

Original Article

Sexual Abuse and Sexually-Transmitted HIV/AIDS in Jamaican Children and Adolescents Aged 6-19 Years

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Abstract

Introduction: Risk factors and outcomes of sexually-acquired human immunodeficiency virus infection were characterized in Jamaican children and adolescents.

Methodology: Management was carried out by multidisciplinary teams in Infectious Diseases clinics during August 2003 through February 2019 using modified World Health Organization HIV criteria.

Results: There were 78 clients, aged 6 to 19 years, with females:males = 4:1 ($p < 0.05$). Sexual-initiation occurred in 60%, 47 before < 16 years (median 13 years, with four < 10 years; females:males = 7:1). Sexual-initiation preceded HIV diagnosis in all cases (median 2 years). Secondary education 93% (69/77) and living with non-parental relatives 17% (13/78) were associated with early sexual-initiation ($p < 0.042$); as was later imprisonment in 6% (3/52). Other sexually transmitted infections 36% (19/53) were associated with sexual-initiation ≥ 16 years ($p < 0.01$). Risks for ongoing HIV-transmission included infrequent condom use 74% (39/53), body-piercings 50% (24/48), illicit drug use 37% (28/76), tattoos 36% (19/52), transactional sex 14% (7/53) and pregnancy 56% of girls. 77% (59/77) had Centres for Diseases Control's Category A HIV infection; 82% (61/75) initiated anti-retroviral therapy; 75% (56/75) had first-line drugs, with helper T lymphocyte counts ≥ 500 cells/ μ L in 61% (48/78) and HIV viral load of < 1,000 copies/ μ L in 63% (40/64). Complications included dermatological 39% (20/52), respiratory 25% (13/52) and neurological 15% (8/52). Early sexual initiation was associated with depression 43% (33/76; $p < 0.004$) and suicidal attempt or ideation 23% (18/77; $p < 0.096$). Four (5%) died.

Conclusions: Sexually transmitted HIV/AIDS in children and adolescents should preempt prompt medical, legal and psychosocial interventions.

Key words: Adolescent; child abuse; sexual abuse; sexual assault; HIV/AIDS; STI's; Jamaica.

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Introduction

Globally, Human Immune Deficiency Virus (HIV) infection from vertical transmission is decreasing, with concurrent increased sexually-transmitted HIV infections in adolescents [1-3]. In 2019, 1,740,000 adolescents aged 10-19 years were living with HIV, with female to male ratio of 1.35:1 [1]. In 2019 alone, there were 170,000 adolescents with newly-acquired HIV-infections, females:males were 3.25:1 [1]. Of these, 34,000 adolescents died of AIDS-related causes

in 2019, females:males, 1:1 [1]. Adolescence is characterized by exploration, experimentation and risk-taking behaviors which can lead to sexual acquisition of HIV [4-17]. Whilst child and adolescent sexual abuse/assault/statutory rape remains under-investigated and under-reported with respect to HIV infection, cases of HIV acquisition in children following suspected, or confirmed sexual abuse have been reported, including some resulting in criminal prosecutions [18-24].

Jamaica is a middle-developing, Caribbean island-nation, of 2.97 million in 2016. Standardized treatment and care in the Jamaica Pediatric Perinatal and Adolescent HIV/AIDS Program (JaPPAAIDS) and public access to antiretroviral therapy (ART), resulted in decreased vertical HIV-transmission from a peak of 25-30% to < 2% during 2014-2015 [25-29]. Most HIV/AIDS cases in children and adolescents were vertically-transmitted, with few sexually-acquired cases observed [30-34].

We describe the clinical epidemiology and outcomes of a cohort of children and adolescents with sexually-acquired HIV-infection at two urban JaPPAAIDS Child and Adolescent Infectious Disease clinics. We determined their socio-demographic factors, the behaviors contributing to HIV-acquisition and ongoing transmission, clinical manifestations and outcomes. Results were shared with stakeholders to facilitate patient advocacy and guide national policy.

Methodology

This study characterized children and adolescents with sexually-acquired HIV within the Greater Kingston Metropolis, who were enrolled prospectively in the JaPPAAIDS clinics at the University Hospital of the West Indies (UHWI) and the Comprehensive Health Center, during August 2003 to February 2019 [25-29].

