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Original article

Effect of Childhood Poverty and Trauma on Adult Depressive Symptoms Among Young Men in Peri-Urban South African Settlements

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A B S T R A C T

Purpose: Depressive disorders contribute to health declines among young men, but little is known about how childhood trauma alongside poverty alters depressive symptoms in young adulthood. These life-course dynamics are particularly under-researched in African settings.
Methods: We assessed how childhood trauma and poverty were associated with depressive symptomology among young men (aged 18–30 years). Data were collected through community-based surveys in two peri-urban, South African settlements. Validated measures assessed childhood abuse, depressive symptomology, and food insecurity. Markers of childhood poverty and young adult socioeconomic predictors were also assessed.
Results: A total of 2,427 young men reported low levels of income, food security, and education. One-third of the sample (39.2%) reported symptoms consistent with probable depression. The majority (76.9%) reported one or more forms of childhood abuse, which was predicted by childhood hunger. Compared with counterparts without childhood trauma, those with physical, sexual, or psychological childhood abuse had a higher risk of later depressive symptoms (adjusted odds ratio [AOR] = 2.37,2.42,2.39, respectively). A fully saturated linear mixed model showed each form of childhood trauma predicted increased depressive symptomology in adulthood, with the combination of physical, sexual, and psychological abuse strongly predicting increased depressive symptoms (coef = 6.78, 95%CI = 5.78–8.17). In all models, childhood poverty and adult poverty independently predicted young adult depressive symptoms.
Conclusion: Household poverty may be a key reason that children experience abuse and, in turn, common mental disorders in young adulthood. Structural interventions for food security, employment, and parenting are essential to break the intergenerational nexus of poverty, trauma, and health in peri-urban settings.
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IMPLICATIONS AND CONTRIBUTION

Young men in peri-urban South African settings with a history of child abuse have two- to three-fold higher odds of depressive symptoms as young adults. Childhood and current poverty compound depressive symptoms, suggesting that mental health in peri-urban communities requires addressing economic deprivation and childhood trauma.

Conflict of Interest: None declared.

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Mental health among young people has become a public health priority [1]. The Global Burden of Disease Study found that among young men between 20 and 24 years of age, depressive disorders were the second most important cause of years lost to disability [2]. Not only does mental health represent a major disease burden, but young adulthood is a crucial time to intervene. This is because a majority of mental health problems present for the first time during adolescence, and many common mental disorders that develop during adolescence persist into adulthood [3].

Childhood trauma can have profound effects on the mental health of young people. Systematic reviews of the literature suggest that childhood abuse predicts anxiety and depression later in life [4–6]. Childhood trauma is a particularly severe form of abuse that fits within a broader literature around "adverse childhood experiences" (ACEs). The ACEs literature has firmly established a link between childhood adversity and mental health [7]. However, in a systematic review of 124 studies, only 2 were conducted in sub–Saharan Africa and none in peri-urban settings [6]. This suggests a significant gap in the evidence base given disproportionately high levels of poverty in sub–Saharan Africa and increasing levels of urbanization across the region.

Severe childhood adversity, in the form of traumas such as physical and sexual abuse, alters young people's transition into adulthood due to social and behavioral reasons [8], but also due to the physiologic and neurobiological changes that occur due to chronic stressors [9]. Importantly, the mental health consequences of childhood trauma can serve as predictors of later mental and physical health outcomes [9,10].

Meta-analyses suggest that sub–Saharan African children have higher rates of sexual, physical, and emotional abuse than in other settings: 83% of boy and girl children report emotional abuse, 64% of children report physical abuse, and 19% of boys report childhood sexual abuse [11]. Male children may be at higher risk of physical abuse in sub–Saharan African settings [12], though the underlying causes for this are poorly understood, and not all studies suggest differences by gender.

Poverty is also associated with increased rates of childhood abuse. In sub–Saharan Africa, childhood physical abuse is associated with factors, such as living in urban areas, living in a poorer household, shifting household composition, parental unemployment, and childhood food insecurity [12–14]. The family disadvantage can work through abusive parenting to adversely impact adolescent health outcomes [15]. It is also possible that poor households create stressed parenting environments, and that stressed parents are more likely to be forced into short-term survival strategies. As caregivers are forced to migrate for work, parental presence declines and children must live in multiple households, which is associated with health risks for young people [16].

