HHS Public Access

Author manuscript

Child Abuse Negl. Author manuscript; available in PMC 2024 October 01.

Published in final edited form as:

Child Abuse Negl. 2024 April ; 150: 106493. doi:10.1016/j.chiabu.2023.106493.

Parenting-related positive childhood experiences, adverse childhood experiences, and mental health—Four sub-Saharan African countries⋆

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Abstract

Background: Adverse Childhood Experiences (ACEs) are associated with poor mental health outcomes and risk-taking behaviors. Positive childhood experiences (PCEs) may mitigate these negative impacts.

Objective: This study 1) assessed the associations between ACEs and negative health outcomes and risk-taking behaviors among young adults, and 2) evaluated whether — and which — PCEs moderate the association between ACEs and these outcomes in sub-Saharan Africa.

Methods: This multi-country analysis combined cross-sectional representative survey data from young adults, ages 18–24 years, from the 2019 Kenya, 2018 Lesotho, 2019 Mozambique, and 2019 Namibia Violence Against Children and Youth Surveys. The association between experiencing any ACEs and each health outcome was assessed using Wald's chi-square tests. Multivariable logistic regression analyses assessed the association between each PCE and each outcome of interest.

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Declaration of competing interest

There are no conflicts of interest to disclose, and no funding was received for this work.

Results: Females who experienced any ACEs had higher odds of experiencing moderate to severe mental distress (aOR = 2.7, 95%CI: 1.9, 3.9). Males who experienced any ACEs had higher odds of experiencing suicidal/self-harm behaviors (aOR = 6.7, 95%CI: 2.8, 16.0) and substance use (aOR = 2.5, 95%CI: 1.4, 4.2). In females, strong mother-child relationship was protective against moderate to severe mental distress (aOR = 0.7, 95%CI: 0.6, 0.9), suicidal/self-harm behaviors (aOR = 0.6, 95%CI: 0.4, 0.9), and substance use (aOR = 0.6, 95%CI: 0.4, 0.9). For males, a strong mother-child relationship was protective against suicidal/self-harm behaviors (aOR = 0.5, 95% CI: 0.2, 0.9), and a strong father-child relationship was protective against suicidal/self-harm behaviors (aOR = 0.4, 95%CI: 0.2, 0.7) and substance use (aOR = 0.6, 95%CI: 0.4, 0.8).

Conclusions: Strong parenting programs may likely play an important role in improving the psychosocial health of young adults.

Keywords

ACEs; PCEs; Violence against children; Sub-Saharan Africa; Mental health; Substance use

1. Introduction

Research demonstrates that Adverse Childhood Experiences (ACEs) are common and may cause both short-term and long-term effects on health and developmental trajectories (Dube et al., 2003; Dube et al., 2010; Felitti et al., 1998; Flaherty et al., 2013; Hughes et al., 2017; Massetti, Hughes, et al., 2020; Sahle et al., 2021). ACEs include potentially traumatic events experienced during childhood, as well as aspects in the child's environment that negatively impact their sense of "safety, stability, and bonding" (Metzler et al., 2017). ACEs include child abuse (sexual, physical, and emotional), child neglect (emotional and physical), and household dysfunction, which encompasses household substance use, household mental illness, domestic violence, household member with a history of imprisonment, and parental divorce or separation (Anda et al., 2010; Dong et al., 2004; Felitti et al., 1998; Finkelhor et al., 2015). ACEs have been demonstrated to increase the risk of poor physical and psychological health, behavioral issues, and poor social outcomes in exposed individuals from childhood into their adulthood (Felitti et al., 1998; Flaherty et al., 2013; Hughes et al., 2017; Hunt et al., 2017; Jones et al., 2022). More specifically, studies have linked ACEs with mental health disorders (Sahle et al., 2021) and substance use (Dube et al., 2003; Rothman et al., 2008). Finally, it is important to note that different types of ACEs tend to co-occur, and co-occurrence has been associated with an increased risk for negative outcomes. Therefore, research on ACEs often focuses on exposure to multiple forms of ACEs and their combined, or graded, impact on health and social outcomes (Dong et al., 2004; Dube et al., 2003; Dube et al., 2006).

Although the investigation of ACEs has been more extensive in higher income countries, there is comparatively limited evidence using population level data from low- and middle-income countries (LMIC). For instance, studies conducted in South Africa have shown high rates of individual exposures to violence for both women and men in rural and urban contexts (Jewkes et al., 2010; Meinck, Cluver, Boyes, & Mhlongo, 2015), linked or leading to adverse health outcomes. Manyema and Richter (2019) reported, in general, that there were higher prevalence rates of ACEs in South Africa than in higher income countries. In

Malawi, almost three quarters of adolescents (on average, 13 years old) experienced four or more lifetime ACEs, commonly reporting emotional abuse or neglect, physical abuse, and witnessing domestic and community violence (Kidman et al., 2020). A recent study revealed that eight in ten young adults had experienced at least one ACE in Namibia (Agathis et al., 2022).

Research on ACEs in LMIC, albeit still in the nascent stage, has demonstrated high prevalence of ACEs — which negatively influence health throughout the life course (Jewkes et al., 2010; Meinck, Cluver, Boyes, & Mhlongo, 2015). Findings from the Global School-Based Student Health Survey (assessing data from five selected African countries) demonstrate significant dose–response relationships between specific ACEs, such as forced sex and bullying, and risk behaviors, such as smoking, alcohol abuse, unsafe sex, as well as attempted suicide (Butchart et al., 2006). Although the evidence is consistent with ACEs research in higher income countries, there remains a need to better research the scope and nature of ACEs in low- and middle-income settings in order to appropriately invest in prevention at local and global levels (Massetti et al., 2020).

Although still under investigation, there is a growing body of literature about Positive Childhood Experiences (PCEs) and evidence that they can buffer the negative effects of ACEs. PCEs are advantageous childhood experiences that have been shown to shape brain development and influence health across the life span (Sege et al., 2017). These experiences are associated with healthier relationships (Narayan et al., 2018), better health (Slopen et al., 2017), and positive characteristics such as optimism, responsibility, and resiliency in adulthood (Johnson et al., 2005; Kosterman et al., 2011; Poole et al., 2017). Studies have examined various experiences of PCEs, such as high parental education, high perceived social-economic status, having a two-parent family, residential stability, no smokers residing in the home, high parental warmth, high emotional support, and high instrumental support (Slopen et al., 2017). Despite the dearth of literature on PCEs in the African context, the experiences examined here are consistent with previous studies in Kenya and Namibia (Agathis et al., 2022; Plummer & Njuguna, 2009).

Furthermore, research has demonstrated that PCEs are not only protective against adverse health outcomes in childhood, but also can mitigate the potentially harmful impacts of ACEs in adulthood (Poole et al., 2017; Kuhar & Zager Kocjan, 2021). According to Baglivio and Wolff (2021), “PCE exposures involve concepts such as family-child communication, feeling supported by family, participating in community/family traditions, feeling, a sense of belonging/engagement in school, support from friends, participating in organized activities, and having adult mentors”. Literature describing PCEs in LMIC context is almost inexistent. This article will provide much needed insight into PCEs in African context and their moderating effect on ACEs.

Mental health disorders and substance use are high among adolescents globally (Whiteford et al., 2013), including in sub-Saharan Africa (Jumbe et al., 2021). One study found these outcomes to be the most strongly associated with ACEs (Ramiro et al., 2010). Similarly, Chang et al. (2011) found significant associations between mental health and substance use, and substantially lower life expectancy. Additional literature reviews showed consistent

and strong association between ACEs and substance use in the young adult population, specifically highlighting that ACEs were strongly associated with tobacco and illicit drug use (Rogers et al., 2022). Another study investigating ACEs in Kenya showed ACEs as risk factors for substance use disorders in adults 18 years and older (Kiburi et al., 2018). The growing body of ACEs literature also shows compelling evidence linking ACE exposure to various mental health outcomes, such as suicidal and self-harm behaviors (Dube et al., 2010; Felitti et al., 1998; Kappel et al., 2021). A study conducted by Strine et al. (2012) not only indicated increased self-reported alcohol problems, but also more psychological distress among men and women with any ACE, compared to those without any. Lee and Chen (2017) support the broader literature on the impact of ACEs on mental health and substance use across both sexes. Additionally, ACEs have been associated with suicide and suicidal behaviors, including suicidal ideation and suicide attempt (Ports et al., 2017; Thompson et al., 2019). Notably, the experience of violence is highly influenced by gender; making the disaggregation of sex data a best practice in the field (Buiten, 2022; Maternowska et al., 2021). However, most studies on ACEs are from high-income nations, and less is known about the prevalence and impact in other populations and settings. Therefore, it is imperative to examine data from diverse regions and cultural contexts to better understand the risk and protective factors for ACEs in other regions of the world.