Management was by a multidisciplinary team of pediatricians, psychologist, social worker and a research nurse manager. Reporting occurred to the National AIDS Program, the Child Development Agency and Center for Investigation of Sexual Offences and Child Abuse [35].

A list of all patients with sexually-acquired HIV was obtained from the JaPPAAIDS clinics’ databases. Medical records were reviewed and those aged < 24 years included. A data extraction sheet recorded information, without personal identifiers, on demographics, risky behaviors, clinical status and ART. Complications secondary to HIV/AIDS and its treatment were abstracted. Clients with vertically transmitted and transfusion-related HIV infection were excluded.

Descriptive analyses were performed. Data were analyzed using the Statistical Program for Social Sciences (SPSS version 20). Comparisons were made between two groups, using Students t test for normally distributed parametric data. Chi-square test was used for categorical variables. Statistical significance was taken at *p* < 0.05. Research was conducted according to the Helsinki Declaration and approval was granted from the Ethics Committees of the University of the West Indies, Jamaican Ministry of Health and South East Regional Health Authority.

Table 1. Socio-demographic features of sexually acquired HIV infected clients (< 25 years) by Age of Consent seen at Comprehensive Health Center and UHWI Paediatric and Adolescent Infectious Disease Clinic, August 2003- February 2019.

Variable	Below age of consent < 16 years old n (%)	At / above age of consent ≥ 16 years old n (%)	Total n (%)	<i>p</i> value
Gender (n = 78)				
Male	6 (12.8)	10 (32.1)	16 (20.5)	0.048
Female	41 (87.2)	21 (67.7)	62 (79.5)	
Age at Diagnosis (n = 78)				
5-9	2 (4.3)	0 (0)	2 (2.6)	< 0.001
10-14	27 (57.4)	0 (0)	27 (34.6)	
15-19	18 (38.3)	31 (100)	49 (62.8)	
Education (n = 77)				
Secondary	45 (95.7)	24 (80.0)	69 (92.9)	0.03
Tertiary	2 (4.3%)	6 (20.0)	8 (10.4)	
Employment at the time of the study (n = 77)				
Employed			18 (23.4)	0.074
Unemployed			48 (62.3)	
Not applicable			11 (14.3)	
Person living with (n = 78)				
Parent	18 (38.3)	18 (58.1)	36 (46.2)	0.042
Relative	8 (17.0)	5 (16.1)	13 (16.7)	
Friend	1 (2.1)	0 (0)	1 (1.3)	
Children home	11 (23.4)	0 (0)	11 (14.1)	
Other	9 (19.1)	8 (25.8)	17 (21.8)	

Table 2. HIV risk behaviours of sexually acquired HIV infected clients (< 25 years) by Age of Consent at Comprehensive Health Center and UHWI Paediatric and Adolescent Infectious Disease Clinic, August 2003- February 2019.

Variables	Below age of consent	At / above age of consent	Total n (%)	p-value
	< 16 years old n (%)	≥ 16 years old n (%)		
Unprotected sex (n = 53)	26 (72.2)	13 (76.5)	39 (73.6)	0.743
Transactional sex (n = 53)	5 (13.9)	2 (12.5)	7 (13.5)	0.892
History of STIs (n = 53)	9 (25.0)	10 (62.5)	19 (36.5)	0.010
History of incarceration (n = 52)	3 (8.3)	0 (0)	3 (5.8)	0.234
Drug use (n = 76)	18 (38.3)	10 (34.5)	28 (36.8)	0.738
Tattoo (n = 52)	12 (38.7)	7 (33.3)	19 (36.5)	0.693
Piercing (n = 48)	16 (57.1)	8 (40.0)	24 (50)	0.242

STIs: Sexually Transmitted infections.

Table 3. Clinical data of sexually acquired HIV infected clients (< 25 years) by Age of Consent at Comprehensive Health Center and UHWI Paediatric and Adolescent Infectious Disease Clinic, August 2003- February 2019.