No research, to our knowledge, has examined how poverty across the life-course compounds childhood trauma and adult depression in informal settlements in sub–Saharan Africa. This is an important area of exploration, since in sub–Saharan Africa particularly, conditions in peri-urban communities are marked by severe material deprivation, limited infrastructure, and environmental hazards. Material deprivation can operate on mental health through pathways of financial hardship, physical degradation of neighborhood environment, or a lack of opportunity [17]. The inadequate housing can worsen mental health through the pathways of increased insecurity and constraints on social interaction [18]. A lack of community resources such as health services or recreational facilities can have impacts on mental health because it disrupts social life and community-level cohesion [19]. Compounding the neighborhood-level effects, individuals with lower socioeconomic status (SES) tend to have fewer available resources (material or interpersonal) to help them navigate the stressors they do encounter [10].

We conducted baseline research in informal settlements near the South African cities of Johannesburg and Durban. We aimed to understand how childhood poverty, childhood trauma, and current socioeconomic deprivation shape depressive symptoms among young men.

Methods

This analysis draws from research nested within two intervention trials that used similar methodology and measures. Protocols for the trials have been published previously [20,21], but briefly, we used cluster sampling at each site. A volunteer sample of men established a cohort, and this analysis draws from baseline data among young men aged 18–30 years old. This age group represents 'youth' as defined by South African national policy.

Study setting

The two study sites are peri-urban settings located near Johannesburg and Durban, South Africa. Living conditions are characterized by dense, informal housing, and inadequate provision of basic services like water, electricity, and paved roads. Limited government services for health, social development, or security create conditions of material deprivation. The South African government recognizes these sites as 'marginalized areas' due to low resident income, few employment opportunities, and insufficient access to education and health services.

Data collection

The Johannesburg site 18 clusters with an average of 103 men per cluster; the Durban site had 34 clusters with roughly 20 men per cluster. Male participants were invited to participate through the use of community meetings and street-based activities in partnership with local non–governmental organizations. The volunteer samples were conveniently established in each pre–mapped cluster, with the prerequisite that men had been living in the cluster for at least one year prior to the research starting.

Data were collected using self-completed interviews on tablets. The questionnaire was available in multiple languages in Johannesburg (English, isiZulu, Tsonga, and Sepedi) and Durban (English, isiZulu or Xhosa), and trained fieldworkers were on-hand to support participants. The time to complete questionnaires ranged from 30 to 95 minutes, and audio-recorded voice files were available. One in 20 participants required assistance from a fieldworker with completing the questionnaire. The surveys had inbuilt logic and skip patterns. Data were uploaded daily to a secure server and were checked for completion by a study investigator. Data were cleaned and variables used in this analysis were abstracted into a joint dataset.

Measures

Probable depression was assessed through the Center for Epidemiologic Studies Depression Scale (CES-D), a brief screener for assessing past-week depressive symptoms. The CES-D has been used in South African community-based populations, including young people. The measure consists of 20 items scored on a

four-point Likert scale. The total scores range from 0 to 60 and a cutoff of 20 indicates depression "caseness." The internal consistency of the scale was strong (Chronbach's α = 0.89).

Childhood trauma was assessed using a 15-item revised Childhood Trauma Questionnaire, a shortened version of an instrument that has been used previously in South Africa. The tool asks participants to self-report frequency of emotional, physical, and sexual abuse before the age of 18 (4 items, 2 items, and 3 items, respectively), and whether they witnessed their mother being beaten by her husband or boyfriend. A higher score reflects more severe levels childhood trauma and the internal consistency was good (Chronbach's α = 0.85).

Childhood SES was assessed through two proxies of single Likert-type items for childhood hunger and living in multiple households. *Adult SES* was assessed by asking whether participants had completed high school, the past-month Household Hunger Scale, total past-month earnings, employment in past three months, stress about lack of work or income, and having stolen in the past four weeks because of a lack of food or money. *Sociodemographics* included age, time living in the community, and relationship status. Participants were considered to have 'grown up in the settlement' if they moved there before ten years of age.

Analysis. The analysis was conducted using STATA 13 using survey commands to adjust for cluster-based sampling. We first examined descriptive statistics of sociodemographics and childhood trauma for the entire cohort. To understand the effect of childhood poverty and adversity, we created dichotomous variables for markers of childhood poverty (any childhood hunger and living in multiple households) and each type of childhood trauma (physical, sexual, psychological abuse, witnessing a mother being beaten). We created childhood trauma variables with a clean comparison group (e.g. any physical childhood abuse vs. no childhood trauma). This 'clean comparison' is important when examining unique types of violence because physical, sexual, and psychological abuse often co-occur.

