DEPARTMENT OF SOCIAL POLICY AND INTERVENTION

Barnett House, 32 Wellington Square,
Oxford, OX1 2ER, United Kingdom
www.spi.ox.ac.uk



UNIVERSITY OF OXFORD

Addressing Gender and Pandemic-Driven Disparities in Experiences of Sexual and Intimate Partner Violence Among South African Adolescents: Leaving No One Behind

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DPhil Thesis
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Nontokozo Agreeneth Langwenya

Doctorate in Social Intervention and Policy Evaluation

Department of Social Policy and Intervention

Nuffield College

December 2025

Declaration of Originality

I, **Nontokozo Agreeneth Langwenya**, declare that this thesis is my own original work, and that it has not been previously submitted for a degree at this or any other university. Except where otherwise stated, this work is entirely my own and all sources of information have been appropriately acknowledged.

Where this thesis is based on work conducted in collaboration with others, I have clearly stated my own contribution and the contribution of others.

This thesis is submitted in partial fulfilment of the requirements for the degree of **Doctor of Philosophy** at the **University of Oxford**.



December 2025

Dedication

To my lovely family, you have grounded me. BoSihlongonyane sakaLangwenya Mhlophe, ngiyabonga. Lesinematfumbu laluhlata lanjengencoshane, lesingakhonjwa ngendvuku siyayilandzela. Somopho. Longa lali nendvuku ecasini uvuka ushyae umtutfu! My dearest mother, Noziwe Maria Nkkabindze Langwenya, Ngiyabonga.

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Numerous individuals, both within and outside the academic community, made this journey possible.

I am grateful to my supervisors, **Professor Lucie Cluver** and **Associate Professor Elona Toska**, for supporting the development of this doctoral research and involving me in a series of intellectually ambitious projects throughout my doctoral training. Thank you for the many opportunities to engage with policymakers on topics that matter greatly to me and for trusting me to present your ideas well. I also appreciate the opportunity to work with rich longitudinal data and to centre the voices and lived experiences of adolescents in this research. I am especially thankful for the connections I made with colleagues during this time, many of whom have become friends and, I am certain, will become valued collaborators. I carry forward many lessons and remain appreciative of the broader research and collaborative environment that supported my development.

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Jabulani Ncayiyana, thank you for being the big brother in academia I never knew I needed. I am deeply grateful for the space you hold and the support you have offered. Tammy Philip, my big sister in academia, thank you for always seeing me just as I am. I am especially grateful for the many times you and Jonathan have opened your home to me, nurtured my dreams, and held space for my pain. I still cannot make pizza from scratch, though. To Siyanai Zhou, sesifikile, bhuti! You have supported me from the very first day we met. My brother, thank you for reading at least two drafts of each doctoral paper! You have pushed me to meet the highest academic standards, always reach for more, and stay focused.

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Bunmi and Temby, thank you for the Euro trips! They were amazing and a much-needed reminder that joy, adventure, and rest are important parts of the journey, too. Rufaro, you have been such an excellent sounding board and an even better partner-in-fun. You’ve hosted me so many times during my stops between Oxford and South Africa. Thank you for always opening your home to me. I can’t wait to return the favour.

Lastly, to my UNESWA family, it’s been a pleasure to be back home and work alongside you all. Thank you for your guidance and for generously sharing your knowledge on how to conduct research in Eswatini. I’m especially grateful for the time and space you gave me to complete this PhD during the peak of our data collection; I truly appreciate it.

Abstract

Adolescence is a period of heightened risk of sexual and intimate partner violence, especially among females. The HIV epidemic and the COVID-19 pandemic may worsen these risks, but data quantifying their effects are limited. Violence prevention requires coordinated, multisectoral strategies; however, evidence on how such strategies may reduce sexual violence is more limited than evidence on emotional and physical violence. Grounded in intersectional feminist theory, my doctoral research addressed two interconnected aims using data from two adolescent cohort studies conducted in the Eastern Cape Province of South Africa between 2014 and 2022:

- How adolescents' social identities (sex, HIV status, motherhood) and the COVID-19 pandemic affect their experiences of sexual and intimate partner violence (Chapter IV, Chapter V and Chapter VI)?; and
- How relational and structural interventions may reduce risk (Chapter VI)?

The findings show that lifetime experiences of contact and transactional sexual violence were more common among adolescent females than males, whereas experiences of non-contact sexual violence were comparable between the sexes. Intersectional analysis showed that the lifetime prevalence of sexual violence was highest among older females and adolescents who had recently acquired HIV. Among older males, the lifetime prevalence was lower than that among older adolescents overall. Among adolescent mothers, the adjusted predicted probability of ever experiencing intimate partner violence following the onset of COVID-19 did not differ by HIV status. However, in both periods, levels of intimate partner violence were higher among adolescent mothers living with HIV than among those without HIV.

These doctoral findings emphasise the need for age- and sex-responsive approaches to preventing sexual violence. Analyses of the indirect effects of government-issued cash transfers revealed two indirect pathways among females: an increased likelihood of affording necessities and attending school. Among males, receipt of social grants was positively associated with schooling; however, schooling was not associated with lower odds of past-year sexual violence. Parental support, although directly associated with lower odds of past-year sexual violence for both sexes, did not mediate the cash-transfer pathways.

Findings highlight the need for equity-driven programming that integrates social protection, school retention, and parenting support to prevent adolescent violence, especially among overlooked groups like adolescent males and adolescent mothers.

Organisation of the thesis

This thesis follows an integrated, article-based format and comprises three original empirical papers presented as standalone chapters (Chapters IV–VI). Two papers have been published in peer-reviewed journals, and the third is being prepared for submission.

The thesis opens with an introductory chapter (Chapter I), which sets out the research aims and questions against the backdrop of South Africa's ongoing crisis of sexual and intimate partner violence. Chapter II presents the intersectional feminist framework underpinning the study, reviews the burden of sexual and intimate partner violence amid the HIV and COVID-19 pandemics, and summarises evidence on the impact of cash-only and cash-plus strategies in reducing such violence. Chapter III then explains the rationale for using quantitative methods to address the research aims and the suitability of the two-cohort dataset for generating robust findings.

The empirical results for each research question are presented in a separate chapter, with Table 1 summarising the findings. At the start of each empirical chapter, I provide a brief rationale linking the study to the overarching research aim. Chapter IV presents a comparative descriptive analysis of the lifetime prevalence of sexual violence across adolescent groups. Chapter V investigates the direct and indirect pathways linking receipt of social grants to past-year sexual violence, when combined with complementary provisions such as parental support, food security, affordability of necessities, and schooling. Chapter VI examines experiences of intimate partner violence before and after COVID-19. The thesis concludes with Chapter VII, which integrates key findings and reflects on their significance for research, policy, and practice.

Table 1: Summary of Empirical Findings

#	Research questions	Key variables	Methods	Results	Publication status
1	*Do experiences of lifetime sexual violence during adolescence differ by sex, age and HIV status?*	Outcome: lifetime prevalence of sexual violence: Any and by form (contact, non-contact and transactional sexual exploitation) Predictors: sex, age, HIV status and mode of HIV acquisition	Disaggregate Lifetime prevalence estimates Odds ratio from Generalized Estimating Equations (GEE) Risk ratio from Cox regression	Approximately one-quarter (23.9%) of adolescent reported ever-experiencing sexual violence, with transactional sexual exploitation was most common form for both sexes. Lifetime prevalence was higher among females than male (27.9% vs 18.7%), increased with age group, and but did not differ by HIV status. Rather, intersectional analysis showed that lifetime sexual violence prevalence was highest among older females and adolescents who recently acquired HIV (46.8%). For older males, the lifetime prevalence was lower than that of older adolescents overall (31.5%).	Chapter IV Published August 2023: Journal of Child Abuse & Neglect: S
2	*What are the pathways through which cash transfers and complementary provisions are associated with past-year experiences of sexual violence among adolescents?*	Outcome: past-year prevalence of any sexual violence Predictors: social grant receipt; parental support, food security, affording necessities and schooling	Sex specific models with sample inverse probability weighting: Odds ratio from mixed-effects logistic regression *B* coefficient from Generalised structural equation models (GSEM)	Incidence rates of past-year sexual violence decreased over time from 12% to 6%. Across the study visits, most adolescents (90%) reported household social grant receipt. Half reported high positive parenting, 37–43% high parental supervision, 71% food security, and 95–98% were enrolled in school. Among females, there was evidence that household social grant receipt was indirectly linked to lower odds of past year sexual violence through a higher likelihood of being able to afford necessities and higher school enrolment and completion. Among males, social grant receipt was associated with higher school enrolment or completion, but this did not appear to translate into lower odds of past-year sexual violence. For both sexes, parental support, while directly associated with lower odds of past-year sexual violence, did not mediate the effects of cash transfer.	Chapter V The paper will be submitted to Social Science and Medicine journal
3	*Did the COVID-19 pandemic have a differential impact on lifetime prevalence of intimate partner violence among adolescent mothers living with HIV compared to those without HIV?*	Outcome: lifetime prevalence of intimate partner violence: Any and by form (psychological, physical, sexual) Exposure: COVID-19 Moderator: living with HIV	Odds ratio using Multivariate mixed-effects logistic regression *Applied exposure (HIV) inverse probability weighting	A quarter (24,7%) of adolescent mothers had experienced any intimate partner violence during COVID-19, quadruple pre-pandemic levels (24.7%vs 6.0%). There was 18.2% significant increase in the average predicted probability of intimate partner violence during COVID-19 compared to pre-pandemic, with no differential effect by HIV status. However, at both periods, intimate partner violence was more prevalent among those living HIV.	Chapter VI Published January 2025: Journal of Adolescent Health

Academic and Dissemination Outputs from this Thesis

My doctoral research has produced the following peer-reviewed original research publications:

Langwenya, N., Toska, E., Stöckl, H., & Cluver, L. (2023). Which groups are most affected by sexual violence? A disaggregated analysis by sex, age, and HIV-status of adolescents living in South Africa. *Child Abuse & Neglect*, 142, 105981.

Langwenya, N., Toska, E., Stöckl, H., & Cluver, L. (2025). Intimate Partner Violence Among Adolescent Mothers Living With and Without HIV: A Pre-and During–COVID-19 South African Cohort Analysis. *Journal of Adolescent Health*, *76*(1), 80-88.

My doctoral research has contributed to policy briefs that support evidence uptake:

Identifying drivers and mitigators of adolescent health risk and the implications for practice: A synthesis of evidence-to-action Research. UNICEF ESARO, University of Cape Town, University of Oxford.

New Evidence on the Impacts of Violence on ART Adherence among Adolescents Living with HIV. UNICEF ESARO, UNICEF

I have shared my doctoral work at local and international conferences and through policy-relevant knowledge exchange initiatives.

September 2025	**Oral:** Sex-Specific Associations of School Enrolment, Parental Support and Economic Strengthening with Reduced Risk of Sexual Violence among Adolescents affected by HIV	2025 United for Change: 12th South African AIDS Conference
August/October	**Oral**: Presented annually at ISPCAN, each year based on findings from an empirical chapter of my thesis.	2023, 2024 and 2025 International Society for the Prevention of Child Abuse and Neglect
October	**Oral:** Presented Empirical findings of chapter IV and chapter VI.	2022 and 2024 Sexual Violence Research Initiative (SVRI).
September 2024	**Oral:** Generalised structural equation modelling for pathways analysis to sexual violence reduction	2024 World Congress on Epidemiology. Cape Town, South Africa.
September / October	**Oral:** Presented Empirical findings of chapter IV and chapter V.	2022, 2024 International Workshop on HIV and Adolescents
November 2023	Targeting HIV and SRHR programmes to better meet the needs of Adolescent Girls and Young Women in Eastern and Southern Africa: Using evidence and programme experience to improve quality and assure impact	Eastern and Southern African Regional Office (ESARO) UNICEF
00 July 2023	Integrating Feminist theory and ecological theory in the study of sexual Violence.	Department of Social Policy and Intervention. Oxford

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Acronyms

LHIV	Living with HIV
IPV	Intimate Partner Violence
GBVF	Gender-Based Violence and Femicide (GBVF)
GSEM	Generelised Structural Equation Models
GEE	Generalized Estimating Equations

Key Terms

Key concepts and terms that will be used throughout this thesis are defined below, listed by category themes:

Sex and gender:

*Sex r*efers to the biological and physiological characteristics used to classify individuals as male, female, or intersex, typically assigned at birth based on anatomy and chromosomes (Jansen, 2016). My doctoral research used sex-based terms (e.g., male/female) to reflect the binary classification recorded during data collection. Gender identity was not assessed, and findings should be interpreted with this limitation in mind.

Gender refers to the socially constructed roles, behaviours, expectations, and identities associated with being male, female, or non-binary. These vary across time and cultural contexts (Jansen, 2016).

Age-based definitions:

Adolescent/s or adolescence: Individuals aged 10-24 as defined by Swayer et al (2018), who argue for a broader understanding of adolescence that reflects biological, social, and developmental transitions. My doctoral research draws on two adolescent cohort studies that enrolled participants who were either aged 10–19 at baseline or had become parents before the age of 20.

Younger adolescents: Adolescents aged 10–14 years, inclusive (Hindin et al., 2013). This category aligns with traditional global usage, as reflected in definitions used by organisations such as WHO, UNICEF, and UNFPA (World Health Organisation, 2017).

Older adolescents: Adolescents aged 15–19 years, inclusive and aligned with common global definitions (World Health Organisation, 2017).

Late adolescents: those aged 20–24. This category reflects the extended definition of adolescence proposed by Sawyer et al. (2018) and acknowledges the prolonged transition into adult roles (World Health Organisation, 2017).

Young people: individuals aged 15-24, inclusive, aligned with common global definitions (World Health Organisation, 2017).

Adolescent mothers: any female who had a live birth before the age of 20, inclusive (Hindin et al., 2013).

HIV:

Recently acquired HIV: To have acquired HIV through unprotected sex with an infected person or during transfusion with infected blood or blood products, or by sharing contaminated needles or instruments (Grants & De Cook, 2021). This mode of HIV infection was previously referred to as "horizontal transmission of HIV" (Grants & De Cook, 2021).

Perinatally acquired HIV: to have acquired HIV from a mother living with HIV either transplacentally during pregnancy or perinatally during birth, or postnatally through breastfeeding (Grants & De Cook, 2021). This mode of HIV infection was previously referred to as "mother-to-child transmission" (MTCT) and "vertical transmission of HIV" (Grants & De Cook, 2021).

Occurrence of sexual violence

Prevalence: The proportion of individuals who experience sexual violence during a defined period (Bonita et al., 2016).

Lifetime prevalence: The proportion of individuals ever experiencing sexual violence at that given time (Bonita et al., 2016).

Past-year prevalence: The proportion of individuals experiencing sexual violence in the preceding 12 months (Bonita et al., 2016).

Incidence: The proportion of new cases of sexual violence reported between study visits among those who had not reported experiences of sexual violence at baseline (Bonita et al., 2016).

Social factors: Aspects of society, community, culture, family, and group membership that influence an individual's behaviour and quality of life (Guy-Evans, 2020).

Intimate partner: A person with whom an individual has a close romantic or sexual relationship. This may include a boyfriend, girlfriend, casual or steady sexual partner, husband, wife, or someone with whom they live as a couple (Lawson, 2012).

Chapter I: Introduction

Background

Sexual and intimate partner violence are interconnected but distinct types of harm. *Sexual violence* involves any unwanted or harmful sexual act or exploitation perpetrated by any individual: strangers, acquaintances, peers, family members, or intimate partners (Hassan et al., 2015). It includes cases where an individual, such as an adolescent, participates in sexual activity that they do not fully comprehend, are unable to give informed consent to, or for which they are not developmentally prepared (World Health Organisation, 1999). *Intimate partner violence* refers to harm caused by a current or former intimate partner and encompasses sexual, psychological, physical, and economic harm (Adams et al., 2008; García-Moreno et al., 2005).

In August 2019, media coverage of multiple femicide cases sparked national outrage and mass protests over the persistently high levels of sexual and intimate partner violence against females in South Africa (Du Plessis et al., 2021). Uyinene Mrwetyana, a 19-year-old University of Cape Town student, was raped and killed inside a post office while collecting a parcel on 24th August 2019 (Nyathi, 2023). On 30 August, 25-year-old boxing champion Leighandre "Baby Lee" Jegels from East London in the Eastern Cape was shot and killed by her former intimate partner, a policeman against whom she had a protection order (Du Plessis et al., 2021). At the time, Leighandre Jegels was on her way to training. Shortly afterwards, on 1 September, the half-naked body of 14-year-old Janika Mallo, also from the Eastern Cape, was discovered in her grandmother's backyard, having been raped and murdered by two teenage boys from her neighbourhood (Nyathi, 2023). Janika had attended a local fundraiser the previous evening and was last seen at around 8 p.m. (Nyathi, 2023). At that time, I was

conceptualising this doctoral research while leading the data collection for two adolescent cohort studies in the Eastern Cape.

In the days after these murders, the hashtag **#AmINext** spread across social media platforms as students, young women, civil society organisations, and activists voiced fear, anger, and frustration at the state's failure to protect them (Mbinjama, 2023). Vigils and marches spread rapidly across university campuses and cities, including Cape Town, Johannesburg, and Durban, with students staging sit-ins and demanding action from political leaders (Molale & Asak, 2024; Du Plessis et al., 2021). On 4–5 September 2019, protesters gathered outside the World Economic Forum on Africa, held in Cape Town, and at the national Parliament, demanding that the government declare gender-based violence a national crisis (Mbinjama, 2023). Many dressed in black and carried placards reading *"Am I Next?"* and *"Enough is Enough"* (Molale and Asak, 2024). Largely organised and amplified through social media, these protests were among the largest youth-led mobilisations against gender-based violence, including sexual and intimate partner violence, in post-apartheid South Africa (Molale & Asak, 2024).



#AmINext protest against gender-based violence in Cape Town, South Africa. Source: Hislop, M. (2019, September 5). *#AmINext: Protest against gender-based violence in South Africa [Photograph]. Women's Agenda.* https://womensagenda.com.au/latest/aminext-thousands-line-the-streets-to-protest-violence-against-women-in-south-africa/

This mobilisation in 2019, however, was not without precedent. The previous year, on 2 August 2018, a decentralised coalition of women's rights activists, feminist organisations, and gender-diverse people from across South Africa organised #TheTotalShutdown, a coordinated nationwide protest against gender-based violence (Zinzombe, 2024). The movement culminated in the National Summit against Gender-Based Violence and Femicide, held in November 2018, where activists, civil society organisations, and government representatives came together to develop a national response plan and lay the groundwork for the subsequent National Strategic Plan on Gender-Based Violence and Femicide (Heywood, 2020; Ntsholeng Segale, 2025; South African Government, 2019).

Among the measures agreed were multi-sectoral strategies to prevent gender-based violence, promote economic empowerment, strengthen social protection to reduce poverty, expand access to education, and ensure that previously marginalised and excluded groups were explicitly considered in policy and implementation frameworks (South African Government, 2019). In response to the #AmINext protests, on 5 September 2019, President Ramaphosa delivered a national address reaffirming his commitment to accelerating the multi-sectoral strategies identified at the 2018 Presidential Summit on Gender-Based Violence and Femicide (Office of the Presidency, 2019).

It is against this background that this thesis was conceived. Despite sustained attention to sexual and intimate partner violence, significant gaps remain in the literature regarding adolescents' experiences, particularly in understanding the burden among different groups and the mechanisms of prevention (El-Bassel et al., 2021). Adolescent males, for instance, are largely absent from prevalence estimates and intervention research on sexual violence (Borumandnia et al., 2020; Madu & Peltzer, 2001a; World Health Organisation, 2016). Yet the gendered nature of such

violence does not exempt adolescent males; rather, it points to potential differences in the forms and contexts of violence experienced by the sexes (Dlamini, 2020; Russo & Pirlott, 2006). For instance, the South African Optimus Study reported that one in three adolescent males (36%) had experienced sexual violence, similar to the rate among adolescent females, though the forms of violence experienced differed between the sexes(Artz et al., 2018). Adolescent males were more likely to experience non-contact forms of sexual violence, such as exposure to pornography and coercion to watch masturbation, whereas females experienced higher levels of contact forms, including unwanted touching and rape (Artz et al., 2018). The widely publicised case of Collan Rex, a former assistant water polo coach at Parktown Boys' High School, further illustrates these patterns (Jordaan, 2018). In 2018, Rex was convicted of 144 counts of non-penetrative sexual violence offences against twelve male learners aged 13–16 (Jordaan, 2018).

At the same time, although much of the existing data has focused on adolescent females, it is often limited to those in school and without children (Ajayi et al., 2021; Groves et al., 2022). The experiences of adolescent mothers, who face intersecting social risks related to gender, age, and social stigma, are notably absent from large-scale studies (Toska et al., 2020). Health facility-based research indicates that approximately 45% of South African adolescent mothers aged 14–19 experienced intimate partner violence during pregnancy, higher than estimates for females aged 20–25 (25%) and 25–39 (19%) (Bernstein et al., 2016; Field et al., 2018; Gebrekristos et al., 2020). However, the few studies that do include adolescent mothers often rely on small samples drawn from health facilities and focus solely on the pregnancy period (Groves et al., 2022). This offers limited insight into the broader experiences of violence post-childbirth and in times of crisis, such as public health emergencies or economic shocks like COVID-19.

Regarding prevention, there is increasing emphasis on multisectoral approaches that address the mechanisms linking adolescents' social, relational, and structural vulnerabilities to sexual violence. (South African Government, 2019; World Health Organisation, 2016). One widely implemented framework is the "cash-plus" approach, which combines financial support, such as social grants, with complementary provisions targeting education, parenting support, and social protection (Roelen et al., 2017). Yet evidence on how these mechanisms operate to reduce sexual violence outcomes among adolescents remains limited (Edwards et al., 2024; Peterman et al., 2017). This includes both trial settings, where cash-plus packages are delivered in an integrated manner, and real-world contexts where adolescents access cash and complementary services through government systems (Peterman et al., 2017).

However, gains in preventing sexual and intimate partner violence are not guaranteed; they remain vulnerable to broader social and structural shocks. The COVID-19 pandemic represents a key example, where the conditions that support adolescent safety and wellbeing were significantly disrupted (UN Women, 2021). In South Africa, national lockdown measures included prolonged school closures, with learners losing an estimated 54% of planned teaching time, removing a critical protective environment and everyday access to supportive adults and peers (Haffejee et al., 2024). At the same time, routine sexual and reproductive health services were constrained as health systems prioritised pandemic response efforts, limiting adolescents' access to contraception, antenatal care, and reporting pathways (Kelly et al., 2022). Widespread economic losses further intensified household financial strain and dependence dynamics, which are known to heighten the risk of conflict and violence (Raphela & Tjantjies, 2025). These overlapping disruptions have been hypothesised to potentially amplify existing gendered and structural inequalities associated with sexual and intimate partner violence (UN Women, 2021).

The multidimensional impact of Sexual and Intimate Partner Violence

Research on sexual and intimate partner violence is essential because these forms of violence violate human rights, constitute a profound social injustice, and impose a costly public health burden.

- **Human Rights Violation**

Acts of sexual and intimate partner violence infringe on adolescents' rights to safety, dignity, and freedom from exploitation, as affirmed by the UN Convention on the Rights of the Child and the African Charter (Organisation of African Unity, 1990; United Nations, 1989). South Africa ratified both conventions by 2000 (Parliament of the Republic of South Africa, 2013).

- **Public Health Burden**

Experiences of sexual and intimate partner violence are associated with a myriad of short- and long-term physical, psychosocial and sexual and reproductive health consequences (Campbell, 2002; Jina & Thomas, 2013). These sequelae are associated with multiple 2030 Sustainable Development Goals (SDGs), including Ending poverty (SDG 1) and Hunger (SDG 2), Healthy lives and well-being (SDG 3), Quality education (SDG 4), and Gender Equality (SDG 5) (United Nations, 2015).

Physical consequences may include death, fractures and injuries to sexual organs (Hillis et al., 2016). Adolescent females experiencing either form of violence are at increased risk of contracting sexually transmitted infections, experiencing an unwanted pregnancy and pregnancy complications during the antenatal and postpartum period (Reza et al., 2009). Decreased psychological well-being includes post-traumatic stress disorder, depression, substance abuse, emotional detachment and self-blame (Agardh et al., 2012; Pillay, 2020). Likewise, adolescent males who have experienced sexual violence may feel shame, loneliness and suicidal ideation as a direct result of the violation (Moss et al., 2023).

In South Africa, the estimated economic value of disability-adjusted life years (DALYs) lost due to poor mental health outcomes associated with violence against children, ages 5-17, was 27.4 billion South African Rand, approximately 0.7% of the country's gross domestic product (Fang et al., 2017). Ending sexual violence against adolescents in South Africa is estimated to lead to a 14% decrease in drug abuse and a 12% decrease in self-harm cases in the entire population (Hsiao et al., 2018).

- **Social injustice**

Social justice refers to the equitable distribution of opportunities, rewards, and responsibilities within society (Hong & Marine, 2018). Sexual and intimate partner violence is disproportionately experienced by females and individuals from marginalised groups defined by race, ethnicity, ability, and sexuality (Armstrong et al., 2018; Barth et al., 2013). These disparities reflect structural inequities that heighten the risk of violence based on social identities—inequities often rooted in power imbalances and gender inequality (Jewkes et al., 2016). If left unaddressed, these inequities may widen and persist across generations (Kawewe & Dibie, 1999).

Why focus on adolescents?

Adolescence is often described as a transition between childhood and adulthood, but it is more than a biological or chronological stage (Ritcher, 2006; Sirin et al., 2025). It is a lived experience, shaped by context, opportunity, and constraint (Sirin et al., 2025). During this period, young people begin to negotiate independence, explore their identities, and make sense of the social and economic realities around them (Chen-Charles et al., 2022; Kågesten et al., 2016). Social changes during this period often unfold within education, work, and both romantic and non-romantic relationships (Amin et al., 2018; Naudé & van Damme, 2024). For some, adolescence is marked by multiple opportunities and a wealth of experiences; for others, it can be a period of

great instability, characterised by having to take on adult responsibilities earlier than expected or planned (Naudé & Esau, 2024; Ngidi, 2022).

Beyond individual experience, adolescence is also a social category, the meaning and boundaries of which are collectively defined by societies (Siweya et al., 2018). Cultural norms, rites of passage, institutional practices, and legal frameworks shape expectations of young people during this period (Nhampoca & Maritz, 2024; Ohaja & Anyim, 2021; Siweya et al., 2018). For example, completion of cultural initiation rituals often entails the expectation that young people assume gender-specific responsibilities within families and communities (Siweya et al., 2018). The varying ages at which voting, employment, marriage, and consensual sexual relationships are legally permitted reflect society's expectation of a gradual increase in independence (B. Mathews, 2022). However, for many, adolescence is non-linear, with young people moving between dependence and independence, school and work, or family and community responsibilities (Nhampoca & Maritz, 2024). For instance, an adolescent mother in the Eastern Cape may be regarded as an adult by her community simply because she has given birth (Jochim et al., 2021). Yet she may still need support to re-enter education, continue living with her parents, and often spend time away from her child to pursue her own aspirations, actions that reflect the ongoing developmental tasks of adolescence (Jochim et al., 2023).

In my doctoral research, I defined adolescence broadly as the period from 10 to 24 years, drawing on Sawyer et al. (2018). As shown in Figure 1, this is an expanded definition, as the World Health Organisation (WHO) has traditionally defined adolescence as ages 10-19 (World Health Organisation, 2017). This extended age range aligns with the non-linear attainment of independence and identity experienced by many adolescents in South Africa, where young people often re-enter formal education, experience delayed economic independence, and face ongoing vulnerabilities well into their early twenties (Gittings et al., 2021; Mukwevho et al.,

2023; Naudé & Esau, 2024). Within this range, 10–14 years are younger adolescents, 15–19 years are older adolescents, and 20–24 years are late adolescents.