Our study used cross-sectional, nationally representative Violence Against Children and Youth Surveys (VACS) data. VACS have provided crucial data on ACEs from over 20 low- and middle-income countries in Asia, sub-Saharan Africa, the Caribbean, Eastern Europe, and South America (Massetti et al., 2020; Nguyen et al., 2019). In each nationally representative VACS, 13-to-24-year-old males and females are interviewed to measure the burden of sexual, physical, and emotional violence experienced during childhood, adolescence, and young adulthood (Nguyen et al., 2019), as well as other adversities, risk-taking behaviors, and health outcomes. VACS data were used to assess the associations between specific ACEs and parenting-related PCEs and mental health and substance use among 18–24-year-olds in four sub-Saharan African countries and examine the potential moderating role of parenting PCEs on these associations. Three parenting-related PCEs were examined: (1) strong mother-child relationships, (2) strong father-child relationships, and (3) high parental monitoring. Two separate mental health-related outcomes (moderate to severe mental distress, suicidal or self-harm behaviors) and substance use were assessed. Therefore, this study had three main objectives: (1) to assess the associations between having experienced any ACEs and mental health and substance use outcomes, for females and males separately; (2) to assess the associations between exposure to each PCE and mental health and substance use outcomes; and (3) to assess whether PCEs moderate the sex-stratified associations between ACEs and each mental health and substance use outcome.

2. Methods

2.1. Study population

This study used VACS data from Lesotho (2018), Kenya (2019), Mozambique (2019), and Namibia (2019), limited to 18–24-year-old females and males to allow estimation of the prevalence of ACEs throughout childhood.

2.2. Study design

The sampling methodology and implementation strategies used in each country's VACS were similar in terms of study design. Detailed sampling approach and the psychometric measures of the VACS have been reported elsewhere (Chiang et al., 2016; Nguyen et al., 2019). Additional information about sampling, data collection procedures, response rate, and eligibility criteria for the four countries included in this study are available in the Lesotho (Ministry of Social Development of Lesotho et al., 2020), Kenya (Ministry of Labour and Social Protection of Kenya et al., 2019), Mozambique (Instituto Nacional de Saúde et al., 2022, and Namibia (Ministry of Gender Equality, Poverty Eradication, and Social Welfare et al., 2020) final VACS reports. VACS are nationally representative, cross-sectional, multi-stage cluster sample surveys of persons aged 13–24 years. The surveys use a split sample approach, such that males and females are sampled from different primary sampling units to protect participant confidentiality and minimize the possibility of a male perpetrator of sexual violence and female victim of his violence in the same community from being interviewed, or vice versa (Centers for Disease Control and Prevention, 2017).

Prior to data collection, field staff receive weeks of extensive training on the VACS methodology, electronic data collection protocols, safety, ethics, community entry, and all other study procedures (Centers for Disease Control and Prevention, 2017). This training helps maximize disclosure while ensuring the safety and security of participants and field staff. As part of the protections built into the study, VACS makes free, direct, and accessible social welfare services, particularly violence and HIV services, available to participants who may need that support.

2.3. Measures

2.3.1. ACEs—The ACEs measures included in this study were adapted from the ISPCAN Child Abuse Screening Tool-Retrospective (ICAST-R) and the Juvenile Victimization Questionnaire (Dunne et al., 2009; Finkelhor et al., 2005). These included physical violence (PV), sexual violence (SV), emotional violence (EV), witnessing interparental violence, witnessing violence in the community, and orphanhood. Physical violence was defined slightly differently across the countries, but included experiences such as being slapped, pushed, shoved, shaken, or having something intentionally thrown at them, or being punched, kicked, whipped, or beaten with an object by a parent, adult caregiver or other adult relative, intimate partner, peers, and adults in the community. Sexual violence included experience of unwanted sexual touching, unwanted attempted sex, physically forced sex, or coerced sex or pressured sex. Emotional violence included experiences such as being told by a parent, adult caregiver, or other adult relative that they were not loved, did not deserve to be loved, wished they were dead, ridiculed, or were put down. Witnessing interparental

violence included seeing or hearing one parent/stepparent being hit, punched, kicked, or beaten by the other parent/stepparent. Witnessing violence in the community was defined as witnessing anyone get attacked outside of the home or family environment. Orphanhood was defined as the death of one or both biological parents before age 18. An ACE score was created by summing up each of the ACE experiences across the six items for a score ranging between zero (experienced no ACEs) to six (experienced all six ACEs).

2.3.2. PCEs—PCE measures were also adapted from validated tools (Lenciauskiene & Zaborskis, 2008). PCEs in this paper focused on parent-child relationships and parental monitoring of children. Parental monitoring falls within a few domains that make up PCEs. Specifically, both parent-child relationship and parental monitoring fall under two of the four building blocks of the HOPE framework (Sege et al., 2017), 1) relationships within the family, and 2) contributing to safe, stable environments (Sege & Browne, 2017). Parental monitoring is directly linked to a parent being present and involved in their child's life and contributing to a safe, stable environment, which is fundamental to PCEs. Separate questions were asked about relationship with mother and relationship with father. For both mother and father, two questions each were asked: 1) How easy or difficult is it to talk to your biological mother/father individually about things that really bother you? and, 2) How close do you feel to your biological mother/father? Those who reported finding it easy to talk to their biological parent *and* felt close to their mother/father were considered to have a strong relationship with their mother/father. High parental monitoring was measured using five questions, each on a three-point scale (i.e., a lot, a little, nothing). Questions included how much their mother/father/caregiver really knew about, 1) who their friends were, 2) how they spent their money, 3) where they go after school, 4) where they go at night, or 5) what they did with their free time before age 18. Responses were scored as one (i.e., "a lot"), two (i.e., "a little") or three (i.e., "nothing") and were summed separately for mother and father. The mean score for females and males were computed separately to generate level of parental monitoring. Participants were considered to have high parental monitoring if their sum score was lower than the mean score, whereas those whose sum score was higher than or equal to the mean were considered to have lower parental monitoring (Lenciauskiene & Zaborskis, 2008).

2.3.3. Outcome variables—Outcome variables of the study are moderate to severe mental distress, suicidal or self-harm behaviors, and substance use. Moderate to severe mental distress was defined as scoring five or more on the Kessler 6 scale (Kessler et al., 2002; Prochaska et al., 2012). Suicidal or self-harm behaviors included those who responded yes to any of the following three questions: 1) Have you ever thought about killing yourself? 2) Have you ever tried to kill yourself? 3) Have you ever intentionally hurt yourself in any way? Substance use in the past 30 days was defined as responding "yes" to any of the following; binge drinking (defined as consuming four or more drinks in a sitting for females, and five or more drinks for males) in the past 30 days, any tobacco use in the past 30 days, or any use of other drugs such as marijuana, dagga (Lesotho only), prescription pills (Lesotho only), injection drugs (Lesotho only), cocaine (Namibia only), tik (Namibia only) pills, ecstasy, or sniffed any chemical such as petrol, glue, or paint thinner (Namibia only) in the past 30 days.

2.4. Demographic characteristics

Age was divided into two groups: 18–21 and 22–24 years. Marital status was defined as having ever been married or cohabiting with someone as if married. Material insecurity was defined as the participant answering no to if their household has enough money for food or necessary material goods. Educational level was defined as attending or having completed primary school or less and attending or having completed secondary school or higher.

