HIV and Child Mental Health: A Case-Control Study in Rwanda

**WHAT'S KNOWN ON THIS SUBJECT:** Research has shown that HIV-affected children face considerable threats to health and mental health. Few studies have investigated the effects of HIV on the health and well-being of HIV-negative children living with HIV-positive caregivers.

**WHAT THIS STUDY ADDS:** By comparing the prevalence of mental health problems and protective and risk factors among HIV-positive, HIV-affected, and HIV-unaffected children in Rwanda, this study demonstrates that the mental health of HIV-affected children requires policy and programmatic responses comparable to HIV-positive children.

**abstract**

**BACKGROUND:** The global HIV/AIDS response has advanced in addressing the health and well-being of HIV-positive children. Although attention has been paid to children orphaned by parental AIDS, children who live with HIV-positive caregivers have received less attention. This study compares mental health problems and risk and protective factors in HIV-positive, HIV-affected (due to caregiver HIV), and HIV-unaffected children in Rwanda.

**METHODS:** A case-control design assessed mental health, risk, and protective factors among 683 children aged 10 to 17 years at different levels of HIV exposure. A stratified random sampling strategy based on electronic medical records identified all known HIV-positive children in this age range in 2 districts in Rwanda. Lists of all same-age children in villages with an HIV-positive child were then collected and split by HIV status (HIV-positive, HIV-affected, and HIV-unaffected). One child was randomly sampled from the latter 2 groups to compare with each HIV-positive child per village.

**RESULTS:** HIV-affected and HIV-positive children demonstrated higher levels of depression, anxiety, conduct problems, and functional impairment compared with HIV-unaffected children. HIV-affected children had significantly higher odds of depression (1.68; 95% confidence interval [CI] 1.15–2.44), anxiety (1.77; 95% CI 1.14–2.75), and conduct problems (1.59; 95% CI 1.04–2.45) compared with HIV-unaffected children, and rates of these mental health conditions were similar to HIV-positive children. These results remained significant after controlling for contextual variables.


**AUTHORS:** Theresa Betancourt, ScD, MA,a Pamela Scorza, ScD, MPH,b Frederick Kanyanganzi, BS,c Mary C. Smith Fawzi, ScD,de Vincent Sezibera, PhD,f Felix Cyamatare, MD,g William Beardslee, MD,h Sara Stulac, MD,i Justin I. Bizimana, BS,ja Anne Stevenson, MSc,j and Yvonne Kayiteshonga, PhDk

aDepartment of Global Health and Population, Harvard School of Public Health, Boston, Massachusetts; bDepartment of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, New York; cPartners In Health/Inshuti Mu Buzima, Rwinkwavu, Rwanda; dProgram in Infectious Disease and Social Change, Department of Global Health and Social Medicine, Harvard Medical School, Boston, Massachusetts; ePartners In Health, Boston, Massachusetts; fDepartment of Clinical Psychology, University of Rwanda, Butare, Rwanda; gDepartment of Psychiatry, Boston Children’s Hospital, Boston, Massachusetts; hDepartment of Mental Health, Rwinkwavu Hospital, Rwinkwavu, Eastern Province, Rwanda; iFrançois-Xavier Bagnoud Center for Health and Human Rights, Harvard University, Boston, Massachusetts; and jRwanda Biomedical Center, Ministry of Health, Mental Health Division, Kigali, Rwanda

**KEY WORDS**

mental health, child, HIV/AIDS, HIV-affected, HIV-infected, Rwanda

**ABBREVIATIONS**

ART—antiretroviral therapy
CES-DC—Center for Epidemiological Studies Depression Scale for Children
CHW—community health worker
CI—confidence interval
EMR—electronic medical record
SES—socioeconomic status
WHODAS-Child—World Health Organization Disability Assessment Schedule for Children
YSR—Youth Self-Report

(Continued on last page)
HIV poses a direct threat to child and adolescent health, family functioning, and well-being. Given the burden of stigma, poverty, and stressors related to consequences of HIV in the family, the mental health of children affected by HIV is particularly at risk. Research has shown that illness and loss due to HIV/AIDS are associated with parental depression, hopelessness, and risk behaviors, such as drug and alcohol problems.1 HIV-positive children and children affected by HIV (ie, those who have caregivers living with HIV or family members who have died of AIDS) may face greater family stress and conflict2 and increased risk of depression, anxiety, and social withdrawal.7–12 For HIV-affected children, parental illness or death may shift family responsibilities to them at a young age, contributing to school dropout, emotional and behavioral problems, and risky survival strategies, such as exchanging sex for money.13–15 Further perpetuating a cycle of HIV risk and infection.16,17