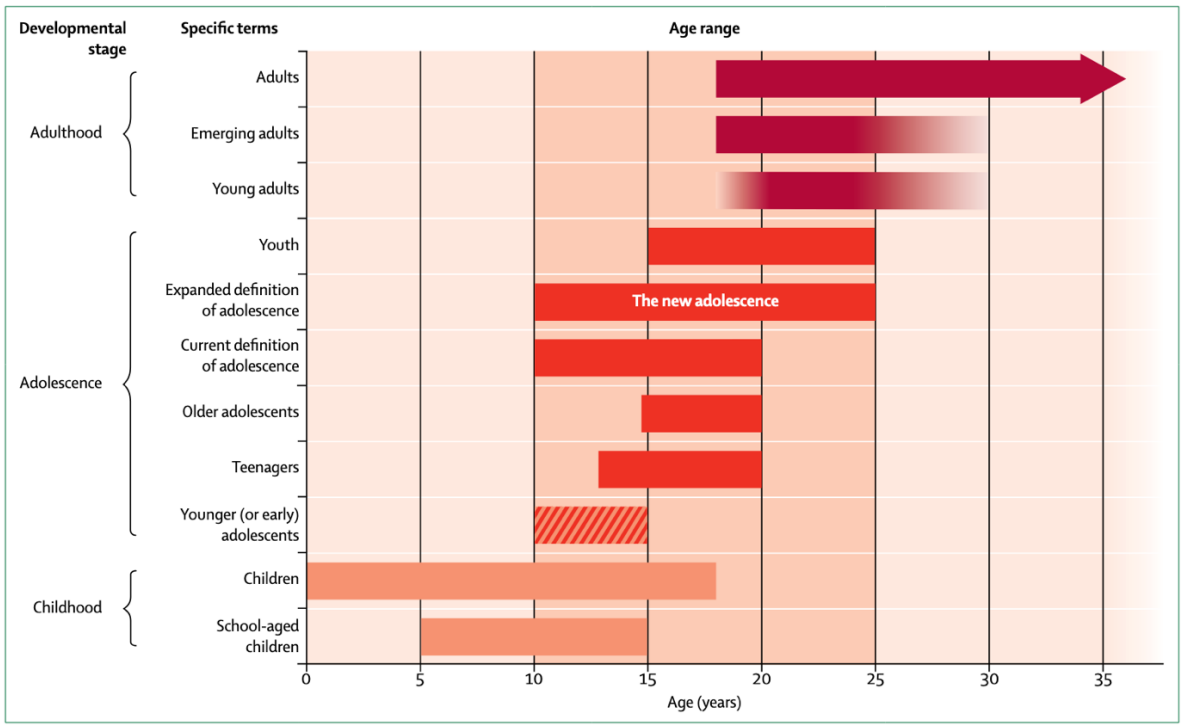


Figure 1: Commonly used age definitions of adolescence, which include younger and older adolescents, as well as youth (The age of adolescence, Sawyer et al., 2018)

Shaped by growing agency, social and environmental factors, and complex developmental transitions, adolescence presents a unique window where targeted investment can yield lasting individual, societal, and intergenerational benefits. In global health and development, this is often referred to as achieving a "triple dividend", with benefits that span three distinct phases of life (Patton et al., 2016). First, supporting adolescents' health, safety, and well-being can improve their daily lives, helping them feel more secure, capable, and able to pursue education, relationships, and personal goals (Patton et al., 2016). Second, these investments lay the foundation for a healthier and more productive adulthood characterised by greater skills, increasing the likelihood that young people can navigate life transitions successfully and contribute meaningfully to society (Patton et al., 2016). Third,

empowered adolescents are more likely to provide stable, nurturing environments for the next generation, generating intergenerational benefits (Patton et al., 2016).

For Africa, the need to invest in adolescents is even more pressing given the continent's rapidly growing population of individuals aged 10–24. Africa is the world's youngest region, with a median age of approximately 19 years (Worldmeters, 2024). Currently, adolescents aged 10–19 make up about 23% of Africa's total population, and this proportion is expected to remain steady through 2050 (African Union, 2017). In absolute terms, the adolescent population in Africa is projected to increase from approximately 341 million in 2019 to nearly 575 million by 2050, meaning an additional 234 million adolescents will come of age within a single generation (UNICEF, 2017). Moreover, by 2030, the target year for achieving the Sustainable Development Goals, young people aged 15–24 are expected to account for around 40% of the global population in that age group (WorldBank, 2023). This demographic distribution underscores Africa's growing significance in shaping the world's social and economic future.

Research Aims and Questions

Against this background, my doctoral research adopts an intersectional feminist approach to address two interconnected aims:

- Aim 1: To explore how adolescents' social identities (sex, HIV status and mode of acquisition, motherhood) and the COVID-19 pandemic influence their experiences of sexual and intimate partner violence.
- Aim 2: To investigate the pathways through which social grants, parenting support, economic security and schooling may interact to reduce adolescents' risk of experiencing sexual violence.

To address these aims, I conducted a secondary analysis of data from two adolescent cohorts in the Eastern Cape Province of South Africa. These datasets provide a unique opportunity to explore how gender, HIV, early parenthood, and the pandemic intersect to shape experiences of sexual and intimate partner violence. The **Mzantsi Wakho** adolescent health cohort, established in 2014, included adolescents aged 10–19 who were interviewed three times between 2014 and 2018. It focused on sexual and reproductive health outcomes, including HIV and violence. At the third and final visit in 2018, adolescent females who had become mothers were invited to join the **HEY BABY** adolescent mother cohort (2018–2024), which focuses on the well-being of adolescent mothers and their children. I led data collection for both cohorts between 2018 and 2021.

This doctoral research addresses its aims through three research questions, each presented in a stand-alone, article-based chapter of this thesis. The research questions and corresponding objectives are outlined below.

Paper 1- Chapter IV

Research Question:

Do lifetime experiences of sexual violence during adolescence differ by sex, age, and HIV status?

Objectives:

1. To examine differences in the lifetime prevalence of sexual violence during adolescence by sex, age group, HIV status and mode of HIV acquisition.
2. To explore whether sex, age group, and HIV status intersect to increase vulnerability to lifetime sexual violence among adolescents.

Paper 2 – Chapter V

Research Question:

What are the pathways through which cash transfers (social grants) and provisions such as food security, access to necessities, schooling and parental support are associated with adolescents' past-year experiences of sexual violence?

Objectives:

1. To assess the independent associations of social grant receipt and complementary provisions with past-year sexual violence, stratified by sex.
2. To evaluate whether these sex-specific associations differ across age groups.
3. To investigate hypothesised indirect pathways from social grant receipt to past-year sexual violence via complementary provisions: food security, ability to afford necessities, schooling, and parental support.

Paper 3 - Chapter VI

Research Question:

Did the COVID-19 pandemic have a differential impact on the lifetime prevalence of intimate partner violence among adolescent mothers living with HIV compared to those without HIV?

Objectives:

1. To compare pre-pandemic and pandemic-period estimates of lifetime intimate partner violence among adolescent mothers.
2. To examine differences in lifetime intimate partner violence by HIV status during each period (pre-pandemic and during COVID-19).

3. To assess whether changes in the lifetime prevalence of intimate partner violence from pre-pandemic to pandemic periods were greater among adolescent mothers living with HIV compared to those without HIV.

Positionality statement

I position myself as a Black, Swazi, cisgender, able-bodied, heterosexual woman in my mid-thirties. I last worked in South Africa in 2021, when my salary placed me in the middle-class category. This position allowed me to move between two social worlds in South Africa: (1) townships and rural areas, where most of my South Africa-based research experience is situated and where I occupied a relative insider position; and (2) gentrified neighbourhoods associated with my affiliations with the University of Cape Town and the University of Oxford, where I occupied a relative outsider position.

Drawing on the similarities between my mother tongue, siSwati, and isiXhosa, I learnt to speak isiXhosa, the primary language spoken by participants in my doctoral research. I developed this ability during my first two years as a research assistant in Gugulethu township, Cape Town, from 2013 to 2014. My ability to communicate in isiXhosa afforded me 'insider' social capital within the data collection team. Other research leads viewed me as more accessible because I am a Black African woman and can speak the local language. I was later entrusted with conducting study interviews and home visits, which significantly strengthened my confidence in conducting research within the community and representing its members' lived experiences.

Most of my education has taken place in Western institutions, granting me access to physical and social spaces often unavailable to many Black South Africans. I attended a United World College in Eswatini for secondary school, York University in Canada for my undergraduate studies, and the University of Cape Town in South Africa for my master's degree. I completed this doctorate at the University of Oxford in the United Kingdom as a member of Nuffield College, a postgraduate-only college that is relatively well resourced compared with the average Oxford college. My social status within academia and the research community has therefore increased over the years.

I write and speak with confidence, feel entitled to have my voice heard within the academic community, and believe I have resources that help me navigate many of the structural barriers associated with my social identity.

Occupying both insider and outsider positions creates internal conflict and unease in my doctoral research. Which of my lived experiences are unique, and which are generalisable? To what extent might my insider status obscure my role in reinforcing traditional power dynamics between lead researchers and data collectors?

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Chapter II: Theory and Empirical Research

This section provides an overview of key theoretical approaches that have shaped research on and interventions for sexual and intimate partner violence. It begins with individual-level explanations, moves on to social and relational theories, and concludes with structural perspectives. The section then outlines how this thesis situates its analysis within an intersectional feminist framework. Finally, it presents a review of the literature on adolescents' experiences of sexual and intimate partner violence in Africa and South Africa, including emerging evidence on cash-plus strategies as promising interventions for reducing such violence.

Theoretical perspectives on sexual and intimate partner violence

Explanations for sexual and intimate partner violence draw from a wide range of disciplinary traditions, each framing the causes of violence in distinct ways (Abdullahi & Abdulquadri, 2018; Agbai et al., 2017; Martinello, 2020; Meyer et al., 2024; Schauer, 1987). These perspectives can be broadly grouped into three levels: individual, social, and structural. Individual-level theories tend to focus on personal attributes, psychological development, or learned behaviours (Howard & Gibson, 2023; Kiguwa & Stevens, 2021). Social theories emphasise relationships, community norms, and the transmission of attitudes within families and peer groups (Meyer, Hardt, Brambilla, Shukla, et al., 2024). Structural approaches locate violence within broader systems of inequality, including gendered power relations, economic marginalisation, and the legacies of colonialism and apartheid (Cannon et al., 2015).

Together, these perspectives illuminate different dimensions of how violence is produced and sustained. However, each is limited when applied in isolation. The result is an ongoing debate about which mechanisms matter most in defining violence,

explaining disparities in the burden, and under what conditions adolescents may be able to navigate societal pressures and structural barriers.

Individual-level theories

Psychological theories explain violence as resulting from psychological dysfunction or maladaptive emotional processing, drawing on frameworks such as the psychopathology model, trait theory of personality, and attachment-based models of emotional regulation (Bornstein & Warmuth, 2019; Dutton, 1995; Miller et al., 2024). For instance, antisocial personality traits, poor emotional regulation, impulsivity, and low empathy, arising from early developmental experience, are proposed to increase the likelihood of violence (Loots & Louw, 2012; Mela et al., 2014; Sigsworth, 2009). *Evolutionary theories* conceptualise sexual violence as arising from reproductive competition, suggesting that behaviours such as jealousy or coercion are attempts to secure reproductive access (Howard & Gibson, 2023; Thornhill & Palmer, 2000). Within this framework, sexual aggression is viewed as a maladaptive expression of evolutionary drives rather than a consequence of psychological dysfunction (Thornhill & Palmer, 2000). *Behavioural theories* emphasise that reinforcement and modelling acquire and maintain violent behaviour (Bandura, 1977). Individuals who witness intimate partner violence between caregivers or experience harsh parenting may internalise aggression as a normative way of resolving conflict (Capaldi et al., 2012). Over time, distorted cognitive schemas such as beliefs in male entitlement, victim-blaming attitudes, and the association of aggression with strength can further reinforce the acceptability and normalisation of violence perpetration (Jewkes et al., 2002; Sigsworth, 2009).

While individual-level theories offer insight into psychological and behavioural processes, they can be critiqued for minimising personal responsibility and overlooking gendered power relations. Framing violence as the result of personality

deficits, trauma histories, or innate biological drives risks implying that violent behaviour is inevitable, thereby diminishing accountability (Ellsberg et al., 2015; Kelly, 2011). Evolutionary perspectives, in particular, risk naturalising sexual violence by presenting it as an adaptive male strategy, thereby obscuring its social and political nature (Ward & Siegert, 2002). While behavioural and cognitive approaches recognise violence as learned behaviour, they cannot fully explain why certain social groups, particularly women, girls, and gender-diverse adolescents, are disproportionately affected by sexual and intimate partner violence (Jewkes et al., 2010; Vilakazi & Mkhize, 2020).

Social and relational theories

Relational perspectives, such as social learning, stress, and norm-based theories, shift attention away from individual deficits by situating violence within interpersonal dynamics and shared social environments rather than within individuals alone.

Social learning theory proposes that behaviours, including aggression, are learned through observation, internalisation, imitation, and reinforcement through rewards and sanctions (Bandura, 2017). Adolescents who witness violence in homes or communities may internalise these behaviours as acceptable or normal, then replicate them in their own relationships (Kheswa et al., 2017). Whether these behaviours persist depends on reinforcement: when aggression is rewarded or tolerated, the cycle of violence is more likely to continue, whereas sanctions (socially or otherwise) may decrease the likelihood of repetition (Gibbs et al., 2020; Kheswa et al., 2017). In the Stepping Stones trials in South Africa, group-based participatory sessions gave participants opportunities to observe, model, and rehearse alternative behaviours in supportive peer environments (Gibbs et al., 2017; Jewkes et al., 2008). At the same time, the programme was grounded in critical reflection and dialogue on gender and power

to facilitate internalisation of these new behaviours (Gibbs et al., 2017; Jewkes et al., 2008).

Stress theories suggest that violence can emerge when stressors, such as loss of income or food insecurity, intersect with limited coping resources and an individual's interpretation of the situation, including perceived threats to masculinity, loss of control, or frustration (Fox et al., 2002; Gelles & Maynard, 1987; Meyer et al., 2024). In such circumstances, the use or threat of violence may serve as a strategy to maintain authority or control, even when resources or supportive networks to address the stressor are unavailable or ineffective (Fox et al., 2002). Empirical reviews and trials indicate that economic strain, food insecurity, and unemployment are associated with increases in household conflict and risk of intimate partner violence (Burke et al., 2015; Fielding-Miller et al., 2014; Fox et al., 2002; Otwombe et al., 2015). Evidence also shows that reducing economic stress through cash transfers and parenting programmes can improve family coping and reduce violence (Baranov et al., 2021; Groves et al., 2024; Okot et al., 2022; Wang & Zhang, 2024).

Social norms theory argues that others' views and actions strongly shape individual behaviour (Cislaghi & Heise, 2019; Young, 2015). It distinguishes between what an individual does, what the group considers acceptable, and what the individual believes others do and approve of. Individuals tend to follow norms when they expect others to do so, even when those norms conflict with their personal preferences (Cislaghi & Heise, 2019; Young, 2015). This is because violating norms risks disapproval, loss of status, exclusion, or other social sanctions (Jewkes et al., 2015; Starmann et al., 2018). However, a person may become more willing to deviate when they believe that fewer people follow or endorse the norm (e.g., realising that "not everyone approves of men hitting their partners"), or when the social consequences of deviation weaken (e.g., it becomes more socially acceptable for men to speak openly with their partners about emotions) (Starmann et al., 2018). Randomised evaluations,

such as SASA! In Uganda, demonstrate that explicitly targeting what people think others do and approve of, through community activism, public dialogue and role-modelling can reduce levels of intimate partner violence and related risk factors (Abramsky et al., 2016; Kyegombe et al., 2015).

While social learning, family stress, and social norms theories provide insights into the causes of sexual and intimate partner violence, each has limitations when considered in isolation. Social learning theories explain how violence is modelled, internalised, and reinforced, but they do not fully account for why certain forms of violence are gendered, or why some groups are disproportionately targeted (Miller et al., 2024). Similarly, while stress theories highlight how lack of resources can heighten conflict and increase the risk of violence, focusing on household stress alone can mask the broader gendered social and economic inequalities that produce these pressures (Meyer et al., 2024). Social norms theory moves closer to addressing gendered power by focusing on how communities collectively define what is acceptable behaviour. However, norms do not operate in a vacuum; institutions, social arrangements, and unequal access to rights and protections reinforce them (Piedalue et al., 2020). Consequently, interventions that focus solely on shifting norms may underestimate how these structural constraints, such as financial dependence, restricted mobility, and weak legal protection, limit people's ability to act on new norms.

Feminist theories

Feminist theories position sexual violence as rooted in patriarchal power systems that operate across individual, relational, community, and societal levels. In patriarchal societies, masculinity is culturally associated with authority, autonomy, and entitlement, while femininity is associated with submissiveness, emotional labour, and maintaining harmony (Brownmiller, 1975; Kelly et al., 1996; Parliament of the

Republic of South Africa, 2013). Violence becomes a mechanism through which male dominance is enforced and naturalised (Brownmiller, 1975). This is most evident from studies that show that rape is often used as an act of punishment and to demonstrate power over the other (Jewkes et al., 2005; Sivakumaran, 2007; Wood, 2015). Patriarchal structures are sustained through gender norms and cultural practices that reinforce, rather than challenge, the gender inequalities (Mtotywa et al., 2023).

Gender norms refer to shared beliefs and societal expectations about appropriate or acceptable behaviour based on sex (Jansen, 2016). Gender norms can challenge patriarchal sex hierarchy by promoting equal inclusion and opportunities for all sexes across economic, legal, political, and social spheres, thus dismantling rigid constructs of masculinity and femininity (Webster & Dunn, 2005). However, when gender norms reinforce patriarchal sex hierarchies, they uphold behaviour that maintains male dominance and normalises the use of violence to control females. Gender norms that seek to preserve patriarchal sex hierarchies and reproduce gender inequality are commonly referred to as harmful gender norms (World Health Organisation, 2016).

Similarly, cultural practices endorsing male dominance legitimise the use of violence to control females. These practices often relate to developmental transitions to adulthood, such as marriage customs (Venganai, 2015). In Kenya, the practice of female genital mutilation is a marker of the transition from girlhood to womanhood that signals purity and modesty (Sano et al., 2021). Female genital mutilation is believed to reduce a woman's libido, limiting her sexual desires, which may lead to a lower likelihood of engaging multiple sexual partners (Sano et al., 2021). In many Southern African settings, including South Africa, the practice of bridewealth can be associated with the right to control females, as they are viewed as the property of their husbands (Williams-Breault, 2018). Like gender norms, cultural practices are socially constructed and can be contested (Mtotywa et al., 2023)

Feminism is not an event that simply emerged with the coining of the term *féminisme* in late-19th-century France (Dewey & Germain, 2012; Motlatfi, 2018). Across African societies, women negotiated and contested gendered authority through locally recognised institutions of power and kinship, including roles such as "female husbands" or "male daughters" that enabled access to rights, status, and autonomy otherwise restricted to men (Motlatfi, 2018; Amadiume, 1987). Within the US and Europe, feminist movements during the 1840s–1920s focused on securing legal rights such as voting, education, and access to middle-class professions (Kelly et al., 1996; Canan & Levand, 2019). In that same period in South Africa under British rule, white women were granted the vote in 1930, not simply as a move toward gender equality, but in ways that reinforced racial hierarchies, as Black[1] women (and most Black men) remained disenfranchised until 1994 (Gaidzanwa, 1992). These divergent historical conditions meant that feminism did not develop as a single, universal project, but rather as multiple feminist traditions rooted in the specific social, political, and cultural realities shaping women's lives.

Intersectional feminism, originating in Black feminist scholarship in the United States, challenged the idea that all women experience patriarchy in the same way (Crenshaw, 1989). It emphasises that gender is lived in relation to other social identities, such as race, age, class, sexuality, and citizenship, which together shape how oppression is experienced and resisted (Davis, 1983; Sojourner Truth, 1851; Wells-Barnett, 2008). For example, while white women in the 19th- and early 20th-century United States were culturally positioned as delicate, moral, and in need of protection, Black women were constructed as physically strong, sexually available, and less deserving of empathy (Haynes et al., 2020). At the same time, Black women were not afforded the patriarchal

[1] In this thesis, I use the term *Black* in two ways: first, in the South African context, where *Black African* refers to indigenous African populations historically dispossessed under colonialism and apartheid, and is part of the official population group nomenclature (i.e., Black African; Coloured; Indian/Asian; White); , and second in reference to U.S.-based Black feminist scholarship such as Crenshaw's work on intersectionality, where *Black* primarily refers to people of African descent in the United States (including but not limited to African Americans)

privileges that Black men exercised within Black communities (Crenshaw, 1989; Sojourner Truth, 1851).

Crenshaw (1991) identified three dimensions of intersectionality: structural, political, and representational. Structural intersectionality refers to how multiple systems of oppression interact to compound the vulnerabilities individuals experience (Crenshaw, 1991). Political intersectionality highlights how individuals belonging to multiple groups can be overlooked or excluded when political or advocacy efforts focus solely on one aspect of their identities, such as race or gender, rather than considering both (Crenshaw, 1991). Representational intersectionality concerns how cultural and media portrayals of marginalised groups are shaped and can reinforce systemic inequalities (Crenshaw, 1991). A conceptual diagram illustrating the interrelationship among the key principles of intersectionality is shown in Figure 2 below.

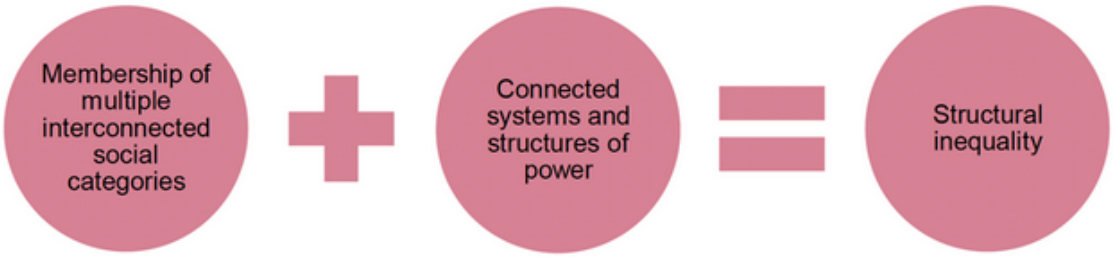


Figure 2: Diagrammatic representation of the relationship between the key tenets of intersectionality (Scottish Government, 2022)

Postcolonial feminism argues that the agency of women in the Global South has been neglected or minimised by treating Western women as the reference group against which all others are compared, resulting in narratives that depict women in the Global South either as helpless victims or as exceptionally resilient survivors (Mohanty, 1988; Piedalue & Rishi, 2017; Salami, 2022). It examines how global power relations, development agendas, and Western academic discourses shape which women are seen, heard, protected, or ignored (Mazibuko, 2020; Mohanty, 1988). While

intersectional feminism highlights how different systems of oppression overlap, postcolonial feminism extends this analysis to examine how the lived experiences of women from colonised societies differ across race, gender, and class (Bonu, 2024; Salami, 2022).

Decolonial feminism originated largely in Latin American decolonial thought, shifting focus from colonialism as a historical past to an ongoing structure shaping gender and race, knowledge production, and state power (Anzaldúa, 2004; Lugones, 2010; Mendoza, 2016). It calls for acknowledgement that colonialism imposed new and rigid hierarchies of masculinity and femininity on Indigenous people, where more fluid and diverse gender systems previously existed (Lugones, 2010; Makama et al., 2019). Colonial hierarchies systems persist in our day-to-day lived experiences. Examples include the delegitimising of female chiefs in South African Indigenous governance, and the erasure or suppression of roles such as 'male daughters' and 'female husbands' in other African societies (Amadiume, 1987; Motlafi, 2018). It largely seeks to undo Western dominance in knowledge-making, centring scholarship on the lived experiences of fostering coalitions across differences in history and positionality (Gqola, 2007; Segalo & Fine, 2020). This strand of feminism emphasises methodological reflexivity; prioritising individuals' own accounts, learning without harming or dominating each other, crossing without taking over, and doing this work in accountable relation to those whose knowledges and experiences have been historically subordinated (Ali et al., 2023; Segalo & Fine, 2020).

African feminist scholars share the critique that colonialism reshaped gender relations but extend it by grounding their analysis in specific African histories, kinship structures, and the political struggles of African women (Amadiume, 1987; Msimang, 2020; Oyěwùmí, 1997). They highlight that in many African societies, gender was relational, for example, linked to lineage, age, and social role, rather than a fixed binary (Amadiume, 1987; Oyěwùmí, 1997). African feminism also recognises that

women's struggles for equality often coexist with commitments to family, cultural belonging, and collective survival. Accordingly, it foregrounds indigenous knowledge systems, oral narrative traditions, and everyday practices of negotiation and care as sources of agency and gendered power (Makama et al., 2019; Mama, 1995; Nnaemeka, 2004). African feminism emphasises context-specific strategies of resistance and transformation, affirming women's and girls' resilience, agency, and collective action (Salami, 2022).

Critical reflections on feminist theories

Together, these perspectives underscore a spectrum of thought in sexual and intimate partner violence research and prevention. On one end, structural and global analyses emphasise systemic drivers of violence, situating adolescent experiences within historical, economic, and social inequalities (Ntuli, 2023). These approaches are essential for understanding the broader patterns and root causes of violence, particularly in contexts shaped by colonial legacies, patriarchal structures, and resource inequalities. However, focusing on systemic factors risks overlooking how adolescents actively negotiate, resist, and experience these inequalities in context-specific ways. Locally grounded approaches, including decolonial and African feminist frameworks, foreground adolescents' perspectives, prioritising their lived realities, local knowledges, and relational contexts (Day, 2018; Tamale, 2020). Yet translating this emphasis on situated agency into research practice can be complex.

Contemporary research practice increasingly positions adolescents not as passive research subjects, but as knowledge-holders who are best placed to identify what matters in their lives and to shape how their experiences are understood, interpreted, and communicated (Coakley et al., 2024). However, these aspirations unfold within existing power dynamics: researchers hold institutional authority, timelines follow academic cycles, and adolescents' participation is often constrained by schooling, caregiving responsibilities, and community expectations (Coakley et al., 2024). Efforts

to centre young people's voices can therefore unintentionally reproduce extractive dynamics, inviting participation while requiring young people to adapt to academic formats, vocabularies, and modes of validation (Cluver et al., 2021; Mannell et al., 2023). Even where co-production is pursued, recognition and reward are uneven, with authorship and professional advancement accruing largely to researchers rather than young contributors.

Another concern is operationalising theory into measurement and intervention (Freedman et al., 2024; Mannell et al., 2023). Frameworks informed by decolonial and African feminisms resist universalised categories and call for context-specific understandings of violence, care, and relational life (Segalo & Fine, 2020). Yet violence research has largely relied on standardised survey instruments, epidemiological indicators, and intervention models designed for comparability across sites (Laher et al., 2019; Mama, 2011). A commitment to centring lived experience and local knowledge therefore invites re-examining traditional empirical conventions, such as using universalised measures as indicators of rigour (Bonita et al., 2016).

However, these conventions remain deeply embedded in global research infrastructures, where funding, scaling, and policy influence often depend on demonstrating that findings are comparable, commensurable, or strategically more urgent than those in other contexts (Laher et al., 2019). This can, to some extent, encourage the use of standardised tools not because they best reflect local realities, but because they are required to justify intervention and investment. The challenge, therefore, is not only methodological but epistemological: how to build research and interventions that are analytically rigorous while remaining grounded in locally meaningful understandings of violence, gender, and safety.

Ultimately, these reflections point to the need for patience, reflexivity, and creativity in research and intervention design. Operationalising decolonial and African-centred

approaches within largely Westernised, epidemiologically driven frameworks will require letting go of some conventional practices and accepting that meaningful change is often slow. How we, as a collective of researchers, agree on these aspects rests on how coalitions are formed. Prioritising locally grounded knowledge, adolescents' lived experiences, and context-specific understandings does not mean achieving immediate "perfection" in measurement or intervention, nor do I believe this is possible given its demand for collective change; rather, it involves a gradual, iterative shift in how research questions are framed, methods are applied, and findings are interpreted.

Within my doctoral research, it may involve recognising that not all stages of the research process, whether framing, interpretation, or dissemination, can fully embody the principles of decolonial feminist practice at the same level. Instead, it means identifying areas for deeper engagement in future work, learning from each stage, and progressively strengthening commitments to locally grounded knowledge, participant agency, and context-specific understandings over time.

Crises and the Exacerbation of Existing Inequalities

A feminist intersectional lens also highlights how crises and policy responses affect social groups differently. Protective actions that benefit some may worsen existing disadvantages and oppression for others. Several studies show that crises such as pandemics, natural disasters, and armed conflicts disproportionately affect social groups, worsening existing inequalities (Saez, 2020). These events can increase unpaid care work for women caring for children while also raising the risk of job loss for women working in informal economies (Onyango et al., 2019). Crises also heighten the risks of violence, exploitation, and social exclusion among adolescent females, refugee and migrant women, and children living in poverty (Onyango et al., 2019). For males, crises often reinforce stigma linked to norms of masculinity (illness, dependence, or emotional distress), which can discourage help-seeking and create

barriers to accessing health care (Gittings, 2019). In the context of armed conflict, adolescent males may be exposed to recruitment into armed groups, direct violence, and profound psychological distress (Mugisho & Muthuki, 2022).

My doctoral research focuses on the COVID-19 pandemic, which both intensified and exposed existing inequalities (UN Women, 2021). Often described as a "shadow pandemic," it highlighted how measures intended to protect public health, such as lockdowns and restrictions on service access, can reinforce structural power imbalances and limit access to support, as shown inFigure 3 (UN Women, 2021). Compared to adults, the effects of lockdown restructuring and service restrictions may be heightened for adolescents, who may have limited social networks to respond to potentially harmful situations and remain dependent on their caregivers (Joska et al., 2020).