Variable	Below age of consent	At / above age of consent	Total n (%)	p-value
	< 16 years old n (%)	≥ 16 years old n (%)		
CDC category (n = 77)				
A	34 (72.3)	25 (83.3)	59 (76.6)	0.494
B	4 (8.5)	1 (3.3)	5 (6.5)	
C	9 (19.1)	4 (13.3)	13 (16.9)	
Last documented CD4 count (cells/μL) (n = 48)				
< 200	4 (12.1)	4 (26.7)	8 (16.7)	0.017
200-499	8 (24.2)	8 (53.3)	16 (33.3)	
≥ 500	21 (63.6)	3 (20.0)	24 (50.0)	
Last documented HIV viral load (copies/mL) (n = 64)				
≤ 50	10 (24.4)	6 (26.1)	16 (25.0)	0.923
51-1,000	9 (22.0)	6 (26.1)	15 (23.4)	
1,001-10,000	7 (17.1)	2 (8.7)	9 (14.1)	
10,001- 100,000	13 (31.7)	8 (34.8)	21 (32.8)	
> 100,000	2 (4.9)	1 (94.3)	3 (4.7)	
Current ART therapy (n = 75)				
None	9 (20.0)	5 (16.7)	14 (18.7)	0.268
1st line	31 (68.9)	25 (83.3)	56 (74.7)	
2nd line	2 (4.4)	0 (0.0)	2 (2.7)	
3rd line	3 (6.7)	0 (0.0)	3 (4.0)	
Self-reported adherence to ART (since last visit) (n = 74)				
Always	10 (22.7)	14 (46.7)	24 (32.4)	0.148
Sometimes	25 (56.8)	11 (36.7)	36 (48.6)	
Never	1 (2.3)	0 (0.0)	1 (1.4)	

HIV: Human Immunodeficiency Virus; CD4: Helper T Lymphocyte Cell Count; ART: antiretroviral therapy.

Table 4. Complications noted among sexually acquired HIV infected clients (< 25 years) by Age of Consent at Comprehensive Health Center and UHWI Paediatric and Adolescent Infectious Disease Clinic, August 2003- February 2019.

Variable	Below age of consent	At / above age of consent	Total n (%)	p-value
	< 16 years old n (%)	≥ 16 years old n (%)		
Complications				
Respiratory (n = 52)	9 (25.0)	4 (25.0)	13 (25.0)	1.0
Neurological (n = 52)	7 (19.4)	1 (6.3)	8 (15.4)	0.224
Dermatological (n = 52)	18 (50.0)	2 (12.5)	20 (38.5)	0.010
Renal (n = 52)	0 (0.0)	0 (0.0)	0 (0.0)	-
Other (n = 52)	26 (72.2)	8 (50.0)	34 (65.4)	0.12
Psychological effects				
Depressive symptoms (n = 76)	26 (56.5)	7 (23.3)	33 (43.4)	0.004
Suicidal ideation (n = 77)	14 (29.8)	4 (13.3)	18 (23.4)	0.096

Results

There were 78 clients enrolled, with age range 6 to 19 years and female:male predominance of 4:1 ($p < 0.05$) (Table 1). “Sexual initiation”, or first coitarche, occurring before 16 years (which is the “legal age of consent” in Jamaica) was reported in 60%, 47 (Female:Male = 7:1); while 39%, 31 (Female:Male = 2:1) reported sexual initiation after ≥ 16 years. Median age of sexual initiation was 13 years (range 6 to 17) preceding HIV diagnosis in all cases (median 15 years, range 6 to 19 years). Among 78 clients, 48% (38) reported "agreeing" to their first sexual contact and 46% (36) said sexual initiation was “forced”; 30% (23) were aged ≤ 14 years and 23% (18) reported their initiating sexual perpetrator/partner was ≥ 16 years. Among 78 clients, 85% (67) identified as heterosexual, 8% (6) bisexual and 4% (3) homosexual (3 did not identify).

High school education was significantly associated with early sexual initiation (93%) ($p < 0.03$), although 50% failed high school completion; 8 (10%) had tertiary education. Among the employable, 48 (62%) were unemployed and 18 (23%) were employed (Table 1). Living with a caregiver other than parents (54.4%), was significantly associated with HIV acquisition in those with early sexual initiation ($p < 0.03$).