Although the elevated risks facing HIV/AIDS-affected orphans and vulnerable children are well documented, the risk in HIV-negative children who live with HIV-positive caregivers compared with HIV-positive children and children unaffected by HIV is less clear.18 Child health status, cognitive function, parental health and mental health, stressful life events, and neighborhood disorder have been associated with poor mental health, whereas parent-child involvement and communication, and peer, parent, and teacher social support have been associated with better mental health outcomes.19,20 The objective of this study was to assess the distribution of mental health problems and protective and risk factors in a sample of HIV-positive, HIV-affected, and HIV-unaffected children in Rwanda. The inclusion of all 3 groups allows for a direct comparison of mental health by HIV status. Such research can identify services gaps and needs.

METHODS

Population and Study Design

This study was conducted as a partnership between the Harvard School of Public Health, the Rwandan Ministry of Health (MOH), and Partners In Health/Inshuti Mu Buzima, a nongovernmental organization providing health care in 3 districts in rural Rwanda. The study was implemented within the catchment area of district hospitals in Rwinkwavu (southern Kayonza District) and Kirehe (Kirehe District). These hospitals serve as administrative and referral hubs for 21 district health centers that provide routine antiretroviral therapy (ART), counseling, and testing for individuals living with HIV (ie, individuals with verified HIV infection who are receiving treatment).21,22 At Rwinkwavu and Kirehe Hospitals, an electronic medical record (EMR) system is maintained for all registered patients with HIV infection. Using a case-control study design, we enrolled a sample of 683 children between March 2012 and December 2012. Sampling followed a multiple-step process. First, hospital staff used the EMR to identify known HIV-positive children aged 10 to 17 from Kayonza and Kirehe Districts. This initial list (List A) was then stratified by village, and for each village, a community health worker (CHW) compiled a comprehensive list of all children aged 10 to 17. In Rwanda, CHWs are assigned to track the health of members of a village with approximately 50 households for each CHW. Next, accompagnateurs (specialized CHWs who monitor ART adherence)23,24 were then asked to review the lists and stratify them by HIV status. On review of the lists, the accompagnateurs identified 37 additional HIV-positive children who had not yet been entered into the EMR; these additional children were added to List A. In each village, children with an HIV-positive caregiver or who had a parent known to have died due to complications of AIDS were added to List B, which captured HIV-affected children. The remaining children in the same age range in each village who were known not to have HIV themselves or in their family were defined as “unaffected” and were added to List C. A random number generator was then used to select HIV-affected and unaffected children from Lists B and C in each village where a child living with HIV infection resided who consented to participate, allowing for a case-control design comparing HIV-positive, HIV-affected, and HIV-unaffected children, matching on village to account for geographic differences. Matching on age and gender was not necessary or logistically feasible given the relatively large sample size, which led to approximately equal distribution of these characteristics across groups. If the index HIV-positive child in a village declined participation, no matched participants from Lists B or C were sampled.

We anticipated that the study sample size of 250 subjects in each of the 3 groups (n = 750) would provide 82% power to detect expected group mean differences (0.25 SD; \( \alpha \) level = 0.05).25 Because the number of HIV-positive children in the EMR fell just short of this target (n = 239), the target study population was reduced to 717. Of this number, 683 participated in the study, resulting in a response rate of >95%. This study received approval from the Harvard School of Public Health Office of Human Research Administration and the Rwanda National Ethics Committee. Parental/guardian informed consent and child assent were obtained for all study participants. Children were eligible for the study if they were aged 10 to 17 years and had resided in Kayonza district.
or Kirehe Districts for at least 1 month. For each child, a coresident adult caregiver also was enrolled and asked to report on their own mental health, that of the child, and related factors. Participants were excluded if they were experiencing active psychosis or had a severe cognitive impairment (as identified by study psychologists), compromising their ability to understand the study consent procedures and materials (n = 5). Further detail on sampling is provided in Fig 1.