To understand childhood trauma reported in this sample, we used mixed effects logistic regression. We explored associations between childhood poverty and each type of childhood trauma, controlling for sociodemographics and clustering by neighborhood. Models were built using a stepwise approach and we included theoretically important covariates that had statistical significance in bivariate analysis. We used a fully saturated linear mixed model to understand associations between childhood trauma and a continuous depressive symptomology score. Here, we created a categorical variable for childhood trauma that accounted for interactions between various types of abuse. Collinearity was assessed by examining the correlation matrix of each set of predictor variables and by using 'variance inflation factor' post-test estimation.

Ethics. Both trials were conducted in alignment with the ethical principles of the World Medical Association Declaration of Helsinki. The Durban trial was approved by the University of KwaZuluNatal (BFC043/15) and South African Medical Research Council (EC0062/2015). The Johannesburg trial was approved by the University of Witwatersrand (HREC M150443). Both trials were registered on Clinical Trials.gov (NCT03022370 and NCT02823288).

Both trials aligned with WHO Ethical and Safety Recommendations for Research on Domestic Violence Against Women, which include disguising the violence focus of the research, establishing a distress protocol, and creating mechanisms for supporting research staff. Self-completed interviews on tablet computers helped ensure anonymity of reporting around sensitive topics. Confidentiality was assured through rigorous training of field staff and labeling data with participant ID numbers.

Results

Sociodemographics

The sample was comprised of 2,427 young males who were predominately black and a median of 24 years old (Table 1). Less than half completed high school education (42.6%) and the cohort earned a median monthly income of ZAR 290 (about US $20). One-third reported current household hunger and less than half had worked in the prior three months.

Prevalence of probable depression and childhood trauma

Probable depression, as measured by the CES-D screener, was reported among 895 young men (39.2%, Table 2). As we used a more conservative estimate, this prevalence represents those participants with a CES-D score of 21 or greater. The standard cut-off of 16 or greater increases the prevalence of probable depression in this sample to 55.7%. We conducted a sensitivity analysis of all regressions with the standard cut-off of 16, and found no differences in directionality or strength of association.

Childhood traumas were prevalent, with 76.9% of participants reporting at least one type of child abuse (Table 2). Physical abuse through beating was the commonest form of childhood trauma (63.3%). Sexual abuse was prominent, though less common than other forms of abuse: one-quarter of young men were touched on their buttocks or genitals (24.5%) and 15% were raped before the age of 18. Witnessing IPV towards one's mother was reported by nearly one-third of the sample (31.2%). More than half of the sample experienced childhood hunger (57.3%). Nearly half lived in multiple households as children (45.4%) and one-fifth grew up in the peri-urban settlement (22.7%).

Childhood poverty as a predictor of childhood abuse

Ever having experienced child abuse in bivariate analysis was associated with markers of childhood poverty (Table 3). Reporting any childhood trauma was also associated with growing up in the informal settlement. Participants in Durban had higher odds of

Table 1
Descriptive statistics, n = 2427

	Total
	Median (IQR) or Number (%)
Sociodemographics	
Age (years)	24 (22–27)
Migrated from outside province	1283 (53.2%)
Single	463 (19.3%)
SES	
High school education	1004 (42.6%)
Worked in past 3 month	1102 (45.6%)
Monthly earnings	R 290 (0–1500)
Household hunger	1179 (49.1%)
Ever stole for food or income	805 (33.4%)
Stressed about income or work	1415 (58.9%)
Childhood SES	
Lacked for food	1434 (57.3%)
Lived in multiple households	1137 (45.6%)
Born in peri-urban settlement	172 (46.8%)
Study site (Durban)	677 (27.9%)

IQR: interquartile range.

Table 2
Prevalence of depression and childhood traumas (n = 2517)

	Number (%)
Probable depression	895 (39.2%)
Any childhood abuse	1822 (76.9%)
Any physical abuse	1519 (63.3%)
Beaten by something hard	1421 (59.0%)
Beaten so hard it left mark	811 (33.6%)
Any sexual abuse	1003 (42.1%)
Sexually molested	589 (24.5%)
Sexually coerced by person 5+ years older	644 (26.7%)
Raped	361 (15.0%)
Any psychological abuse/neglect	1544 (65.5%)
Told was lazy or stupid	1066 (44.2%)
Insulted or humiliated	991 (41.2%)
Stayed outside home	861 (35.7%)
Parent too drunk/ drugged to care for them	486 (20.2%)
Other Childhood Adversities	
Witnessed IPV towards mother	729 (31.2%)
Child abuse by category	
No childhood adverse experience	572 (22.5%)
Physical Abuse only	162 (6.7%)
Sexual Abuse only	66 (2.7%)
Psychological Abuse/Neglect only	145 (6.0%)
Physical and sexual	54 (2.2%)
Sexual and psychological	125 (5.1%)
Physical and psychological	534 (22.0%)
Physical, sexual, and psychological	794 (32.7%)

reporting childhood trauma compared with those in Johannesburg in bivariate analysis.