Risky behaviors for ongoing acquisition of other sexually transmitted infections (STI’s) included unprotected sex (74%), body piercings (50%), illicit drug use (37%) [viz: alcohol (37%), marijuana (25%) and cigarette/tobacco (17%)], tattoos (37%) and transactional sex (14%). None reported intravenous drug abuse. Incarceration (6%) later occurred only in those with underage sexual activity, while reported history of other STI’s in 37% was more likely in those who commenced sexual activity above the legal age of consent ($p < 0.01$) (Table 2). Fifty-six percent of the

girls were pregnant at least once. Immunizations records revealed nine patients (11.4%) receiving Hepatitis B vaccines. None received Human Papilloma Virus vaccines.

The clinical data revealed the majority (77%) were classified as CDC Category A, i.e. mild HIV infection (Table 3). Antiretroviral therapy had started in 82%, most (75%) of whom were on first-line therapy. The last documented helper T lymphocyte cell (CD4) count was ≥ 500 cells/ μ L in 50%, with 45% of patients having an HIV viral load of $< 1,000$ copies/mL. Consistent adherence to ART’s was reported in 32% of those treated, although for 49% adherence was classified as “sometimes” (Table 3).

Common complications involved dermatological lesions in 39% (Table 4). These included chronic dermatitis (25%), perineal warts (23%) seborrheic dermatitis (11%), *tinea corporis* (8%), *tinea capitis* (4%) and *Molluscum contagiosum* (4%). Respiratory illnesses were noted in eleven (25%) with bronchopneumonia in seven (13%), tuberculosis (8%) and bronchiectasis, *Pneumocystis jiroveci* pneumonia and lymphocytic interstitial pneumonia in 2%, each. Neurological complications were seen in eight (15%) patients, with three cases each (6%) of meningitis and seizures. The remaining 34 patients had lymphadenopathy (32%), oropharyngeal candidiasis (13%), wasting syndrome (11%), perineal abscess (11%), failure to thrive (8%), septicemia (6%), immune reconstitution syndrome (4%) and disseminated gonococcal infection (4%). Early sexual initiation was associated with depression in 43% (33/76; $p < 0.004$) and suicidal attempt/ideation in 23% (18/77; $p < 0.096$).

Fifty three (69%) patients were known to be alive at the time of data abstraction. Twenty two (29%) had defaulted. Four (5%) HIV-attributable deaths resulted

Table 5. Sexually HIV-infected Children and Adolescents with HIV-attributable Mortality.

Age (Yrs)	Sex	HIV diagnosis	Risk factor	Treatment	Outcomes and complications leading to death
15	M	Cryptococcus, <i>Neoformans</i> , meningitis	Sexual abuse by uncle from age 9 years	ART social and psychological interventions	Seizures, central nervous system toxoplasmosis, Cytomegalovirus retinitis and panuveitis, <i>Pneumocystis jiroveci</i> pneumonia, tuberculosis
14	F	Routine antenatal screen	Incest and rape, early teen pregnancy, genital warts	ART, placement in state care, with infant in separate facility, psycho-social interventions	Conduct disorder, suicidal attempts, absconding from home, non-adherence, suicidal ideation, clinic default $\times 5$ years, <i>Pneumocystis jiroveci</i> pneumonia, HIV wasting syndrome, oesophageal candidiasis, clinical immunological, HIV virological failure
13	F	Medico-legal evaluation for sexual abuse since age 8 years	Incest, rape, diagnosed with HIV at age 11 years	ART, placement in children’s home	Depression, suicidal attempts, absconded from home, unprotected sex with multiple sexual partners, substance abuse and misuse, nonadherent to ART and care, <i>Pneumocystis jiroveci</i> pneumonia, persistent vaginal discharge, vaginal warts.
16	F	Routine antenatal screen		ART	Non-adherence, anemia, oropharyngeal candidiasis, HIV wasting syndrome, depression, defaulted from clinic, HIV-attributable complications

from complications of non-adherence to ART's and care (Table 5).