**Procedures**

Mental health problems, protective factors, and risk factors were assessed in all children and caregivers enrolled. A team of 7 Rwandan research assistants carried out all assessments in Kinyarwanda, the local language, with oversight from the study field coordinators and investigators. All research assistants were trained in research ethics and survey research methods. Interviews were performed in participants’ homes, with child and caregiver interviews conducted concurrently and out of earshot of one another. Data were collected electronically by using Samsung Galaxy GT 15503 smartphones (Samsung Town, Seoul, South Korea) running on an Android platform. Study data were de-identified and uploaded to DataDyne’s episurveyor.org Web site where they were downloaded for analysis.

**Measures**

Constructs reflecting common child and adolescent mental health problems and functional impairments were identified in 2 previous qualitative studies conducted in 2007 and 2009.26,27 These studies used qualitative data to derive local terms for mental health problems and protective resources. Standard mental health measures were then identified via a literature review of measures used to assess similar constructs in children and examined for their fit to local indicators. When a good fit was indicated (by a concordance of at least 50% of items), standard measures were adapted to include local terminology. For culturally unique constructs (such as the Rwandan construct of uburara or “conduct problems”), new scales were constructed by using indicators from qualitative data. All measures were subjected to a thorough forward and backward translation process and a validity exercise among 378 child-caregiver dyads.28,29 Following a process described previously,29 all scales were selected, adapted, and validated by comparing scores to diagnoses by Rwandan psychologists by using a structured diagnostic instrument (the Mini International Neuropsychiatric Interview for Children).30

Functional impairment was assessed using the World Health Organization Disability Assessment Schedule for Children (WHODAS-Child), a measure of functional limitations based on WHO’s International Classification of Functioning, Disability, and Health, Child and Youth Version. The WHODAS-Child is a 36-item self-report assessment of difficulties in 6 domains: understanding and communicating, mobility, self-care, getting along with people, life activities, and participation in society. As shown in a previous article, the WHODAS-Child displayed good psychometric properties in this sample.28 The Center for Epidemiologic Studies Depression Scale for Children (CES-DC),31 which has been previously used in Rwanda,32 was used to capture...
depressionlike problems (*agahinda kenshi* and *kwiheba*), including a range of symptoms, such as hopelessness, having emotional pain (*arababaye ku mutima*), and suicidal ideation. The CES-DC is a commonly used 20-item self-report scale with a 4-point Likert response scale ranging from “not at all” to “a lot.” In our validation study, the CES-DC demonstrated good internal consistency (α = 0.86) and test-retest reliability (r = 0.85).29 Per our validation exercises using the Mini International Neuropsychiatric Interview for Children, a threshold of 30 was used (sensitivity 82%; specificity 72%).

To assess symptoms of constant worry/stress (*guhangayika*), we used the Youth Self-Report (YSR) Internalizing Subscale.33 The YSR Internalizing Subscale has 13 anxious/depressed items and 8 withdrawn/depressed items, with a 3-point Likert scale response format of “not true,” “very true,” or “often true.” Because the YSR internalizing scale did not capture all of the local items in the construct of *guhangayika*, we added 10 additional items based on local symptoms from qualitative data. This adapted YSR anxiety/internalizing scale demonstrated good internal consistency (α = 0.93) and test-retest reliability (r = 0.85) in our validation study. A threshold of 24 was used, with a sensitivity of 68% and a specificity of 63%, which was significantly associated with functional impairments.28

Because no standard scale matched 50% or more of the qualitative data on indicators of conduct problems (*uburere bwiza*) in this setting, the data were used to construct an 11-item self-report scale. This allowed for conduct problems to be identified in a manner that reflected cultural and context-specific rule-breaking behaviors. Response options were on a 4-point Likert scale from “never” to “often.” This locally derived scale displayed good internal consistency (α = 0.90) and adequate test-retest reliability (r = 0.58) in our validation study. A threshold of 0.55 was used, with a sensitivity of 71% and a specificity of 68%, and was significantly associated with functional impairments.