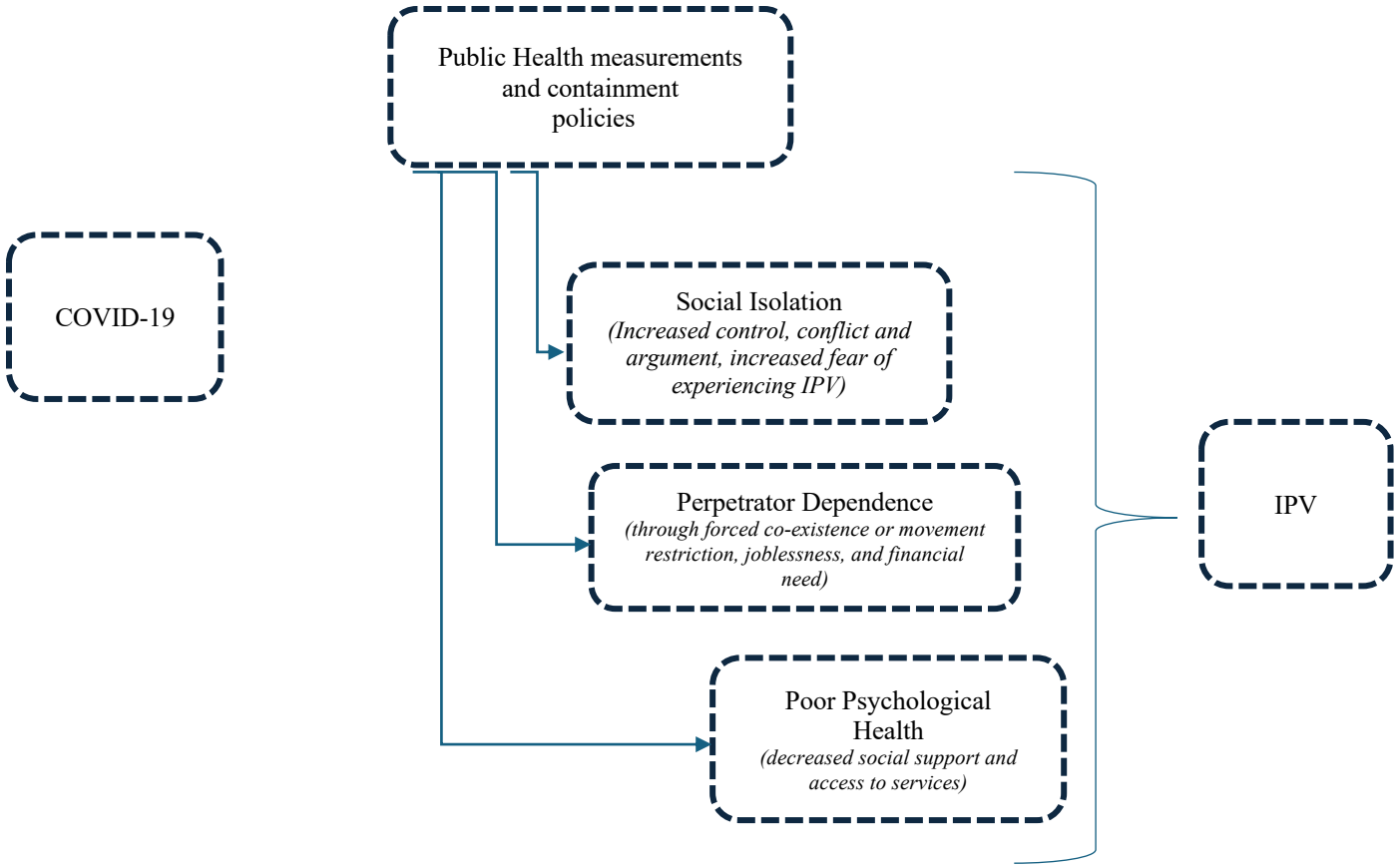


Figure 3: COVID-19 stressors and heightened risk of experiencing IPV

Operationalising intersectional feminist theory

With an understanding of sexual and intimate partner violence as rooted in gendered power dynamics and systems of oppression operating across multiple social identities, Bronfenbrenner's ecological systems model provides a helpful way to conceptualise how these forces interact between the individual and their ecological system (Bronfenbrenner, 1977; Guy-Evans, 2020). Within this framework, risk factors for violence include how individual experiences of marginalisation and social identity (*individual level*) intersect with harmful dynamics within families and intimate relationships (*relational level*), barriers to accessing services in the community (*community level*), and social norms that condone or normalise violence (*societal level*) (Bronfenbrenner, 1977; Guy-Evans, 2020).

Applying Feminist Perspectives to Research Design and Analysis

This research draws on intersectional feminist perspectives. By identifying patriarchy as the root of gender inequality, reinforced by gender norms and cultural practices, I see alternative theories as offering a microscopic examination of specific power dynamics across different levels of the social ecosystem (Meyer et al., 2024). For instance, economic theories that explore how poverty and financial dependency contribute to the increased risk of sexual and intimate partner violence align with feminist theory by highlighting how economic inequities, particularly among females, exacerbate their likelihood of experiencing violence (Baranov et al., 2021). Figure 4 by Meyer et al. (2024) shows how other theories, including economic, sociological, and physiological perspectives, can be understood as branches extending from the foundational feminist theory.

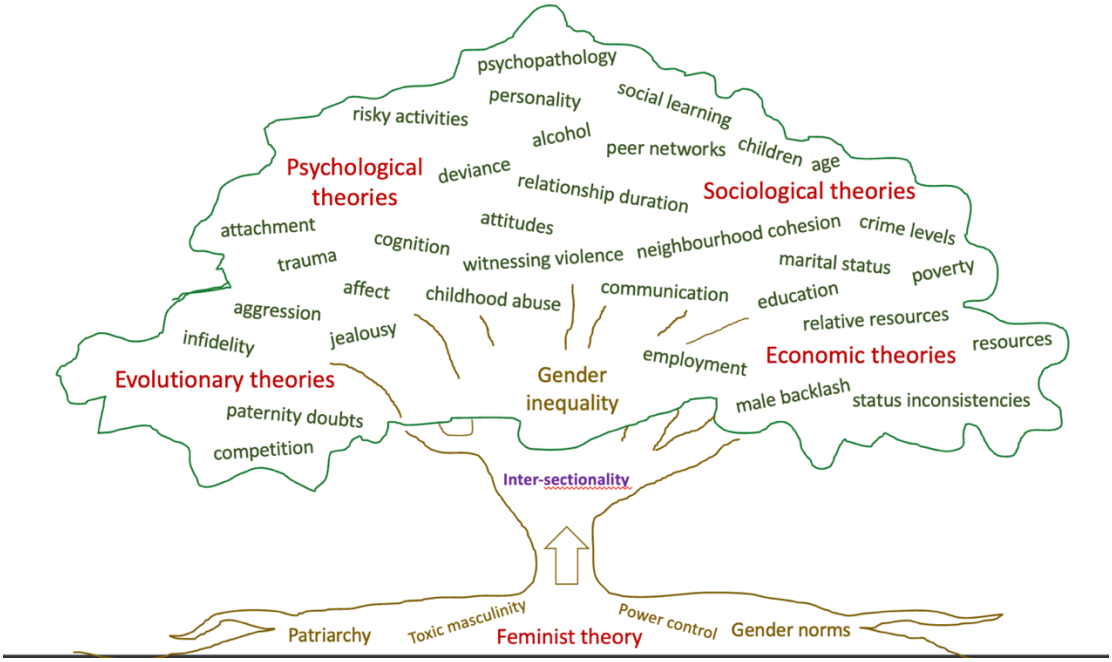


Figure 4: Feminist theory as a foundational theory of sexual and intimate partner violence from Meyer et al (2024).

Ontologically, this perspective assumes that violence is not a fixed or universal phenomenon but a socially and relationally produced reality, embedded within unequal social systems that privilege some groups while marginalising others (Bonu, 2024; Salami, 2022). Experiences of sexual and intimate partner violence among South African adolescents are produced through intersecting structures of power, such as patriarchy, colonial legacies, age hierarchies, and economic inequality, that shape how adolescents encounter and make sense of violence (Mendoza, 2016).

Epistemologically, adopting an intersectional feminist lens means recognising that all knowledge is situated and partial (Segalo & Fine, 2020). Knowledge about violence is produced from particular social positions, acknowledging that the perspectives of adolescents, particularly those most marginalised, offer critical insights into how structural power operates (Segalo & Fine, 2020). It also recognises my own positionality as a researcher and the need to interrogate how it shapes interpretation and knowledge production (Jamieson et al., 2022). Consequently, the knowledge

claims made in this thesis are contextual rather than universal: they aim to illuminate how interlocking systems of power shape adolescents' lives, and to contribute to an inclusive understandings of sexual and intimate partner violence that challenge dominant and gender-neutral framings.

Enduring Effects of Apartheid

Under apartheid, violence was normalised as a tool of state control, used to enforce forced relocations of Black South Africans, maintain White race dominance, and suppress resistance (Mtotywa et al., 2023). In the Eastern Cape, these dynamics were compounded by the Bantustan system of 'homeland' governance, which deliberately produced under-resourced regions to concentrate Black South Africans by implementing restrictive travel and trading policies (Modise, 2025). This resulted in high levels of circular labour migration, which in turn reduced parents' physical presence as primary caregivers within family units (Mtotywa et al., 2023; Ngumbela, 2021). Although apartheid formally ended, adolescents in the region continue to experience high levels of community violence and altered caregiving dynamics, as many adults still migrate in search of employment in more resourced provinces (Ngumbela, 2021; Raphela & Tjantjies, 2025). By situating the analysis within this regional and historical context, the doctoral research aims to recognise both structural constraints and the nuanced forms of agency adolescents and their families exercise within these conditions.

While recognition of the ongoing effects of colonial power may be aligned with insights from decolonial feminism, the doctoral research does not seek to re-theorise the category of gender itself. Instead, it adopts a postcolonial feminist orientation to situate quantitative patterns within broader social and historical contexts, without overclaiming theoretical scope. In engaging with these perspectives, I recognise that parts of my analysis risk reproducing the very narrative that postcolonial feminists

critique, particularly where transactional sex and gender norms are framed primarily in terms of vulnerability. Such framings can obscure how young women exercise agency within constrained socio-economic conditions, including the strategic, relational, and collective forms of negotiation, care, and aspiration that shape their everyday lives. To address this, my interpretation situates risk not as an individual characteristic, but as emerging from broader structural and historical conditions, while also acknowledging the practices through which adolescents navigate, resist, and reshape these conditions.

Centring the lived experiences of Adolescents

The research design incorporated participatory processes to ensure that the measures, priorities, and interpretations reflected adolescents' lived realities. Prior to the baseline survey for Mzantsi Wakho (2013) and HEY BABY study (2017), the research team held knowledge exchange camps with adolescents, a three-day weekend workshop, that explored relationships, safety, and sexual and reproductive health (Toska, 2017; Toska et al., 2022). I participated in the 2017 workshops in which adolescent mothers shaped the research priorities. Adolescents who took part in these preparatory workshops subsequently formed a Teen Advisory Group (TAG), which directly informed the wording and content of key sexual and reproductive health measures, including questions on relational fluidity and everyday safety concerns within and outside the home (Cluver et al., 2021; Toska, 2017).

Following baseline, the Teen Advisory Group (TAG) would meet prior to the start of the next data collection wave, and adolescents would continue to help set priorities and agendas for the next round (Cluver et al., 2021). For example, the content of participant pack that served as a token of appreciation for participating in the study was selected Adolescents. Although the study was longitudinal and prioritised repeated measures, survey tools were adapted across waves in response to adolescent

feedback on relevance and burden. When conceptualising COVID-19 data collection procedures, adolescents again guided the research process: TAG members advised on how interviews should be conducted under lockdown: viability of remote data collection via telephone interviews, and which baseline topics they felt most comfortable discussing over the phone (e.g., partner conflict, schooling experiences, mental health). TAG spaces were also an opportunity for the study team to share research findings and identify dissemination platforms that adolescent felt needed to know and would be more likely lead to improve for adolescents (Cluver et al., 2021).

Additionally, co-investigators of both cohort studies included practitioners working directly with adolescents living in the Eastern Cape: in schools, youth development programmes, and social work services (Kelly et al., 2022). This aimed to ensure that interpretations of the findings remained grounded in local practice and relational knowledge rather than external expertise alone. In this way, the findings contributed to revising school policy to support continued education for adolescent mothers during and after pregnancy (Kelly et al., 2025).

This doctoral thesis reflects on the adolescent's agency within the context of ongoing debate between the framing of adolescents who engage in transactional sex as victims of structural and economic pressures and as agents navigating complex relational economies (Mihretie et al., 2023; Wamoyi, Ranganathan, et al., 2019). Wamoyi et al. (2016) identify three paradigms of transactional sex: "sex for basic needs", "sex for improved social status", and "sex and material expressions of love". These forms can be understood along a spectrum from survival needs to personal choice and strategic use of relationships (Stoebenau et al., 2016; Wamoyi et al., 2016). "In the 'sex for basic needs' type, adolescents' involvement is mainly driven by poverty and male economic power, highlighting vulnerable relationships (Stoebenau et al., 2016; Wamoyi et al., 2016). In the 'sex for improved social status' and 'material expressions of love' types, adolescents exercise agency in using relationships to gain

status, resources, or emotional support, even within unequal gendered power structures (Stoebenau et al., 2016; Wamoyi et al., 2016). These paradigms show that transactional sex cannot always be framed solely as victimisation; care must be taken to recognise contexts of relational agency, negotiation, and structural risk.

A study of adolescent females, ages 15-24, from nine provinces in South Africa found that around 10% reported ever engaging in transactional sex, and 15% reported having stayed in a relationship for money or material gain (Duby et al., 2021). Another South-Africa study explored female adolescents', ages 13-20, perceptions of transactional sex using focus groups and described motivations included love, material support, improved social status attached to material gain, as well as limited bargaining power (Ranganathan et al., 2017). Within the limited evidence from the Eastern Cape, adolescent females may engage in transactional sex within these three paradigms: from sex for basic needs to sex for attainment of improved social status. (Duby et al., 2021; Kheswa, 2017; Zembe et al., 2013)

Applying Crenshaw's Three Dimensions of Intersectionality

This doctoral research draws on Crenshaw's three dimensions of intersectionality to theorise how structural and relational power dynamics operate in the lives of adolescents living in the Eastern Cape, as shown in Table 2. Structural intersectionality refers to the interplay of multiple systems of oppression that compound the vulnerabilities individuals experience (Crenshaw, 1991). Political intersectionality highlights how individuals belonging to multiple groups can be overlooked or excluded when political or advocacy efforts focus on only one aspect of their identities, such as race or gender, rather than both (Crenshaw, 1991). Representational intersectionality concerns how cultural and media portrayals of marginalised groups are shaped and can reinforce systemic inequalities (Crenshaw, 1991).

Table 2: Study population and application of Crenshaw's three dimensions of examining intersectionality

Intersecting Identities	Intersectional Dimension	Manifestation of lived experience or risk
Sex * Age	Structural	Adolescent males are often socialised to explore their sexuality freely which aligns with gender norms of dominance that celebrate risk-taking and control. In contrast, adolescent girls are expected to be passive and sexually pure. When adolescent females who assert sexual agency, they are judged harshly, often blamed for the consequences of sexual encounters, including violence and sexual exploitation (Zurbriggen & Capdevila, 2023).
	Representational	Sexually active adolescent females are portrayed as being irresponsible, while sexually active adolescent male portrayed was rightfully exploring (Robnett & Vierra, 2023).
	Political	Although many studies on violence against children include adolescents, they sit at the intersection of child protection and global advocacy agendas against violence against women, often resulting in their specific needs being overlooked. For example, shelters for children exclude older adolescents while shelters for women often cater for married adult females or those cohabiting with their partner (Guedes et al., 2016).
Sex*Age* Living with HIV	Structural	Compared to their HIV-uninfected counterparts, adolescent females living with HIV are more likely to experience health and service-based exclusion due to HIV-related stigma. While masculine norms allow for delayed service engagement among adolescent males and males living with HIV face fewer institutional barriers related to their HIV status (Gittings et al., 2023; C. A. Laurenzi et al., 2021).
	Representational	Adolescent females who contract HIV are often moralised as "irresponsible" and labelled "promiscuous". Adolescent males, even when stigmatized, are often not blamed for contracting HIV (Winskell et al., 2015).
	Political	New HIV infections are concentrated among female adolescents. In response, HIV prevention and testing has largely targeted adolescent females, with an emphasis on knowing the HIV status of your sexual partner/(s) (Maskew et al., 2019). To some extent, concentrating prevention efforts on adolescent girls can reinforce the patriarchal expectation that women alone should take responsibility for sexual health and HIV prevention within relationships.

Intersecting Identities	Intersectional Dimension	Manifestation of lived experience or risk
Sex * Age * Parenting	Structural	Adolescent mothers are not afforded the privileges that older mothers may gain within patriarchal structures—there is no celebration of their motherhood status. Instead, they are often expected to immediately assume childcare responsibilities, frequently with limited emotional or social support from the child's father. In contrast, adolescent fathers can delay their caretaker roles, sometimes justifying their involvement as primarily financial support that becomes relevant later in the child's life (Rubaya, 2022).
	Representational	Adolescent mothers have the right to access to the child support grant, however unlike older mothers, they are labelled as taking advantage of social protection services, with political narrative of adolescent pregnancy being an intentional mechanism or strategy to gain financial security (Mpike et al., 2016).
	Political	Adolescent females who become mothers, they are often excluded from school or lack targeted re-enrolment support, while adolescent males who father children are rarely held to the same standard (Erfina et al., 2019). Additionally, the health sector disproportionally prioritises the prevention of pregnancy compared to the management of adolescent's transition to parenting (Adedokun & Yaya, 2020). This results in gendered disparities in access to education and future opportunities.
Sex*Age * Living with HIV * parenting (among females only)	Structural + Representational + Political	Although South Africa has policies supporting integrated HIV and maternal health care, adolescents often have to navigate multiple service points where they may experience judgment or denial of care due to their age, HIV status, or pregnancy – triple burden (Groves et al., 2022). They may be morally judged for experiencing both early motherhood and acquiring HIV. Youth-specific policies are often fragmented across governmental departments (e.g., Health, Basic Education, and Social Development), leading to gaps in accountability and coordinated service delivery (Toska et al., 2020). As a result, adolescent mothers living with HIV fall through the cracks of both maternal health and HIV-specific youth programming.

This doctoral thesis considers the intersection of age and gender, situated within the context of how norms are formed and enforced during early adolescence. A global review from the Global Early Adolescent Study (GEAS) found that unequal gender norms and attitudes develop early in life, often intensifying between ages 10 and 14 (Kågesten et al., 2016). South African literature similarly shows that societal expectations for adolescent males and females differ, as do their willingness and ability to challenge unequal gender norms (Mtotywa et al., 2023; Reardon & Govender, 2013). Masculinities are commonly associated with toughness, independence, and sexual assertiveness (Mfecane, 2016; Morrell et al., 2012; Mtotywa et al., 2023). Femininities are often constructed around respectability, sexual restraint, caregiving, and deference, with adolescent girls more harshly judged when deviating from these ideals (Alexander-Scott et al., 2016)

For adolescents living with HIV, these gendered double standards become even more pronounced. Adolescent females are often blamed for acquiring HIV, perceived as promiscuous or careless, while adolescent males face significantly less moral scrutiny (Mhungu et al., 2023). Similarly, adolescent mothers bear a disproportionate burden of stigma and responsibilities compared to adolescent fathers (Toska et al., 2020). They are often expected to discontinue schooling early during pregnancy, face barriers to school re-enrolment, and are expected to undertake caregiving roles with minimal institutional support (Govender et al., 2020). Adolescent fathers, by contrast, are rarely held equally accountable and may postpone parenting responsibilities without the same long-term consequences (Erfina et al., 2019).

These overlapping forms of disadvantage can result in a triple burden faced by adolescent mothers living with HIV (Erfina et al., 2019; Toska et al., 2020). The interlocking of age-based exclusion, patriarchal gender expectations, and HIV-related stigma all limit their access to responsive health, education, and social services (Groves et al., 2022). For example, adolescent-friendly services often fall all short of

addressing the complex realities of adolescent mothers living with HIV, as such services often focus primarily on delayed sexual debut and first pregnancy (Groves et al., 2022). As a result, they are not afforded the recognition, support, or protection extended to older mothers or to adolescents living with HIV who are not parents.

Burden estimates of sexual and intimate partner violence

Building on this intersectional framing, this section presents empirical evidence on how experiences of sexual and intimate partner violence among adolescents vary by sex, age, HIV status, and early parenthood, both as isolated identities and in combination. While some studies have begun to explore variation across these dimensions, the available evidence remains fragmented, with limited comparative or longitudinal analysis that captures the complexity of adolescents' lived experiences.

Sexual violence burden estimates

- **Sex-specific prevalence estimates of sexual violence**

Based on nationally representative surveys conducted between 2010 and 2022 in 120 countries, the latest UNICEF global report estimates that 650 million females and 530 million males have experienced sexual violence in childhood (UNICEF, 2024). This translates to 1 in 5 females and 1 in 7 males (UNICEF, 2024). Within Eastern and Southern Africa, estimates are higher, with 1 in 3 females and 1 in 5 males having experienced sexual violence before the age of 18 (UNICEF, 2018b).

Several meta-analyses have reported on the sex disparities of sexual violence against adolescents (Barth et al., 2013; Hillis et al., 2016; Pereda et al., 2009; Stoltenborgh et al., 2011). Based on data from 22 countries, seven from Africa, early work by Pereda and colleagues (2009) found that 20% of females experienced sexual violence by age 18, compared to 8% among males (Pereda et al., 2009). Stoltenborgh and colleagues (2011)

later reported similar findings in a meta-analysis of 217 research articles, eight of which were from Africa and published between 1980 and 2008. The prevalence of sexual violence among adolescent females was 18% compared to 8% among males (Stoltenborgh et al., 2011). The most recent meta-analysis by Barth and colleagues (2013) includes data from 55 studies published between 2002 and 2009, nine from Africa. The results also showed a higher prevalence of sexual violence among females compared to males, which persisted when estimates were disaggregated by sexual violence forms: 31% vs 16% for non-contact sexual violence, 13% vs 6% for contact sexual violence, and 9% vs 3% for forced penetrative sex, respectively (Barth et al., 2013).

Of the three meta-analyses, only one provided regionally disaggregated estimates. These estimates revealed that rates of sexual violence for both males and females living in Africa are higher than the global average but are similar between the sexes within the region (Stoltenborgh et al., 2011). The lifetime prevalence of sexual violence by age 18 was 20% among African females, compared to an 18% global average. Among African males, it was estimated at 19%, compared to a 9% global average (Stoltenborgh et al., 2011). These findings were later supported by the South African Optimus study, which observed no sex differences in the overall prevalence of sexual violence among 9,717 adolescent males and females, ages 15-17, approximately 34% and 37%, respectively (Artz et al., 2018). A South African birth cohort of 3273 children found no sex differences in the lifetime prevalence of any form of sexual violence at age 22: 23% for females and 24% for males (Ritcher et al., 2018). However, when estimates were further disaggregated by form, the analyses revealed that females were more likely to report contact forms of sexual violence compared to males (Artz et al., 2016). Data from 12 Violence Against Children Surveys (VACS) showed greater sex disparities for forced penetrative sex compared to other forms of contact and non-contact sexual violence (Ligiero, 2019).

Although evidence shows that females are more likely to experience sexual violence, the greater availability of prevalence estimates for females compared to males may limit our nuanced understanding of how different forms of sexual violence vary between genders. Globally, UNICEF estimates that approximately 60% of countries have national data on sexual violence experienced during adolescence for females, and only 17% have national data sources on males (UNICEF, 2024). Only 11 of 58 countries committed to the Sustainable Development Goals had estimates for sexual violence against adolescent males in the year 2020 (UNICEF, 2020). As noted above, only one of the four meta-analyses provided estimates for males living in Africa. The inclusion of males in the research agenda can provide critical insights into cycles of abuse, power hierarchies, and broader societal factors, enabling more comprehensive solutions that benefit all children. This broader understanding can support inclusive prevention strategies that acknowledge and address vulnerabilities across the sexes.

Since the early 2000s, the occurrence of sexual violence has been described as an epidemic in South Africa (Jewkes et al., 2002; Joyner, 2016). In the most recent nationally representative household survey of 9717 adolescents aged 15-17, approximately 1 in 3 adolescent males and females have experienced sexual violence in their lifetime (Artz et al., 2018). Forms of sexual violence assessed included contact and non-contact forms such as receiving unwanted pornographic images, being forced to watch others masturbate, unwanted touching of private parts and forced penetrative sex (Artz et al., 2016). Between 2015 and 2018, at least 41% of reported rape cases were perpetrated against children and adolescents aged 0-19 (Statistics South Africa, 2019). In the 2019/2020 Annual South African Crime Statistics report, more than 24,000 children aged 0-18 were reported to have experienced sexual violence (South African Police Service, 2020). The most recent crime statistics for 2022 indicate a 10% increase in reported cases of sexual violence against adolescents compared to the previous year (2019-2020) (South African Police Service, 2022).

- **Age-specific prevalence estimates of sexual violence**

There is a paucity of data on sexual violence exposure during early adolescence, ages 10-14. Early adolescence is commonly defined as ages 10–14, while late adolescence refers to ages 15–19 (World Health Organisation, 2017). These developmental stages differ markedly in terms of physical, cognitive, and social maturation (World Health Organisation, 2017). Most nationally representative studies, such as the Violence Against Children Survey, the Demographic and Health Survey, and the Multiple Indicator Cluster Survey, sample adolescents aged 13 and older (Ahinkorah et al., 2020; Chiang et al., 2016). Similarly, school-based studies often focus on adolescents aged 15 years and older (Andersson et al., 2012; Ward et al., 2018). Exposure to different forms of sexual violence is likely to vary with age; with early evidence from South Africa indicating that non-contact sexual violence may be more prevalent in early adolescence, with contact and exploitative forms of sexual violence being more likely to occur during late adolescence (Madu & Peltzer, 2001).

While ethical and methodological challenges complicate research with adolescents under 14, the absence of data on this group limits our ability to design early prevention interventions. Within the limited existing data, the lifetime prevalence of sexual violence shows an increase in exposure to sexual violence with age, with most of these findings focusing on contact (force kissing, touching and sex) and non-contact (sexual advances and indecent exposure) forms of sexual violence (Barth et al., 2013; Ravi & Ahluwalia, 2017). In South Africa, the mean age of victimisation across all forms of sexual violence was 14 for females and 15 for males (Artz et al., 2018). Among violations committed by a known adult, females recalled their earliest incident at age four and males at age six (Artz et al., 2018). VACS data from 16 countries in Africa, Latin America and Europe found that 47% and 53% of adolescent females and males, respectively, reported that their first experience of sexual abuse happened before the age of 13 (Harker Roa et al., 2023).

Intimate partner violence among females

A recent meta-analysis of global rates of physical and/or sexual intimate partner violence based on data from 2002–2018 found that the highest past-year prevalence occurred among females aged 15–24 years (Sardinha et al., 2022). In this age group, an estimated 16% of females were exposed to such violence, with the true proportion likely between 13% and 19% (Sardinha et al., 2022). For the same age group, a meta-analysis using Demographic and Health Surveys data from 27 African countries found that the past-year prevalence of physical and/or sexual intimate partner violence was higher among those married and/or cohabiting with their intimate partner, at 25.6% (Wado et al., 2021a). Across both meta-analyses, the African continent had higher levels of lifetime intimate partner violence (28%-40%) than those estimated at the global level (27%) (Sardinha et al., 2022; Wado et al., 2021).

Evidence indicates that the risk of intimate partner violence increases during pregnancy, with adolescent mothers particularly vulnerable due to low childcare support, financial hardship, and punitive school policies (Erfina et al., 2019; Wado et al., 2021). In Uganda, where a quarter of women are adolescent mothers, intimate partner violence during pregnancy ranges from 25% to 55% (Asiimwe et al., 2022; Auma et al., 2020). A recent South African cohort study found that one in five adolescent mothers aged 15-19 experienced physical intimate partner violence during pregnancy (Le Roux et al., 2019). Another study revealed that 41% of mothers, aged 15-24, faced psychological and/or emotional intimate partner violence during postpartum (Gebrekristos et al., 2020). However, both studies have small sample sizes of less than 100 mothers and are limited to pregnancy and HIV prevention contexts (Gebrekristos et al., 2020; Le Roux et al., 2019).

HIV and sexual and intimate partner violence

HIV and sexual and intimate partner violence have *bidirectional relationships* wherein experiences of sexual and intimate partner violence increase susceptibility to HIV, and living with HIV, in turn, heightens the risk of experiencing such violence. Several studies have shown that experiencing sexual violence and intimate partner violence is associated with increased HIV risk, either directly through rape or indirectly through diminished ability to negotiate condom use or refuse sex in violent or coercive relationships (Dunkle & Decker, 2013; Maman et al., 2000). However, far fewer studies have explored the reverse relationship. Namely, the risk of experiencing sexual and intimate partner violence after HIV acquisition, especially among adolescent females and mothers (Christofides & Jewkes, 2010; Jewkes et al., 2010).

In South Africa, Zimbabwe, and Eswatini, two in five women reported experiencing psychological or physical intimate partner violence after HIV status disclosure (Meskele et al., 2021). A meta-analysis of 28 studies, half from Eastern and Southern Africa, found that women living with HIV were twice as likely to experience physical and/or sexual intimate partner violence as their HIV-negative counterparts (Li et al., 2014). An updated meta-analysis of twelve studies from sub-Saharan Africa found that women living with HIV experienced higher rates of psychological intimate partner violence than those without HIV, with a difference of up to 20% in past-year prevalence estimates (Tenkorang et al., 2021). However, these studies typically draw on samples of women aged 18 and older. Where adolescent data exist, they are often drawn from cross-sectional, health facility-based studies that do not disaggregate by age or examine longitudinal patterns (Yonga et al., 2022).

