Child Abuse & Neglect 79 (2018) 98–106

Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Childhood adversity increases the risk of onward transmission from perinatal HIV-infected adolescents and youth in South Africa

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ARTICLE INFO

Keywords:
HIV
Adolescents
Childhood adversity
Adherence
Sexual behavior

ABSTRACT

Repeated exposure to childhood adversity (abuse, neglect and other traumas experienced before age 18) can have lifelong impacts on health. For HIV-infected adolescents and youth, such impacts may include onward transmission of HIV. To evaluate this possibility, the current study measured the burden of childhood adversity and its influence on risky health behaviors among perinatally-infected adolescents and youth. We surveyed 250 perinatally-infected adolescents and youth (13–24 years) receiving care in Soweto, South Africa. Both male and female participants reported on childhood adversity (using the ACE-IQ), sexual behavior, and psychosocial state. Viral load was also abstracted from their charts. We used logistic regressions to test the association between cumulative adversity and behavioral outcomes. Half the sample reported eight or more adversities. Overall, 72% experienced emotional abuse, 59% experienced physical abuse, 34% experienced sexual abuse, 82% witnessed domestic violence, and 91% saw someone being attacked in their community. A clear gradient emerged between cumulative adversities and behavioral risk. Having experienced one additional childhood adversity raised the odds of risky sexual behavior by almost 30% (OR 1.27, 95% CI 1.09–1.48). Viral suppression was poor overall (31% had viral loads > 400 copies/ml), but was not related to adversity. Adversity showed a robust relationship to depression and substance abuse. Childhood adversity is common, influences the current health of HIV-positive adolescents and youth, and puts their sexual partners at risk for HIV infection. Greater primary prevention of childhood adversity and increased access to support services (e.g., mental health) could reduce risk taking among HIV-positive adolescents and youth.

1. Introduction

The expansion of anti-retroviral therapy (ART) in the past decade has improved the life expectancy of HIV-infected children leading to a rapidly emerging population of perinatally HIV-infected (PHIV) adolescents and young adults. Their numbers are expected to increase substantially over the next decade (Ferrand et al., 2009; UNAIDS, 2015). While mortality has improved, new clinical and psychosocial challenges are emerging. One major concern is that PHIV adolescents and youth have detectible viral loads and are engaging in high risk sex, meaning that they could pass the virus on to their partners and children. We know this age group has low ART adherence (Kim, Gerver, Fidler, & Ward, 2014; Nachega et al., 2009). Sexual risk taking has been studied less frequently

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https://doi.org/10.1016/j.chiabu.2018.01.028
Received 26 September 2017; Received in revised form 23 January 2018; Accepted 30 January 2018
Available online 20 February 2018
0145-2134/

in PHIV, but several Ugandan studies report low rates of consistent condom use (34–47%) (Birungi, Obare, Mugisha, Evelia, & Nyombi, 2009; Mbalinda, Kiwanuka, Eriksson, Wanyenze, & Kaye, 2015; Obare & Birungi, 2010). In a study of infected adolescents in South Africa, almost a third reported not using a condom at last intercourse (Toska et al., 2016).

Such behavioural risk taking may be exacerbated by high levels of childhood adversity among PHIV adolescents and youth. By definition, PHIV adolescents and youth have a mother who carried the virus, and thus are more likely to have experienced parental illness and related mental health problems (Petersen et al., 2010). Such adolescents and youth are more likely to have been orphaned, which heightens the risk of sexual, physical and emotional violence (Cluver, Orkin, Boyes, Gardner, & Meinck, 2011; Kidman & Palermo, 2016). Finally, growing up with a highly stigmatized chronic illness may predispose them to bullying by peers. In a US study, HIV-infected adolescents experienced an average of six childhood adversities (e.g., sexual abuse, abandonment), a notable increase relative to community samples (Radcliffe et al., 2007). However, the pattern of the HIV epidemic in the US is different to that of sub-Saharan Africa making it difficult to draw direct comparisons. It is possible that adverse childhood experiences (ACE) may be even more common in the South African context where endemic HIV and endemic violence coexist.

