	30 (93.8%)	9 (28.1%)	23 (71.9%)	32 (2.8%)

Note. N = 1,134. SD = Standard Deviation

^aTotals that do not sum to N= 1,134 indicate missing data

^bPolyvictimization was measured as a summary score of the 4 violence types explored in this study. “1 type” indicates that the participant experienced one of the four types of violence exposures explored in this study, “2 types” indicate that the participant experienced two of the four types of violence exposures explored, and so on.

Table 2

Logistic Regression Analyses of the Associations between Demographic Characteristics, Violence Experiences and Self-Reported Depression, Anxiety, and Substance Use to Cope Among Youth in the Slums of Kampala, Uganda

	Depression		Anxiety		Substance use to cope	
	OR	AOR	OR	AOR	OR	AOR
Sex						
Male	1.00	1.00	1.00	1.00	1.00	1.00
Female	1.27 [0.99, 1.61]	1.17 [0.90, 1.53]	1.09 [0.83, 1.44]	0.91 [0.67, 1.22]	0.96 [0.76, 1.23]	0.74 [0.56, 0.98]
Age	1.21 [1.14, 1.30]	1.19 [1.10, 1.29]	1.24 [1.15, 1.34]	1.19 [1.10, 1.30]	1.25 [1.16, 1.34]	1.22 [1.12, 1.33]
Education						
No primary	1.00	1.00	1.00	1.00	1.00	1.00
Completed primary	1.08 [0.84, 1.40]	0.91 [0.68, 1.21]	1.03 [0.77, 1.39]	0.85 [0.61, 1.18]	0.76 [0.59, 0.99]	0.59 [0.43, 0.79]
Completed secondary school or higher	0.73 [0.48, 1.12]	0.60 [0.37, 0.95]	0.97 [0.59, 1.58]	0.76 [0.45, 1.29]	0.69 [0.44, 1.08]	0.56 [0.34, 0.92]
Orphan status						
Both parents alive	1.00	1.00	1.00	1.00	1.00	1.00
One parent dead	1.26 [0.97, 1.65]	1.12 [0.84, 1.50]	1.28 [0.94, 1.73]	1.14 [0.83, 1.56]	1.95 [1.47, 2.59]	1.74 [1.28, 2.37]
Both parents dead	2.05 [1.48, 2.83]	1.72 [1.21, 2.45]	2.42 [1.60, 3.65]	2.06 [1.34, 3.17]	2.51 [1.82, 3.46]	2.12 [1.48, 3.02]
Witnessed family violence						
Yes	2.86 [2.15, 3.81]	1.79 [1.29, 2.48]	1.81 [1.30, 2.53]	1.28 [0.87, 1.88]	1.96 [1.51, 2.56]	1.27 [0.92, 1.75]
No	1.00	1.00	1.00	1.00	1.00	1.00
Parental abuse of youth						
Yes	3.21 [2.46, 4.20]	2.32 [1.71, 3.15]	2.04 [1.49, 2.79]	1.58 [1.10, 2.25]	2.34 [1.82, 3.01]	1.84 [1.37, 2.48]
No	1.00	1.00	1.00	1.00	1.00	1.00
Any Rape history						
Yes	1.94 [1.48, 2.54]	1.33 [0.98, 1.80]	2.59 [1.82, 3.70]	1.96 [1.34, 2.87]	2.72 [2.09, 3.54]	2.23 [1.65, 3.00]
No	1.00	1.00	1.00	1.00	1.00	1.00
Dating violence victimization						
Yes	4.34 [2.79, 6.73]	2.52 [1.58, 4.02]	3.22 [1.85, 5.58]	1.90 [1.07, 3.39]	4.33 [3.02, 6.22]	2.69 [1.82, 3.97]
No	1.00	1.00	1.00	1.00	1.00	1.00

Note. $N = 1,134$. OR = odds ratios; AOR = adjusted odds ratios; 95% confidence intervals displayed with brackets. Referent category is the absence of self-reported depression, anxiety, and substance use to cope, respectively.

Statistically significant associations ($\alpha = .05$) are bolded.

Overall model fit statistics

Model 1: self-reported depression was the outcome, witnessed family violence, experiencing direct physical abuse by a parent, any rape history, and dating violence were independent variables of interest, orphan status was a covariate, and sex, age, and education level were control variables.

Score test ($\chi^2 = 157.65$, $df = 10$, $p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 10.07$, $df = 8$, $p = .26$)

Model 2: self-reported anxiety was the outcome, witnessed family violence, experiencing direct physical abuse by a parent, any rape history, and dating violence were independent variables of interest, orphan status was a covariate, and sex, age, and education level were control variables.