One recent pooled analysis of nationally representative data found that adolescent girls aged 15–24 living with HIV had a 16% past-year IPV prevalence, compared with 8% among those without HIV (Kuchukhidze et al., 2023). However, the sample size

for those living with HIV was significantly smaller (Kuchukhidze et al., 2023). In Zambia, among adolescents aged 15–24 living with HIV, 6.7% of females and 4.8% of males reported rape in the past year (Merrill et al., 2018). While comparable figures for adolescents without HIV are lacking, research shows that adolescents living with HIV are more likely to experience orphanhood, discrimination, and material deprivation, factors that increase vulnerability to sexual violence (Cluver et al., 2020; Toska et al., 2020).

This data gap limits our ability to understand how living with HIV, when combined with intersecting social identities and structural disadvantages, may heighten the risk of sexual and intimate partner violence. For example, it prevents us from examining how these experiences interact within overlapping systems of stigma, gender inequality, and poverty, resulting in compounded harms—such as emotional distress, disengagement from care, and broader social exclusion—that cannot be fully explained by any factor in isolation (Cluver et al., 2022; Tsai, 2018). The public cost of this constrained understanding is significant: without robust evidence on these intersecting pathways, prevention and response systems remain poorly equipped to identify at-risk groups early, anticipate compounded vulnerabilities, or invest in interventions that disrupt these reinforcing inequities.

COVID-19 and sexual and Intimate Partner Violence

Most of the literature on the effect of the COVID-19 pandemic on sexual and intimate partner violence levels relies on data from adult populations, in high-income settings and cross-sectional data (Kourti et al., 2021). Insights from these studies may not fully transfer to adolescents because their developmental stage creates unique vulnerabilities and risk patterns. Furthermore, the social and economic contexts in many African settings differ substantially from those in high-income countries, further limiting the relevance of these findings.

For example, early administrative data documenting increases in intimate partner violence during the pandemic primarily came from adult populations in the United States, Spain, and the United Kingdom (Bunce et al., 2024; Jacques-Avinõ et al., 2020; Sapire et al., 2022). While some African countries have similar routine data from helplines, law enforcement, and healthcare facilities, these services are less available and less widely covered (Peterman et al., 2020; Vetten, 2021). These routine data sources may also be more likely to reach individuals who are socially and economically better resourced, those who believe their reports will be taken seriously, that help is accessible, and that seeking support will not lead to further harm (Ndlovu et al., 2022). As a result, administrative data in these contexts likely reflects a narrow demographic and underestimates the true scale of violence, especially among the most marginalised adolescents. For instance, in South Africa, aggregated estimates from social services and law enforcement indicate a decrease in gender-based violence during the COVID-19 pandemic, including sexual violence cases among adolescent females, highlighting potential underreporting and gaps in service access (Ndlovu et al., 2022).

Within the limited data on adolescents living in Africa that are not derived from service-based sources, findings on the effect of COVID-19 on intimate partner violence are mixed and inconclusive (Nakaike et al., 2025; Ndlovu et al., 2022; Shukla et al., 2023). A longitudinal study conducted between 2019 and 2021 in Kenya found no difference in the past-year prevalence of physical and/or sexual intimate partner violence (17.5%) before and during COVID-19 among adolescent females aged 15-24 (Decker et al., 2022). In contrast, a cross-sectional analysis reported a 42% past-year prevalence of physical and/or sexual intimate partner violence during COVID-19 among Kenyan adolescent females of the same age group (Bevilacqua et al., 2022). For the same population, Karp et al. (2021) found a decrease in the cross-sectional analysis of the past-month prevalence of psychological, physical, or sexual intimate partner

violence during COVID-19, 23% pre-pandemic compared to 11% during COVID-19. In Ghana, sexual violence perpetrated by non-intimate partners was estimated to have increased by 12-30% during COVID-19 among adolescent females aged 13-19 (Owusu-Addo et al., 2023). However, there is virtually no data on the impact of COVID-19 on intimate partner violence among adolescent mothers globally and in the African region. Yet, one in four girls in the region gives birth before age 18 (UNICEF, 2022).

These mixed findings highlight methodological variation and reveal a critical gap in our understanding of how crisis conditions such as COVID-19 interact with existing structural risks. If COVID-19 amplified the drivers of sexual and intimate partner violence, did it do so uniformly, or did its effects vary based on pre-existing social, economic, and health-related inequities? In settings with a high HIV burden where adolescent girls already face chronic exposure to violence, stigma, and economic precarity, pandemic-related disruptions may have shaped experiences of violence in distinct and disproportionate ways. Yet, without disaggregated adolescent-specific data, we remain unable to assess whether and how COVID-19 differentially impacted those already situated at the nexus of structural and health-related disadvantage. Understanding these dynamics is essential for designing age-appropriate and evidence-based interventions.

Prevention: Layered approaches in the form of cash-plus

Building on the understanding that sexual and intimate partner violence arises from interpersonal power dynamics rooted in patriarchy and its intersection with other oppressions linked to social identities, prevention efforts must be comprehensive and multifaceted. Integrated social protection or cash-plus approaches, which combine economic support with complementary multisectoral services, are among the growing strategies for targeting the multiple intersecting pathways that sustain sexual and intimate partner (Cirillo et al., 2021). This section of the chapter explores the evolving role of cash transfer programmes as a form of social protection, the theoretical foundations underlying the selection of complementary provision and the evidence and gaps on its effects in reducing adolescent experiences of sexual and intimate partner violence.

The rise of Cash Transfer programmes as a form of Social Protection

Social protection refers to policies and programmes designed to help individuals and households reduce deprivation, mitigate risk exposure and strengthen resilience to economic shocks and natural crises (Garcia & Moore, 2012). This includes social assistance, social insurance and labour market programmes (Garcia & Moore, 2012). Among these, cash transfers, both unconditional and conditional, are the most widely implemented forms in sub-Saharan Africa and have gained prominence as a mechanism to improve outcomes for vulnerable adolescents (Ojong & Cochrane, 2021). Unconditional cash transfers are payments provided without behavioural requirements, whereas conditional cash transfers require recipients to meet specific behaviours (Garcia & Moore, 2012).

Two major influences have driven the rise of cash transfer programmes in Africa (Ojong & Cochrane, 2021). First, influential models in Latin America, such as Brazil's *Bolsa Família* (launched in 2003) and Mexico's *Progresa/Oportunidades* (launched in

1997), demonstrated the effectiveness of cash transfers in reducing poverty and improving maternal and child health (Cavalcanti et al., 2025; Parker & Tood, 2017). These development gains aligned closely with the priorities of most African countries, as reflected in their commitment to the Millennium Development Goals launched in 2000 (Santosh & Indumati, 2020). In parallel, the HIV/AIDS crisis created an urgent need for social protection to support households with vulnerable and orphaned children due to parental illness or mortality, and economic disruption (Ojong & Cochrane, 2021). In 2000, an estimated 13 million children under the age of 15 in Africa had lost one or both parents to AIDS, accounting for 90% of children globally affected by HIV-related orphanhood at that time (Shetty & Powell, 2003).

Cash transfers have shown promise in improving development and health outcomes across many African countries. Multiple evaluations have documented positive impacts on adolescent wellbeing, with studies consistently reporting improvements in mortality, food security, material wellbeing, school enrolment, and attendance among children and adolescents under 19 years (Cirillo et al., 2021). More recently, evidence on the effects of cash transfers on sexual and intimate partner violence outcomes has begun to emerge. Peterman et al. (2017) reviewed 14 impact evaluations examining the link between cash transfers and violence prevention. These studies assessed 29 measures of sexual violence, including 20 indicators of transactional sexual exploitation (Peterman et al., 2017). Among these measures, approximately 40% showed protective associations (Peterman et al., 2017). This body of evidence included evaluations of unconditional cash transfers such as Kenya's Cash Transfer for Orphans and Vulnerable Children, South Africa's Child Support Grant, and Malawi's Social Cash Transfer Programme (Cluver et al., 2013; Decker et al., 2018; Rosenberg et al., 2014).

Notably, most evaluations concluded that while cash transfers provide a crucial foundation for reducing deprivation, they alone are insufficient to address the broader

social and structural drivers of health, such as gender inequality and harmful social norms (Peterman et al., 2017; Roelen et al., 2017). To address this limitation, combining cash transfers with complementary interventions, often referred to as 'cash-plus ', has emerged as a strategy to maximise their effectiveness (Asfaw & Davis, 2018; Peterman et al., 2017).

Theoretical underpinning of the cash-plus model of violence prevention

Theoretically, cash transfers that improve household economic security may reduce the risk of violence through several pathways. First, alleviating financial stress can lower household tension and conflict, which are known risk factors for experiencing sexual violence (Finkelhor, 2009). Second, adolescents living in poverty may face challenges meeting basic needs (affording necessities), increasing their exposure to sexual exploitation and coercion; cash transfers can reduce this necessity (Hatcher et al., 2022). Third, increased household resources can strengthen caregivers' capacity to provide supervision, reduce neglect, and protect adolescents from harmful relationships (Finkelhor, 2009). Finally, by improving material wellbeing and reducing economic dependence, cash transfers can enhance adolescents' agency and bargaining power in their relationships (Özler et al., 2020). These mechanisms operate at both the individual and relational levels, as illustrated in

Figure 5.

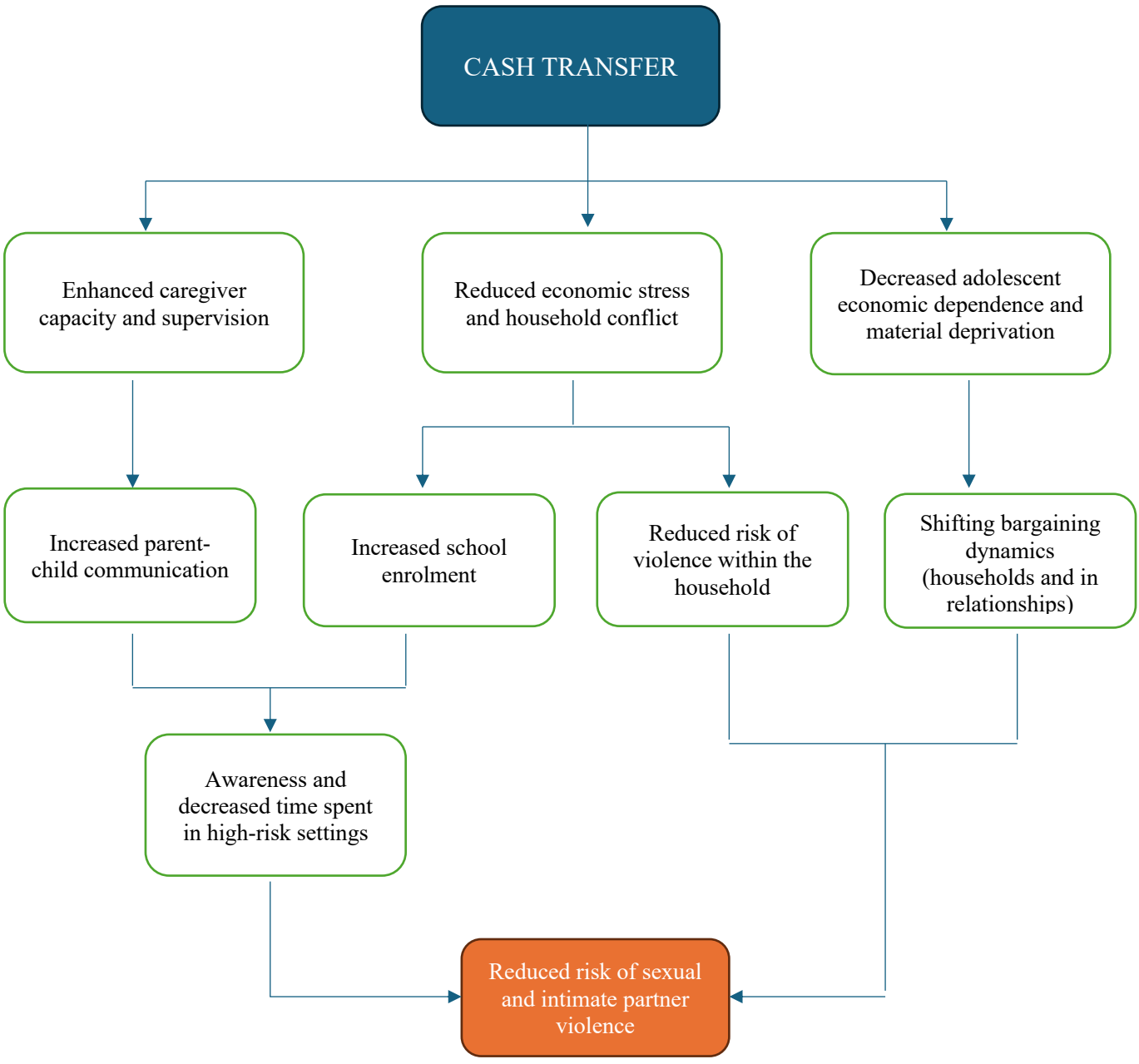


Figure 5: Theoretical pathways linking cash transfer to sexual and intimate partner violence risk among adolescents

Complementary interventions to cash-transfer programmes aim to strengthen economic pathways to risk reduction, such as improving school retention or

household functioning, or to operate through alternative pathways, including shifting harmful social norms, building adolescents' empowerment, and enhancing their ability to exercise rights and make safe choices (Roelen et al., 2017). The cash-plus model is underpinned by the idea that economic and non-economic components can work synergistically. This can be by reinforcing shared pathways or by engaging distinct, complementary mechanisms that address multiple drivers of violence (Roelen et al., 2017).

A notable example is the DREAMS Partnership (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe), implemented widely across ten Eastern and Southern African since 2015 (Saul et al., 2018). DREAMS aimed to lower the risk of HIV and gender-based violence among adolescent females aged 15-24 by offering multisectoral interventions selected based on the quality of evidence (such as the number and rigour of evaluations), consistency of results across studies, and prudence (Saul et al., 2018). The resulting core packages included social protection (school subsidies, savings groups), empowerment (social asset building, expanded access to family planning services), family strengthening (parenting programs and discussion groups on norms and gender-based violence), and community mobilisation initiatives (Saul et al., 2018). Although the core intervention package is broadly similar across countries, implementation has varied by local context, particularly in how complementary components were linked to existing national services and sectoral structures (Saul et al., 2018).

Impact of cash-plus approaches on sexual and intimate partner violence among adolescents

Evidence on cash-plus approaches to preventing sexual and intimate partner violence among adolescents remains limited (Machado et al., 2024; Peterman et al., 2017; Rogers et al., 2024). A recent systematic review of cash-plus programmes for adolescents in Africa by Rogers et al. (2024) examined 37 studies; of these, only 3

measured violence-related outcomes, and even fewer explicitly focused on sexual or intimate partner violence. Similarly, a newly published evidence gap map of cash-based interventions by Machado et al. (2024) reviewed over 100 studies but found that fewer than 10 evaluated sexual or intimate partner violence among adolescents. Together, these reviews highlight the need for more rigorous research to understand how combining cash transfers with complementary interventions can reduce adolescents' risk of sexual and intimate partner violence (Machado et al., 2024; Rogers et al., 2024).

Among those programmes that do measure sexual and intimate partner violence, complementary interventions added to cash transfers in African settings primarily aim to reduce risks and strengthen protective factors across individual, relational, and community levels (Cirillo et al., 2021; Machado et al., 2024; Rogers et al., 2024). Empowerment interventions include conditional and unconditional cash transfers, educational subsidies, and in-kind support such as school uniforms and transport vouchers, aimed at reducing adolescents' economic vulnerability and enabling continued engagement in education (Baranov et al., 2021; Roelen et al., 2017). Life skills training targets the individual level by enhancing adolescents' knowledge and confidence.

Family strengthening interventions address relationship power dynamics associated with conflict within households at the relational level (Gardner & Leijten, 2017). This can include community dialogue and parenting programmes designed to strengthen caregiver supervision, communication, and emotional support (Rudolph et al., 2018). Educational incentives help overcome community-level barriers to schooling, particularly those linked to gender inequality (Kilburn et al., 2017). Linkages to health and protection services engage both community and societal levels by improving access to care and support systems, while also empowering adolescents to exercise agency (Rogers et al., 2024). Lastly, community mobilisation initiatives focus on

shifting harmful gender norms, promoting HIV prevention through community dialogues, and increasing access to biomedical services such as HIV testing, counselling, and pre-exposure prophylaxis (Abramsky, Devries, Michau, Nakuti, Musuya, Kiss, et al., 2016; Saul et al., 2018). The above-mentioned complementary components align with feminist theory that preventing violence requires addressing both immediate risks and the underlying power dynamics, gendered imbalances, and systems of oppression that sustain them.

Table 3 below summarises notable examples of cash-plus strategies implemented in Africa and their documented association with reduced sexual and intimate partner violence outcomes among adolescents.

Table 3: Summary of Cash-Plus Programmes Evaluated in Africa and Their Effects on Sexual and Intimate Partner Violence Outcomes

Country and Program Name	Components	Age Group	Setting	Study design	Effect Size by Sex	Time Point
Tanzania **Ujana Salama Cash Plus Model** (Maara et al., 2023; UNICEF Innocenti, 2024)	Unconditional CT Livelihoods training HIV & SRH services linkage	14–19 year Females and males	cRCT Rural villages control: cash-transfer only	Increasing household economic security, strengthening adolescents' knowledge and confidence, and improving their connection to health, education, and livelihood opportunities. Together, these pathways help delay marriage and pregnancy, reduce experiences of transactional sexual exploitation and promote healthier, more empowered transitions to adulthood.	**Outcome:** *Transactional sexual exploitation* Females: no significant reduction Males: not assessed **Outcome:** *Lifetime sexual violence* Females: -7.2% point reduction Males: : no significant reduction **Outcome:** *Intimate Partner Violence* Females: no significant reduction Males: : not assessed	2017-2021 (48 mons)
10 Eastern and Southern Africa **DREAMS** (Floyd et al., 2022; Mathur et al., 2022)	Unconditional and conditional on schooling Family planning access (HIV, contraception, circumcision) Parenting programs, Social Assets building Community mobilization	15–24 years Females only	Quasi-experimental Urban & Rural Controls: none beneficiaries multiple	Layering of intervention that on their own, have been associated with reduced risk of sexual violence among adolescents will act synergistically to enhance impact.	**Outcome**: *Transactional sexual exploitation* Increased odds in Kenya (aIRR=1.77) and Zambia (aIRR=2.55) among females ages 20-24. **Outcome**: *Intimate Partner Violence* Reduction in sexual forms, 49%-68%: Kenya (15–24yrs) and Malawi(15–24years) Reduction in physical IPV forms: 38% in Malawi (20–24years) **Outcome**: N*on-partner sexual violence* 56% educed Kenya (20–24years) and Zambia (20-24 years)	2015 Between 12-48 months

Country and Program Name	Components	Age Group	Setting	Study design	Effect Size by Sex	Time Point
Kenya **Adolescent Girls Initiative** (Austrian et al., 2022; Kangwana et al., 2022)	Conditional CT on school enrolment and continuation SRH services& life skills Wealth creation and savings Community conversations	11–14 years Females only	cRCT Urban (Kibera) + Rural (Wajir) Control: Community conversations	CT to reduce transactional exploitation drive by economic strain. Dialogues to promote changes in harmful norms and attitudes. Safe spaces to improve agency and knowledge	Outcome: *Transactional sexual exploitation* and sexual violence (contact and non-contact) Females: No significant reduction in both sites for any of the outcomes.	2015-2018 24 and 48 mons

When grouped by form of violence, the reviewed programmes showed mixed and often limited impacts. In Tanzania, which had one of the longest follow-up periods of 4 years, the Ujana Salama Cash Plus Model was associated with a 5-percentage-point reduction in the likelihood of ever experiencing sexual violence among females (Palermo et al., 2021). There were no significant changes in the experiences of transactional sexual exploitation and intimate partner violence among females (Maara et al., 2023; Palermo et al., 2021; UNICEF Innocenti, 2024).

For intimate partner violence, evidence was somewhat more promising but still variable (Lowe et al., 2022). In the DREAMS programmes, reductions in sexual forms of intimate partner violence were only observed in Kenya and Malawi, with decreased likelihood of non-partner-perpetrated sexual violence experiences observed in Malawi as well, but among those aged 20- 24 years (Mathur et al., 2022). There was no reduction in any form of sexual violence for South Africa and Zambia (Floyd et al., 2022; Mathur et al., 2022). On the other hand, participation in DREAMS was associated with at least double the odds of experiencing transactional sexual violence among adolescents aged 20-24 in Kenya and Zambia (Mathur et al., 2022). Together, these patterns show that even intensive, multi-sectoral interventions can produce mixed or unintended effects, underscoring the need to understand local context, age-specific vulnerabilities, and implementation dynamics when designing and scaling prevention programmes.

Table 3 also points to several critical gaps in our understanding of how cash-plus interventions can prevent sexual and intimate partner violence among adolescents. First, adolescent boys are often excluded from programme design and evaluation, reflecting an implicit assumption that sexual violence is primarily a female experience (Kavenagh et al., 2023; Moss et al., 2023). As a result, little is known about the potential of cash-plus strategies to prevent violence among boys, despite evidence that economic stress and gendered expectations also increase their vulnerability to

coercion, exploitation, and early sexual debut (Morrell et al., 2012; Blackburn et al., 2022). Second, most evaluations do not systematically disaggregate effects by narrower age groups, making it difficult to determine whether interventions work differently for younger versus older adolescents or for those transitioning into early adulthood (Machado et al., 2024). Third, there is limited evidence on how cash-plus strategies operate in real-world settings where provisions are accessed through referrals or parallel government programmes rather than through vertical delivery models. Fourth, while many interventions were implemented in high HIV burden settings, few studies have explicitly focused on adolescents living with HIV or examined whether the intersection of HIV status, poverty, and gendered power imbalances shapes intervention effectiveness. Together, these gaps limit our ability to determine which cash-plus combinations work best, for whom, and under what circumstances.

To address these gaps, my doctoral research used longitudinal observational data to examine the association between cash transfers, broadly defined to include poverty-targeted social grants and non-contributory social pensions, and three complementary provisions linked to reduced past-year sexual violence. The plus provisions were (i) *parenting support* (positive parenting and parental supervision), (ii) *household economic security* (food security and the ability to afford necessities), and (iii) *school enrolment or completion*. These provisions were selected for three main reasons: first, they are frequently examined in existing empirical research on adolescent experiences of violence, allowing for comparison; second, they align with components already targeted in many social grant and adolescent-focused programmes; and third, they represent practical and policy-relevant domains where simultaneous intervention is both feasible and scalable in real-world settings. Drawing on intersectional feminist theory and existing literature, I hypothesised a set of direct and indirect pathways through which these provisions might reduce the risk of past-year sexual violence.

Chapter summary

In this chapter, I applied feminist theory to examine the root causes of sexual and intimate partner violence. I highlighted the importance of an intersectional approach to understanding adolescents' experiences of sexual and intimate partner violence, even during crises. I presented empirical evidence to highlight key gaps in knowledge about the burden of sexual and intimate partner violence across different adolescent groups and its interaction with COVID-19. The chapter concluded with an examination of evidence on cash-plus approaches and their associated reductions in sexual and intimate partner violence. Next, Chapter III presents the research design and methods

Chapter III: Research Methodology

In this chapter, I describe the methodological approach used to address the aims of the doctoral research. This study constitutes a secondary analysis of data from two primary cohort studies conducted in the Eastern Cape Province of South Africa. I begin by outlining the study settings, recruitment strategies, data collection procedures, and ethical considerations of these primary studies. I then present the construction of key variables and evaluate the statistical approaches considered for each research question. While detailed methodologies are provided in each article-based chapter, this section offers a consolidated overview to support interpretation across the thesis.

Quantitative study selection

The choice of a quantitative approach preceded the formulation of specific research questions and reflected a commitment to producing generalisable, scalable, and policy-relevant evidence to inform interventions. The research aimed to uncover patterns and disparities in adolescents' experiences of sexual and intimate partner violence across social identities (such as sex, HIV status, and early parenthood), and to test theoretical pathways through which structural interventions may reduce violence risk. These questions require measurable constructs, disaggregated comparisons, and statistical modelling to identify associations and estimate risk distributions across populations. Additionally, the doctoral research is situated within a public health and social epidemiological tradition that prioritises population-level evidence, structural determinants, and actionable prevention pathways. While qualitative methods can offer depth and nuance, they do not support the comparative, inferential, and generalisable insights needed to answer the research aims. Therefore, choosing quantitative methods reflects a deliberate philosophical alignment with the research aims: to support scalable, evidence-based interventions by identifying

measurable disparities and ways to prevent or lower sexual and intimate partner violence among adolescents in Africa.

Importantly, this work also contributes to the evolving application of intersectional feminist theory in quantitative public health research. While intersectionality is increasingly used in qualitative and conceptual analyses of gendered violence, its integration into quantitative studies, particularly those involving adolescents, remains limited (Baird et al., 2021; Hill Collins et al., 2021). The doctoral research aimed to advance intersectional understandings in quantitative research methodologies by using statistical methods not only to estimate disparities but also to examine how social identities intersect to shape patterns of risk (Baird et al., 2021).

Selection of data sources

When selecting data sources for this doctoral research, I followed two key principles: ethical integrity and conceptual validity. First, I prioritised research that meaningfully engaged adolescents not only as subjects but also as contributors to the research process, from formative design and instrument development through to interpretation and dissemination. This was especially important given the sensitive nature of sexual and intimate partner violence and the need to safeguard young people's safety, dignity, and agency throughout the research process. Second, I sought datasets that used validated, contextually appropriate, and policy-relevant measures of the constructs under investigation, including experiences of violence, household and relational dynamics, schooling, and economic support. These criteria were essential to ensure the research was ethically grounded while generating robust, actionable evidence.

With these principles in mind, I selected two longitudinal cohort studies conducted in South Africa's Eastern Cape Province. Paper 1 and Paper 2 of my doctoral research used data from the Mzantsi Wakho Adolescent Health cohort study, which primarily investigated risk and protective factors associated with improved HIV-related outcomes, including sexual and reproductive health and rights-related experiences (Haghighat et al., 2021). The outcome of interest in the two papers is experiences of sexual violence perpetrated by any person. The predictors of interest include (1) social grant receipt, (2) parental support, (3) household food security, (4) affording necessities and (5) school enrolment and completion. Paper 3 of my doctoral research used data from the HEYBABY adolescent mothers' cohort, developed in response to early Mzantsi Wakho fieldwork that highlighted the growing population of adolescent mothers and the limited evidence on strategies to improve their wellbeing outcomes (Toska et al., 2022). The outcome of interest is lifetime intimate partner violence, and the COVID-19 period is the predictor of interest. Figure 6 illustrates the data collection visits for the two cohort studies.

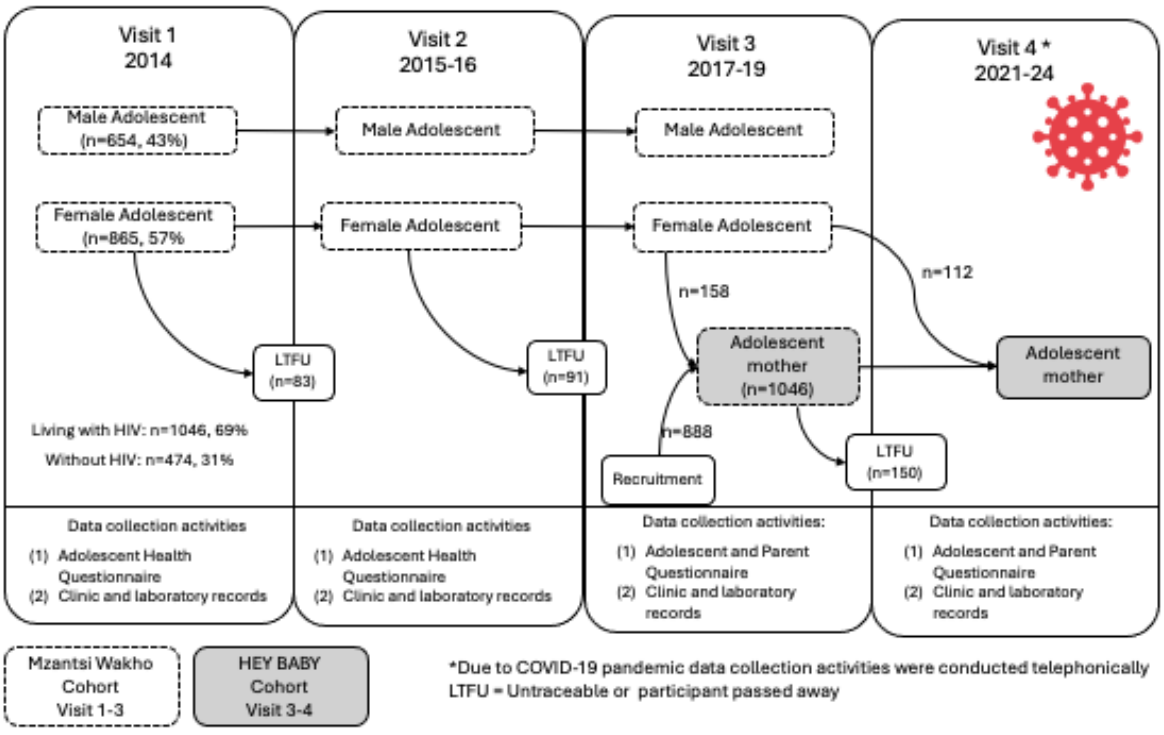


Figure 6: Mzantsi Wakho and HEY BABY cohort study diagram

The cohorts combine repeated measures of sexual violence exposures and social protection access, enhancing validity by enabling assessment of temporal relationships and change over time. Their design builds on and extends the scope of prior cross-sectional research by incorporating detailed data on intersecting social identities, including HIV status and sex, which are critical for situating findings within the broader literature on structural drivers of violence and health disparities (Piolanti et al., 2025; Ward et al., 2018). The data are credible and reliable because the studies used rigorous sampling procedures, included participants not engaged in healthcare services, used validated instruments aligned with international standards, and achieved high retention rates across multiple data collection visits.