Discussion

This prospective cohort of 78 children and adolescents with sexually-acquired HIV infections manifests several overlapping features of previous reports [19-24]. There was an early age of sexual initiation of < 16 years in 60% [19-24]. Forty six percent of our cohort did not give consent for their coitarche. Forced coitarche was perpetrated by males aged ≥ 16 years [19-24]. By Jamaican laws, children aged < 16 years cannot "consent" to sexual activity and hence the adult offender committed "child sexual abuse/assault/incest/statutory rape". Children and adolescents are vulnerable and may easily be preyed upon by older men, who force them into sexual intercourse [7,19-24,32-34]. Sexual abuse by known perpetrators, including family maybe common, as children trust these individuals [8-10,19-21,32-34]. As children may not understand and blame themselves for the act perpetrated against them, sexual-abuse maybe unreported [8-10,19,20,36,37]. Latin American and Caribbean meta-analyses revealed a lack of recent data regarding prevalence of violence against children and adolescents [36]. Lindengren reported 26 of 9,236 children with HIV/AIDS in the USA were sexually-abused; this is most likely an underestimate, as two million allegations of sexual-abuse are investigated there, annually [23]. Canada noted a 50% increase in child sexual abuse cases during 1998-2008 [9]. Whilst Africa has recorded the highest rates of child sexual abuse, the lowest rates are from Europe [8]. In Jamaica, 84% of youth were sexually-experienced by age 20 years [6]. At first coitus, 70% of adolescents had an older partner and most agreed to their first sexual encounter [6,7], although 9% of boys and 11% of girls said they disagreed but "did not say anything" [6].

We report that 74% of this cohort had engaged in unprotected sex with only 25% reporting consistent condom usage [5,19-24]. Acquisition of condoms by healthy Jamaican teens is discouraged as they may be seen as promiscuous [38]. Decreased sexual pleasure and insistence on condom use is viewed negatively by partners and fidelity maybe questioned. In the USA, coitarche before age 14 years is reportedly associated with condom use in 68% of females and 80% of males [8]. Caribbean surveys identified 56% of girls and 79% of boys engaging in sexual activity before age 14 years; 38% of those aged 13 to 15 years, denied using a condom at last sexual intercourse [10]. Among

sexually-active Jamaican high-schoolers, prevalence of condom use during last sex act was 52% [6].

Transactional sexual intercourse in 14% of this cohort was self-initiated for monetary and materialistic gain, a known risk for child sexual abuse and HIV-infection [19]. Transactional sexual initiation of teens may also result from parental exploitation, for income generation to support the household [19]. A high proportion of Jamaican girls, aged 10 to 19 years are having sex with older men for financial gain [7]. Teens are limited in decision-making, negotiating condom use and are at high risk for physical abuse. Transactional sex is stigmatized and illegal in the Caribbean [12]. Among sexually-experienced adolescents, many males had their first sexual experience with a commercial sex worker, or a casual friend.

This study of sexually HIV-infected youth reports a female:male predominance of 4:1 overall, and increased to > 7:1 for those aged < 16 years. A similar gender disparity has been observed globally and in South Africa [1,39]. As adolescents are given "syndromic-STI-management" and not tested routinely for HIV in Jamaica, this suggests the larger problem of undiagnosed asymptomatic sexually HIV-infected youth [12]. Thirty seven percent of the cohort was diagnosed with an STI-coinfection, similar to 33% in Gellert's series [21]. Gonococcal infections are linked with subsequent HIV infection for both sexes [40]. Adolescents attending an STI clinic in Jamaica, had repeated STI's (33%), teenage pregnancy (13%), HIV-coinfection (1.2%) and syphilis (1.2%) [16]. Here, 60% of our HIV-infected girls were pregnant, the higher proportion potentially reflecting their identification during antenatal screening.

Drug-use was commonly reported in 37% of this HIV-infected population. Alcohol consumption in large quantities increases high-risk sexual behaviors, including unprotected sex, multiple sexual partners, sex with high-risk partners and transactional sex [14]. Among Jamaican high-schoolers, lifetime prevalence of alcohol use was 64%, while 22% consumed alcohol, or used drugs before their last sexual intercourse [13].

Body-piercing and tattoos occurred in 50% and 37%, respectively. This industry is unregulated in Jamaica and the Caribbean and the link to HIV-transmission is challenging to establish because these clients are also sexually-active [41].