2.5. Analysis

Since ACEs refer to adversities that occurred in childhood, we limited the analyses for this study to ages 18–24 to capture adverse experiences that occurred prior to age 18. Given the differences in prevalence and the gendered nature of violence epidemiology (Stark et al., 2019) and the split sampling approach to the VACS, all analyses were stratified by sex. For this study, only the pooled estimates from four countries were estimated and reported.

All analyses were conducted in SAS software version 9.4, invoking the appropriate survey procedure to account for the survey weight, survey strata, and survey cluster. Data from each country was weighted to yield nationally representative estimates and were adjusted based on the country's relative population to generate multi-country pooled estimates. Descriptive statistics were generated to describe the prevalence of the various dependent and independent variables and covariates. To look at differences in the weighted prevalence of all variables by sex, Wald's chi-square tests were run and a p-value of 0.05 was used to determine statistical significance. Prior to conducting bivariate and multivariable analyses, the random standard error (RSE) was calculated for estimates to determine stability. Any RSE that was above 30 % was considered unstable and suppressed. Bivariate analyses were conducted to determine the unadjusted association between ACEs, PCEs, and covariates (age, marital status, country, and financial security) with outcomes of moderate to severe mental distress, suicidal or self-harm behaviors, and substance use. Multivariable logistic regression was used to assess the association between having experienced one or more ACEs with each outcome, after adjusting for covariates. In addition, multivariable analysis was used to assess the association between each of the four PCEs with each outcome of interest. In these models, ACEs, covariates, one of the four PCEs, and an interaction term between the PCE and ACEs was included. Where interactions were significant, stratified analyses were performed. For these multivariable analyses, a Bonferroni correction was applied and an alpha of 0.01 was used to determine significance to correct for the increased possibility of Type I error, given that five models were run for each of the ACE-outcome associations. The multivariable logistic regression model included fixed effect for country. For significant interaction terms, the moderation effect of the significant interaction between PCE(s) on the association between ≥1 ACEs and the significant behavioral health outcome was described.

3. Results

Among 18,899 participants across all four countries, 8063 females and 2115 males ages 18–24 were included in this analysis. The prevalence of demographic characteristics, ACEs, mental health and substance use outcomes, and PCEs by sex are reported in Table 1. The age distribution and material insecurity were similar among both males and females. However,

ever being married or cohabitated with a partner was significantly higher among females than males (females: 50.6 %, males: 19.2 %; $p < 0.0001$).

The prevalence of moderate to severe mental distress and suicidal or self-harm behaviors were similar between females and males. However, the prevalence of substance use was significantly higher in males than in females (males: 20.5 %, females: 6.4 %; $p < 0.0001$). Similarly, the prevalence of ACEs by sex was significantly different, with 81.5 % of males experiencing one or more ACEs, in contrast to 70.3 % of females ($p = 0.001$). The prevalence of experiencing physical violence (males: 46.5 %, females: 33.4 %; $p = 0.0016$), sexual violence (males: 7.0 %, females: 15.0 %; $p < 0.0001$), and witnessing community violence (males: 58.0 %, females: 39.6 %; $p < 0.0001$) significantly differed by sex.

Regarding PCEs, strong-father child relationships (males: 64.4 %, females: 42.2 %; $p < 0.0001$) were significantly higher among males than females, but neither strong mother-child relationship ($p = 0.3065$) nor high parental monitoring ($p = 0.6588$) differed by sex.

3.1. Associations of ACEs, PCEs, and mental health and substance use

There were varying bivariate associations between demographic variables, ACEs, and PCEs with mental health and substance use outcomes as presented in Tables 2 and 3. However, all associations with moderate to severe mental distress have been suppressed for males due to unstable estimates, and thus were not assessed for unadjusted nor adjusted associations. The associations between ACEs, PCEs, and mental health and substance use outcomes after adjusting for demographic characteristics are in Tables 4 and 5.

Adjusting for demographic characteristics, females who experienced one or more ACEs had significantly higher odds of experiencing moderate to severe mental distress (aOR = 2.7; 95 % CI: 1.9, 3.9). Males who experienced one or more ACEs, compared to no ACEs, had significantly increased odds of suicidal or self-harm behaviors (aOR = 6.7; 95 % CI: 2.8, 16.0) and substance use (aOR = 2.5; 95 % CI = 1.4, 4.2).

After adjusting for demographic characteristics and having one or more ACEs, a strong mother-child relationship was the only protective factor significantly associated with moderate to severe mental distress (aOR = 0.7; 95 % CI: 0.6, 0.9), suicidal or self-harm behaviors (aOR = 0.6; 95 % CI: 0.4, 0.9), and substance use (aOR = 0.6; 95 % CI: 0.4, 0.9) among females. There was a significant interaction between ACEs and high parental monitoring in predicting mental distress among females. Among males, a strong mother-child relationship (aOR = 0.5; 95 % CI: 0.2, 0.9) and a strong father-child relationship (aOR = 0.4; 95 % CI: 0.2, 0.7) were significantly associated with suicidal or self-harm behaviors. In addition, males with a strong father-child relationship had significantly lower odds of substance use (aOR = 0.6; 95 % CI: 0.4, 0.8). High parental monitoring was not significantly associated with suicidal or self-harm behaviors and substance use for males.

3.2. Interaction of high parental monitoring, ACEs, and moderate to severe mental distress

For ease of interpretation, we stratified the analyses by experience of ACEs. The stratified analysis of the significant interaction is reported in Table 5. The separate calculations by sex

were due to the known gendered nature of parental monitoring and supervision (Mills et al., 2021). Among females who had no ACEs, high parental monitoring was protective against experience of moderate to severe mental distress (aOR = 0.5; 95 % CI: 0.3, 0.8). However, among females who had experienced any ACEs, high parental monitoring was not protective against moderate to severe mental distress (aOR = 1.2; 95 % CI = 0.8, 1.7).

4. Discussion

Since the original ACEs study in the 1990s, compelling evidence has emerged on both the high prevalence of ACEs in a variety of contexts and the association between such childhood adversity and negative health impacts. More recently, mounting evidence has shown that positive experiences in childhood can be protective against ACEs and can also moderate the effect of ACEs and promote resiliency in adulthood (Ungar et al., 2013; Yule et al., 2019). The American Academy of Pediatrics updated their policy statement on toxic stress in childhood to further emphasize the importance of safe, stable relationships and environments (Garner et al., 2021). Knowing the nature of the most protective types of relationships and supportive structures is key to effectively promote those protective factors (Hambrick et al., 2021). Although the majority of ACE and PCE research has been conducted in high-income countries, growing literature on ACEs in the LMIC context is helpful to start understanding the extent, nature, and consequences of ACEs in these countries, notwithstanding their cultural variations (Meinck, Cluver, & Boyes, 2015; Soares et al., 2016; Solberg & Peters, 2020). Recent investigation on ACEs in sub-Saharan Africa has shown high levels of ACEs linked to increased risky behaviors and adverse health outcomes in youth and young adulthood, consistent with previous work in high-income countries (Kidman et al., 2020). Nevertheless, scant literature in sub-Saharan Africa has meant that policy and programmatic response have not had geographically and culturally specific evidence to reference.

Our multi-country analysis of data from Kenya, Namibia, Lesotho, and Mozambique provides further insight into how PCEs can potentially mitigate the harmful impacts of ACEs in this under-studied geographical context. Our results are comparable to a growing body of literature, demonstrating a high prevalence of both ACEs and PCEs in youth (Seedat et al., 2004; Baglivio & Wolff, 2021; Nazareth et al., 2022; Agathis et al., 2022, Edwards et al., 2023). We found that experiencing one or more ACEs was significantly associated with moderate to severe mental distress in females and suicidal or self-harm behaviors and substance use in males, which is consistent with other studies that have found negative health impacts associated with childhood exposure to adversity (Felitti et al., 1998; Negriff, 2020). The results of this paper demonstrate gendered differences in outcomes — as consistent with existing literature (Cammack et al., 2019). While data from sub-Saharan Africa are limited, our findings align with some of the few studies from the region. For example, a study in Malawi found high prevalence of ACEs and a graded relationship between experiences of ACEs and higher sexual risk behaviors (Vanderende et al., 2018).