In the mixed-effects logistic regression, those with any childhood trauma had higher odds of childhood hunger, growing up in multiple households, and growing up in the settlement, and living in Durban. Physical abuse (compared with no abuse) followed a similar pattern. The strongest predictor of sexual abuse and psychological abuse was living in multiple childhood households. Childhood hunger and growing up in the settlement were also predictive of childhood sexual abuse and of psychological abuse. Study sites were similar for sexual and psychological abuse. Witnessing IPV as a child was similarly predicted by childhood hunger, multiple households, and growing up in the study settlement, with equal odds for Durban and Johannesburg.

Clustering by site throughout the models was negligible, with low intraclass correlation (range: .02–.05). This suggests observations within clusters are only slightly more similar than observations from different clusters.

Childhood traumas as a predictor of probable depression

Table 4 shows the logistic regression model of symptoms consistent with probable depression. Each form of childhood trauma was strongly predictive of probable depression as a young adult. These associations were slightly attenuated after controlling for childhood socioeconomic predictors, current markers of SES, and sociodemographics. The AOR for the association between physical abuse on probable depression was 2.37, with a 95% confidence interval (CI) 1.82–3.08). Similarly, probable depression was predicted by childhood sexual abuse (AOR = 2.42, 95%CI 1.81–3.21), psychological abuse, (AOR = 2.49, 95%CI 1.90–3.25), and witnessing one's mother being beaten (AOR = 3.08, 95%CI 2.21–4.26).

Within these adjusted models, childhood poverty was significantly associated with adult depressive symptoms. Childhood hunger predicted probable depression in adjusted models for physical, sexual, psychological, and witnessing IPV. Similar consistent patterns of the effect of living in multiple childhood homes were seen all analyses. Current poverty in the form of hunger, stealing for food, and being stressed about lack of work was similarly impactful on current depressive symptoms.

A fully saturated linear mixed model (Table 5) assessed how various forms of childhood trauma are linearly associated with depressive symptomology, while accounting for childhood and current poverty. Each type of childhood trauma was independently associated with adult depressive symptoms. The greater number of combined childhood traumas, the stronger the statistical relationship with depressive symptoms. The combination of physical, sexual, and psychological abuse in childhood had the most pronounced effect on depressive symptoms as an adult (Coef = 6.78, 95%CI 5.40–8.17).

Socioeconomics were also strong predictors of depression the final adjusted model. Men who reported hunger during childhood were more likely to have depressive symptoms in adulthood, as were men who stayed in multiple childhood households. Current household hunger, stealing for food, and stress about lack of work or income were all associated with depressive symptoms. Those in the Durban site had increased depressive symptoms.

Discussion

Childhood trauma and childhood poverty had clear associations with probable depression in adulthood among young men in peri-urban, South African settlements. This extends meta-analytic findings from elsewhere globally [22] by providing support for robust

Table 3
Estimated effects of childhood poverty on child abuse experience among young men in informal settlements

	Unadjusted OR (95% CI)		Adjusted OR (95% CI)				
	Any Child Abuse	*p* value	Model 1: Any Child Abuse (vs. None)	Model 2: Physical Abuse (vs. No Abuse)	Model 3: Sexual Abuse (vs. No Abuse)	Model 4: Psychological Abuse or Neglect (vs. No Abuse)	Model 5: Witness IPV (vs. No Abuse)
Childhood SES						-	
Childhood hunger	4.40 (3.56 to 5.44)	.000	2.88 (2.30 to 3.62)	3.24 (2.60 to 4.15)	2.69 (2.08 to 3.46)	3.14 (2.44 to 3.90)	3.63 (2.69 to 4.87)
Multiple childhood households	4.90 (3.86 to 6.21)	.000	3.45 (2.68 to 4.44)	3.76 (2.86 to 4.76)	4.37 (3.33 to 5.72)	4.12 (3.11 to 5.21)	7.58 (5.43 to 10.13)
Grew up in settlement	1.35 (1.06 to 1.74)	.016	1.49 (1.14 to 1.94)	1.42 (1.07 to 1.87)	1.55 (1.16 to 2.07)	1.60 (1.22 to 2.11)	1.53 (1.08 to 2.19)
Study site (Durban)	1.67 (1.24 to 2.29)	.001	1.35 (.97 to 1.87)	1.42 (1.02 to 2.02)	1.28 (.93 to 1.76)	1.29 (.093 to 1.82)	1.44 (.99 to 2.09)
Intraclass correlation							
Cluster	-		.04 (.02 to.09)	.05 (.02 to.10)	.02 (.01 to.08)	.04 (.02 to.10)	.03 (.01 to.12)