While most of our HIV-infected children and teens lived with parents, others reported unstable living environments and frequent movement between family and friends, which has been significantly associated with HIV-acquisition among underage clients

elsewhere [19]. HIV-related stigma makes social support more essential and increases the need for family support and a good parent-child relationship. Half of the respondents in a Sub-Saharan African survey highlighted the importance of community support for HIV-infected adolescents, fostering acceptance, healthy decisions and adherence to ART's [42]. "Eve for Life" in Jamaica supports social and psychological aspects of adolescent girls living with, or at risk for HIV. Though most clients in our study were enrolled in secondary schools approximately half were "drop-outs", due to financial instability, school truancy, misconduct and expulsions, with high unemployment rates.

Seventy seven percent of the HIV-infected youth in our study were categorized as CDC category A. Half of the cohort had CD4 cells/ μ L count of ≥ 500 and an acceptable HIV viral load, with 82% on ART. Optimal ART adherence correlated with HIV viral load $< 1,000$ copies/mL in 48%. Non-adherence correlated positively with missing appointments and increasing age of the child in JaPPAIDS clinics [17]. As teens assume autonomy, adherence diminishes leading to increase in drug resistance, exposure to multiple ART regimes and frequent drug-related and clinical complications. Many had dermatological, neurological, respiratory and other complications reflecting immune-compromised states and unlike other series, we report HIV-related deaths [18-24].

Adverse psychological effects of sexually-acquired HIV were apparent with 23% of our study population having suicidal attempts/ideation and 43% having clinical depression. Sexually-abused children are also recognized to have these adverse psychological effects [43,44]. Early and ongoing psychological intervention is therefore needed in HIV-infected teens. Psychologists, social workers and the Nurse Managers in JaPPAIDS clinics provide an outlet for teens to talk about ongoing problems and offer emotional support.

The WHO's seven principles to prevent violence against children and adolescents could be enforced [45]. These include implementation and enforcement of laws, establishing appropriate norms and values, providing a safe environment with parental/caregiver support, establishing income and economic strengthening, providing response and support services, and education and life skills.

Conclusions and recommendations

We report Jamaican children and adolescents who contracted HIV through unprotected sexual contact, including through childhood sexual

exploitation/violence. Inconsistent condom use, transactional sex and drug-use were reported, associated with HIV acquisition as well as onward transmission. These children and adolescents exhibited difficulty coping with their illness, psychological mal-effects, non-adherence and HIV-attributable morbidity and mortality.

Measures must be implemented to prevent child sexual abuse and sexually-transmitted HIV in children and youth. Thorough medico-legal investigations must be done and perpetrators prosecuted. Victims must be managed appropriately, referred to the oversight legal agencies, linked to treatment and care and assisted to cope with their illness and engage in safe sexual practices.

Appendix

The following terms were defined: **Transactional sex:** a relationship/partnership with an exchange of gifts, or money for sexual favors. **Employable:** a person who is ≥ 15 years of age, including persons not currently enrolled in school. **Adherence:** the extent to which patients take their medications as prescribed by their health care providers, assessed by self-reporting. **Suicidal ideation:** thinking about or an unusual preoccupation with suicide which range from a detailed plan to a fleeting consideration and does not include the act of killing. **Depressive symptoms:** presence of symptoms of depression with evidence of social dysfunction, as also evaluated by a psychologist and/or psychiatrist. **Sexual assault:** illegal sexual contact that usually involves force upon a person without consent or is inflicted upon a person who is incapable of giving consent because of age or physical or mental incapacity, or who places the assailant in a position of trust or authority. **Statutory rape:** sexual relations involving someone below the legal "age of consent"; sixteen years in Jamaica.

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Authors' contributions

Dr Kadine Orrigio contributed to all aspects of the development of this paper, which was the subject of her doctoral thesis, which she wrote and was accepted, in support of her Doctorate in Pediatric Medicine Degree from the University of the West Indies, Mona Campus, Jamaica, W.I. Prof Russell Pierre, Dr Diahann Gordon-Harrison and Dr Kaye Lewis O'Connor – revised several reiterations of the manuscript and made relevant comments into its editorial content.

Dr Georgiana Gordon-Strachan – analyzed the data, performed statistical tests, revised several reiterations of the manuscript and made relevant comments into its editorial content.

Prof Celia Christie – originated the idea for the thesis and the manuscript, supervised Dr Orrigio's DM thesis and rewrote all versions of the paper resulting in the final published manuscript. She is the Corresponding and Senior Co-author.

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