While we found that ACEs are common and seriously impactful, we also found that PCEs are important in the prevention and mitigation of such adversity. Specifically, we found that a strong father-child relationship was protective against suicidal/self-harm behaviors among males. A strong mother-child relationship was protective for all three outcomes

in females. We also found that high parental monitoring had a moderating effect on the relationship between ACEs and moderate to severe mental distress among females, consistent with a recent study in a similar context (Agathis et al., 2022). There is substantial literature demonstrating that strong parent-child relationships are protective against a range of negative outcomes, including substance use and mental health problems (DeVore & Ginsburg, 2005; Nogueira Avelar E Silva et al., 2016; Robles et al., 2019; Yap et al., 2017). Furthermore, the Dittus et al. (2015) meta-analysis showed that higher levels of parental monitoring were associated with lower levels of engagement in risky behaviors during adolescence.

The gendered nature of these protective caregiver relationships may be related to societal and cultural norms, where mothers are encouraged to take on the more nurturing role, and fathers more of the disciplinarian role. This could be explained by cultural attitudes and norms, which influence the type of relationship boys or girls might have with their father and the impact of that relationship on them (Kalmakis & Chandler, 2014). Seedat et al. (2004) emphasized considering the importance of the influence of cultural contexts on both ACEs and PCEs when studying multiple countries. Just as the prevention and response to ACEs are likely influenced by culture, potential PCEs might also be shaped by cultural norms and behaviors. In a context where the maternal nurturing role is established and accepted, promoting the positive impact that father-child relationships can provide, particularly for boys, even in the face of high ACEs, is paramount. These results indicate the need for more father engagement in parenting programs or father-focused parenting programs and policy.

For females, our study additionally demonstrates the moderation effect of parental monitoring on the association between one or more ACEs and moderate to severe mental distress. We observed that high parental monitoring was protective against moderate to severe mental distress among females who had not experienced any ACEs. However, among those who experienced ACEs, high parental monitoring was not protective against moderate to severe mental distress. Although, it is possible that the frequency and intensity of PCE exposure may foster resiliency and buffer against ACEs, findings from this study highlight the importance of primary prevention of ACEs. Future studies may assess the moderating effect of cumulative PCEs on the relationship between ACEs and mental health distress, suicidal or self-harm behaviors, and substance use.

Although several studies have shown that relational and interpersonal connectedness such as parent-child relationships may serve as protective factors, we did not observe a moderating effect of strong mother/father-child relationship on the association between ACEs and the study outcomes. Morin et al. (2015) posited that although parental connectedness and engagement is an important factor for development, it may not be strong enough to attenuate experiences of violence. Resiliency studies suggest that both environmental and internal factors play crucial roles in buffering against ACEs and mitigating risks (Ungar et al., 2013; Yule et al., 2019). In the context of sub-Saharan Africa, a recent systematic literature review of violence prevention recommended policies and interventions at the individual and family levels, focused on 1) economic strengthening, 2) teachers/schools, 3) entire families,

4) caregivers only, and 5) children/youth (Edwards et al., 2023) More research on these concepts and in this context will be important.

Understanding the interaction of ACEs and PCEs is essential to develop priority strategies to prevent or counteract the negative effects of ACEs on the health of children and youth, into their adulthood (Anda et al., 2010). Furthermore, deeper knowledge of the moderating effects of PCEs on negative effects, despite the presence of ACEs, will guide positively-focused interventions. In their study, Crandall et al. (2019) suggested that the absence of PCEs may be generally more disadvantageous to long-term health than the mere presence of ACEs. Thus, the authors recommended that related programs focus on fostering PCEs. This aligns with our recommendations to emphasize parent and caregiver support by strengthening father- — or father figure- — focused parenting programs. These may have an important mediating effect on childhood adversity and alleviate psychological distress and self-harm for children and youths. The INSPIRE technical package (World Health Organization, 2016) describes key evidence-based strategies and specific programs, which may be relevant to emphasize in this context. Initiating or strengthening evidence-informed programs such as *SOS!* and *Families Matter!* while improving father/male attendance and participation in the programs may lead to positive outcomes, as discussed above.

Several study limitations merit mention. First, due to the sensitive nature of the topic, some possible under-reporting of ACEs can be anticipated. Nonetheless, VACS utilizes a rigorous approach, including multiple aspects in the research process to reassure participants and collect sound data. More specifically, the data collectors are trained extensively on the ethics of the study, privacy and confidentiality, the process of a response plan (i.e., linking participants who need it to supportive services). Secondly, VACS data are cross-sectional and thus no causal inferences can be drawn from this analysis. Next, although ACEs and PCEs were measured for events that occurred in childhood, suicidal or self-harm behaviors were assessed across the lifetime. As such, temporality between ACEs, PCEs, and these outcomes cannot be established. Finally, although we found a significant interaction between ACEs and moderate to severe mental distress among females, our estimates may be imprecise due to a wide confidence interval.

5. Conclusions

ACEs are common and associated with many public health issues affecting individuals from childhood into adulthood. Our findings from four sub-Saharan African countries suggest that strong parent-child relationships may be important for preventing and mitigating the impacts of ACEs. Implementation of policy initiatives that allow children to thrive in supportive environments is important in all contexts.

Acknowledgement

The authors would like to thank all government agencies involved in the implementation of the surveys.

Disclaimer:

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability

Data will be made available on request.

References

Agathis TN, Annor FB, Xu L, Swedo E, Chiang L, Comer R, … Massetti GM (2022). Strong father-child relationships and other positive childhood experiences, adverse childhood experiences, and sexual risk factors for HIV among young adults aged 19–24 years, Namibia, 2019: A cross-sectional study. Research Square: 23 November 2022, PREPRINT (version 1). available at. 10.21203/rs.3.rs-1930490/v1.

Anda RF, Butchart A, Felitti VJ, & Brown DW (2010). Building a framework for global surveillance of the public health implications of adverse childhood experiences. American Journal of Preventive Medicine, 39(1), 93–98. [PubMed: 20547282]

Baglivio MT, & Wolff KT (2021). Positive childhood experiences (PCE): Cumulative resiliency in the face of adverse childhood experiences. Youth Violence and Juvenile Justice, 19(2), 139–162. 10.1177/1541204020972487

Buiten D. (2022). A framework for gender-based violence. In Familicide, gender and the media. Singapore: Springer. 10.1007/978-981-19-5626-3_3.

Butchart A, Kahane T, Harvey AP, Mian M, & Furniss T. (2006). Preventing child maltreatment: A guide to taking action and generating evidence. WHO and International Society for the Prevention of Child Abuse and Neglect, Geneva: Switzerland.

Cammack AL, Haardorfer R, & Suglia SF (2019). Associations between child maltreatment, cigarette smoking, and nicotine dependence in young adults with a history of regular smoking. Annals of Epidemiology, 40, 13–20. e4, ISSN 1047–2797 10.1016/j.annepidem.2019.10.003. [PubMed: 31711840]

Centers for Disease Control and Prevention. (2017). Critical elements of interviewer training for engaging children and adolescents in global violence research: Best practices and lessons learned from the violence against children survey.

Chang CK, Hayes RD, Perera G, Broadbent MT, Fernandes AC, Lee WE, … Stewart R. (2011). Life expectancy at birth for people with serious mental illness and other major disorders from a secondary mental health care case register in London. PLoS One, 6(5), Article e19590.