OR: odds ratio; CI: confidence interval; IPV: intimate partner violence; SES: socioeconomic status.

Table 4
Estimated effects of childhood traumas on probable depression among young men in informal settlements

	Unadjusted OR (95% CI)	*p* value	Adjusted OR (95% CI) Model 1: Physical Abuse	Adjusted OR (95% CI) Model 2: Sexual Abuse	Adjusted OR (95% CI) Model 3: Psychological Abuse or Neglect	Adjusted OR (95% CI) Model 4: Witness IPV
Types of childhood trauma						
Physical Abuse vs. no abuse	3.68 (3.00 to 4.81)	.000	2.37 (1.82 to 3.08)	-	-	-
Sexual Abuse vs. no abuse	3.92 (3.16 to 5.18)	.000	-	2.42 (1.81 to 3.21)	-	-
Psychological Abuse vs. no abuse	3.72 (3.03 to 4.87)	.000	-	-	2.49 (1.90 to 3.25)	-
Witnessed IPV vs. no abuse	4.99 (3.82 to 6.50)	.000	-	-	-	3.08 (2.21 to 4.26)
Childhood SES						
Childhood hunger	2.31 (1.97 to 2.81)	.000	1.40 (1.13 to 1.83)	1.47 (1.16 to 2.06)	1.24(1.04 to 1.69)	1.55 (1.07 to 2.11)
Multiple childhood households	2.33 (2.01 to 2.89)	.000	1.50 (1.12 to 1.79)	1.51 (1.14 to 2.03)	1.42 (1.08 to 1.72)	1.29 (.94 to 1.81)
Grew up in settlement	1.15 (.94 to 1.41)	.164	1.14 (.90 to 1.44)	1.05 (.80 to 1.38)	1.08 (.85 to 1.36)	1.13 (.82 to 1.55)
Current SES						
Household hunger	2.20 (1.90 to 2.68)	.000	1.46 (1.36 to 2.15)	1.32 (1.11 to 1.94)	1.43 (1.20 to 1.89)	1.46 (1.14 to 2.21)
Stole for food	2.11 (1.77 to 2.53)	.000	1.51 (1.25 to 1.98)	1.61 (1.21 to 2.12)	1.48 (1.30 to 1.98)	1.27 (.98 to 1.92)
Stress about work or income	1.79 (1.52 to 2.17)	.000	1.33 (1.04 to 1.66)	1.43 (1.05 to 1.81)	1.40 (1.16 to 1.77)	1.24 (.89 to 1.77)
Study site (Durban)	1.49 (1.24 to 1.80)	.000	1.28 (1.04 to 1.59)	1.51 (1.19 to 1.96)	1.31 (1.07 to 1.62)	1.61 (1.21 to 2.14)

Adjusted models control for all variables noted as well as age, high school education, and clustering by neighborhood
OR: odds ratio; CI: confidence interval; IPV: intimate partner violence; SES: socioeconomic status.

links between childhood trauma, childhood poverty, and adult depression in a low-resourced setting. Ours is the first African study, to our knowledge, to examine the association between markers of poverty and childhood sexual and psychological abuse.

Men in our sample reported higher rates of childhood trauma than found in the extant literature. Physical abuse in childhood was reported by nearly two-thirds of the study sample, which is higher than past South African studies where 3%–18% report childhood physical abuse [23–26]. We learned that sexual molestation and rape occurred in 24% and 15% of participant childhoods, respectively, which is double the rate of nationally representative data [25]. Two-thirds (65.5%) of our sample reported childhood psychological trauma compared with 5% of men in other South African studies [26].

Symptoms consistent with probable depression, as measured by CES-D, were reported by more than one-third of young men in our sample, which is markedly higher than national prevalence of 4.9% [27], but aligns with higher rates (41.1%–49.5%) of probable depression from studies conducted in Durban and inner-city Johannesburg [28,29]. That these urban rates differ greatly from rural studies suggests that environmental conditions are important for understanding the mental health of young persons [30].