Score test ($\chi^2 = 85.79$, $df = 10$, $p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 7.30$, $df = 8$, $p = .51$)

Model 3: self-reported use of substances to cope was the outcome, witnessed family violence, experiencing direct physical abuse by a parent, any rape history, and dating violence were independent variables of interest, orphan status was a covariate, and sex, age, and education level were control variables. Score test ($\chi^2 = 182.46, df = 10, p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 14.93, df = 8, p = .06$)

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Table 3

Logistic Regression Analyses of the Associations between Demographic Characteristics, Polyvictimization and Self-Reported Depression, Anxiety, and Substance Use to Cope Among Youth in the Slums of Kampala, Uganda

	Depression		Anxiety		Substance use to cope	
	OR	AOR	OR	AOR	OR	AOR
Sex						
Male	1.00	1.00	1.00	1.00	1.00	1.00
Female	1.27 [0.99, 1.61]	1.14 [0.88, 1.48]	1.09 [0.83, 1.44]	0.96 [0.72, 1.29]	0.96 [0.76, 1.23]	0.79 [0.60, 1.04]
Age	1.21 [1.14, 1.30]	1.20 [1.11, 1.29]	1.24 [1.15, 1.34]	1.21 [1.12, 1.32]	1.25 [1.16, 1.34]	1.24 [1.14, 1.35]
Education						
No primary	1.00	1.00	1.00	1.00	1.00	1.00
Completed primary	1.08 [0.84, 1.40]	0.93 [0.69, 1.24]	1.03 [0.77, 1.39]	0.86 [0.62, 1.20]	0.76 [0.59, 0.99]	0.59 [0.44, 0.79]
Completed secondary school or higher	0.73 [0.48, 1.12]	0.60 [0.38, 0.95]	0.97 [0.59, 1.58]	0.79 [0.47, 1.33]	0.69 [0.44, 1.08]	0.54 [0.33, 0.88]
Orphan status						
Both parents alive	1.00	1.00	1.00	1.00	1.00	1.00
One parent dead	1.26 [0.97, 1.65]	1.13 [0.85, 1.52]	1.28 [0.94, 1.73]	1.16 [0.85, 1.60]	1.95 [1.47, 2.59]	1.82 [1.34, 2.47]
Both parents dead	2.05 [1.48, 2.83]	1.74 [1.22, 2.48]	2.42 [1.60, 3.65]	2.09 [1.36, 3.21]	2.51 [1.82, 3.46]	2.12 [1.49, 3.02]
Polyvictimization ^a						
0 types	1.00	1.00	1.00	1.00	1.00	1.00
1 type	2.04 [1.52, 2.73]	1.73 [1.28, 2.36]	1.84 [1.32, 2.58]	1.53 [1.08, 2.18]	2.41 [1.74, 3.32]	2.18 [1.55, 3.07]
2 types	5.21 [3.63, 7.49]	4.88 [3.37, 7.07]	2.81 [1.87, 4.24]	2.54 [1.67, 3.86]	3.24 [2.30, 4.57]	3.15 [2.20, 4.52]
3 types	7.36 [4.28, 12.65]	6.11 [3.52, 10.61]	4.80 [2.43, 9.78]	3.90 [1.95, 7.80]	8.26 [5.16, 13.23]	7.64 [4.67, 12.50]
4 types	6.52 [2.63, 16.17]	4.62 [1.82, 11.71]	7.50 [1.77, 31.81]	5.31 [1.23, 22.97]	9.67 [4.33, 21.61]	8.61 [3.70, 20.05]

Note. $N = 1,134$. OR = odds ratios; AOR = adjusted odds ratios; 95% confidence intervals displayed with brackets. Referent category is the absence of self-reported depression, anxiety, and substance use to cope, respectively.

Statistically significant associations ($\alpha = .05$) are bolded.

^aPolyvictimization was measured as a summary score of the 4 violence types explored in this study. "1 type" indicates that the participant experienced one of the four types of violence exposures explored in this study, "2 types" indicate that the participant experienced two of the four types of violence exposures explored, and so on.

Overall model fit statistics

Model 1: self-reported depression was the outcome, polyvictimization summary was the independent variable of interest, orphan status was a covariate, and sex, age, and education level were control variables. Score test ($\chi^2 = 161.96$, $df = 10$, $p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 2.80$, $df = 8$, $p = .95$)

Model 2: self-reported anxiety at night was the outcome, polyvictimization summary was the independent variable of interest, orphan status was a covariate, and sex, age, and education level were control variables. Score test ($\chi^2 = 85.37$, $df = 10$, $p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 9.82$, $df = 8$, $p = .28$)

Model 3: self-reported use of substances to cope with anxiety was the outcome, polyvictimization summary was the independent variable of interest, orphan status was a covariate, and sex, age, and education level were control variables. Score test ($\chi^2 = 174.88$, $df = 10$, $p < .0001$); Hosmer-Lemeshow test ($\chi^2 = 12.78$, $df = 8$, $p = .12$)