Chiang LF, Kress H, Sumner SA, Gleckel J, Kawemama P, & Gordon RN (2016). Violence against children surveys (VACS): Towards a global surveillance system. Injury Prevention: Journal of the International Society for Child and Adolescent Injury Prevention, 22(1), i17–i22. 10.1136/injuryprev-2015-041820 [PubMed: 27044493]

Crandall A, Miller JR, Cheung A, Novilla LK, Glade R, Novilla MLB, & Hanson CL (2019). ACEs and counter-ACEs: How positive and negative childhood experiences influence adult health. Child Abuse & Neglect, 96, 1–9.

DeVore ER, & Ginsburg KR (2005). The protective effects of good parenting on adolescents. Current Opinion in Pediatrics, 17(4), 460–465. 10.1097/01.mop.0000170514.27649.c9 [PubMed: 16012256]

Dittus PJ, Michael SL, Becasen JS, Gloppen KM, McCarthy K, & Guilamo-Ramos V. (2015). Parental monitoring and its associations with adolescent sexual risk behavior: A meta-analysis. Pediatrics, 136(6), e1587–e1599. 10.1542/peds.2015-0305 [PubMed: 26620067]

Dong M, Anda RF, Felitti VJ, Dube SR, Williamson DF, & Thompson TJ (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. Child Abuse & Neglect, 28(7), 771–784. [PubMed: 15261471]

Dube SR, Cook ML, & Edwards VJ (2010). Health-related outcomes of adverse childhood experiences in Texas, 2002. Preventing Chronic Disease, 7(3), 1–9.

Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, & Anda RF (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. Pediatrics, 111(3), 564–572. [PubMed: 12612237]

Dube SR, Miller JW, Brown DW, Giles WH, Felitti VJ, Dong M, & Anda R. (2006). Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence. Journal of Adolescent Health, 38, 44e1–44e10.

Dunne MP, Zolotor AJ, Runyan DK, Andreva-Miller I, Choo WY, Dunne SK, … Youssef R. (2009). ISPCAN child abuse screening tools retrospective version (ICAST-R): Delphi study and field testing in seven countries. Child Abuse & Neglect, 33(11), 815–825. 10.1016/j.chiabu.2009.09.005 [PubMed: 19853301]

Edwards KM, Kumar M, Waterman EA, Mullet N, Madeghe B, & Musindo O. (2023). Programs to prevent violence against children in sub-Saharan Africa: A systematic review. Trauma, Violence, & Abuse, 0(0). 10.1177/15248380231160742

Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, & Edwards V. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. American Journal of Preventive Medicine, 14(4), 245–258. [PubMed: 9635069]

Finkelhor D, Hamby SL, Ormrod R, & Turner H. (2005). The juvenile victimization questionnaire: Reliability, validity, and national norms. Child Abuse & Neglect, 29(4), 383–412. 10.1016/j.chiabu.2004.11.001 [PubMed: 15917079]

Finkelhor D, Shattuck A, Turner H, & Hamby H. (2015). A revised inventory of adverse childhood experiences. Child Abuse and Neglect, 48, 13–21. ISSN 0145–2134 10.1016/j.chiabu.2015.07.011. [PubMed: 26259971]

Flaherty EG, Thompson R, Dubowitz H, Harvey EM, English DJ, Proctor LJ, & Runyan DK (2013). Adverse childhood experiences and child health in early adolescence. JAMA Pediatrics, 167(7), 622–629. [PubMed: 23645114]

Garner A, Yogman M, & Committee on Psychosocial Aspects of Child Family Health Section on Developmental Behavioral Pediatrics, Council on Early Childhood. (2021). Preventing childhood toxic stress: Partnering with families and communities to promote relational health. Pediatrics., 148, Article e2021052582. 10.1542/peds.2021-052582

Hambrick EP, Seedat S, & Perry BD (2021). How the timing, nature, and duration of relationally positive experiences influence outcomes in children with adverse childhood experiences. Frontiers in Behavioral Neuroscience, 15, 755959.

Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, … Dunne MP (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. The Lancet Public Health, 2(8), e356–e366. 10.1016/S2468-2667(17)30118-4 [PubMed: 29253477]

Hunt TKA, Slack KS, & Berger LM (2017). Adverse childhood experiences and behavioral problems in middle childhood. Child Abuse & Neglect, 67, 391–402. [PubMed: 27884508]

Instituto Nacional de Saúde, Ministry of Health, Ministry of Gender, Child and Social Action, & Instituto Nacional de Estatística, and the U.S. Centers for Disease Control and Prevention. (2022). Violence against children and youth survey in Mozambique, 2019. Mozambique: Maputo.

Jewkes RK, Dunkle K, Nduna M, Jama PN, & Puren A. (2010). Associations between childhood adversity and depression, substance abuse and HIV and HSV2 incident infections in rural South African youth. Child Abuse Neglect, 34(11), 833–841. [PubMed: 20943270]

Johnson JG, Bromley E, & McGeoch PG (2005). Role of childhood experiences in the development of maladaptive and adaptive personality traits (pp. 209–221). The American Psychiatric Publishing Textbook of Personality Disorders.

Jones MS, Pierce H, & Shafer K. (2022). Gender differences in early adverse childhood experiences and youth psychological distress. Journal of Criminal Justice, 101925. 10.1186/s13643-021-01680-y. ISSN 0047–2352, doi:10.1016/j.jcrimjus.2022.101925.

Jumbe S, Kamninga TM, Mwalwimba I, & Kalu UG (2021). Determinants of adolescent substance use in Africa: A systematic review and meta-analysis protocol. Systematic Reviews, 10(1), 1–6. [PubMed: 33388080]

Kalmakis KA, & Chandler GE (2014). Adverse childhood experiences: Towards a clear conceptual meaning. Journal of Advanced Nursing, 70(7), 1489–1501. 10.1111/jan.12329 [PubMed: 24329930]

Kappel RH, Livingston MD, Patel SN, Villaveces A, & Massetti GM (2021). Prevalence of Adverse Childhood Experiences (ACEs) and associated health risks and risk behaviors among young women and men in Honduras. Child Abuse & Neglect, 115, 104993.

Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, … Zaslavsky AM (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychological Medicine, 32(6), 959–976. 10.1017/s0033291702006074 [PubMed: 12214795]

Kiburi SK, Molebatsi K, Obondo A, & Kuria MW (2018). Adverse childhood experiences among patients with substance use disorders at a referral psychiatric hospital in Kenya. BMC Psychiatry, 18, 197. 10.1186/s12888-018-1780-1 [PubMed: 29914409]

Kidman R, Piccolo LR, & Kohler HP (2020). Adverse childhood experiences: Prevalence and association with adolescent health in Malawi. American Journal of Preventive Medicine, 58(2), 285–293. 10.1016/j.amepre.2019.08.028 [PubMed: 31810632]

Kosterman R, Mason WA, Haggerty KP, Hawkins JD, Spoth R, & Redmond C. (2011). Positive childhood experiences and positive adult functioning: Prosocial continuity and the role of adolescent substance use. Journal of Adolescent Health, 49(2), 180–186.

Kuhar M, & Zager Kocjan G. (2021). Associations of adverse and positive childhood experiences with adult physical and mental health and risk behaviours in Slovenia. European Jurnal of Psychotraumatology, 12(1), 1924953. 10.1080/20008198.2021.1924953

Lee RD, & Chen J. (2017). Adverse childhood experiences, mental health, and excessive alcohol use: Examination of race/ethnicity and sex differences. Child Abuse & Neglect, 69, 40–48. 10.1016/j.chiabu.2017.04.004 [PubMed: 28448813]

Lenciauskiene I, & Zaborskis A. (2008). The effects of family structure, parent-child relationship and parental monitoring on early sexual behaviour among adolescents in nine European countries. Scandinavian Journal of Public Health, 36(6), 607–618. 10.1177/1403494807088460 [PubMed: 18775817]

Manyema M, & Richter LM (2019). Adverse childhood experiences: Prevalence and associated factors among South African young adults. Heliyon, 5(12), Article e03003. 10.1016/j.heliyon.2019.e03003

Massetti GM, Chiang L, Mercy J, Fernandez B, Ligiero D, Hart C, & Centers for Disease Control and Prevention. (2020). Linking violence against children and youth surveys to coordinated and effective action: CDC and the together for girls partnership. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Massetti GM, Hughes K, Bellis MA, & Mercy JA (2020). Global perspective on ACEs -chapter 11. In Asmundson GJG, & Afifi TO (Eds.), Adverse childhood experiences (pp. 209–231). Academic Press.