Making sense of these discrepancies between our data and extant literature requires consideration of the peri-urban settlements where the research took place. Growing up in the informal settlement doubled the odds of childhood abuse, reinforcing findings that impoverished community and household-level conditions are related to childhood adversity [12,13]. Conditions of informal settlements may also exacerbate mental health challenges due to rapid changes in social structures or pressure due to economic vulnerability [30]. Social marginalization, lack of access to formal services, and widespread unemployment may create a nexus of trauma, poverty, and depression for those participating in our studies. It is worth noting the protective nature of living in the Johannesburg settlement versus living in Durban for several analyses presented. While it is not possible to ascertain the rationale for these regional differences, it is probable that the Durban setting has additional forms of marginalization unmeasured in our models that predict worse mental health outcomes.

These data emphasize that mental health and poverty should be examined as intersecting issues, and confirm that poverty is "social determinants of mental health." Despite increased attention to the social determinants of mental health in recent literature, less attention has been paid to low-resource countries or peri-urban settings. While adulthood poverty has been associated with mental health [31], less work has examined poverty and adversity throughout the life-course. Our data add to this literature by suggesting that poverty may have a multiplicative effect on mental health when coupled with multiple forms of trauma in childhood. Young men experiencing poverty and childhood trauma as they grow up, may construct specific masculinities that further entrench mental health outcomes. This aligns with research suggesting that men feel more vulnerable as resources grow scarcer [32], and that harsher forms of masculine identity can be adopted as a technique to keep the "weakness" of emotion at bay [33].

There are also lessons from these data regarding the differential impact of various forms of childhood abuse on later depression. Each type of childhood trauma on its own, or in

Table 5
Estimated effects of various types of childhood traumas on depressive symptoms among young men in informal settlements (n = 2,177)

	Coef (95% CI)	*p* value
Childhood abuse		
No childhood abuse	ref	-
Psychological Abuse only	2.27 (.23 to 4.31)	.026
Physical Abuse only	2.30 (.35 to 4.26)	.021
Sexual Abuse only	3.57 (.69 to 6.45)	.015
Sexual and Psychological Abuse	4.06 (1.78 to 6.34)	.000
Physical and Sexual Abuse	4.11 (1.06 to 7.17)	.008
Physical and Psychological Abuse	5.79 (4.37 to 7.20)	.000
Physical, Sexual, and Pyschological Abuse	6.78 (5.40 to 8.17)	.000
Childhood SES		
Childhood hunger	1.13 (.08 to 2.16)	.035
Multiple childhood households	2.39 (1.13 to 3.69)	.000
Grew up in settlement	.76 (−.36 to 1.87)	.182
Current SES		
Household hunger	1.57 (.57 to 2.57)	.002
Stole for food	1.66 (.63 to 12.69)	.001
Stress about work or income	1.87 (.91 to 2.83)	.000
Study site (Durban)	2.29 (1.19 to 3.48)	.000

Adjusted models control for all variables noted as well as age, high school education, and clustering by neighborhood
OR: odds ratio; CI: confidence interval; SES: socioeconomic status.

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combination with other forms of abuse, was associated with worse depressive symptomology. This seems to point to the fact that it matters less which form abuse occurs in, but rather that it occurs at all. This suggests a dose-response relationship, with additional forms of abuse compounding and worsening mental health outcomes. Witnessing IPV was also a strong predictor of probable depression, even after controlling for other forms of childhood trauma. In resource-rich settings, children witnessing IPV show more depressive symptoms as children [34]. However, there has not, to our knowledge, been an extant study of the relationship between witnessing IPV in childhood and later depressive symptomology in adulthood.

Limitations

The findings of this study should be viewed in light of design limitations. The cross-sectional nature of the data is a considerable weakness, limiting our ability to determine causality or assess mediation between predictors of interest and adult depression. Our retrospective measure of childhood trauma may have been sensitive to recall bias (particularly among those participants who had depressive symptoms), which may alter the relationship between the two conditions. While our use of an analytical method that accounts for specific types of childhood trauma may add nuance to the findings, rare outcomes (e.g., sexual abuse only) may suffer from small percentage bias. Brief screeners for depression are useful for research settings, but preclude the ability to make a clinical diagnosis. That our findings align with diagnostic interviews utilized in other studies [23] helps confirm the utility of brief screeners, but similar studies need to validate the CES-D in similar peri-urban settlements with a clinical diagnosis. Our measures for childhood trauma and childhood SES also require validation among men in peri-urban, African settings. Volunteer samples may be different from men in each cluster who did not take part in the research. The population participating in our study had similar rates of unemployment (54.4%) but lower monthly incomes than men in representative South African settlement studies [35]. Due to cluster sampling of volunteer participants, these findings are not generalizable and no claims can be made about the overall prevalence of conditions in these communities.