Other variables included were: parenting, measured by a locally derived scale comprising 16 items to capture the concept *uburere bwiza* (good parenting), that also included 16 additional items from the Parental Acceptance and Rejection Questionnaire,34 which displayed good internal consistency (α = 0.80); harsh punishment, measured by a 12-item scale adapted from the United Nations Children’s Fund’s Multiple Indicator Cluster Survey25 (α = 0.78); daily hardships, measured by an adapted version of the Post-War Adversities Index (18 items), which had been used previously in sub-Saharan Africa38 and included items such as food insecurity and illness in the family (internal consistency in this sample α = 0.80); social service access, including medical and social support services, reported by caregivers and measured by 17 items adapted from the SAFE child protection checklist15 (α = 0.70); and HIV-related stigma, measured by 13 items adapted from the Young Carers Project.37 Frequency of experiencing interpersonal interactions indicative of HIV-related stigma was reported on a 4-point Likert scale of “never,” “sometimes,” or “often/a lot.” When a stigma item was endorsed, children were then asked to report why they thought it happened. Caregiver assessments also included the Hopkins Symptoms Checklist-25,38 a measure of depression and anxiety symptoms that had been previously validated for use among adults in Rwanda39 and displayed good internal consistency in this sample (α = 0.94).

**Data Analysis**

Multiple regression analysis was used to examine relationships between HIV status and key outcomes of interest. Mental health problems were regressed on child HIV status per child and parent-reported outcomes (see Tables 1 and 2). Model 1 is the unadjusted model. Model 2 adjusts for child age (measured continuously), gender, school attendance, whether the child’s mother was the primary caregiver, and socioeconomic status (SES), measured by a family wealth index created using items from the 2010 Rwandan Demographic and Health Survey.40 Model 3 includes additional contextual variables that could account for differences in child mental health: caregiver mental health, daily hardships, death of a caregiver, social service access, harsh punishment, and stigma. For ease of comparison, the marginal means and 95% confidence intervals (CIs) were computed based on the regression coefficients and CIs. Because of the extremely low proportion of missing data (<1% for all measures), participants with missing data were omitted from the analysis using list-wise deletion. Logistic regression was used to estimate odds ratios of mental health problems in HIV-positive and HIV-affected children, compared with HIV-unaffected children. Analyses were performed with SAS version 9.2 (SAS Institute, Inc., Cary, NC).

**RESULTS**

**Mental Health**

The final sample contained a total of 683 children, 218 of whom were HIV-infected, 228 HIV-affected, and 237 HIV-unaffected. A summary of participants screened and enrolled appears in Fig 2. Demographic characteristics of participants are shown in Table 3. Across all mental health variables, HIV-affected children demonstrated levels of problems that were significantly higher than HIV-unaffected children and not statistically different from HIV-positive children, both in the youth self-report and caregiver report (Tables...
### TABLE 1 Regression Coefficients (SE) for Mental Health Problems Regressed on Child HIV Status, Child Reports, n = 683

<table>
<thead>
<tr>
<th>Contextual Variables and Family</th>
<th>CES-DC</th>
<th>YSR-Anxiety/Internalizing Conduct Problems</th>
<th>WHOQOL-Child</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>26.84* (1.20)</td>
<td>15.53* (6.33)</td>
<td>8.89 (5.68)</td>
</tr>
<tr>
<td>HIV-positive</td>
<td>2.65 (1.72)</td>
<td>1.59 (1.72)</td>
<td>-0.88 (1.67)</td>
</tr>
<tr>
<td>HIV-affected</td>
<td>5.66* (1.70)</td>
<td>5.24* (1.66)</td>
<td>2.06 (1.49)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.99* (0.33)</td>
<td>0.52 (0.30)</td>
<td>-0.01** (0.01)</td>
</tr>
<tr>
<td>Female</td>
<td>1.92 (1.38)</td>
<td>1.22 (1.21)</td>
<td>0.09* (0.03)</td>
</tr>
<tr>
<td>SES</td>
<td>-2.98** (0.70)</td>
<td>-1.07 (0.63)</td>
<td>-0.03 (0.02)</td>
</tr>
<tr>
<td>Education</td>
<td>-3.33 (2.52)</td>
<td>-2.56 (2.20)</td>
<td>-0.11 (0.06)</td>
</tr>
<tr>
<td>Primary caregiver is mother</td>
<td>-3.03* (1.45)</td>
<td>-2.07 (1.29)</td>
<td>-0.06 (0.04)</td>
</tr>
<tr>
<td>Parental death</td>
<td>-0.68 (1.41)</td>
<td>0.05 (0.03)</td>
<td>-0.02 (0.02)</td>
</tr>
<tr>
<td>Daily hardships</td>
<td>-1.05** (0.23)</td>
<td>0.43** (0.07)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td>Social service access</td>
<td>-2.25 (1.00)</td>
<td>-0.64 (0.33)</td>
<td>-0.04 (0.03)</td>
</tr>
<tr>
<td>Caregiver HSCL</td>
<td>3.59** (0.99)</td>
<td>0.05* (0.02)</td>
<td>0.06 (0.03)</td>
</tr>
<tr>
<td>Harsh punishment</td>
<td>16.34** (2.94)</td>
<td>0.43** (0.07)</td>
<td>0.68*** (0.09)</td>
</tr>
<tr>
<td>Stigma</td>
<td>7.27** (1.32)</td>
<td>0.22* (0.03)</td>
<td>0.04 (0.02)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.02</td>
<td>0.06</td>
<td>0.30</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.01</td>
<td>0.05</td>
<td>0.29</td>
</tr>
</tbody>
</table>