Another possible data alternative would have been to use large-scale national survey datasets commonly used to estimate population-level health and social outcomes, such as the Demographic and Health Surveys (DHS) and the National Income Dynamics Study (Brophy et al., 2018; National Department of Health et al., 2019). While these national datasets provide valuable cross-sectional estimates of health and social outcomes, most focus primarily on adults, with broad age ranges (15–49 years) that include only a small fraction of adolescents and therefore offer limited measures of adolescents' experiences of sexual violence (Brophy et al., 2018; National Department of Health et al., 2019). As they are cross-sectional, these datasets also lack the repeated measures needed to assess temporal changes or the impacts of the COVID-19 pandemic. The UNICEF Multiple Indicator Cluster Surveys (MICS) and the Violence Against Children Survey (VACS) have not been conducted in South Africa (Bjelic et al., 2024). Other specialised studies, such as the Optimus Study, are not publicly available for secondary analysis (Artz et al., 2018). Consequently, the Mzantsi Wakho and HEY BABY cohort data represent feasible and appropriate sources to address the study aims.

Study setting

The adolescent cohort studies were conducted in the Eastern Cape Province of South Africa, specifically in the Amathole district and Buffalo City Metropolitan Municipality, as shown in Figure 7, which is a peri-urban and rural area.



Figure 7: Map of study location: Eastern Cape Province, Buffalo City, in South Africa

The Eastern Cape Province is one of South Africa's nine provinces and is marked by historical and contemporary inequities that shape adolescent health and wellbeing. Geographically large and predominantly rural, the province has consistently recorded some of the country's highest rates of poverty and deprivation. According to Statistics South Africa, over 70% of households in the Eastern Cape live below the upper-bound poverty line, and 65% of households receive social grants (South African Government, 2024).

Compared with other South African provinces, the Eastern Cape has one of the highest prevalences of HIV, populations of adolescent mothers, and rates of interpersonal violence (Simbayi et al., 2019). Data from the South African National HIV Prevalence Survey indicate that approximately 25% of adults aged 15–49 in the Eastern Cape are living with HIV, compared to a national prevalence of around 19%

(Simbayi et al., 2019). Estimates from the South African Demographic and Health Survey indicate that approximately 17–20% of girls aged 15–19 have begun childbearing in the province, which is among the highest rates nationally (Simbayi et al., 2019). Data from the South African Crime Statistics reveal that the Eastern Cape also reports some of the highest rates of physical and sexual intimate partner violence, with over 30% of ever-partnered women experiencing physical violence and approximately 10–12% reporting sexual violence (Simelane et al., 2023; South African Police Service, 2020). Although provincial estimates for adolescents are limited, the heightened burden of HIV, early childbearing, and interpersonal violence highlights the potential intersectional vulnerabilities faced by adolescents living in this province.

Cohort Profiles

Both studies aimed to inform our understanding of life-course and intergenerational health disparities and potential intervention opportunities. As such, we closely harmonised operational procedures. The same adolescent health questionnaires were administered across both studies and all study visits, with additional modules developed to address the unique experiences of adolescent mothers. Consistent approaches were used for research team development and training, referral management and stakeholder engagement, including collaboration with the South African Departments of Social Development, Basic Education, and Health. Both studies also implemented similar strategies to engage adolescents in the research process. This included the formation of teen advisory groups to ensure that youth voices were central to the study design and dissemination.

This high level of procedural and conceptual alignment allows for consistent description of data collection and ethical procedures across the cohorts. Accordingly, I first provide descriptions of the specific characteristics of each cohort, followed by a

single, integrated description of the shared methods and operational procedures applied across both studies.

Mzantsi Wakho study

In 2013, all public health facilities providing antiretroviral therapy (ART) to more than four adolescents (n = 52) in the Amathole district were identified. Using clinic records that were no older than three years, all adolescents (10-19 years) who had ever initiated ART at these facilities were entered into a roster of eligible participants. To minimise potential selection bias related to engagement in care, the recruitment roster included patients who had defaulted from ART or were lost to follow-up. We traced identified eligible participants back to their communities and schools, and held interviews in community spaces. To avoid stigmatisation associated with participating in a study investigating sexual and reproductive health and HIV-related outcomes, study recruitment included HIV-negative cohabiting or neighbouring adolescents.

As shown in Figure 6 between March 2014 and September 2015 (visit 1), a total of 1519 adolescents consented to study participation: 68.9% were living with HIV (n=1046), and 57% were females (n=865) (Cluver et al., 2015). The median age was 13 years (IQR 11-16), and adolescent girls were older than their male counterparts, with a median age of 14 years (IQR=12-17) for adolescent girls compared to 13 years (IQR=11-15) for adolescent boys. Among those living with HIV, 73% had perinatally acquired HIV. Following baseline interviews, the Mzantsi Wakho participants were interviewed twice, between 2016-2017 (visit 2) and 2017-2018 (visit 3). The median months between Visit 1-2 and Visit 2-3 were 18 months (IQR=12-22) and 16 months (IQR=13-20), respectively. The average retention rate across the three visits is 93.8%. Approximately 3.3% were confirmed to have died, and 2.3% were lost to follow-up.

Helping Empower Youth Brought up in Adversity with their Babies and Young Children study (HEY BABY)

In 2018 (visit 3), the study invited adolescent mothers (n=158) from the Mzantsi Wakho study to participate in a new cohort, the HEY BABY cohort study (**H**elping **E**mpower **Y**outh **B**rought up in **A**dversity with their **B**abies and **Y**oung Children). To increase the sample size, the study team concurrently mapped a full spectrum of potential recruitment points within the same catchment areas as the Mzantsi Wakho study.

Eligible individuals were female adolescents who had a live birth before age 20, and whose child was alive at the time of recruitment. The study team first identified eligible individuals from the Mzantsi Wakho study and then mapped a full spectrum of potential recruitment points within the same catchment areas. Recruitment methods aimed to minimise selection bias towards those engaged in services, particularly through peer-to-peer, community-based recruitment strategies.

First, the study identified all maternity obstetric units (n=9) in the health district and used maternity case files to identify eligible adolescent mothers (Toska et al., 2022). Second, the study invited adolescent females identified in non-maternity-related health facility files to participate (Toska et al., 2022). The inclusion of neighbouring adolescent mothers reduced the risk of unintended stigmatisation due to participating in the study, i.e., managing the community's perception that the study is directed towards those living with HIV or those attending a specific healthcare facility (Toska et al., 2022). Third, the study used publicly available lists of secondary schools to reach adolescent mothers attending school within the study's catchment area (Toska et al., 2022). Fourth, social workers and NGO service providers referred adolescent mothers who may be especially vulnerable (Toska et al., 2022). Fifth, community referrals by adolescent mothers themselves were included. Recruitment rates across all strategies ranged from 95% to 98% (Toska et al., 2022). At the end of visit 3 in July 2019, a total of 1,046 adolescent mothers consented to participate in the study, including 158

adolescent mothers from the Mzantsi Wakho study. This formed the baseline for the HEYBABY study.

The baseline median age of adolescent mothers was 18 (IQR=17-19), and 29% (n=311) were living with HIV. Adolescent mothers living with HIV were older than those who had not acquired HIV, with a median age of 19 (IQR=18-21) vs. 18 (IQR=17-19), respectively. The median age at birth of the first child was 17 (IQR=16-18), and 9.1% (n=95) of mothers had two or more children. As shown in Figure 6, the HEY BABY cohort has had follow-up interviews between 2021 and 2022 (visit 4).

My doctoral research used the first two study visits of the HEY BABY cohort: the pre-COVID-19 visit (2018-2019) and the visit during the COVID-19 pandemic (2021-2022). While baseline interviews were conducted in person, the first follow-up interviews were conducted remotely via telephone due to COVID-19 safety measures. Of the 1046 adolescent mothers interviewed at the baseline HEY BABY visit, 85.9% (n=899) were successfully followed up during the pandemic. Approximately 1.2% (n=12) were deceased at follow-up, 2.8% (n=24) refused participation, and 10.9% (n=114) were not reachable by telephone. Additionally, at the follow-up interviews of the HEY BABY participants, female Mzantsi Wakho participants who had recently become mothers were invited to join the HEY BABY cohort. A total of 112 Mzantsi Wakho participants consented.

Meaningful engagement of adolescents in the research

As briefly mentioned earlier, the research team formed Teen Advisory Groups comprising 15-32 adolescents and young people aged 14-26 who reside in the research area. This group co-created the research questions explored in cohort studies. Study instruments were also co-created with the Teen Advisory Group and piloted with 34 adolescents in the study catchment area. The Teen Advisory Groups have also been

involved in local and international policy engagement activities, such as the 2022 International Workshop on Adolescence, SRHR and HIV (Cluver et al., 2021). Recruitment sites for the HEY BABY study were identified in consultation with the Teen Advisory Group. Teen Advisory Group participation was primarily through weekend workshops, which have been ongoing since 2008 (Cluver et al., 2021). In my then-capacity as a Research Officer, I helped organise and collaborate on the 2019 Teen Advisory Groups weekend workshop, held in the study catchment area. During the workshop, the research team shared research outcomes from the previous round of interviews (visit 3; 2018-2019) and, together with young people, co-created the research agenda for the upcoming data collection period.

Data Collection

Participants in both cohorts completed the *Adolescent Health and Wellbeing Survey*, which measured risk and protective factors at the individual, relational, community, and societal levels of the ecological system. Interviews lasted from 45 minutes to one hour. Measures included mental and physical health, sexual and reproductive health and rights, social support networks, household economic status, and schooling experience. Where applicable, the research team used tools that had been validated in South Africa or the African region (Meinck et al., 2018). Participants living with HIV also reported on their experiences with antiretroviral treatment, HIV-related stigma and engagement with HIV care services.

During the COVID-19 pandemic, the researchers used shortened versions of the study tools because 45-minute to 1-hour phone interviews were impractical. The study instruments were available in both isiXhosa, the local language, and English. The questionnaire included youth-friendly images and language designed to engage adolescents (Figure 8). The complete questionnaire is available online at

https://www.heybaby.org.za/research. Questions relevant to the doctoral research are detailed in the variable list section of this chapter.

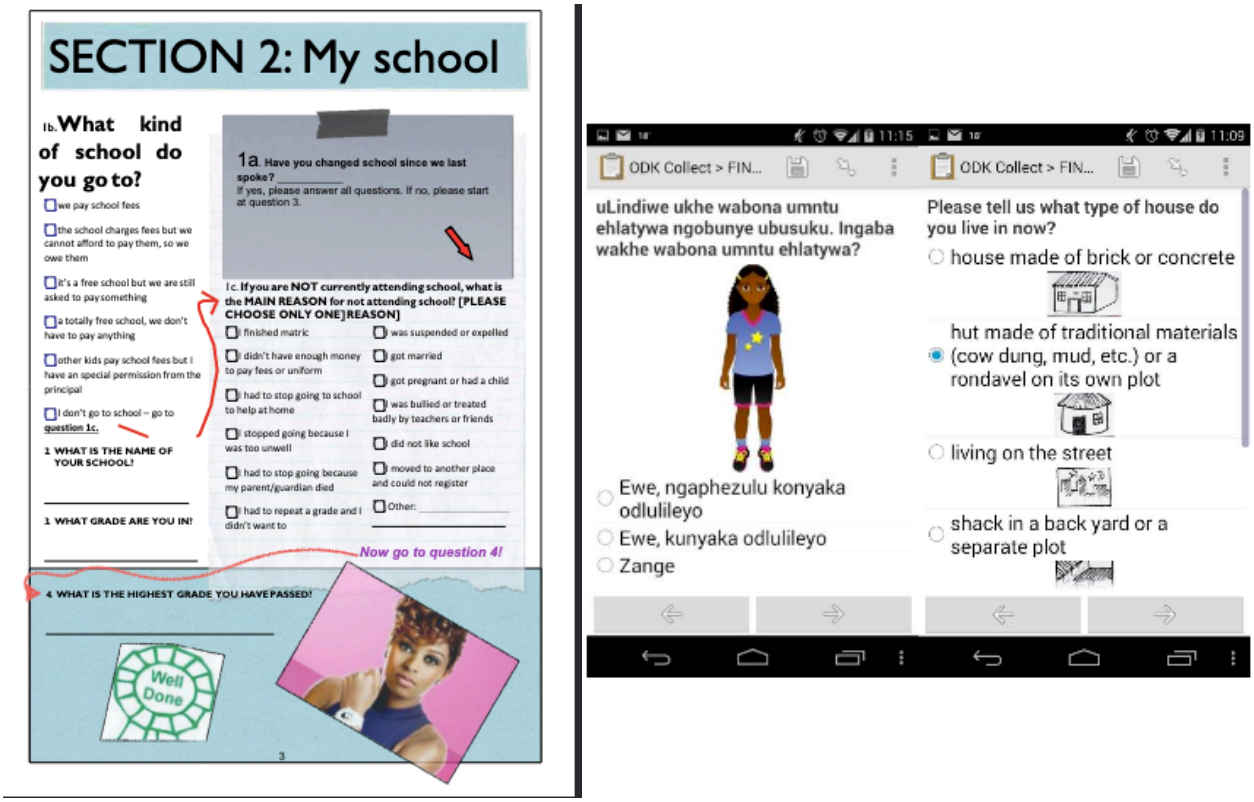


Figure 8: Sample pages for questionnaires, hard copy and ODK tablet version

For in-person interviews, research assistants assisted adolescents in completing the adolescent health and well-being survey on digital tablets. However, older adolescents and those who could read could also use the tablets directly, in either English or Xhosa. For sensitive questions related to HIV and violence, the tablet was handed over to participants for self-administration using the Audio-enhanced Computer-Assisted Self-Interviewing (Audio-CASI) method. With the COVID-19 pandemic beginning during visit 4, we could not use the Audio-CASI technique. Instead, research assistants recorded participants' responses on tablets, as was done during in-person interviews.

After completing the visit 1 interview, researchers abstracted clinical and laboratory data from participants' patient files between 2015 and 2016. This included information on clinical appointments, medication history, WHO clinical staging, and immunologic and virologic monitoring. Data were obtained through a review of both hard copy and electronic records available at health facilities, covering the period from each participant's HIV diagnosis or treatment initiation (Haghighat et al., 2021). At visit 3, the study team partnered with the National Health Laboratory Services to access electronic laboratory records dating back to 2014 (Toska et al., 2025). The National Health Laboratory Services Data Warehouse contains nationwide HIV-related laboratory results, as well as other clinical test results. The last round of electronic health record abstraction was in 2023-2024.

Ethical consideration

At each data collection visit, informed and voluntary consent was obtained from all participants. In line with legal and ethical requirements for research involving children in South Africa, adolescents under 18 provided informed, voluntary consent to participate through their primary caregiver. Trained research assistants with extensive experience working with vulnerable populations administered the informed consent and assent process. Research assistants received frequent updates on ethical treatment of human subjects, protocol adherence, data management, and the importance of confidentiality and privacy. To maintain confidentiality, we de-identified questionnaires as early as possible and stored field notes in password-protected electronic files and locked cabinets.

Before the COVID-19 pandemic, participants received a certificate of participation, snacks, and a small gift pack, which included stationery and toiletries, as a token of appreciation for their participation. During COVID-19 (visit 4), participants received a mobile phone voucher worth ZAR30.00 ($2.15). Ethical approvals were obtained

from the University of Cape Town (CSSR 2013/4 and HREC 226/2017), Oxford University (CUREC2/12–21), provincial Departments of Health and Education, and local healthcare facilities. These are included in the Supplementary material.

- **Referral guidelines**

The research team enforced stringent safeguarding protocols, providing referrals for social, physical, and sexual harm. Before data collection, the research team mapped referral sites that provided violence response services and conducted regular check-ins to confirm these services remained available. In cases of heightened risk, such as suicidality, substance abuse and child mortality, with the adolescent's consent, they were referred to local organisations, and the choice of these options was made in consultation with the social worker and psychologist on the research team.

Participants reporting sexual or intimate partner violence were offered referrals to counselling and social protection services, depending on their needs. When participants declined a referral, they were encouraged to contact the research team when ready. This included referrals for emergency contraception and HIV post-exposure prophylaxis (where relevant) for rape cases that occurred in the last 72 hours. During the COVID-19 pandemic, the research team included an in-house counsellor who provided initial counselling (comprising three sessions) and oversaw the timely linkage of participants to local remote counselling and protection services. In addition, a registered child protection social worker held weekly meetings with the study team to review referral management. As study manager between 2018 and 2021, I ensured these processes were completed on time, including tailoring our protocol to participants' unique needs.

To support the research team in identifying and responding to vicarious trauma, the research team held weekly debrief sessions and had access to one-on-one counselling services with an external provider.

Variable Selection

Outcomes

There are two outcomes of interest in this doctoral research: sexual violence acts perpetrated by anyone, and intimate partner violence as harms perpetrated by a current or former partner. Table 4 provides the wording used to assess each form of violence and highlights any relevant deviations from the original scale/s.

Sexual Violence

Sexual violence experiences Sexual violence experiences among adolescent males and females enrolled in the Mzantsi Wakho study were assessed using four items from the Juvenile Victimisation Questionnaire (commonly known as the JVQ scale), along with two additional items: (1) first sexual intercourse being forced or coerced (i.e., rape), and (2) engaging in sex in exchange for goods, a standard measure of transactional sexual exploitation (Finkelhor et al., 2005; Wamoyi, et al., 2019).

The Juvenile Victimization Questionnaire is a widely used 24-item tool that includes seven items specifically designed to assess experiences of sexual violence perpetrated by any individual, whether an intimate or non-intimate partner (Finkelhor et al., 2005; Meinck et al., 2022). The seven items assess unwanted sexual touching by a known adult, sexual violence of any form by peers, unwanted sexual exposure by any person, verbal sexual violence by any person, and statutory rape (Finkelhor et al., 2005). The tool has demonstrated good construct and content validity, as well as test-retest reliability in African populations, including South Africans (Meinck et al., 2022).

As shown in Table 4, the Mzantsi Wakho study, a four-item version of the Juvenile Victimization Questionnaire was administered, focusing on experiences of unwanted non-contact and contact sexual violence perpetrated by any persons. The selection of

the four items considered participants' young age at baseline and the sensitivity of asking about sexual violence, while aiming to capture experiences relevant to this age group.

The study tool also included two additional questions that captured experiences of sexual violence outside the Juvenile Victimisation Questionnaire (see Table 4). One question assessed whether a participant's first sexual intercourse had been forced or coerced, and another asked about having sex in exchange for goods, money, or school-related benefits such as grades (Wamoyi et al., 2019). I conceptualised sex in exchange for goods, money, or grades as a form of transactional sexual exploitation, reflecting structural manifestations of gendered power dynamics and economic inequalities. There is growing acknowledgement in the field that transactional sexual exploitation is distinct from consensual adolescent relationships, as it often emerges from constrained agency and unequal power relations (Wamoyi et al., 2019). For example, studies in sub-Saharan Africa have shown that adolescent females are frequently socialised to accept transactional sex as normative, and that adolescent males may also experience sexual exploitation in similar contexts (Adjei & Saewyc, 2017; Wamoyi, Heise, et al., 2019).

Table 4: Operational definitions of sexual and intimate partner violence applied in the doctoral research.

Juvenile Victimization Questionnaire (Original scale)	Items used in Mzantsi Wakho Study (Paper 1 and Paper 2)
Sexual violence (Visit 1, Visit 2 and visit 3)	
The Juvenile Victimization Questionnaire 1. *At any time in your life, did a grown-up you know touch your private parts when they should not have or make you touch their private parts?* 2. *At any time in your life, did a grown-up you do not know touch your private parts when they should not have or make you touch their private parts?* 3. *Now think about other kids, like from school or a boyfriend or girlfriend or even a brother or sister at any time in your life, did another kid or teenager ever make you do sexual things, like touching or more, when you didn't want to?* 4. *At any time in your life, did anyone try or force you to have sex, even if it didn't happen?* 5. *At any time in your life, did anyone make you look at their private parts by using force or surprise, or by 'flashing' you?* 6. *At any time in your life, did anyone hurt your feelings by saying or writing something sexual about you or your body?* 7. *At any time in your life, did you do sexual things with anyone 18 or older, even if it's things you both wanted to do.*	1. Has anyone made you touch your private parts or made you touch theirs when you did not want to? 2. Has anyone made you look at their private parts when you did not want to? and/or Has any wanted to look at your private parts when you did not want them to? 3. Has anyone had sex (vaginal, anal or oral) with you when you did not want them to? 4. Has anyone tried to have sex with you when you did not want to?" <u>None JVQ items</u> 5. Think back to the first time you had sex (penetrative vaginal), were you forced to have sex? (Pettifor et al., 2005) 6. Has anyone ever given you a present for having sex with them OR have you ever decided to have sex with someone in exchange for present, money or favours? (Pettifor et al., 2005; UNICEF, 2018a).

Original Scales- Phrasing	HEY BABY Study Phrasing
Revised Conflict Tactics Scale (Visit 3 – pre-COVID-19 pandemic) *How often did this happen in your relationship* *1. My partner insulted or swore or shouted or yelled at me* *2. My partner pushed, shoved, or slapped me* *3. My partner used force (like hitting, holding down, or using a weapon) to make me have sex* *4. My partner insisted on sex when I did not want to or insisted on sex without a condom (but did not use physical force)*	*How often did this happen in your relationship?* 1. My boyfriend/girlfriend insulted, swore or said something to spite (hurt) me 2. My boyfriend/girlfriend pushed, shoved, grabbed or slapped me 3. I had sex (vaginal, anal or oral) with my boyfriend/partner even when I did not want to because I was afraid of what they may do. (Item from WHO Violence against Women Questionnaire)
WHO Violence against Women Questionnaire (Visit 4 – during COVID-19) *1. Has your partner insulted you or made you feel bad about yourself?* *2. Have they belittled or humiliated you in front of other people?* *3. Have they done things to scare or intimidate you on purpose?* *4. Have they threatened to hurt you or someone you care about?* *5. Have they slapped you or thrown something at you that could hurt you?* *6. Have they pushed or shoved you?* *7. Have they hit you with a fist or with something else that could hurt you?* *8. Have they kicked you, dragged you or beaten you up?* *9. Have they choked or burnt you on purpose?* *10. Have they threatened to use or actually used a gun, knife or other weapon against you?* *11. Have they physically forced you to have sexual intercourse when you didn't want to?* *12. Did you ever have sexual intercourse when you didn't want because you were afraid of what they might do?* *13. Have they forced you to do something sexual that you found degrading or humiliating?*	*Selected items that closely captured the same constructs as those assessed at visit 3)* Did you experience any of the following in the last 12 months? 1. Has your partner insulted you or made you feel bad about yourself? *(construct comparable with #1 from pre-pandemic period).* 2. Has he slapped you or thrown something at you that could hurt you? *(construct comparable with #2 from pre-pandemic period).* 3. Has he pushed or shoved you? *(construct comparable with #2 from pre-pandemic period).* 4. Did you ever have sexual intercourse when you didn't want because you were afraid of what he might do? *(construct comparable with #3 from pre-pandemic period).*

Intimate Partner Violence

Intimate partner violence experiences in the HEY BABY study were assessed using two items from the short-form Revised Conflict Tactics Scale and 13 items from the WHO Violence Against Women Instrument (García-Moreno et al., 2005; Straus, 2004) (Table 4). The short-form Revised Conflict Tactics Scale is a 20-item questionnaire that captures an individual's experience and perpetration of physical, psychological and sexual forms of intimate partner violence (Straus, 2004). The short-form Revised Conflict Tactics Scale has been validated for use among female adolescents in South Africa (Costa & Barros, 2016). A review of 34 methodologically diverse studies found good internal reliability, with Cronbach's alphas (α) generally above 0.6 (Costa & Barros, 2016; Lachman et al., 2017; Straus, 2004). The WHO Violence Against Women Instrument was developed as part of the WHO Multi-country Study on Women's Health and Domestic Violence Against Women, initially conducted in 10 countries, two of which were in Africa (Ellsberg et al., 2008; García-Moreno et al., 2005).

At the pre-pandemic baseline interviews, experiences of intimate partner violence among adolescent mothers were assessed using two items from the short-form Revised Conflict Tactics Scale and one item from the WHO Violence Against Women Instrument (García-Moreno et al., 2005; Straus, 2004). Each form of intimate partner violence (physical, psychological and sexual) was assessed by a single item. Minor age-appropriate edits were made to the two items of the short-form Revised Conflict Tactics Scale. The act of being grabbed was added to the description capturing physical intimate partner violence. The item "being yelled at" was replaced with behaviour associated with an intimate partner saying something spiteful or hurtful.

During the COVID-19 interviews, the study team adopted the full 13-item WHO Violence Against Women Instrument to assess intimate partner violence (Ellsberg et al., 2008;

García-Moreno et al., 2005). This change reflected growing global concern about domestic violence during the pandemic and the need to capture experiences across a broader range of violence types (UN Women, 2021).

Predictors

This doctoral research examined predictors of sexual and intimate partner violence in the context of cash transfers (Paper 2) and the onset of the COVID-19 pandemic (Paper 3).

Cash-plus provisions

In Paper 2, I adopted a cash-plus social protection framing to examine how a combination of material and relational supports might reduce the risk of past-year sexual violence among adolescents. The "cash" component was measured as adolescents' access to social grants, either directly or through their household. I examined five "plus" provisions: food security, affording necessities, parental supervision, positive parenting, and school enrolment or completion. These provisions reflect domains often layered onto cash-based programmes to increase impact on desired outcomes by addressing both economic stressors and developmental needs (Özler et al., 2020; Rogers et al., 2024). Table 5 shows the exact wording for each measure.

The "cash" component included both unconditional child-focused grants and non-contributory social pensions received by any household member. Social pensions are included as these often play a critical role in supporting multigenerational households and reducing poverty among children and adolescents in South Africa (Duflo, 2003; Lloyd-Sherlock et al., 2020).

Parental support was assessed using the Alabama Parenting Questionnaire, a tool commonly used in parenting interventions to estimate the effectiveness of intervention in promoting positive parenting and parental supervision (Backhaus et al., 2023; Essau et al., 2006). Its use aligns with evidence from South Africa demonstrating that parenting programmes grounded in similar principles, such as the Sinovuyo Teen intervention, have been successfully implemented and shown to improve adolescent outcomes (Cluver et al., 2018)

Food security and affording necessities are both a proxy of household economic security, were analysed independently rather than as a combined score to gain a detailed understanding of their individual roles and mechanisms in reducing the risk of sexual violence. For example, food security may help decrease poverty-related stressors, which can lower the risk of experiencing sexual violence (Hatcher et al., 2022). Affording necessities like school uniforms and shoes can increase the likelihood of staying in school, thereby empowering adolescents through continued educational participation (Meinck et al., 2015). Separating these factors prevents oversimplification of complex relationships and allows examination of varied effects, ensuring distinct pathways are not obscured. From a policy and programme perspective, this approach also emphasises the importance of protective factors that may indirectly reduce sexual violence, which could be hidden by traditional regression methods that combine these measures. Although this disaggregated method introduces additional complexity to the analysis, it aligns with comprehensive data collection practices.

For the analysis of schooling-related factors, I included a variable indicating school enrolment or completion. I considered variables measuring experiences of corporal punishment and receipt of free school meals. However, because these measures apply only to individuals currently enrolled in school, including them would have restricted

the analysis to a subsample of the population, reducing the generalisability of the findings. Additionally, a structural equation model, the statistical technique employed in Paper 2, requires assessing the relationships between variables across the entire sample to ensure robust estimation of structural paths and maintain model consistency, enabling comparisons of fit and improvements.