Implications for policy and practice

Increasing access to mental health services for young men in informal settlements is crucial. Mental health interventions delivered in schools to all students, regardless of mental health status (or a “universal” approach) has been shown to be effective in high-income settings [36], as has cognitive behavioral therapy among adolescents [37]. However, in low-income settings there are major gaps in investment and coverage of mental health services [38], making traditional mental health care models infeasible.

Our findings suggest that cognitive behavioral interventions should simultaneously address the underlying causes of poverty and childhood trauma. Practically, this means that South African policy should focus on poverty-reduction to ensure child safety and, ultimately, to achieve mental health among large portions of the population. This could be done in the form of cash transfers, which have shown reductions in psychological distress among young people [39,40]. Recognizing child abuse as a preventable national and regional problem is a key policy implication of this research.

Conclusion

Poverty and childhood trauma set the stage for mental health across the life course. Poverty frames how young boys experience physical, sexual, and psychological abuse. These intersecting issues of poverty and childhood trauma may, in turn, play an important role in the high burden of depressive symptoms among young men globally [2]. Addressing poverty and childhood protection in peri-urban settlements in South Africa could have marked impact on the health and wellbeing of young men and the next generation of South African youth.

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References

[1] Patton GC, Sawyer SM, Santelli JS, et al. Our future: a Lancet commission on adolescent health and wellbeing. Lancet 2016;387:2423–78.
[2] Mokdad AH, Forouzanfar MH, Daoud F, et al. Global burden of diseases, injuries, and risk factors for young people's health during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet 2016;387:2383–401.
[3] Patton GC, Coffey C, Romaniuk H, et al. The prognosis of common mental disorders in adolescents: a 14-year prospective cohort study. Lancet 2014;383:1404–11.
[4] Lindert J, von Ehrenstein OS, Grashow R, et al. Sexual and physical abuse in childhood is associated with depression and anxiety over the life course: systematic review and meta-analysis. Int J Public Health 2014;59:359–72.
[5] Li M, D'arcy C, Meng X. Maltreatment in childhood substantially increases the risk of adult depression and anxiety in prospective cohort studies: systematic review, meta-analysis, and proportional attributable fractions. Psychol Med 2016;46:717–30.
[6] Norman RE, Byambaa M, De R, et al. The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. PLoS Med 2012;9:e1001349.
[7] Chapman DP, Whitfield CL, Felitti VJ, et al. Adverse childhood experiences and the risk of depressive disorders in adulthood. J Affect Disord 2004;82:217–25.
[8] Gore S, Aseltine Jr RH, Schilling EA. Transition to adulthood, mental health, and inequality. In: Mental health, social mirror; Springer, 2007:219–37.
[9] Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. JAMA 2009;301:2252–9.
[10] Matthews KA, Gallo LC, Taylor SE. Are psychosocial factors mediators of socioeconomic status and health connections? Ann N Y Acad Sci 2010;1186:146–73.
[11] Stoltenborgh M, Bakermans-Kranenburg MJ, Alink LRA, et al. The prevalence of child maltreatment across the globe: review of a series of meta-analyses. Child Abuse Rev 2015;24:37–50.
[12] Akmatov MK. Child abuse in 28 developing and transitional countries–results from the multiple indicator cluster surveys. Int J Epidemiol 2011;40:219–27.
[13] Meinck F, Cluver LD, Boyes ME, et al. Risk and protective factors for physical and emotional abuse victimisation amongst vulnerable children in South Africa. Child Abuse Rev 2015;24:182–97.
[14] Richter LM, Dawes AR. Child abuse in South Africa: rights and wrongs. Child Abuse Rev 2008;17:79–93.