Maternowska C, Shackel RL, Carlson C, & Levtov RG (2021). The global politics of the age-gender divide in violence against women and children. Global Public Health, 16(3), 354–365. 10.1080/17441692.2020.1805783 [PubMed: 32835618]

Meinck F, Cluver LD, & Boyes ME (2015). Household illness, poverty and physical and emotional child abuse victimisation: Findings from South Africa's first prospective cohort study. BMC Public Health, 15(1), 444. [PubMed: 25924818]

Meinck F, Cluver LD, Boyes ME, & Mhlongo LE (2015). Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: A review and implications for practice. Trauma, Violence and Abuse, 16(1), 81–107.

Metzler A, Merrick M, Klevens J, Ports K, & Ford D. (2017). Adverse childhood experiences and life opportunities: Shifting the narrative. Children and Youth Services Review, 72, 141–149. [PubMed: 37961044]

Mills R, Mann MJ, Smith ML, & Kritsjansson AL (2021). Parental support and monitoring as associated with adolescent alcohol and tobacco use by gender and age. BMC Public Health, 21, 2000. 10.1186/s12889-021-12119-3 [PubMed: 34736436]

Ministry of Gender Equality, Poverty Eradication and Social Welfare, Namibia Statistics Agency, & International Training and Education Center for Health at the University of Washington. (2020). Violence against children and youth in Namibia: Findings from the violence against children and youth survey, 2019 (full report). Windhoek, Namibia: Government of the Republic of Namibia.

Ministry of Labour and Social Protection of Kenya, & Department of Children's Services. (2019). Violence against children in Kenya: Findings from a National Survey. Nairobi, Kenya.

Ministry of Social Development of Lesotho, ICAP, & the Centers for Disease Control and Prevention. (2020). Violence against children and youth survey, 2018. Maseru, Lesotho: Ministry of Social Development of Lesotho.

Morin HK, Bradshaw CP, & Berg JK (2015). Examining the link between peer victimization and adjustment problems in adolescents: The role of connectedness and parent engagement. Psychology of Violence, 5(4), 422.

Narayan AJ, Rivera LM, Bernstein RE, Harris WW, & Lieberman AF (2018). Positive childhood experiences predict less psychopathology and stress in pregnant women with childhood adversity: A pilot study of the benevolent childhood experiences (BCEs) scale. Child Abuse and Neglect, 78, 19–30. [PubMed: 28992958]

Nazareth ML, Kvalsvig JD, Mellins CA, Desmond C, Kauchali S, & Davidson LL (2022). Adverse childhood experiences (ACEs) and child behaviour problems in KwaZulu-Natal, South Africa. Child Care, Health and Development, 48(3), 494–502. 10.1111/cch.12950 [PubMed: 34913192]

Negriff S. (2020). ACEs are not equal: Examining the relative impact of household dysfunction versus childhood maltreatment on mental health in adolescence. Social Science & Medicine, 245, 112696. ISSN 0277–9536 10.1016/j.socscimed.2019.112696.

Nguyen KH, Kress H, Villaveces A, & Massetti GM (2019). Sampling design and methodology of the violence against children and youth surveys. Injury Prevention, 25(4), 321–327. 10.1136/injuryprev-2018-042916 [PubMed: 30472679]

Nogueira Avelar E Silva R, van de Bongardt D, van de Looij-Jansen P, Wijtzes A, & Raat H. (2016). Mother- and father-adolescent relationships and early sexual intercourse. Pediatrics, 138(6), Article e20160782. 10.1542/peds.2016-0782

Plummer C, & Njuguna W. (2009). Cultural protective and risk factors: Professional perspectives about child sexual abuse in Kenya. Child Abuse & Neglect, 33, 524–532. [PubMed: 19758700]

Poole JC, Dobson KS, & Pusch D. (2017). Childhood adversity and adult depression: The protective role of psychological resilience. Child Abuse & Neglect, 64, 89–100. [PubMed: 28056359]

Ports KA, Merrick MT, Stone DM, Wilkins NJ, Reed J, Ebin J, & Ford DC (2017). Adverse childhood experiences and suicide risk: Toward comprehensive prevention. American Journal of Preventive Medecine, 53(3), 400–403. 10.1016/j.amepre.2017.03.015. Epub 2017 May 5. PMID: 28483301; PMCID: PMC5603224.

Prochaska JJ, Sung HY, Max W, Shi Y, & Ong M. (2012). Validity study of the K6 scale as a measure of moderate mental distress based on mental health treatment need and utilization. International Journal of Methods in Psychiatric Research, 21(2), 88–97. 10.1002/mpr.1349 [PubMed: 22351472]

Ramiro LS, Madrid BJ, & Brown DW (2010). Adverse childhood experiences (ACE) and health-risk behaviors among adults in a developing country setting. Child Abuse & Neglect, 34(11), 842–885. [PubMed: 20888640]

Robles A, Gjelsvik A, Hirway P, Vivier PM, & High P. (2019). Adverse childhood experiences and protective factors with school engagement. Pediatrics, 144(2), Article e20182945.

Rogers CJ, Pakdaman S, Forster M, Sussman S, Grigsby TJ, Victoria J, & Unger BJ (2022). Effects of multiple adverse childhood experiences on substance use in young adults: A review of the literature. Drug and Alcohol Dependence, 234, 109407. ISSN 0376–8716 10.1016/j.drugalcdep.2022.109407.

Rothman EF, Edwards EM, Heeren T, & Hingson RW (2008). Adverse childhood experiences predict earlier age of drinking onset: Results from a representative US sample of current or former drinkers. Pediatrics, 122(2), e298–e304. 10.1542/peds.2007-3412 [PubMed: 18676515]

Sahle BW, Reavley NJ, Li W, Morgan AJ, Yap BH, Reupert MA, & Jorm AF. (2021). The association between adverse childhood experiences and common mental disorders and suicidality: An umbrella review of systematic reviews and meta-analyses. European Child & Adolescent Psychiatry. 10.1007/s00787-021-01745-2

Seedat S, Nyamai C, Njenga F, Vythilingum B, & Stein D. (2004). Trauma exposure and post-traumatic stress symptoms in urban African schools: Survey in Cape Town and Nairobi. British Journal of Psychiatry, 184(2), 169–175. 10.1192/bjp.184.2.169

Sege R, Bethell C, Linkenbach J, Jones J, Klika B, & Pecora PJ (2017). Balancing adverse childhood experiences with HOPE: New insights into the role of positive experience on child and family development. Boston: The Medical Foundation Accessed at www.cssp.org.