Table 5: Operationalisation of Cash-Plus Provisions

Indicator	Item wording in the study tool	Response	Coding
CASH TRANSFER - 'cash' component			
Social grant receipt	Are you or anyone in the household receiving any grants? o How many **child support** grants does your household receive? o How many **foster care** grants does your household receive? o How many **pension** grants does your household receive? o How many **care dependency** grants does your household receive? o How many **disability** grants does your household receive?	*Count*	Binary: (1= At least one person receiving a grant)
Complementary provision – 'plus' component			
Parenting Support			
Positive Parenting Alabama Parenting Questionnaire (Essau et al., 2006)	Your parents or caregiver says you have done something well (#27) Your parent or caregiver compliments you when you have done something well (#13) Your parent or caregiver praises you for behaving well (#16) Your parent or caregiver tells you that they like it when you help out around the house (#27) Your parent or caregiver rewards or gives something extra to you for behaving well (#5) Your parents or caregivers hug you or kiss you when you have done something well (#18)	*0 Never* *1 Rarely* *2 Sometimes* *3 Often* *4 Always*	Binary: (1=Always/Often) Continuous Score range 0-24:
Parental Supervision Alabama Parenting Questionnaire (Essau et al., 2006)	You go out after dark without an adult with you (#21) You go out without a set time to be home (#19) You stay out in the evening past the time you are supposed to be at home (#10) You stay out later than you are supposed to, and your caregiver doesn't know it (#28) Your parent or caregiver does not know who you are friends with (#17) Your parent or caregiver leaves the house and doesn't tell you where they are going (#29) Your parent or caregiver gets so busy that they forget where you are and what you are doing (#24) You fail to leave a note or let your parent or caregiver know where you are going (#6). You come home from school more than an hour past the time your parent or caregiver expects you to be home (#30) You are at home without an adult with you (#32)	*0 Never* *1 Rarely* *2 sometimes* *3 Often* *4 Always*	Binary: (1=Never/Rarely) Continuous: Score range 0-28:

Indicator	Item wording in the study tool	Response	Coding
Household economic security			
Affording Necessities (Wright, 2008)	Please tick the things which you can afford at home: (Choose as many as apply) o Visit to the doctor when you are ill, and all the medicines you need o Enough clothes to keep you warm and dry o Toiletries to be able to wash every day o More than one pair of shoes o School uniform o School equipment	*0 No* *1 Yes*	Binary (1=yes for all six)
Food security (Statistics South Africa, 2019)	Sometimes kids don't have enough food in their home. How many days in the past week (7 days) did you NOT have enough food in your home? Can you afford at 3 meals a day at home:	*Number* *0 No* *1 Yes*	Binary (1=enough food >3 days/week and can afford all three meals)
Education			
School enrolment or completion	Which school do you go to? o Primary or secondary school o University, college, FET or another tertiary institution o I am not in school What grade are you in? If you are not currently attending school what is (are) the reason(s) for not attending school? (*Choose as many answers as apply*) - I finished matric	*0 No* *1 Yes* Number *0 No* *1 Yes*	Binary (1=in-school or completed high school)

In Paper 3, I examined whether the COVID-19 pandemic differentially increased the lifetime prevalence of intimate partner violence among adolescent mothers living with HIV compared to those who were HIV-uninfected. To classify the timing of data collection, I defined the pre-pandemic period as all interviews conducted between 2018 and 2019 (visit 3), and the COVID-19 period as interviews conducted in 2021 and 2022 (visit 4).

I conceptualised the onset of the pandemic as the implementation of South Africa's first national lockdown measures on 15 March 2020 (South African Government, 2020). Because experiences of intimate partner violence were assessed over the previous 12 months, interviews conducted before 15 March 2021 could include a recall period that partially preceded the lockdown. Due to logistical considerations, the first set of follow-up interviews during the COVID-19 period took place on 4 February 2021. Consequently, for 25 interviews (3% of the total sample of 843), the past-year recall periods extended to one month before the onset of COVID-19 lockdown measures. This one-month overlap could introduce misclassification bias by including incidents that occurred before the pandemic. However, it is unlikely to have meaningfully affected estimates of association, given the small proportion (3%) of such cases.

Moderators

I was interested in exploring the potential moderating role of three factors: age, sex and living with HIV. A moderator is a third variable that could influence the strength or direction of the relationship between an independent variable and an outcome. Participant self-reported their age, and this was validated with clinical records when available. For the Mzantsi Wakho study, the participants' sex was indicated at the baseline interview. HIV status was self-reported at all interviews and validated by the

research team through paper-based and electronic reviews of medical records. We measured the mode of HIV acquisition using an age cut-off of 10 years, validated with a detailed algorithm when definitive clinic notes did not specify the mode of HIV acquisition (CIPHER Global Cohort Collaboration, 2018). Perinatally infected adolescents were those who began antiretroviral treatment before the age of 10, supported by parents living with HIV, parental orphanhood, no sexual activity, and a history of chronic illness (Sherr et al., 2018).

Candidate's Role in the Data Collection Process

Between 2018 and 2022, I was centrally involved in developing and operationalising follow-up visits for two adolescent cohort studies. I was based at the research fieldwork office from 2018–2020 and managed critical aspects of data collection until I began doctoral studies in 2021. I provided technical input into the design, development, and piloting of research tools. During the COVID-19 pandemic, I helped adapt and continue study activities under restricted fieldwork conditions. My responsibilities included training the fieldwork team to obtain voluntary, informed consent; administer structured questionnaires; and oversee data cleaning across multiple datasets from various research tools. I matched participant records and ensured internal consistency across datasets. Additionally, I facilitated participant referrals in accordance with ethical and safeguarding protocols. I conceptualised all quantitative analyses in this thesis after the research tools were finalised and data collection concluded.

Data preparation for the doctoral research

My doctoral research examined how adolescents' social identities and the COVID-19 pandemic affect their risk of sexual and intimate partner violence, and the mechanisms by which cash-plus strategies may reduce this risk. Given that the research aims of my

doctoral research align with those of the cohort studies, reconsent of participants was not required. The Mzantsi Wakho study examined risks and resilience-promoting factors for HIV-related outcomes, which include sexual and reproductive health among adolescent males and females. The HEY BABY study examined adolescent parenthood when it occurs in the presence of multiple adversities, such as experiences of violence, living with HIV, orphanhood, and the COVID-19 pandemic. I did not collect any additional data for the doctoral research. I signed a data use undertaking agreement with the research team, which provides guidelines for the ethical use of data from the Mzantsi Wakho and HEY BABY cohort studies. This form is included in the supplementary materials.

De-identified data from the two cohort studies are stored on a secure, password-protected server at the University of Cape Town. Data relevant to this doctoral research are also stored in a password-protected file on my personal work laptop and the study's institutional server. All data cleaning, exploration, and analyses were conducted using STATA 16 and STATA 18 (Stata Corporation, College Station, Texas). Datasets across the four study visits were linked using unique participant identification fields.

To address potential discrepancies and improve measure reliability, I employed multiple strategies. First, where available, variables capturing the same underlying construct (e.g., schooling, violence exposure, HIV status) were triangulated across different tools, time points, or reporting sources. This included comparing baseline and follow-up responses, as well as aligning self-reported data with clinic or laboratory records, where appropriate. Second, internal consistency checks were applied across waves to assess the plausibility of participant responses over time. Where inconsistencies arose (e.g., orphanhood status, or school enrolment), additional variables were used to verify or reconcile differences. In cases where inconsistencies could not be resolved through triangulation, these observations were flagged and handled using sensitivity analyses.

All data protection and information security protocols were followed in accordance with both the General Data Protection Regulation (GDPR) and South Africa's Protection of Personal Information Act (POPIA) (Haque et al., 2021; Sekgweleo & Marir, 2019). These procedures were reviewed and approved by the University of Oxford's Data Protection Officer to ensure compliance with relevant regulations. Hertzog et al. (2021) further guided the approach to POPIA compliance, including consent, child protection, and data security, by outlining essential instruments for research involving children and adolescents in South Africa.

Statistical consideration

For each research question, which are restated below, several statistical approaches were considered.

1. *Do lifetime experiences of sexual violence during adolescence differ by sex, age and HIV status?* Paper 1- Chapter IV

For the first research question, which examined differences in lifetime prevalence of sexual violence by social identities, I considered latent class analysis or multinomial regression, as well as growth curve models. While latent class analysis would have been more appropriate for identifying subgroups of adolescents with shared risk profiles, it is not primarily designed to test predefined group comparisons such as "males vs. females" or "living with HIV vs. without HIV" (Naldi & Cazzaniga, 2020). Given the focus of this research on cumulative occurrence rather than continuous change over time, growth curve modelling was less suitable (Preacher, 2003). I first conducted descriptive frequencies to illustrate the distribution of lifetime sexual violence across sex, HIV status, and age groups. I then selected Generalised Estimating Equations (GEE), which provided robust, population-averaged estimates while accounting for the correlation of repeated

measures within individuals over time (Gardiner et al., 2009). GEE models were particularly appropriate because they yield results directly interpretable as average group differences relevant to assessing how intersecting social identities combine to shape risk.

2. *What are the pathways through which cash transfers (social grants) and complementary provisions (food security, schooling, parental support and affording necessities) are associated with past-year experiences of sexual violence among adolescents?* Paper 2 – Chapter V

For the second research question, which explored the pathways linking cash transfers and complementary provisions to past-year experiences of sexual violence, the alternatives I considered were propensity score matching and mediation analysis. However, given that the conceptual model hypothesised indirect pathways through multiple, layered provisions rather than a single binary treatment, propensity score matching would have required estimating generalised propensity scores for numerous combinations of exposures (Pan & Bai, 2018). This complexity, combined with sparse data within some combinations of provisions, limited the feasibility and interpretability of such methods in this context (Pan & Bai, 2018). Although causal mediation approaches such as marginal structural models offer advantages in terms of formal counterfactual definitions of direct and indirect effects, they are typically implemented for single mediators or require more complex extensions to accommodate multiple simultaneous pathways (Vanderweele, 2009). I selected Generalised Structural Equation Modelling (GSEM) as it enabled the estimation of multiple interrelated mediators within a single framework, was more practical to implement given the binary outcomes and sample size and aligned well with the conceptual model underpinning the study (Vanderweele, 2009). The Generalised Structural Equation Modelling also offered a clear interpretability of these interrelated pathways (Pearl et al., 2016).

For the second research question, I also compared the utility of the fixed effects model with the mixed effects model. Fixed effects models were considered because they can control for all unobserved time-invariant confounding by estimating within-person associations (McNeish & Kelley, 2019). However, the aim was not only to understand within-individual change (i.e., do the odds of past-year sexual violence for an adolescent decrease in the same period they experience food security?), but also to examine overall associations—i.e., do adolescents who experience more food security overall have lower odds of past-year sexual violence? And how do stable factors like sex and HIV status shape risk? To do this, I needed to retain time-invariant predictors that fixed-effects models would drop (McNeish & Kelley, 2019). Also, the cash-plus provisions did not vary enough within individuals to reliably estimate fixed effects, reducing statistical power. Mixed-effects models were therefore selected as a more appropriate approach, as they enabled the estimation of associations across individuals and over time, while accounting for the correlation of repeated measures within participants (McNeish & Kelley, 2019).

3. *Did the COVID-19 pandemic have a differential impact on lifetime prevalence of intimate partner violence among adolescent mothers living with HIV compared to those who without HIV?* Paper 3 - Chapter VI

Selecting the appropriate methods for the third research question was challenging. I considered difference-in-differences and interrupted time series approaches to estimate the pandemic's impact on intimate partner violence; however, both methods usually require at least two pre-pandemic data points to establish stable trends over time, which this dataset lacked (Schochet, 2022). Additionally, the lack of a control group unaffected by COVID-19 further limited the suitability of these approaches (Schochet, 2022). Although marginal structural models can be used to adjust for time-varying confounding

affected by prior outcome, they were not considered central to this analysis because the exposure of interest—the onset of the COVID-19 pandemic—was experienced universally by all participants and was operationalised as a binary time indicator (Vanderweele, 2009). The primary focus was on differential trends by HIV status, a time-invariant factor, rather than estimating the effect of changing exposures over time. Mixed-effects logistic regression was therefore selected as the most suitable approach to estimate changes in intimate partner violence over time and interactions with HIV status, while accounting for repeated observations within participants (McNeish & Kelley, 2019). To further strengthen comparability between adolescents living with and without HIV, inverse probability weighting was implemented to adjust for baseline confounding (Ma & Wang, 2020).

Selection Bias

Loss to follow-up can introduce bias, particularly if the reasons for attrition are related to the outcome and/or exposure of interest. In violence research conducted in settings with high levels of poverty, participants who are lost to follow-up are more likely to be experiencing higher levels of poverty, which are associated with an increased risk of experiencing sexual or intimate partner violence (Gibbs et al., 2018). If this increased risk of attrition is linked to the exposure or moderators, i.e. living with HIV, it can result in either an overestimation or underestimation of the observed associations. Suppose attrition is assumed to be unrelated to outcome, exposure, or moderators. In that case, the resulting bias typically skews the observed association toward the null, meaning that the true relationship between the exposure and the outcome may be underestimated. Examining baseline characteristics by attrition status can indicate how attrition may affect observed frequencies and associations between variables.

Reflexivity

While the preceding *positionality statement* in the Introduction chapter described who I am, the social locations I occupy, and some of the experiences that have shaped my perspective, this section moves beyond description to critically examine how my identity, values, and professional background influenced how I conducted this research. Reflexivity is an ongoing process of questioning how my social positioning and lived experience shaped not only what I chose to study but also how I framed research questions, approached data analysis, interpreted findings, and navigated the inevitable tensions of researching sensitive topics in settings marked by structural inequality.

1. **Motivation and focus: Why I pursued this research and how my background shaped the questions I considered important.**

I was an adolescent myself when I first realised that the violence I was witnessing in my community had a name- that there was a term for it, and that its occurrence was not inevitable but deeply problematic. Airing on weekday evenings, the South African educational series Soul City portrayed the life of Matlakala, a Black woman experiencing intimate partner violence. Married to a man perceived by the community as gentle and quiet, she felt unsafe disclosing her experiences of abuse. She feared her social networks wouldn't believe her and had few safe relocation options, especially since she needed to take three children with her.

Watching the show prompted me to reflect on the lives of three women in the same apartment block where I grew up, women whose partners, to outsiders, seemed the kindest of men. Yet every month I heard their cries through the walls. I came to understand the meaning of the bruises my aunt often bore, and the complexity of staying in a relationship marked by violence while striving to maintain stability for the children.

As I saw other women with similar bruises, I began to wonder about their lives and their safety.

These early experiences shaped a commitment to centring the lives of those navigating structural inequality, gendered power imbalances, and limited choices. Over time, this commitment developed into an explicitly feminist orientation. For me, feminism means believing that women and men deserve equal rights, opportunities, and the freedom to define their own lives. My practice of feminism took shape through my work in public health, first in prevention of mother-to-child transmission (PMTCT) programmes, then expanding to contraceptive access and abortion services in South Africa, and eventually to a focus on the complexities of sexual violence. Each step deepened my conviction that we must address structural drivers of harm alongside individual agency. That research can contribute to this process if done with respect and critical reflection. This has guided my interest in understanding how social protection and structural interventions could disrupt cycles of violence.

At the same time, my belief in gender equity meant this research needed to move beyond narrow framings of survivorship. I will be honest, including boys in the research was not an obvious or automatic decision. In the first draft of my doctoral proposal, I had planned to focus exclusively on adolescent girls, reflecting the way gender-based violence has often been used synonymously with violence against females. Reflecting my socialisation. A conversation with a close friend, an anthropologist, prompted me to question this framing. He asked whether I believed that vulnerability during adolescence was always primarily determined by gender, or whether it was equally shaped by the social construction of childhood itself. Suppose childhood is understood as a socially produced condition of dependence and limited power. Should I not also consider how

boys, too, experience sexual violence and coercion, even if their stories are less told? The answer was yes; I should.

This reflection led me to reconsider my assumptions about who is at risk and why. Growing up during the third wave of feminism, I was shaped by ideas that emphasise intersectionality, bodily autonomy, and the recognition that experiences of oppression are never singular. I therefore believe in recognising multiple, overlapping dimensions of marginalisation, including the vulnerabilities that come with being young, regardless of gender. My decision to conceptualise HIV as a social identity rather than solely as a syndemic risk factor is also rooted in intersectionality, cemented by my professional experience.

Early in my career, I worked in PMTCT programmes, where I saw firsthand how a positive HIV diagnosis could become a defining social label. For many adolescent mothers, living with HIV was not simply a health condition; it was an experience that shaped how partners, families, and health workers perceived them. I witnessed how stigma, fear of disclosure, and social isolation intersected with poverty and gender inequality to deepen vulnerability. These experiences led me to approach HIV status in this research not just as a biomedical variable but as a social position that can magnify the risks of violence. In doing so, I hoped to highlight how structural marginalisation operates across multiple dimensions of adolescents' lives.

2. **Relationships and power: How I navigated insider–outsider dynamics, professional hierarchies, and the ethical obligations inherent in working with adolescent data.**

Being an insider in language and cultural understanding came with trust and social capital, but it also risked overidentification or assuming I "already knew" the context.

For example, although I spoke isiXhosa and shared cultural reference points with many of the fieldworkers, I was unlikely to know any of the adolescents participating in the cohorts. This contrasts with my work in Eswatini, where my professional and personal networks often overlap. Therefore, I was careful not to extrapolate my experience in Eswatini to the South African community

At the same time, occupying a middle-class position brought me into contact with perspectives beyond formal research spaces. I realised that using Uber to travel safely to the research site, and conversations with drivers, often offered unexpected personal and professional insights. One trip I shared with a colleague visiting from the UK stayed with me in particular. After hearing about the focus of my research, the driver, a Black South African man, disclosed that he had experienced sexual violence as a boy. He described the silence surrounding this abuse and how, when he finally spoke up, the responses he received were rooted in patriarchal norms, causing further harm and shame. Stories like these, although shared outside formal research processes, shaped how I write about gender, blame, and accountability, and influenced how I interpreted my doctoral findings and the literature I cited.

While we established the overall data-collection strategies collaboratively with fieldworkers and participants, I acknowledge that I had more implementing authority over what was included in the follow-up survey. For example, when planning the second visit to the adolescent mother cohort, I advocated including the full WHO scale on intimate partner violence rather than the Conflict Tactics Scale Measure (García-Moreno et al., 2005; Straus et al., 1996). This decision was motivated by the aims of my doctoral research. I then led the training, data collection, and query resolution related to this measure. This experience underscored the politics of survey design and whose priorities are more likely to be represented.

At the same time, I am proud of how I used my position to advocate for participant welfare in concrete ways. One example was ensuring that all referrals for participants reporting experiencing violence or acute distress were completed within two weeks. I often insisted that our timelines and resources prioritise these follow-ups, even when it meant delaying other study activities. For me, this was not simply a procedural obligation but an ethical commitment to the young people who had entrusted us with their stories.

3. **Analysis and interpretation: How my standpoint and prior field experience informed how I read and represented patterns in the data.**

One area of tension in my writing was the language used to describe participants' sex and gender. I was aware that terms such as "boys" and "girls" can reinforce binary framings of childhood and potentially evoke assumptions about innocence or passivity. However, for clarity and to align with how the survey data were collected (respondents reported their sex as male or female), I primarily used "male" and "female" as descriptive categories. This decision was also shaped by feedback I received when drafting my first paper, which was included in the special issue on sexual exploitation of boys. The editor noted that using "boys" throughout inadvertently framed the analysis primarily through the lens of gendered vulnerability rather than highlighting the shared patriarchal structural conditions of risk across all adolescents.

There were also instances where I retained the terms "women" and "girls," particularly when referencing established frameworks and terminology within the literature, such as "violence against women," or when citing studies and policy documents that use this language. In these contexts, I felt it was important to reflect the original sources' terminology to maintain clarity and fidelity to the evidence base, while recognising that this language does not fully capture the spectrum of gender identities or all adolescents'

experiences. Throughout my writing, I make efforts to balance precision, readability, and critical reflection.

4. **Emotional engagement: The personal reactions evoked by sustained engagement with data on sexual and intimate partner violence, and how I managed these feelings during analysis and writing.**

Engaging with data on sexual and intimate partner violence is not emotionally neutral work. During analysis, I sometimes found myself unexpectedly overwhelmed. I still vividly remember sitting in my supervisor's office, rereading the discussion section of my first paper and suddenly realising: *"Girl, you are biased too."* I had written the piece with what I believed to be a gender-sensitive lens, but on reflection, I could see how my framing risked reinforcing the same assumptions I was trying to remain critically reflective about. That moment brought tears, not only from frustration or fatigue, but from confronting the discomfort of seeing my own blind spots reflected back at me in my writing.

It was also a reminder that reflexivity is not a one-off exercise but a continual process of learning and unlearning. I began keeping a reflection diary partway through the doctorate, not only to track analytic decisions but also to document how the data affected me emotionally. Reading about the violence experienced by adolescents—especially in communities I had come to know—was often painful. I carried the stories with me, sometimes long after closing the dataset.

Outside of work, I often found unexpected comfort and solidarity in *Law & Order: Special Victims Unit*. Watching Olivia Benson, who, despite her fictional status, embodies an unrelenting commitment to justice and compassion, has helped me remember why this research matters. Her character's insistence that all survivors deserve to be heard and

respected resonated deeply with me. At the same time, I remained aware that the prevalence estimates in my research only capture those who survived and were willing or able to share their experiences. This reality added both urgency and humility to the work.

To manage these emotions, I often chose to write the most difficult sections of the thesis in spaces that felt bright, comforting, or happy: by the beach, a sunny spot in or by a fireplace. These settings offered a small counterweight to the topic's heaviness and reminded me that the work, while serious, did not have to consume all parts of my life. What sustained me was knowing that acknowledging my emotional responses was not a weakness but part of what made the work real.

Chapter summary

The chapter described the data used in the doctoral research. It summarised study recruitment strategies, baseline and follow-up interviews, research tools and ethical considerations in adolescent research. In the next chapter, I present the three doctoral research papers. The papers follow a format suitable for submission to peer-reviewed journals; however, I may extend the methodological sections to ensure transparency in how analytical decisions were made, following feedback at the Confirmation of Status examination.

Two papers have already been accepted for publication: Paper 1 in the Journal of Child Abuse & Neglect (August 2023) and Paper 3 in the Journal of Adolescent Health (January 2025). The target journal for paper 2 is the Social Science and Medicine journal. Each paper begins with a title page, rationale, objectives and an abstract, followed by an introduction, methods, results, and a discussion section. References are presented at the end of each paper and formatted to meet the requirements of the University of Oxford,

rather than those of the journal. Tables and figures are embedded in the text where possible for readability and accessibility.

Chapter IV: Social identities and experience of lifetime sexual violence

Rationale

Understanding variations in adolescents' experiences of different forms of sexual violence (contact, non-contact and exploitative) is crucial for developing effective prevention and response strategies. Evidence indicates that social identities, such as gender, age, and HIV status, can shape vulnerability in distinct ways. Gender norms that reinforce power imbalances increase the risk for adolescent females while contributing to the neglect and underreporting of violence against males. Younger adolescents are particularly vulnerable because their developmental stage can limit their ability to set boundaries with older peers and adults. Older adolescents often face mounting social and economic pressures to conform to patriarchal norms, further increasing their risk. In high HIV-burden settings, research and programmes on sexual violence have mainly centred on adolescents without HIV. Yet adolescents living with HIV may experience stigma-driven violence, economic insecurity, and coercive relationships, all of which heighten their vulnerability. As intersectional feminist frameworks theorise, these social identities interact as gender power relations combine with other social positions to shape lived experiences. Despite growing recognition of these intersecting vulnerabilities, evidence remains limited on how they may influence specific forms of sexual violence.

Research Question:

Do lifetime experiences of sexual violence during adolescence differ by sex, age, and HIV status?

Objectives:

1. To examine differences in the lifetime prevalence of sexual violence during adolescence by sex, age group, HIV status and mode of HIV acquisition.
2. To explore whether sex, age group, and HIV status intersect to increase vulnerability to lifetime sexual violence among adolescents.

Title page

Which groups are most affected by sexual violence? A disaggregated analysis by sex, age, and HIV-status of adolescents living in South Africa.

Nontokozo Langwenya[1,2§], Elona Toska,[1,3,4], Heidi Stöckl[5], Lucie Cluver [1,6]

1. Centre for Evidence-Based Social Intervention, Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom
2. Nuffield College, University of Oxford, Oxford, United Kingdom
3. Centre for Social Science Research, University of Cape Town, Cape Town, South Africa
4. Department of Sociology, University of Cape Town, Cape Town, South Africa
5. Institute for Medical Information Processing, Biometry and Epidemiology, Ludwig-Maximilians-Universität, Munich, Germany
6. Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa

§Corresponding author
Nontokozo Langwenya
Department of Social Policy and Intervention, Barnet House, 32-37 Wellington Square,
OX1 2ER, United Kingdom
Phone number: +44 7713 934173
Email: nontokozo.langwenya@nuffield.ox.ac.uk
ORCID-ID : 0000-0001-7883-621X

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N.L. conceptualised the analysis, conducted the analyses, and drafted the manuscript. Both E.T. and L.C. designed the overall study, including data collection tools and secured funding for the study. As doctoral supervisors, E.T. and L.C. advised on the research focus and framing. H.S., as a field expert, provided feedback on the analysis and drafted the paper. All authors have reviewed and approved this manuscript.

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Keywords: sexual violence; adolescents; HIV; boys; intersectional analysis

Abstract

Background: Although there is growing evidence on sexual violence against children in South Africa, estimates are rarely disaggregated by biological sex, age, and HIV status. Disaggregated data are essential to identify trends, design effective prevention programmes, and inform policy.

Methods: Using cohort data from a South African cohort of 1,447 adolescents (57% female, 69% with HIV), we assessed experiences of three forms of sexual violence: Non-contact as unwanted exposure of private parts; contact as unwanted touching, coerced debut, and forced sex; transactional sexual exploitation as exchanging sex for money or goods. We estimated the lifetime prevalence of sexual violence stratified by sex, age, and HIV status, and conducted intersectional analyses to examine differences across groups.

Results: Overall, 23.9% (95%CI=21.7%-26.1%) reported exposure to sexual violence at some point in their lives: non-contact=5.7%, contact=9.0% and exploitative=15.8%. Females reported higher rates of exploitative (18.4%vs12.3%; p<0.001) and contact (12.3%vs4.6%; p<0.001) forms, and there were no differences in levels of non-contact by sex (6.5%vs4.6%; p=0.086). Exploitative forms of sexual violence showed the steepest age-related increase, rising from 1.1% in the youngest group to 14.7% among 15–19-year-olds and 41.8% among 20–24-year-olds. Lifetime prevalence doubled in late adolescence (10-14 years=7.0% vs 15-24 years=31.7%). No differences were observed by HIV status overall; adolescents who recently acquired HIV were twice as likely to report ever-experiencing sexual violence compared to adolescents who perinatally acquired HIV (42.3%vs15.4%). Intersectional analysis showed that lifetime sexual violence prevalence was highest among older females and adolescents who recently acquired HIV (46.8%; 95%CI=39.7% - 53.9%). For older males, the lifetime prevalence was lower than that of older adolescents overall (31.5%; 95% CI: 28.6%–34.5%).

Conclusion: The prevalence of sexual violence was high among both sexes, increased with age, and was higher among adolescents who had recently acquired HIV. Prevention policies and programmes must be responsive to age, HIV status and gender.

Introduction

In many settings in Africa, adolescents (ages 10-19) experience high levels of sexual violence, often perpetrated by known members of their families and communities (Devries et al., 2018; Ward et al., 2018). Data from Violence Against Children Surveys show that 23% of females and 10% of males experience sexual violence by the age of 18 (Ligiero et al., 2019). In South Africa, these estimates are higher, with more than one-third of adolescents, both males and females, reporting having experienced sexual violence by the age of 18 (Artz et al., 2016). Experiences of sexual violence during adolescence are associated with an increased risk of HIV acquisition and multiple adverse developmental outcomes, including poor mental, sexual, and reproductive health (Jina & Thomas, 2013; Richter et al., 2018). Global efforts to end all forms of violence against children by 2030 depend on understanding the epidemiology of sexual violence: who is exposed, to what forms of sexual violence and when they are most at risk (UNICEF, 2015). For South Africa and many other African countries with a high HIV burden, contextualising these risks requires disaggregating sexual violence data by sex, age, and HIV status to inform targeted, effective prevention strategies (UNAIDS, 2023).

Sexual violence involves any sexual acts, contact or non-contact, attempted or completed, that happen without informed consent or through coercion (Krug et al., 2002). Specific to adolescents, this also includes relationships whereby adolescents receive items (e.g., gifts, money, food, accommodation, alcohol) in exchange for sexual acts and/or having others perform sexual activities on them, commonly referred to as transactional sex (United Nations, 1989; Wamoyi, Heise, et al., 2019). In this paper, we refer to transactional sex as a form of exploitative sexual violence since it consists of abuse of an adolescent's vulnerability, trust, and limited power for sexual gain (Wamoyi, Heise, et al., 2019; Williams et al., 2012).

So far, very few studies have described patterns of sexual violence among adolescent males, particularly in comparison to adolescent females (Collings, 2005; Madu & Peltzer, 2001; Richter et al., 2018; Ward et al., 2018). Research on adolescent males has mainly been conducted in conflict-affected or male-dominated environments such as gangs and prisons (Carpenter, 2006; Chynoweth et al., 2020; Wood, 2015). In studies involving adolescent males, the use of restrictive, contact-based measures of sexual violence, typically limited to attempted or completed rape, may have led to an underestimation of their risk (Madu & Peltzer, 2001). Findings from recent South African community-based studies that include adolescent males and measure non-contact forms of sexual violence suggest that the overall risk of experiencing sexual violence may be similar across the sexes: 37% among adolescent females and 34% among adolescent males (Richter et al., 2018; Ward et al., 2018). Therefore, data on various forms of sexual violence by sex are essential in improving our understanding of sex-specific risks.