*P < .001, **P < .01, *P < .05. HSCL, Hopkins Symptoms Checklist.

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**Contextual Variables and Family Dynamics**

Several contextual variables differed at the $P < .05$ level of significance in the various levels of HIV experience among the 3 groups of children at variance. HIV-positive children reported experiencing greater levels of stigma than HIV-affected children, who were not affected by HIV. HIV-affected and HIV-positive children on the death of a caregiver (odds ratios of 1.78 and 6.26, respectively) compared with unaffected children, and HIV-affected and HIV-positive children were more likely to have unexperienced greater levels of vulnerability in HIV-positive children and HIV-negative children. In addition, HIV-positive children also reported experiencing greater levels of stigma than HIV-negative children at the $P < .05$ level of significance. HIV-positive children also had significantly higher odds of having daily hardships and harsh punishment than HIV-negative children. However, only HIV-affected children, reported greater levels of stigma than HIV-positive children.

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### Notes

1. Adjusted estimates for age, gender, education, primary caregiver, and SES provided in Supplemental Table 5.
2. Estimates adjusted for age, gender, education, primary caregiver, and SES, and primary caregiver displayed the same pattern of significant effects as unadjusted estimates. As unadjusted estimates, significant demographic effects on both parent and child reports were not different at the $P < .05$ level of significance. For instance, HIV-affected children also had significantly higher odds of experiencing greater levels of vulnerability in HIV-positive and HIV-affected children than HIV-negative children.

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**References**

- For instance, HIV-affected children also had significantly higher odds of experiencing greater levels of vulnerability in HIV-positive and HIV-affected children than HIV-negative children.

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**Significance Levels**

- $P < .001$ (high significance)
- $P < .01$ (moderate significance)
- $P < .05$ (low significance)
### TABLE 2 Regression Coefficients (SE) for Mental Health Problems Regressed on Child HIV Status, Parent Reports \(n = 683\)

<table>
<thead>
<tr>
<th>Regression Coef</th>
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<th>WHODAS-Child</th>
</tr>
</thead>
<tbody>
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<td>Model 2</td>
<td>Model 3</td>
<td>Model 1</td>
</tr>
<tr>
<td>Intercept</td>
<td>27.66** (1.22)</td>
<td>15.16* (6.48)</td>
<td>5.26 (5.86)</td>
</tr>
<tr>
<td>HIV-positive</td>
<td>2.41 (1.76)</td>
<td>2.94 (1.76)</td>
<td>0.73 (1.74)</td>
</tr>
<tr>
<td>HIV-affected</td>
<td>4.08* (1.74)</td>
<td>3.85* (1.74)</td>
<td>0.09 (1.52)</td>
</tr>
<tr>
<td>Age</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Female</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SES</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Education</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Primary caregiver is mother</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>Parental death</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Daily hardships</td>
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<td>—</td>
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<tr>
<td>Social services access</td>
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<td>—</td>
</tr>
<tr>
<td>Caregiver HSCL</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>Harsh punishment</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stigma</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.01</td>
<td>0.07</td>
<td>0.33</td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>0.01</td>
<td>0.06</td>
<td>0.31</td>
</tr>
<tr>
<td>( n )</td>
<td>683</td>
<td>679</td>
<td>666</td>
</tr>
</tbody>
</table>

*HSCL, Hopkins Symptoms Checklist.*

DISCUSSION

Although the global AIDS response has increased access to ART for HIV-positive children, the needs of children more broadly affected by HIV because of living with an HIV-positive caregiver or who had a caregiver die of AIDS present a burden of psychological distress comparable to children both infected and affected by HIV. Furthermore, children affected by HIV because of living with an HIV-positive caregiver may experience comparable levels of psychological distress. Children facing HIV/AIDS-related stigma, presenting another potential vulnerability and important indicator of the current study. The current study illuminates important vulnerabilities and the differences observed between the groups on the mental health outcomes in this analysis.