Importantly, the harmful impacts of ACEs reverberate across the life course (Shonkoff, Boyce, & McEwen, 2009). Studies have documented its impact on a spectrum of conditions ranging from depression to autoimmune disorders and cancers (Shonkoff et al., 2009). For PHIV adolescents and youth, adversity may also contribute to high risk sexual behavior and poor ART adherence. This would have long-term implications for both their own health (through poorly controlled HIV infection) and the public's health (through onward transmission). Studies generally have shown a clear gradient between ACEs and sexually transmitted diseases, though all but one study has been in high income countries (Norman et al., 2012). The exception is a study in South Africa, which found ACEs were associated with HIV in youth (Jewkes, Dunkle, Nduna, Jama, & Puren, 2010).

One way that ACEs may be influencing later behaviors is through psychosocial sequelae. Chronic stress can alter brain physiology, resulting in social, cognitive and emotional impairments (Shonkoff et al., 2009, 2012). We know, for example, that ACEs (and associated chronic stress) increase alcohol abuse and depression (Brown, Riley, Butchart, & Kann, 2008; Jewkes et al., 2010). Both psychosocial sequelae contribute to and compound risky sexual behavior and poor adherence in behaviorally-infected (Murphy et al., 2001; Naar-King et al., 2006) and perinatally-infected adolescents and youth (Naar-King et al., 2006; Williams et al., 2006). Alternatively, adversity may disrupt normative transitions to adulthood – such as school drop-out – which are associated with increased sexual risk (Hargreaves et al., 2008).

Substantial literature exists demonstrating that ACEs have life-long consequences for health (Felitti et al., 1998), including in HIV-infected adults (Pence et al., 2012; Whetten et al., 2013). This research base has not been adequately described among adolescents and youth in low and middle-income countries. Given the challenges associated with growing up HIV-positive, an explicit focus on childhood adversity and its consequences is long overdue. This study aims to 1) examine the prevalence of ACEs among PHIV adolescents and youth in an endemic context, and 2) explore whether cumulative ACEs are associated with high risk sexual behaviors, psychosocial health and viral load suppression.

2. Methods

2.1. Study population

A convenience sample of HIV-positive patients was recruited from those attending the Paediatric Wellness Clinic, part of the Perinatal HIV Research Unit at Chris Hani Baragwanath Hospital in Soweto, South Africa. Patients were also recruited from those previously seen, but who had been subsequently referred to other clinics within the Soweto community following a government policy to decentralize HIV treatment. A smaller number was recruited from clinics within the Soweto community after obtaining approval from local health authorities. The inclusion criteria for participation was being aged 13–24 years; being aware of their HIV diagnosis; having documented HIV infection before age 10; and being literate in English. To check literacy, we had the adolescent read the appropriate signature pages in the assent/consent form; 11 adolescents could not read English and were excluded. Exclusion criteria included acute psychiatric illness and cognitive impairment. All minors provided assent with guardian consent. Participants aged 18–24 years provided consent to participate in the study. The protocol was granted approval by both Stony Brook University and the University of the Witwatersrand's Human Research Ethics Committee.

2.2. Data collection

Surveys were in English and pre-programmed on Apple i-pads using the Qualtrics Survey application. Each participant received an individualized tutorial on how to use the touch screen and completed a practice module. Participants then completed the survey themselves in a private room at the clinic. After completion, all participants were given the opportunity to meet with a staff psychologist immediately or at later stage if they felt they needed additional support. For each participant, clinical data, HIV viral load and CD4 cell counts were also abstracted directly from medical records by the research coordinator.

2.3. Measures

The survey instrument was reviewed by an Adolescent Community Advisory Board and their feedback was incorporated. The survey captured adversity, sexual behavior, psychosocial health and relevant clinical and sociodemographic characteristics.