When examining the relationship between sexual violence and age, there is limited empirical data from Africa on experiences of sexual violence during early adolescence, aged 10-14. For example, nationally representative studies, such as the Violence Against Children and Demographic and Health Surveys, tend to sample adolescents aged 13 and older (Ahinkorah et al., 2020; Chiang et al., 2016). Similarly, school-based studies often focus on adolescents aged 15 years and above (Andersson et al., 2012; Ward et al., 2018). Experiences of different forms of sexual violence are likely to vary with age; non-contact sexual violence may be more common in early adolescence, while contact and exploitative forms are more prevalent during late adolescence (Madu & Peltzer, 2001). In several studies, older adolescents are asked if they have experienced any form of sexual violence before age 15 (Barth et al., 2013; Piolanti et al., 2025). Although this retrospective question offers an estimate of early adolescent sexual violence risk, it usually focuses on contact forms like rape, which may constitute a small fraction of early adolescent sexual violence experiences (Jewkes et

al., 2002; Madu & Peltzer, 2001). To better understand risk differences among age groups, we need analyses that include adolescents aged 10 to 24.

Furthermore, given the high rates of HIV in Africa, alongside disaggregating data by sex and age, experiences of sexual violence should be examined in relation to HIV status. About 1.7 million adolescents in Africa are living with HIV, accounting for nearly 88% of the global estimate (UNAIDS, 2021). In South Africa, more than 420,000 adolescents are living with HIV, the highest number in the region (Johnson & Dorrington, 2021). Compared to HIV-negative adolescents, those living with HIV are more often from disadvantaged families, have less school education, and may face heightened levels of poverty (Mabaso et al., 2018). These socio-economic factors are associated with an increased likelihood of exposure to sexual violence, such as coerced sexual debut, early marriage, and transactional sexual exploitation (Wamoyi et al., 2016). AIDS-related orphanhood among children who perinatally acquired HIV can compound their vulnerability to exploitative forms of sexual violence (Birdthistle et al., 2011; Cluver et al., 2011; Mathews et al., 2016).

Despite this, only one study in the African region has investigated the prevalence of sexual violence as the primary outcome among adolescent males and females living with HIV (Merrill et al., 2020). However, the study's findings are limited to rape, and the estimated rates are not compared with those among adolescents without HIV (Merrill et al., 2020). Examining the potential moderating effect of HIV on the likelihood of experiencing different forms of sexual violence is crucial in supporting the wellbeing of all adolescents.

While the preceding sections have highlighted individual factors such as sex, age, and HIV status that shape adolescents' risk of sexual violence, these factors rarely operate in isolation. Intersectional feminist theory provides a lens for understanding how multiple social identities intersect to create unique patterns of risk and resilience

(Crenshaw, 1991; Hill Collins et al., 2021). For example, adolescent females face heightened vulnerability due to gendered power imbalances. Still, this risk may be compounded among those who are older and living with HIV, who must also navigate stigma, poverty, and reduced access to protective resources (Mhungu et al., 2023). Similarly, adolescent males who have acquired HIV horizontally may encounter distinct forms of violence that remain invisible in studies focusing on only one dimension of identity (Moss et al., 2023). Despite growing recognition of these intersecting vulnerabilities, most research has relied on single-axis analyses that consider sex, age, or HIV status independently (Piolanti et al., 2025). Few studies have examined how combinations of these characteristics jointly shape experiences of different forms of sexual violence (Piolanti et al., 2025). Generating evidence that captures these intersections is essential to inform prevention and response strategies that reflect the diverse realities of adolescents' lives.

To contribute towards addressing these research gaps, I used data from a 4-year longitudinal South African study to investigate the nature and extent of sexual violence exposure during adolescence. I describe the lifetime prevalence of each form of sexual violence (i.e., contact, non-contact and exploitative), disaggregating levels by sex, age, HIV status and mode of HIV acquisition. I examined the independent association of these four factors (sex, age, HIV status and mode of HIV acquisition) with the outcomes, using multivariate generalised estimating equations, controlling for other known factors associated with exposure to sexual violence. Lastly, I conducted a sensitivity analysis on the effect of HIV status and exposure to sexual violence using incidence measures.

Methods

I used data from a prospective cohort of 1,591 adolescents, aged 10-19 years, living in urban and peri-urban settlements in the Eastern Cape Province of South Africa.

Adolescents were sampled from 52 public health facilities and neighbouring households: median age=13 years, 53% (n=843) females and 67% (n=1071) living with HIV. Participants were interviewed three times between 2014 and 2018, with a median follow-up of 32.9 months (Interquartile Range (IQR) = 27.6-40.0) between the first and last interview. The retention rate was 94% across all three interviews, with 1.5% deaths, 1.4% refusals, and 3.1% untraceable participants.

Study Procedures

The questionnaire was piloted with a teen advisory group, translated into isiXhosa, and administered by a trained research staff member of the same sex as the participant, where possible. The order and wording of the sexual violence measures were retained across the three study interviews. To minimise social desirability bias, all participants read an introductory text explaining the nature of the questions and the research team's no-judgment and confidentiality practices. In addition, participants could complete sensitive sections of the interview using Audio-CASI (Audio-enhanced, computer-assisted self-interviewing). We took special care to protect adolescents' privacy by conducting interviews at a safe distance from their homes and/or caregivers.

During all three interviews, participants were asked if they had experienced any of the following three forms of sexual violence: non-contact (unwanted showing of private parts), contact (coerced sexual debut, attempted and complete forced penetrative or oral sex) and exploitative (engaging in sexual activities in exchange for gifts or money). The wording is shown in Table 6. These measures of sexual violence included four items from the Juvenile Victimisation Questionnaire and two items adapted from previous studies conducted in South Africa among boys and girls (Finkelhor et al., 2005b; Pettifor et al., 2005). Several African studies have found the

Juvenile Victimisation Questionnaire to have good internal consistency and construct validity (Collings et al., 2014; Ritacco et al., 2012).

Table 6: Paper1_Study Assessment of three forms of sexual violence

Sexual violence form	**Question**
Non-contact	"Has anyone made you look at their private parts when you did not want to" and/or "Has any wanted to look at your private parts when you did not want them to" (Finkelhor et al., 2005b)
Contact	Has anyone: • "touched your private parts or made you touch theirs when you did not want to?"; (Finkelhor et al., 2005b) • "tried to have sex with you when you did not want to?" (Finkelhor et al., 2005b); • "had sex (vaginal, anal or oral) with you when you did not want them to?" (Finkelhor et al., 2005b); Think back to the first time you had sex (penetrative vaginal), • "were you forced to have sex?" (Pettifor et al., 2005)
Transactional sexual exploitation	"Has anyone ever given you a present for having sex with them" OR "have you ever decided to have sex with someone in exchange for present, money or favours" (Pettifor et al., 2005).

Ethics

Ethical approvals were obtained from the University of Cape Town (CSSR 2013/4), Oxford University (CUREC2/12–21), provincial Departments of Health and Education, and local healthcare facilities. Research staff received training on administering the questionnaire and conducting research with vulnerable groups such as children and adolescents affected by HIV. Participation in the study was voluntary, and written informed consent was sought from adolescents and their caregivers if the adolescent was <18 years. The study followed stringent safety and fieldwork protocols and provided referrals for social, physical, and sexual harm. This included referrals for emergency contraception and HIV post-exposure prophylaxis (where relevant) for rape cases that occurred in the last 72 hours. In heightened-risk cases, with adolescents' consent, they were referred to local organisations, and the research team's social worker and psychologist consulted on the options. There were

no financial incentives for study participation; however, all participants received a certificate of participation, snacks, and a small gift pack that included stationery and toiletries.

Study Measures

Sexual violence: Measures of non-contact and contact sexual violence (excluding forced sexual debut) had five categorised responses – "weekly", "monthly", "at least once this year", "it has happened but more than a year ago" and "never"; and the participants could only select one response. Responses for forced sexual debut were restricted to "yes" and "no" options. Transactional sexual violence responses included "yes, in the last year", "yes, but more than a year ago" and "never". Participants' responses were used to generate two measures of occurrence for each form of sexual violence: (i) lifetime prevalence and (ii) incidence. The lifetime prevalence is the cumulative percentage of adolescents who reported ever experiencing any of the three forms of sexual violence out of all adolescents in the cohort. Responses for lifetime prevalence excluded the "never" and "no" options. We defined incidence as the proportion of adolescents who had not experienced sexual violence at baseline but reported at any follow-up visit "weekly", "monthly" and "at least once this year/ yes, in the last year" experiences of sexual violence.

***Explanatory variables*:** Socio-demographic characteristics were measured at each interview and included age, sex, school grade delay (enrolment in a lower grade than expected for age), housing type (informal if living in a shack), food insecurity (not enough food to eat for at least 3 days of the preceding 7 days or not having three meals a day), social protection (household receiving at least one government grant), employment (part-time and full-time) and orphanhood status (maternal or paternal). HIV measures included self-reported HIV status, which was validated by review of paper-based and electronic medical records for HIV-related treatment (Haghighat et

al., 2021). We measured the mode of HIV acquisition using an age cut-off of 10 years, validated with a detailed algorithm when definitive clinic notes did not specify the mode of acquisition (CIPHER Global Cohort Collaboration, 2018). Perinatally infected adolescents were those who began antiretroviral treatment before the age of 10, supported by parents living with HIV, parental orphanhood, no sexual activity, and a history of chronic illness (Sherr et al., 2018).

Data Analysis

Data analysis was conducted using Stata 16 (StataCorp, 2017). Lifetime prevalence of each form of sexual violence and overall prevalence were described using proportions with 95% confidence intervals (95% CI). Group differences were assessed by sex (female vs male), age group (10–14 years vs >15 years), and HIV status (living with or without HIV) using chi-square tests and Fisher's exact tests for binary variables. Among adolescents living with HIV, findings were further disaggregated by mode of HIV acquisition (perinatally vs recently acquired HIV). To explore whether experiences of sexual violence differed across intersecting dimensions of age and HIV acquisition mode among female adolescents living with HIV, a fully cross-categorical approach was applied. All p-values were two-sided, with α set at 0.05.

To account for the possibility that recent HIV infections might have resulted from exposure to sexual violence, we further estimated the risk of sexual violence using only incidence cases at follow-up interviews. We excluded adolescents who had experienced any form of sexual violence by the first interview (n=190, 13%) and modelled the cumulative risk of being exposed to sexual violence by HIV status and mode of HIV infection using a Cox proportional hazards method. We censored participants at the interview date at which they first reported sexual violence exposure or at the second interview if they did not complete the third interview. We further assumed non-informative censoring: individuals who had one follow-up visit had the

same probability of experiencing sexual violence as individuals who had two follow-up visits, as there were no differences in baseline sexual violence prevalence between these two groups.

To examine the independent and combined associations of sex, age, HIV status, and mode of HIV acquisition with exposure to sexual violence, we fitted generalised estimating equations (GEE) models with a probit link function (Gardiner et al., 2009). The GEE models used an unstructured correlation matrix to account for repeated outcome measurements over time. Adjusted incidence rate ratios (IRRs) and 95% CIs were estimated for the four subgroups and intersectional groups identified as significant in descriptive analyses (Gardiner et al., 2009). Models controlled for socio-demographic covariates, including housing type, food security, orphanhood status, and educational attainment.

Results

The analysis includes participants with at least one follow-up interview (n=1447, 95%). While there were no significant differences in the experiences of each of the three forms of sexual violence, those retained were marginally more likely to have ever experienced transactional sexual exploitation compared to those with no follow-up interview (Table 7). Those retained were less likely to stay in informal housing and urban areas.

Table 7: Paper 1 Study participants' characteristics of study participants by follow-up status

	Full sample (n=1519)	No follow-up (n=72)	Retained (n=1447)	p-value
Demographics				
Age years (mean, IQR)	14 (11-16)	14 (12-17)	13 (11-16)	0.392
10-14 years	899 (59%)	417 (60%)	585 (59%)	0.692
Sex (girls)	864 (56%)	43 (60%)	831 (7%)	0.618
Informal housing	1292 (83%)	105 (91%)	1187 (82%)	**0.020***
Urban	1115 (73%)	62 (86%)	1053 (73%)	**0.012***
School Grade Delay	748 (49%)	38 (53%)	733 (51%)	0.725
Household Grant	909 (60%)	46 (64%)	863 (60%)	0.447
Orphanhood	789 (52%)	31 (43%)	758 (52%)	0.121
Food Insecure	343 (23%)	11 (16%)	332 (23%)	0.129
Living with HIV	1108 (71%)	84 (72%)	1024 (71%)	0.707
Baseline lifetime Prevalence of Sexual Violence				
Non-contact	49 (3.2%)	3 (4.2%)	46 (3.2%)	0.643
Contact	59 (3.9%)	3 (4.2%)	56 (3.9%)	0.899
Transactional sexual exploitation	107 (7.3%)	1 (3.7%)	106 (7.3%)	0.057

n, % unless stated otherwise | * statistically significant at p<0.05
School grade delay Based on age, enrolled in a lower grade than expected | Food Insecure not enough food to eat for at least 3 days in the last 7 days

Table 8 shows the baseline characteristics of the 1447 adolescents included in the analysis. The median age at first interview was 13 years (IQR 11-16), and the majority were females, living with HIV and in early adolescence (10-14 years). Among those living with HIV, nearly three-quarters (73%) had perinatally acquired HIV. Compared to males, females were older, less likely to report school grade delay, and more likely to experience food insecurity in the preceding seven days. Additionally, a higher proportion of females had recently acquired HIV compared to males.

Table 8: Paper 1_Baseline characteristics of adolescents ages 10-19 years (n=1447), stratified by sex

	Total n=1447	Females (n=821,57%)	Males (n=626,43%)	P value
Age years (median, IQR)	13 (11-16)	14 (11.5-17)	13 (11-15)	<0.001*
10-14 years	858 (60%)	434 (53%)	424(68%)	<0.001*
15-19 years	663 (38%)	358 (44%)	195 (31%)	
20-24 years	36 (2.5%)	29 (3.6%)	7 (1.1%)	
Informal Housing	260 (18%)	161 (20%)	99 (16%)	0.064
Urban	1053 (73%)	585 (71%)	463 (75%)	0.138
School Grade Delay	714 (49%)	365 (44%)	349 (56%)	<0.001*
Grant/Employment	826 (59%)	458 (58%)	368 (61%)	0.270
Orphanhood	719 (52%)	392 (50%)	317 (54%)	0.096
Food Insecure	332 (23%)	214 (26%)	118 (19%)	0.001*
Living with HIV	1024 (71%)	571 (69%)	453 (73%)	0.243
Recently acquired	274 (27%)	194 (34%)	80 (17%)	<0.001*

n, % unless state otherwise | * statistically significant at p<0.05
School grade delay based on age, enrolled in a lower grade than expected | Food Insecure: not enough food to eat for at least 3 days in the last 7 days, and not affording three meals a day.

Lifetime prevalence of sexual violence:

About 23.9% (95%CI=21.7-26.1%) of adolescents reported that they had experienced at least one of the three forms of sexual violence in their lifetime, and the most common form of sexual violence was transactional sexual exploitation, 15.8% (95%CI=12.9%-17.7%). Nearly one-in-ten adolescents reported having experienced non-contact sexual violence (95%CI=7.6%-10.6%). The proportion of adolescents who ever experienced non-contact sexual violence was 5.7% (95%CI=4.5%-7.0%). Figure 9 shows the lifetime prevalence of each form of sexual violence, disaggregated by sex.

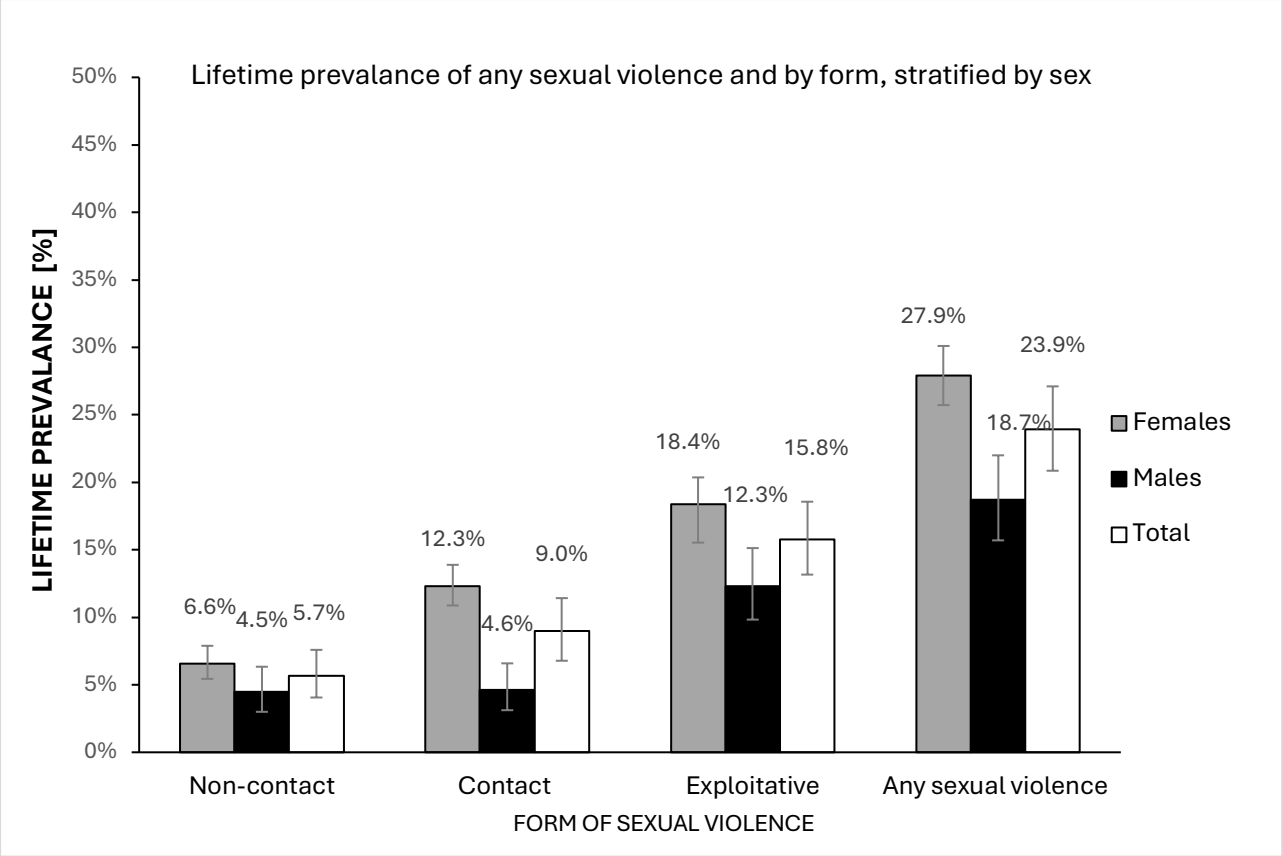


Figure 9: Paper 1_Proportion of adolescents reporting sexual violence at some point in their lives, stratified by sex

Overall, females were significantly more likely than males to report ever experiencing any form of sexual violence (females=27.9% vs males=18.7%, p<0.001). This increased likelihood was further observed for contact and transactional exploitative forms of sexual violence (p<0.02 for both forms) but not for non-contact forms of sexual violence (p=0.086). However, for both sexes, the most prevalent form of sexual violence was transactional sexual exploitation. Among males, the lifetime prevalence of non-contact and contact forms of sexual violence was comparable (4.5% vs 4.6%), whereas, for females, the lifetime prevalence of contact sexual violence was nearly double that of non-contact violence (12.3% vs 6.6%).

Sex and Age

Lifetime experiences of sexual violence increased markedly with age, as shown in Figure 10a. Among adolescents aged 10–14 years, 7.0% reported any form of sexual violence, compared to 23.3% among those aged 15–19 years and 51.6% among 20–24-year-olds. Exploitative form of sexual violence showed the steepest age-related increase, rising from 1.1% in the youngest group to 14.7% among 15–19-year-olds and 41.8% among 20–24-year-olds. While the prevalence of non-contact sexual violence was relatively similar across age groups, contact sexual violence rose more than threefold with age, from 4.4% in early adolescence to 15.3% in late adolescence ($p < 0.001$).

While the overall lifetime prevalence of sexual violence was higher among females than males, intersectional analysis by age and sex indicated that these disparities were most likely driven by the 20–24 age group, as shown in *Figure 10b*. Among adolescents aged 20–24, the prevalence was higher among females (54.5%) than among males (43.2%), although confidence intervals overlapped (females: 47.5%–61.0%; males: 43.0%–55.3%).

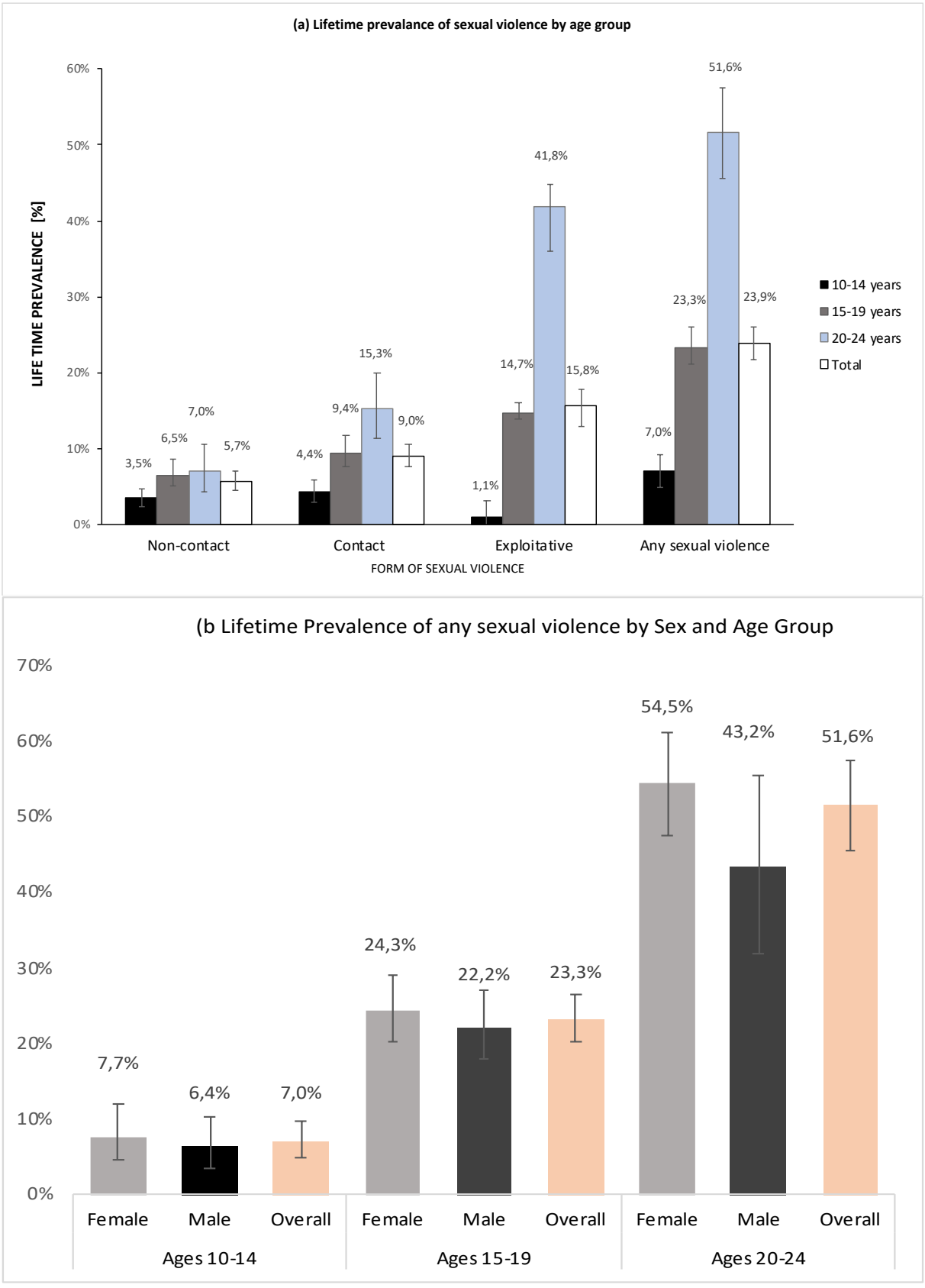


Figure 10: Paper 1_Lifetime Sexual Violence Prevalence by (a) Age group and (b) intersection of Sex and Age Group

HIV status and mode of infection

The lifetime prevalence of sexual violence, overall and by form, did not differ significantly between adolescents living with HIV and those who were HIV-uninfected (22.9% vs 26.2%, p=0.182) [Figure 11a]. However, among adolescents living with HIV, those who had recently acquired HIV were significantly more likely to report any sexual violence than those who had acquired HIV perinatally (42.3% vs 15.4%, p<0.001) [Figure 11b]. Among adolescents who had recently acquired HIV, the prevalence of transactional exploitation was fourfold that of perinatally infected adolescents (33.2% vs 8.2%, p<0.001), and the prevalence of contact sexual violence was nearly double that of perinatally infected adolescents (12.8% vs 6.6%, p<0.001). Rates of non-contact sexual violence by mode of HIV acquisition were comparable.

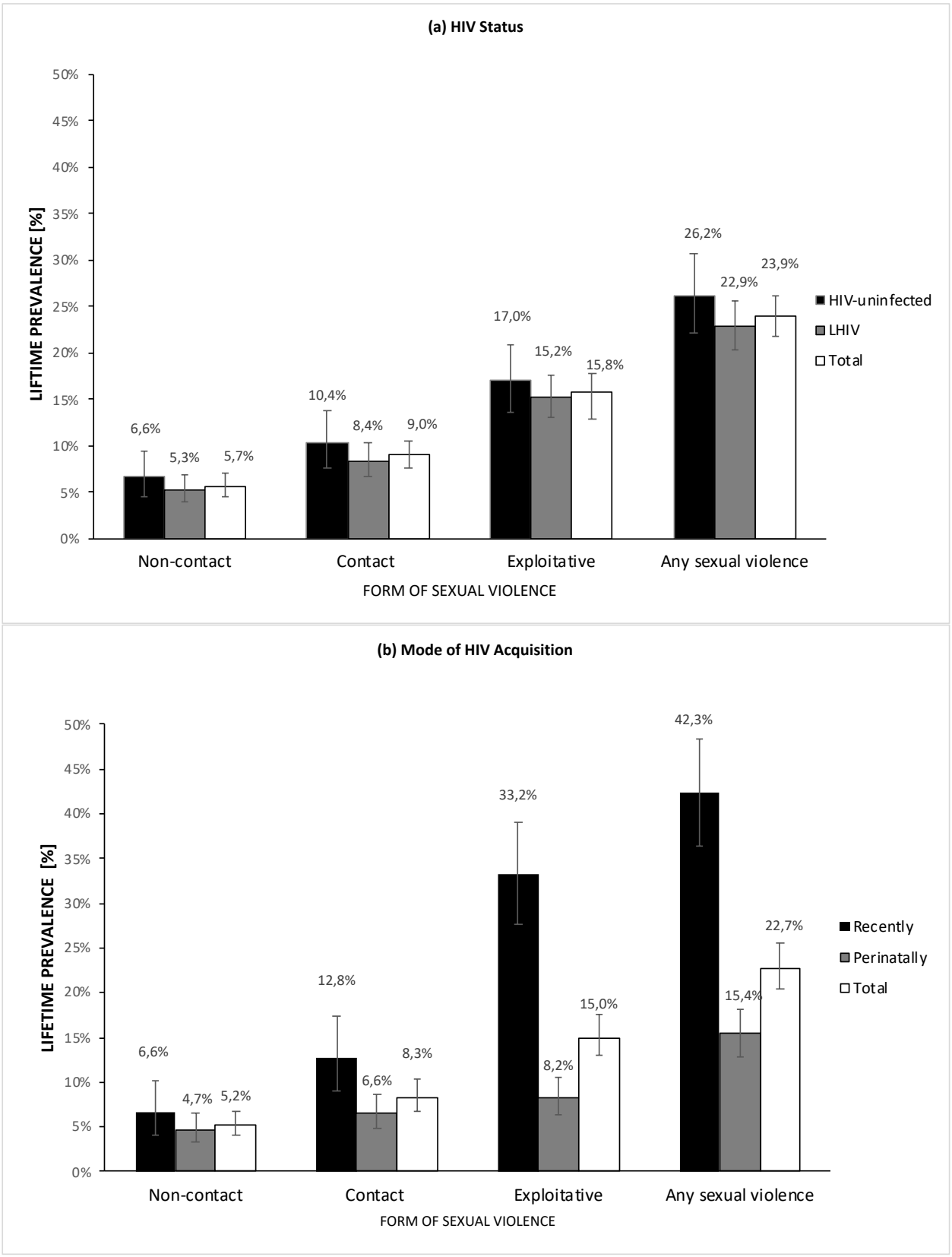


Figure 11: Paper 1_Proportion of adolescents reporting experiencing sexual violence at some point in their lives, disaggregated by (a)HIV status and (b) Mode of HIV acquisition

Given the potential bidirectional relationship between HIV acquisition and sexual violence (i.e., sexual violence can increase the risk of HIV infection, and conversely, living with HIV may increase vulnerability to sexual violence), a Cox proportional hazards model was used to estimate the risk of incident sexual violence among adolescents who reported no prior experiences at baseline (n=1257; 71% living with HIV). As shown in Table 9, there was no significant difference in the past-year incidence of sexual violence between adolescents living with HIV and those who were HIV-uninfected (aHR=1.022; 95%CI=0.79-1.31). However, when disaggregated by mode of HIV acquisition, adolescents who had recently acquired HIV experienced a significantly higher incidence rate of sexual violence than those with perinatally acquired HIV, with an adjusted hazard ratio of 1.676 (95% CI: 1.23–1.93). As shown in Figure 12, the risk of experiencing sexual violence was consistently higher across all age groups among those with recently acquired HIV than among those with perinatal infection.