Sege RD, & Browne CH (2017). Responding to ACEs with HOPE: Health outcomes from positive experiences. Academic Pediatrics, 17(7), 79–85. [PubMed: 27402351]

Slopen N, Chen Y, Guida JL, Albert MA, & Williams DR (2017). Positive childhood experiences and ideal cardiovascular health in midlife: Associations and mediators. Preventive Medicine, 97, 72–79. [PubMed: 28087467]

Soares AL, Howe LD, Matijasevich A, Wehrmeister FC, Menezes AM, & Goncalves H. (2016). Adverse childhood experiences: Prevalence and related factors in adolescents of a Brazilian birth cohort. Child Abuse & Neglect, 51, 21–30. 10.1016/j.chiabu.2015.11.017 [PubMed: 26707919]

Solberg MA, & Peters RM (2020). Adverse childhood experiences in non-westernized nations: Implications for immigrant and refugee health. Journal of Immigrant and Minority Health, 22(1), 145–155. 10.1007/s10903-019-00953-y [PubMed: 31811614]

Stark L, Seff I, Hoover A, Gordon R, Ligiero D, & Massetti G. (2019). Sex and age effects in past-year experiences of violence amongst adolescents in five countries. PLoS One, 14(7), Article e0219073. 10.1371/journal.pone.0219073

Strine TW, Dube SR, Edwards VJ, Prehn AW, Rasmussen S, Wagenfeld M, … Croft JB (2012). Associations between adverse childhood experiences, psychological distress, and adult alcohol problems. American Journal of Health Behavior, 36(3), 408–423. 10.5993/AJHB.36.3.11 [PubMed: 22370441]

Thompson MP, Kingree JB, & Lamis D. (2019). Associations of adverse childhood experiences and suicidal behaviors in adulthood in a U.S. nationally representative sample. Child Care Health Development, 45(1), 121–128. 10.1111/cch.12617. Epub 2018 Sep 2. PMID: 30175459. [PubMed: 30175459]

Ungar M, Ghazinour M, & Richter J. (2013). Annual research review: What is resilience within the social ecology of human development? Journal of Child Psychology and Psychiatry, 54(4), 348–366. [PubMed: 23215898]

Vanderende K, Chiang L, Mercy J, Shawa M, Hamela J, Maksud N, … Hillis S. (2018). Adverse childhood experiences and HIV sexual risk-taking behaviors among young adults in Malawi. Journal of Interpersonal Violence, 33(11), 1710–1730. 10.1177/0886260517752153 [PubMed: 29739289]

Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, … Vos T. (2013). Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. Lancet (London, England), 382(9904), 1575–1586. 10.1016/S0140-6736(13)61611-6 [PubMed: 23993280]

World Health Organization. (2016). INSPIRE: Seven strategies for ending violence against children. World Health Organization.

Yap MBH, Cheong TWK, Zaravinos-Tsakos F, Lubman DI, & Jorm AF (2017). Modifiable parenting factors associated with adolescent alcohol misuse: A systematic review and meta-analysis of longitudinal studies. Addiction, 112(7), 1142–1162. 10.1111/add.13785 [PubMed: 28178373]

Yule K, Houston J, & Grych J. (2019). Resilience in children exposed to violence: A meta-analysis of protective factors across ecological contexts. Clinical Child and Family Psychology Review, 22, 406–431. [PubMed: 30887404]

Table 1

Prevalence of adverse childhood experiences, positive childhood experiences, mental health and substance use outcomes, and demographic characteristics.

	Female (*N* = 8063)		Male (*N* = 2115)		
	n	**Weighted % (95 % CI)**	**n**	**Weighted % (95 % CI)**	**p-value**
Age					
18–24	4692	62.7 (59.7, 65.8)	1333	65.0 (59.5, 70.5)	
22–24	3101	37.3 (34.2, 40.3)	789	35.0 (29.5, 40.5)	0.4988
Material insecurity					
Enough financial support	5629	46.3 (43.1, 49.5)	1412	47.1 (42.8, 51.4)	
Not enough financial support	2373	53.7 (50.5, 56.9)	697	52.9 (48.6, 57.2)	0.8261
Ever married or cohabitated					
Yes	3091	50.6 (47.3, 53.8)	389	19.2 (16.1, 22.2)	
No	4918	49.4 (46.2, 52.7)	1711	80.8 (77.8, 83.9)	<0.0001
Education					
Attending or completed primary school or less	1951	42.7 (39.1, 46.2)	660	33.9 (30.8, 37.0)	
Attending or completed secondary school or higher	6083	57.35 (53.8, 60.9)	1454	66.1 (63.0, 69.2)	0.0036
Moderate to severe mental distress					
Yes	2899	36.3 (33.4, 39.2)	617	31.1 (26.5, 35.6)	
No	5140	63.7 (60.8, 66.6)	1493	68.9 (64.4, 73.5)	0.1329
Suicidal or self-harm behaviors					
Yes	1102	16.7 (14.4, 19.1)	184	14.2 (10.3, 18.0)	
No	6935	83.3 (80.9, 85.6)	1913	85.8 (82.0, 89.8)	0.3629
Substance use					
Yes	886	6.4 (4.7, 8.2)	760	20.5 (16.9, 24.1)	
No	7177	93.6 (91.8, 95.3)	1355	79.5 (75.9, 83.1)	<0.0001
ACEs					
Physical violence	2300	33.4 (30.4, 36.4)	968	46.5 (41.3, 51.7)	0.0016
Sexual violence	964	15.0 (12.8, 17.2)	128	7.0 (4.7, 9.3)	<0.0001
Emotional violence	705	6.3 (4.8, 7.8)	149	5.5 (3.3, 7.7)	0.5846
Witnessing interparental violence	1980	25.5 (22.6, 28.4)	464	22.6 (18.7, 26.5)	0.3249
Witnessing community violence	2667	39.6 (36.4 (42.9)	1127	58.0 (53.2, 62.7)	<0.0001

	Female (*N* = 8063)		Male (*N* = 2115)		
	n	**Weighted % (95 % CI)**	**n**	**Weighted % (95 % CI)**	**p-value**
Orphanhood	2775	23.9 (21.0, 26.8)	689	24.7 (21.4, 27.9)	0.7616
0	2131	29.7 (26.3, 33.1)	370	18.5 (13.8, 21.2)	
1+	5923	70.3 (66.9, 73.7)	1744	81.5 (76.8, 86.2)	0.0010
PCEs					
Strong mother-child relationship					
Yes	5336	72.8 (70.0, 75.5)	1472	75.6 (71.4, 79.8)	
No	1926	27.2 (24.5, 30.0)	491	24.4 (20.2, 28.6)	0.3065
Strong father-child relationship					
Yes	2717	42.2 (39.2, 45.2)	1122	64.4 (59.0, 69.8)	
No	3337	57.8 (54.8, 60.8)	593	35.6 (30.2, 41.0)	<0.0001
High parental monitoring					
Yes	4260	50.86 (47.6, 54.1)	1089	52.2 (48.2, 56.3)	
No	3803	49.14 (45.9, 52.4)	1026	47.8 (43.7, 51.8)	0.6588

Definitions and acronyms: n = unweighted frequency; CI = Confidence interval; ACEs = adverse childhood experiences; PCEs = positive childhood experiences.

Table 2

Prevalence of adverse childhood experiences, positive childhood experiences, and demographic characteristics by moderate to severe mental distress, suicidal or self-harm behaviors, and substance among females aged 18–24.

	Moderate to severe mental distress			Suicidal or self-harm behaviors			Substance use		
	n	WP (%) with CI	P	n	WP (%) with CI	P	n	WP (%) with CI	P
ACE									
0 ACEs (Ref.)	548	20.6 (16.2, 25.0)		144	11.8 (7.8, 15.7)		166	4.6 (2.0, 7.3)	
1+ ACEs	2351	42.9 (39.5, 46.3)	<0.0001	958	18.8 (16.2, 21.5)	0.0021	720	7.2 (5.1, 9.3)	0.1073
Age									
18–21 (Ref.)	1727	35.3 (31.7, 38.9)		711	16.1 (13.3, 18.8)		472	6.0 (4.2, 7.9)	
22–24	1172	37.9 (32.9, 42.9)	0.4083	391	17.8 (13.7, 21.9)	0.4950	414	7.1 (4.7, 9.4)	0.3779
Marital status									
No (Ref.)	1858	37.1 (32.6, 41.7)		735	18.5 (14.9, 22.2)		637	7.5 (4.6, 10.3)	
Yes	1017	35.0 (31.3, 38.6)	0.47	349	14.5 (11.5, 17.4)	0.0490	245	5.6 (3.6, 7.5)	0.2690
Education									
Attending or completed primary school or less (Ref.)	622	31.2 (27.6, 34.8)		188	16.2 (12.4, 19.9)		124	5.5 (3.5, 7.5)	
Attending or completed secondary school or higher	2269	40.1 (36.1, 44.2)	0.001	909	17.2 (13.7, 20.6)	0.7116	761	7.1 (4.7, 9.5)	0.2703
Country									
Kenya	278	39.8 (35.7, 43.9)		140	21.6 (18.1, 25.0)		27	4.6 (2.2, 7.0)	
Lesotho	1126	30.2 (27.6, 32.8)		390	11.4 (10.2, 12.7)		355	10.3 (8.7, 11.8)	
Mozambique (Ref.)	380	29.7 (25.8, 33.6)		98	8.2 (5.3, 11.1)		92	8.6 (5.5, 11.8)	
Namibia	1115	46.4 (43.6, 49.3)	<0.0001	474	18.9 (16.0, 21.8)	<0.0001	412	16.6 (14.4, 18.9)	<0.0001
Material insecurity									
Not enough financial support (Ref.)	811	33.6 (29.8, 37.4)		338	13.6 (10.9, 16.3)		304	5.3 (3.4, 7.1)	
Enough financial support	2070	39.5 (35.5, 43.5)	0.0283	760	20.3 (16.5, 24.2)	0.0065	579	7.8 (5.3, 10.3)	0.0555
PCEs									
Strong mother-child relationship									
No (Ref.)	846	42.1 (36.5, 47.8)		416	22.3 (17.2, 27.4)		259	9.4 (5.7, 13.0)	
Yes	1766	33.3 (30.0, 36.7)	0.006	561	14.7 (11.9, 17.4)	0.0067	552	5.6 (4.0, 7.2)	0.0320
Strong father-child relationship									
No (Ref.)	1301	38.6 (34.6, 42.5)		538	17.1 (14.0, 20.3)		398	5.5 (3.7, 7.2)	