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mental health in addition to child HIV status makes sense in the context of Rwanda, given the historical and economic context of the 1994 genocide.\textsuperscript{45,46} Parental mental health and economic security need to be considered when developing psychosocial programs for children affected by HIV/AIDS.

A number of study limitations must be noted. First of all, it was not ethically or logistically feasible to administer a test of HIV seropositivity at the time of assessment for all individuals enrolled in the study. In Rwanda, testing is not compulsory, but there are robust systems of routine HIV testing widely available. However, if an individual had chosen not to be tested or had tested HIV-positive in a health center outside the catchment area and not disclosed it to a CHW or \textit{accompagnateur} in their village, then the CHWs would not know the HIV status of an individual and it would not be recorded in the EMR. This potential for error in our sampling strategy is most relevant to households designated as “unaffected by HIV,” as there would be more likelihood in those households that someone could be HIV-positive and unaware. On the other hand, in Rwanda, testing also is done widely among pregnant women and strongly emphasized for all households in which any member has been diagnosed with HIV. This gives us confidence in the HIV status of the index HIV-positive child and also the HIV-affected children, as all of those children had been tested in our study at least once. There could certainly have been cases where a child designated as unaffected or HIV-negative (but affected) became seropositive, but given the age of our sample and dynamics of HIV infection in Rwanda,\textsuperscript{47,48} these cases are estimated to be relatively few and not systematically ascribed to either the unaffected or affected groups.

### Generalizability

The Government of Rwanda’s Ministry of Health provides a robust level of health and social programs for HIV-positive children, including a national health insurance scheme, well-developed HIV care, and a growing system of mental health services. Even higher levels of mental health problems and risk factors may be observed in other resource-limited settings where health services are less robust. Nonetheless, our findings indicate that even in an increasingly supportive context in Rwanda, HIV-affected youth contend with serious threats to their mental health, comparable to HIV-positive youth. As services for HIV-positive children improve globally, additional awareness

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**TABLE 3. Participant Demographics, n = 683**

<table>
<thead>
<tr>
<th></th>
<th>HIV-Positive, n = 218</th>
<th>HIV-Affected, n = 228</th>
<th>HIV-Unaffected, n = 237</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age, y (SD)</td>
<td>13.79 (2.27)</td>
<td>13.46 (2.16)</td>
<td>13.57 (2.14)</td>
</tr>
<tr>
<td>Mean SES index (SD)</td>
<td>0.03 (1.02)</td>
<td>-0.07 (0.88)</td>
<td>0.04 (1.09)</td>
</tr>
<tr>
<td>Boys, n (%)</td>
<td>108 (50)</td>
<td>111 (49)</td>
<td>111 (47)</td>
</tr>
<tr>
<td>Mother is primary caregiver, n (%)</td>
<td>97 (44)</td>
<td>150 (66)</td>
<td>161 (68)</td>
</tr>
<tr>
<td><strong>Caregivers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age, y (SD)</td>
<td>46.37 (14.10)</td>
<td>45.01 (8.68)</td>
<td>44.70 (10.68)</td>
</tr>
<tr>
<td>Men, n (%)</td>
<td>42 (19)</td>
<td>44 (19)</td>
<td>53 (22)</td>
</tr>
</tbody>
</table>

Parents of HIV-positive children were significantly older than parents in the affected group. HIV-positive children were significantly less likely than those in the other 2 groups for the mother to be the main caregiver.
is needed for children who live with HIV-positive caregivers, along with ongoing attention to children orphaned by AIDS. As the availability of ART increases and the lives of HIV-positive caregivers are extended, priority attention is needed to ensure that mental health and social services programming and policy initiatives for HIV-affected children are on par with that for HIV-positive children.

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