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[15] Meinck F, Cluver LD, Orkin FM, et al. Pathways from family disadvantage via abusive parenting and caregiver mental health to adolescent health risks in South Africa. J Adolesc Health 2017;60:57–64.
[16] Kidman R, Palermo T. The relationship between parental presence and child sexual violence: evidence from thirteen countries in sub-Saharan Africa. Child Abuse Neglect 2016;51:172–80.
[17] Curtis S, Pain R, Fuller S, et al. Neighbourhood risk factors for common mental disorders among young people aged 10-20 years: a structured review of quantitative research. Health Place 2013;20:81–90.
[18] Evans GW, Wells NM, Moch A. Housing and mental health: a review of the evidence and a methodological and conceptual critique. J Soc Issues 2003;59:475–500.
[19] Bernard P, Charafeddine R, Frohlich KL, et al. Health inequalities and place: a theoretical conception of neighbourhood. Soc Sci Med 2007;65:1839–52.
[20] Christofides N, Hatcher AM, Pino A, et al. A cluster randomized controlled trial to determine the effect of community mobilization and advocacy on men's use of violence in peri-urban South Africa: study protocol. BMJ Open 2018;8: e017579.
[21] Gibbs A, Washington L, Willan S, et al. The stepping stones and creating futures intervention to prevent intimate partner violence and HIV-risk behaviours in Durban, South Africa: study protocol for a cluster randomized control trial, and baseline characteristics. BMC Public Health 2017;17:336.
[22] Nanni V, Uher R, Danese A. Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: a meta-analysis. Am J Psychiatry 2012;169:141–51.
[23] Slopen N, Williams DR, Seedat S, et al. Adversities in childhood and adult psychopathology in the South Africa stress and health study: associations with first-onset DSM-IV disorders. Soc Sci Med 2010;71:1847–54.
[24] Cluver L, Orkin M, Boyes ME, et al. Child and adolescent suicide attempts, suicidal behavior, and adverse childhood experiences in South Africa: a prospective study. J Adolesc Health 2015;57:52–9.
[25] Artz L, Burton P, Ward C, et al. Optimus study South Africa: technical report sexual victimisation of children in South Africa. Zurich: UBS Optimus Foundation 2016.
[26] Lochner C, Seedat S, Allgulander C, et al. Childhood trauma in adults with social anxiety disorder and panic disorder: a cross-national study. Afr J Psychiatry (Johannesbg) 2010;13:376–81.
[27] Tomlinson M, Grimsrud AT, Stein DJ, et al. The epidemiology of major depression in South Africa: results from the South African stress and health study. S Afr Med J 2009;99.
[28] Gibbs A, Govender K, Jewkes R. An exploratory analysis of factors associated with depression in a vulnerable group of young people living in informal settlements in South Africa. Global Public Health 2016:1–16.
[29] Cheng Y, Li X, Lou C, et al. The association between social support and mental health among vulnerable adolescents in five cities: findings from the study of the well-being of adolescents in vulnerable environments. J Adolesc Health 2014;55:S31–8.
[30] Jebena MG, Lindstrom D, Belachew T, et al. Food insecurity and common mental disorders among ethiopian youth: structural equation modeling. PLoS One 2016;11:e0165931.
[31] Naidoo I, Charlton KE, Esterhuizen TM, et al. High risk of malnutrition associated with depressive symptoms in older South Africans living in KwaZulu-Natal, South Africa: a cross-sectional survey. J Health Popul Nutr 2015;33:19.
[32] Wood K, Jewkes R. 'Dangerous' love: reflections on violence among Xhosa township youth. 2005.
[33] Jeleniewski Seidler V. Masculinities, bodies, and emotional life. Men Masc 2007;10:9–21.
[34] Evans SE, Davies C, DiLillo D. Exposure to domestic violence: a meta-analysis of child and adolescent outcomes. Aggress Violent Behav 2008;13:131–40.
[35] Mahajan S. Economics of South African townships: special focus on Diepsloot. The World Bank, 2014.
[36] Stockings EA, Degenhardt L, Dobbins T, et al. Preventing depression and anxiety in young people: a review of the joint efficacy of universal, selective and indicated prevention. Psychol Med 2016;46:11–26.
[37] James AC, James G, Cowdrey FA, et al. Cognitive behavioural therapy for anxiety disorders in children and adolescents. Cochrane Libr 2015.
[38] Gilbert BJ, Patel V, Farmer PE, et al. Assessing development assistance for mental health in developing countries: 2007–2013. PLoS Med 2015;12:e1001834.
[39] Baird S, De Hoop J, Özler B. Income shocks and adolescent mental health. J Hum Resour 2013;48:370–403.
[40] Fernald LC, Gunnar MR. Poverty-alleviation program participation and salivary cortisol in very low-income children. Soc Sci Med 2009;68:2180–9.