	Moderate to severe mental distress			Suicidal or self-harm behaviors			Substance use		
	n	WP (%) with CI	P	n	WP (%) with CI	P	n	WP (%) with CI	P
Yes	914	31.1 (26.3, 36.0)	0.0317	282	13.0 (9.4, 16.7)	0.1190	280	5.1 (3.0, 7.3)	0.8242
High parental monitoring									
No (Ref.)	1332	36.5 (32.0, 41.1)		487	16.0 (13.1, 18.9)		417	6.6 (4.2, 9.0)	
Yes	1567	36.0 (31.7, 40.4)	0.8821	615	17.4 (13.9, 20.9)	0.5322	469	6.2 (4.3, 8.2)	0.7854

Definitions and acronyms: n = unweighted frequency; WP = weighted percentage; CI = Confidence interval; ACEs = adverse childhood experiences; PCEs: positive childhood experiences; P = p-value.

Table 3

Prevalence of adverse childhood experiences, positive childhood experiences, and demographic characteristics by suicidal or self-harm behaviors and substance use among males aged 18–24[±].

	Suicidal or self-harm behaviors			Substance use		
	n	**WP % (95 % CI)**	**P**	**n**	**WP % (95 % CI)**	**P**
ACE						
0 ACEs (Ref.)	16	3.0 (1.4, 4.6)		91	11.1 (7.5, 14.7)	
1+ ACEs	178	16.7 (12.4, 21.1)	<0.0001	669	22.7 (18.4, 27.0)	0.0002
Age						
18–21 (Ref.)	114	14.8 (9.5, 20.2)		430	20.2 (16.0, 24.3)	
22–24	80	13.0 (6.8, 19.2)	0.6895	330	21.2 (14.5, 27.8)	0.7917
Marital status						
No (Ref.)	151	15.0 (10.2, 19.8)		598	18.4 (14.7, 22.0)	
Yes	42	10.5 (6.2, 14.8)	0.1971	158	28.4 (22.2, 34.6)	0.0012
Education						
Attending or completed primary school or less (Ref.)	56	10.1 (6.5, 13.6)		243	23.5 (18.4, 28.6)	
Attending or completed secondary school or higher	138	16.3 (10.9, 21.6)	0.0557	517	19.0 (14.3, 23.7)	0.1873
Country						
Kenya	53	17.1 (11.7, 22.6)		97	19.2 (14.2, 24.3)	
Lesotho	44	6.0 (3.4, 8.5)		346	46.5 (41.1, 51.9)	
Mozambique (Ref.)	42	9.0 (4.2, 13.8)		91	18.9 (14.4, 23.4)	
Namibia	55	10.1 (6.3, 13.9)	0.0047	226	37.4 (31.2, 43.6)	<0.0001
Material insecurity						
Not enough financial support (Ref.)	61	12.7 (7.6, 17.8)		232	19.0 (13.6, 24.3)	
Enough financial support	133	15.9 (10.9, 20.9)	0.3471	527	22.3 (17.3, 27.2)	0.3835
PCEs						
Strong mother-child relationship						
No (Ref.)	74	23.1 (13.7, 32.5)		182	25.5 (20.6, 30.5)	
Yes	111	11.6 (8.0, 15.1)	0.0222	508	19.4 (14.7, 24.0)	0.0890
Strong father-child relationship						

	Suicidal or self-harm behaviors			Substance use		
	n	**WP % (95 % CI)**	**P**	**n**	**WP % (95 % CI)**	**P**
No (Ref.)	84	25.6 (17.8, 33.4)		244	26.3 (19.0, 33.7)	
Yes	72	9.0 (4.9, 13.1)	0.0005	350	17.9 (14.2, 21.6)	0.0294
High parental monitoring						
No (Ref.)	64	12.4 (5.3, 19.6)		325	24.9 (17.5, 32.2)	
Yes	129	14.8 (9.5, 20.2)	0.6324	427	18.3 (13.8, 22.8)	0.1663

Definitions and acronyms: n = unweighted frequency; WP = weighted percentage; CI = Confidence interval; ACEs = adverse childhood experiences; PCEs: positive childhood experiences; P = p-value.

[±]Moderate to severe mental distress data not presented due to unstable estimates.

Table 4

Adjusted associations of moderate to severe mental distress, suicidal or self-harm behaviors, and substance use with adverse childhood experiences and positive childhood experiences.

	Moderate to severe mental distress		Suicidal or self-harm behaviors				Substance use			
	Female		Female		Male		Female		Male	
	aOR	95 % CI	aOR	95 % CI	aOR	95 % CI	aOR	95 % CI	aOR	95 % CI
ACES[1]										
0 ACEs (Ref.)										
1+ ACEs	2.7	1.9, 3.9*	1.7	1.0, 2.8	6.7	2.8, 16.0*	1.5	0.8, 3.0	2.5	1.4, 4.2*
PCES										
Strong mother-child relationship[2]										
Yes	0.7	0.6, 0.9*	0.6	0.4, 0.9*	0.5	0.2, 0.9*	0.6	0.4, 0.9*	0.7	0.4, 1.2
No (Ref.)										
Strong father-child relationship[2]										
Yes	0.9	0.6, 1.2	0.8	0.5, 1.3	0.4	0.2, 0.7*	0.9	0.6, 1.7	0.6	0.4, 0.8*
No (Ref.)										
High parental monitoring[2]										
Yes	¥	¥	1.1	0.8, 1.6	0.9	0.5, 1.9	0.9	0.5, 1.4	0.7	0.5, 1.1
No (Ref.)										

Acronyms: aOR = adjusted odds ratio; CI = Confidence interval; ACEs = adverse childhood experiences; PCEs: positive childhood experiences.

[1] Adjusted for age, marital status, country, material insecurity, and education.

[2] Adjusted each PCE with experiencing 1+ ACEs, with age, marital status, country, material insecurity, and education.

* $p < 0.05$.

¥ Interaction was significant and stratified analysis was performed (Table 5).

Table 5

Associations of moderate to severe mental distress with parental monitoring and demographic characteristics stratified by adverse childhood experiences among females aged 18–24.

		Moderate to severe mental distress	
ACEs		**aOR[1]**	**95 % CI**
0 ACEs	High parental monitoring Low parental monitoring (ref)	0.5	0.3, 0.8 *
1+ ACEs	High parental monitoring Low parental monitoring (ref)	1.2	0.8, 1.7

Acronyms: aOR = adjusted odds ratio; CI = Confidence interval; ACEs = adverse childhood experiences.

1. Adjusted for age, marital status, country, material insecurity, and education.

* $p < 0.05$.