Table 9: Paper 1_Adjusted Hazard Ratio for sexual violence.

	Adjusted Hazard ratio	**96% CI**
≥15 years	4.290	3.25 - 5.68
Girl	1.361	1.06 - 1.73
Living with HIV	1.022	0.79 - 1.31
*Recently Acquired HIV	1.676	1.23 - 1.93
Informal housing	0.848	0.65 - 1.10
Grant/Employment	0.946	0.75 - 1.18
School Grade Delay	1.256	0.99 - 1.59
Food Insecure	0.647	0.50 - 0.82

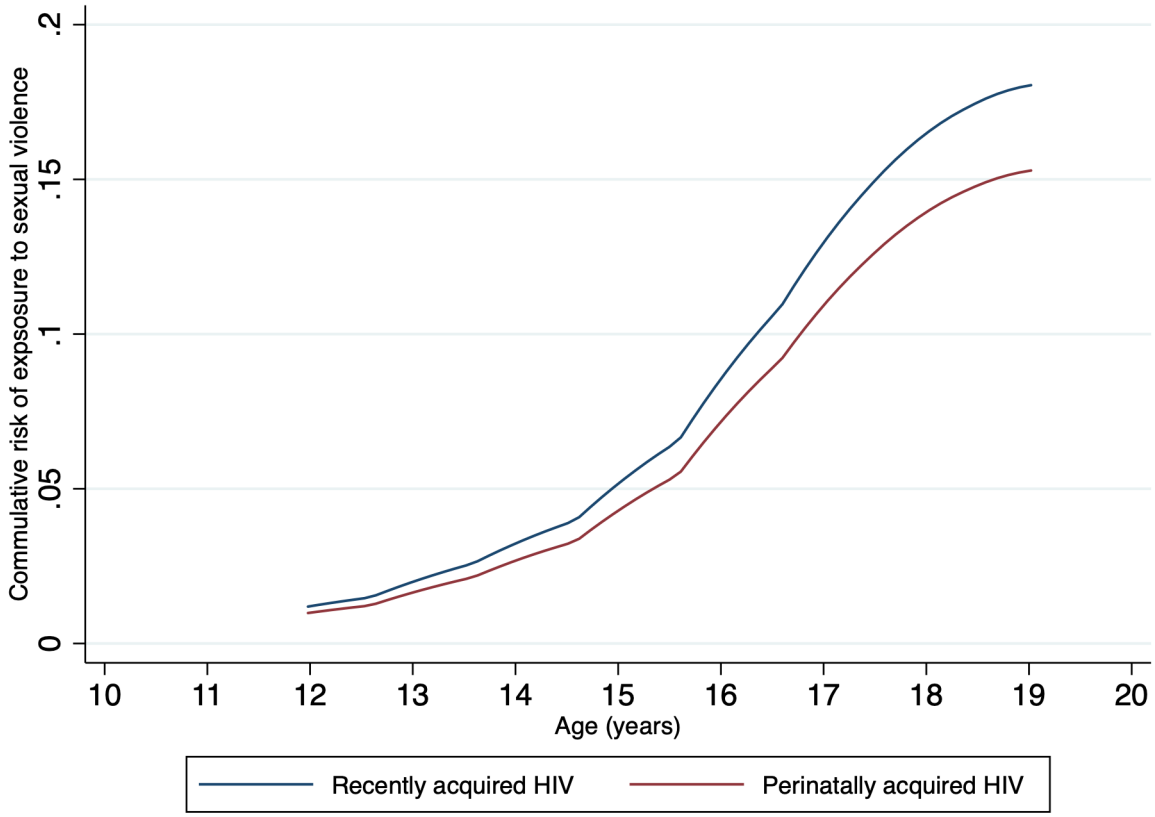


Figure 12:Paper 1_Nelson-Aalen plot for the cumulative risk of sexual violence at each age of the adolescence period among adolescents living with HIV (n=870)

When stratified by sex, there was no difference in the lifetime prevalence of sexual violence by mode of HIV acquisition, as shown in Figure 13.

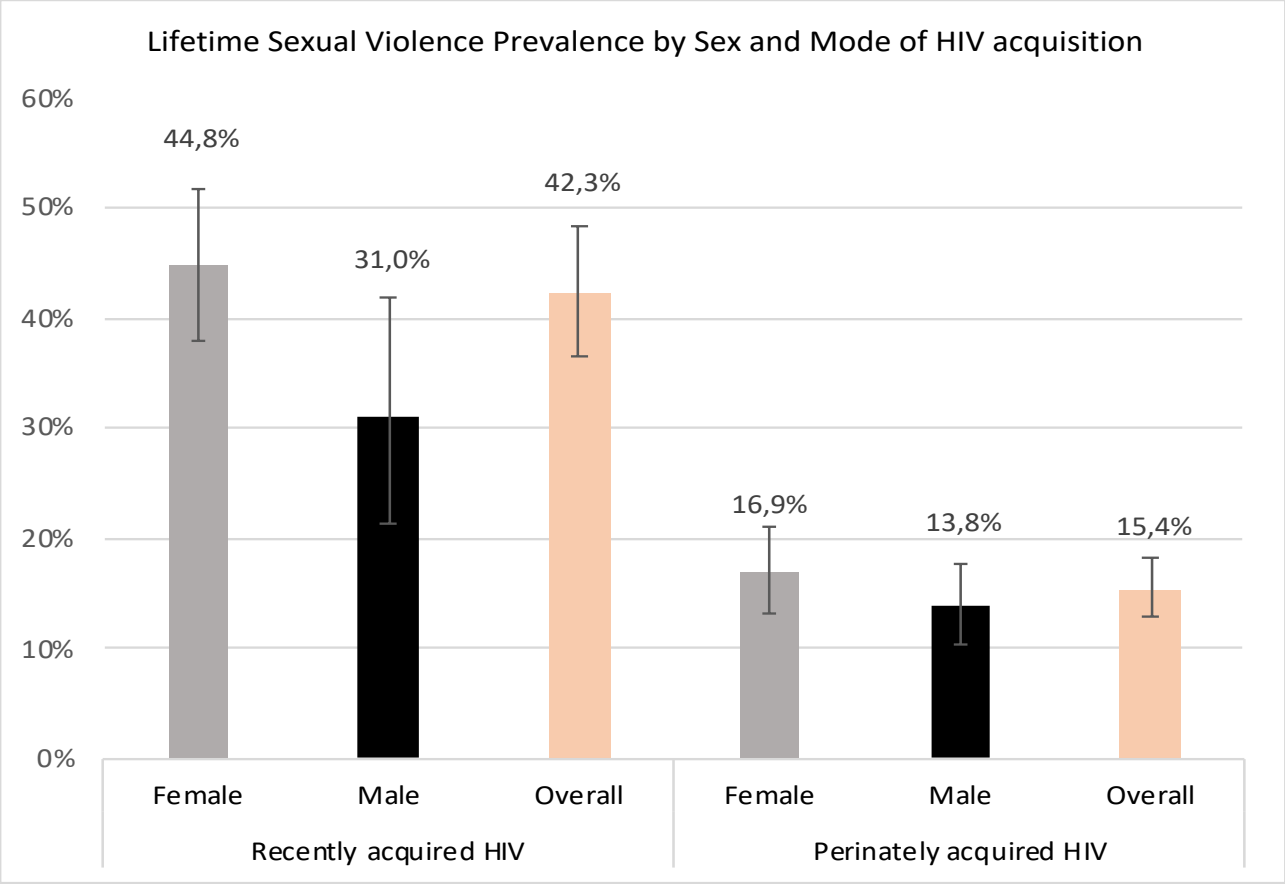


Figure 13: Paper 1_Lifetime Sexual Violence by Mode of HIV Acquisition and Sex

Intersectional analysis

We further examined the intersection of three key identity and experience factors: sex, age, and mode of HIV acquisition to explore distinct patterns of vulnerability to sexual violence among adolescents living with HIV. While earlier analyses used age groups of 10–14, 15–19, and 20–24 years, we re-categorised age into 10–14 years (younger adolescents) and 15–24 years (older adolescents or young adults) to mitigate unreliable estimates due to small cell sizes, particularly among males living with HIV aged 20–24 years (n=74). This regrouping aligns with global adolescent health frameworks and policy definitions.

While the lifetime prevalence of sexual violence was higher among older females aged 15–24 years who had recently acquired HIV (46.8%; 95% CI: 39.7%–53.9%) compared to their male counterparts (33.0%; 95% CI: 22.9%–45.2%), estimates were comparable to overall levels among adolescents with recently acquired HIV (33.2%; 95% CI: 27.7%–39.1%) and overall levels of adolescents ages 15-24 (31.5%; 95%CI=28.6% - 34.5%). The 95% confidence intervals overlapped.

Multivariate adjusted associations

After adjusting for socio-demographic characteristics, being older, female and having recently acquired HIV continued to be associated with increased risk of sexual violence (Table 10). Being >15 years old doubled the risk of an adolescent's exposure to sexual violence (aRR=2.07; 95% CI=1.82-2.37). Adolescent females had a 23% increased risk of exposure to sexual violence compared to males (aRR=1.23; 95% CI=1.08-1.39), and living with HIV did not increase an adolescent's risk of exposure to sexual violence (aRR=0.94; 95% CI=0.82-1.07). Among those living with HIV, adolescents who horizontally acquired HIV had a 62% increased risk of exposure to sexual violence compared to those who perinatally acquired HIV (aRR=1.62; 95% CI=1.37-1.92).

To expand our consideration of intersectional effects, we ran sex-stratified models to examine whether the associations between sexual violence and age, HIV status, and mode of HIV acquisition differed by sex. While the independent effects of older age and horizontally acquired HIV remained statistically significant in both sexes, the overlapping confidence intervals across models suggest that the intersecting dimensions of age and HIV acquisition mode did not significantly moderate the relationship between sex and the risk of sexual violence. Model outputs are provided in Table 10.

Table 10: Paper 1_Result of a GEE univariable and multivariable model predicting the incidence risk ratio of any sexual violence among adolescents and when stratified by sex (n=1447)

	Univariable models			Multivariable model		
	aRR	95%CI	p-value	aRR	95%CI	p-value
Everyone						
≥15 years	2.11	1.86 - 2.39	<0.001	2.07	1.82 - 2.37	<0.001
Female	1.32	1.17 - 1.49	<0.001	1.23	1.08 - 1.39	0.001
Living with HIV	0.94	0.83 - 1.07	0.393	0.94	0.82 - 1.07	0.405
	1.97		<0.001	2.03		<0.001
*Recently Acquired		1.70 - 2.28			1.73 - 2.39	
Informal housing	1.12	0.97 - 1.30	0.128	1.15	0.98 - 1.36	0.085
Grant/Employment	0.92	0.82 - 1.02	0.098	1.05	0.90 - 1.22	0.513
School Grade Delay	1.27	1.13 - 1.43	<0.001	1.14	1.06 - 1.30	0.039
Food Insecure	1.40	1.25 - 1.57	<0.001	1.30	1.14 – 1.49	<0.001
Males						
≥15 years	1.96	1.61 - 2.37	<0.001	1.88	1.54 - 2.31	<0.001
Living with HIV	0.83	0.66 - 1.05	0.130	0.81	0.62 - 1.05	0.121
*Recently Acquired	1.68	1.75 - 2.42	0.005	1.72	1.19 - 2.48	0.004
Informal housing	0.87	0.63 - 1.20	0.422	0.93	0.66 - 1.29	0.615
Grant/Employment	0.28	0.78 – 1.11	0.402	0.98	0.78 – 1.24	0.903
School Grade Delay	1.06	0.85 - 1.31	0.580	1.11	0.89 - 1.38	0.369
Food Insecure	1.03	0.83 - 1.32	0.96	1.26	1.02 - 1.57	0.034
Females						
≥15 years	2.16	1.82 - 2.56	<0.001	2.22	1.87 - 2.68	0.001
Living with HIV	1.03	0.89 - 1.19	0.125	0.98	0.83 - 1.16	0.833
*Recently Acquired	1.52	1.29 - 1.80	<0.001	1.58	1.31 - 1.92	<0.001
Informal housing	1.21	1.01 - 1.44	0.036	1.30	1.12 - 1.57	0.009
Grant/Employment	0.91	0.80 - 1.04	0.172	0.95	0.81 - 1.11	0.484
School Grade Delay	1.13	0.97 - 1.32	0.098	1.16	0.99 - 1.36	0.072
Food Insecure	1.50	1.31 - 1.71	<0.001	1.33	1.12 - 1.57	<0.001

*Model restricted to adolescents living with HIV (n=1024)

Other factors associated with increased risk of sexual violence included being grade delayed and food insecure. Adolescents who experienced food insecurity were 30% more likely to be exposed to sexual violence than those who were food secure, and this association held true for both males and females. While school grade delay was associated with a 14% increased risk of sexual violence, the association did not persist in sex-stratified models. Informal housing was associated with a 30% increased risk of sexual violence among females but not males.

Discussion

The study findings show that preventing and responding to sexual violence requires differentiated approaches by age and mode of HIV acquisition, while recognising that both male and female adolescents are vulnerable to sexual violence. Approximately 1 in 4 females and 1 in 6 males in this adolescent study were exposed to sexual violence. The lifetime prevalence of all three forms of sexual violence (non-contact, contact and transactional) increased with age. Although there were no differences in the levels of sexual violence between adolescents living with HIV and those without HIV, ever experiencing sexual violence was more likely to occur among adolescents who had recently acquired HIV than among those who perinatally acquired HIV.

Overall, estimates of contact and transactional sexual violence observed in our study are comparable to those reported in other studies, whilst estimates of non-contact sexual violence were slightly higher than those reported in the literature. Using the same measures from the Juvenile Victimization Questionnaire, Meinck et al. (2017) and Ward et al. (2018) found similar rates of contact sexual violence, 9.0%-12.0%, among South African adolescents aged 10-17. The prevalence of transactional sexual exploitation among adolescents without HIV in this study was comparable to those reported in two South African HIV prevention clinical trials (13%-17%) (Jewkes et al., 2006; Ranganathan et al., 2016), but they are higher than estimates from an earlier community-based longitudinal study conducted on younger adolescents from the same province (5%-7%) (Cluver et al., 2011). The prevalence of non-contact sexual violence from our study is also higher than that reported by the South African Optimus study (4.5%), the only study we identified to have reported estimates of non-contact sexual violence among adolescent males and females (Ward et al., 2018). The higher estimates likely reflect our broader age range (10-19 years), whereas the Optimus study sampled younger adolescents, who may have had fewer opportunities to be exposed to this form of violence (Ward et al., 2018).

Consistent with other research with adolescents living in South Africa and globally, we observed that females experienced sexual violence at higher rates than males (Barth et al., 2013; Stöckl et al., 2014; Stoltenborgh et al., 2015). More specifically, we observed a higher lifetime prevalence of contact and transactional forms among females than males. One of the root causes identified for heightened vulnerability to sexual violence among females is gender norms and beliefs that reinforce male dominance and superiority, creating power hierarchies that give males greater status and legitimise society's acceptance of violence against females (Jewkes et al., 2020). The same social and power hierarchies are why children are subjected to sexual violence. In South Africa, males from within the home and community are most often the perpetrators of sexual violence against both adolescent males and females (Lalor, 2004; Ravi & Ahluwalia, 2017). Therefore, efforts to end sexual violence against adolescents must continue to address social gender dynamics that contribute to the disparities in sexual violence experiences among the sexes.

This study is one of the few to provide robust evidence that male adolescents are also affected by sexual violence, particularly for evidence on experiences of transactional sexual exploitation, which was the most prevalent form of sexual violence among males (12.3%). The study's estimates are notably higher than those reported in previous African studies using a similar definition of exchanging sex for goods, money, grades, or other resources (Adjei & Saewyc, 2017; Cluver et al., 2013; Miller et al., 2021). For instance, data from a 2004 national survey of adolescents aged 12–17 (n=1,314) in Burkina Faso, Ghana, Malawi, and Uganda estimated that 7.6% of males had ever experienced transactional sexual exploitation (Adjei & Saewyc, 2017). Among South African adolescent males aged 10–18 (n=1,475), interviewed twice between 2009 and 2012, the lifetime prevalence was 2% (Cluver et al., 2013). Similarly, a 2002 baseline school intervention trial (n=4009) found a lifetime prevalence of 5.3% among adolescent males aged 10–19 (Miller et al., 2021). Our higher estimates may reflect increased contemporary risk factors, as earlier studies relied on older data, and

may also point to unique vulnerabilities within our study population, which includes adolescents living with HIV. These findings underscore the urgent need for more recent, comprehensive data to better understand evolving risks and to inform targeted interventions for male adolescents at risk of sexual violence.

Furthermore, among male adolescents, the equal reporting of both non-contact and contact sexual violence experiences may point to the shared risk factors for non-contact and contact forms of sexual violence, such as the perpetrator's characteristics and the environment in which the violation occurs. Existing research from South Africa shows that both non-contact and contact forms of sexual violence against male adolescents often occur at schools and are perpetrated by their peers (Richter et al., 2018), while transactional sexual exploitation usually occurs outside of the school environment and is perpetrated by adults (Dunkle et al., 2007). To further explore these hypotheses' contextual differences, future studies should explicitly include a focus on male adolescents and systematically examine the context in which sexual violence occurs, as well as the perpetrators' characteristics.

The strong observed effect of older age on exposure to sexual violence is not surprising. Compared with younger adolescents, older adolescents (>15 years) faced double the risk of experiencing any form of sexual violence, with a disproportionately higher likelihood of transactional sexual exploitation. One plausible explanation is that, with age, adolescents are more likely to engage in sexual encounters, become more mobile (spending more time outside the home and in new environments), and may be less supervised by their caregiver (Simons et al., 2018). This is often coupled with increased interactions with both adults and peers (Hampshire et al., 2011). Together, these factors may place older adolescents at heightened risk of sexual violence compared with younger adolescents. Even so, the prevalence of 7% among adolescents aged 10-14 is concerning and warrants targeted interventions.

Our findings indicate that adolescents who have recently acquired HIV face heightened risk of sexual violence, reinforcing that violence is both a driver and consequence of HIV infection (Stockman et al., 2013). This underscores the need for integrated HIV care programs that incorporate routine sexual violence screening. The post-diagnosis period may be a particularly vulnerable time, as adolescents navigate disclosure, stigma, and shifts in social and economic dependence (Groves et al., 2022). Expanding adolescent-friendly, trauma-informed services within HIV care settings is critical to breaking this cycle (Christofides & Jewkes, 2010; Colombini et al., 2021). A key component of this integration will be ensuring services use adolescent-friendly approaches: adolescents are respected, their records are kept confidential, and they are treated with kindness (Africa et al., 2015). Healthcare workers will also require support with navigating referral networks. The integration of gender-based violence screening in two adolescent-friendly HIV prevention centres in South Africa and Tanzania was shown to be feasible and sustainable when accompanied by regular debriefing sessions among healthcare providers (Colombini et al., 2021).

Beyond the clinical setting, the study findings highlight the urgent need to scale up effective and promising INSPIRE-aligned interventions to prevent sexual violence among adolescents. INSPIRE, a globally recognised framework for ending violence against children, outlines seven evidence-based strategies for violence prevention (World Health Organisation, 2016). Among these, interventions that shift harmful gender norms, strengthen parental support, improve household income, and increase educational attainment have shown promise in reducing the risk of sexual violence (Ligiero et al., 2019). For example, community-based interventions such as DREAMS integrate multiple INSPIRE strategies to reduce tolerance for sexual violence and foster equitable gender norms (Saul et al., 2018). This includes economic strengthening for adolescent girls through cash transfers to increase school retention and life skills training that challenges harmful gender norms (Saul et al., 2018). Parenting for Lifelong Health aligns with parent and caregiver support, equipping families with

non-violent discipline strategies and improving parent-adolescent communication (Cluver et al., 2018). However, while these programs have increased protective factors—such as improved gender attitudes, reduced harsh parenting, and higher school enrolment—their direct impact on reducing sexual violence remains unclear (Cluver et al., 2020; Ligiero et al., 2019; UNICEF., 2017).

Despite theoretical and empirical expectations of compounded vulnerability, our stratified models did not detect statistically significant moderation by sex in the associations between age or mode of HIV acquisition and sexual violence. This absence of statistically significant interaction should not be interpreted as evidence of no intersectional effect, but rather as a limitation of the statistical power or analytic sensitivity to detect such complex dynamics. For instance, while the lifetime prevalence of sexual violence among older females with horizontally acquired HIV was notably high at 46.8%, this subgroup comprised only 201 participants, which may limit the precision of estimates and power to detect interactions. Similarly, the subgroup of older males with horizontally acquired HIV, among whom 33.0% reported lifetime sexual violence, included only 75 individuals. These small cell sizes reduce the likelihood of identifying statistically significant moderating effects, even when meaningful differences in burden exist. It is therefore possible that structural and relational drivers of violence interact in nuanced ways that are not fully captured by stratified regression models alone.

That said, our findings do highlight the need for comprehensive sexual violence prevention and response services that explicitly include male adolescents. This requires integration into both national and global policies to ensure that support systems, legal protections, and intervention programs address the unique vulnerabilities faced by male adolescents. Most programmes engaging male adolescents in sexual violence prevention question norms related to masculinity and power with limited recognition of their own vulnerabilities to sexual violence

(Hatcher et al., 2022; Russell et al., 2020). Currently, measures of program effectiveness—such as reductions in sexual violence rates, increased disclosure of experiences, and uptake of response services—rarely report these outcomes for male adolescents (Ligiero et al., 2019; Russell et al., 2020). Evidence on the effectiveness of cash transfer programmes in reducing transactional sexual exploitation among male adolescents is virtually absent in the literature. To meet the Sustainable Development Goals' call of leaving no one behind, we must include male and female adolescents equitable in policy targets.

Several limitations should be considered when interpreting the study findings. Since caregivers, who are also possible perpetrators of sexual violence, provided consent for adolescents to participate, adolescents may have felt uncomfortable disclosing sexual violence in fear of their caregivers becoming aware they have done so (Meinck, et al., 2017). While four questions were used to assess contact forms of sexual violence, the study used one question each for measures of non-contact and exploitative forms of sexual violence. A one-question-based measure does not comprehensively capture adolescents' experiences of these two forms of sexual violence, further underestimating the levels of these two forms of sexual violence. Additionally, the lifetime prevalence measure relies on retrospective recall of events that occurred before the baseline interview, which can contribute to the underestimation of all three forms of sexual violence. The lack of uniformity in baseline age may result in missed cases of sexual violence, occurring similarly across both age groups, which would weaken the association observed. Future studies should include birth cohorts to examine more nuanced causal pathways and provide more robust estimates of the association between HIV and sexual violence experiences.

Additionally, the study did not assess who perpetrated the reported sexual violence, which is an important limitation. Understanding the characteristics of perpetrators, whether they are peers, intimate partners, family members, or authority figures, is

crucial for developing targeted prevention and intervention strategies and the refinement of existing programs. Without this information, it may be difficult to identify patterns of risk, tailor support services for survivors, or address the social and structural drivers of sexual violence in adolescents' environments (Devries et al., 2018). Future research should incorporate detailed perpetrator data to strengthen the evidence base for effective responses.

Still, the present study has several methodological merits. The study included younger adolescents, those living with HIV, and male participants: groups that are often neglected in sexual violence research. It extended sexual violence measures to non-contact forms, assessing all forms of sexual violence for both males and females. Literature of this nature is scarce in the African region. The study's longitudinal design allowed risk estimation throughout adolescence whilst adjusting for confounding variables at the individual and household levels. In turn, we characterised patterns of three forms of sexual violence and identified groups at increased risk of sexual violence.

Conclusion

The study results offer insights into the different forms of sexual violence experienced by adolescents and identifies which groups are at greater risk. The study demonstrates that male adolescents and adolescents who have recently acquired HIV - two groups often neglected in research and programming – are also at risk of experiencing sexual violence. The research underscores the need for disaggregated data to capture the full spectrum of adolescent experiences and inform tailored interventions. Established violence prevention frameworks, such as INSPIRE, offer evidence-based strategies that address sexual violence risks, regardless of perpetrator identity. Strategies focused on parental support, education access, and economic strengthening could reduce adolescents' exposure to environments that heighten the risk of sexual

violence. Future research should not only examine perpetrator characteristics but also explicitly include male adolescents in sexual violence research. Additionally, research should explore how access to INSPIRE-aligned interventions may differentially reduce sexual violence risk across diverse adolescent populations, including males and those living with HIV.

Chapter V: Unpacking Cash-Plus: Pathways to Sexual Violence Prevention in Adolescence

Rationale

The previous chapter demonstrated that adolescents experience high rates of sexual violence. These risks vary by developmental stage, proxied using age, as well as by sex and by mode of HIV acquisition. Recognising that no single intervention can address the multiple, intersecting drivers of sexual and intimate partner violence, multisectoral approaches have increasingly been promoted as essential for comprehensive prevention. Cash-plus strategies are an increasingly prominent approach within this paradigm, combining financial support with complementary interventions targeting relational, social, and structural risk factors. Yet, current evaluations of the association between cash-plus provisions and sexual violence outcomes among adolescents remain scarce. This includes assessments both in trial settings, where cash-plus provisions are offered in a single integrated package, and in real-world contexts where individuals access cash and complementary provisions through government services. Moreover, the mechanisms linking cash and complementary provisions to violence outcomes remain poorly understood. Understanding these pathways is critical to ensure that prevention efforts are data-driven, equitable, and responsive to the diverse realities of adolescents' lives.

Research Question:

What are the pathways through which cash transfers (social grants) and complementary provisions—food security, schooling, parental support, and the ability to afford necessities—are associated with past-year experiences of sexual violence among adolescents?

Objectives:

1. To assess the independent associations between social grant receipt, complementary provisions, and past-year sexual violence, stratified by sex.
2. To evaluate whether these sex-specific associations differ across age groups.
3. To investigate hypothesised indirect pathways from social grant receipt to past-year sexual violence via complementary provisions: food security, affording necessities, schooling, and parental support.

Title Page

Pathways to Reductions in Adolescent Sexual Violence Risk in South Africa: The role of Economic and Social Provisions.

Nontokozo Langwenya[1,2§], Lucie Cluver [1,3], Siyanai Zhou[4], Heidi Stöckl[5], Elona Toska,[1,4,6]

1. Centre for Evidence-Based Social Intervention, Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom
2. Nuffield College, University of Oxford, Oxford, United Kingdom
3. Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa
4. Centre for Social Science Research, University of Cape Town, Cape Town, South Africa
5. Institute for Medical Information Processing, Biometry and Epidemiology, Ludwig-Maximilians-Universität, Munich, Germany
6. Department of Sociology, University of Cape Town, Cape Town, South Africa

§Corresponding author
Nontokozo Langwenya
Department of Social Policy and Intervention, Barnet House, 32-37 Wellington Square, OX1 2ER, United Kingdom
Phone number: +44 7713 934173
Email: nontokozolangwenya@gmail.com

ORCID-ID 0000-0001-7883-621X

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N.L. conceptualised the study, conducted the analyses, and wrote the manuscript draft. Both E.T. and L.C. designed the overall study, including data collection tools. L.C., E.T. and H.S. advised on the focus and framing of research, including the interpretation of results. S.Z supported with data analyses. All authors have reviewed and approved this manuscript.

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Abstract

Introduction: While multisectoral interventions are increasingly recognised as essential for preventing adolescent sexual violence, the mechanisms through which these provisions collectively relate to protection remain understudied.

Methods: We hypothesised that household receipt of social grants would be associated with higher parental support, higher food security, higher affordability of necessities, and higher school enrolment/completion, which would, in turn, each be independently associated with lower odds of experiencing past-year sexual violence. Using data from a prospective South African adolescent cohort, we used mixed-effects regression and Generalised Structural Equation Modelling to test the conceptual model.

Results: At baseline, the median age was 13 (IQR=11–16) and of the 1,353 participants, 56% were female and 69% were living with HIV. Transactional sexual exploitation was the most commonly reported form among both sexes. Over the study period, nine in ten adolescents reported that their households received at least one social grant. Approximately 50% of participants reported high levels of positive parenting, 37–43% reported high levels of parental supervision, and 71% reported food security. School enrolment remained consistently high (95–98%). Among females, we find evidence that household social grant receipt was indirectly linked to lower odds of past-year sexual violence through a higher likelihood of being able to afford necessities and higher school enrolment or completion. These pathways were particularly true for older females, aged 15-24. Among males, receiving a social grant was associated with higher school enrolment or completion, but this did not appear to translate into lower odds of past-year sexual violence. However, affording necessities among older males was directly associated with lower odds of past-year sexual violence. Although parental supervision was directly associated with reduced odds of past-year sexual violence for both sexes, it did not mediate the effect of social grant receipt, as no significant association was found between grant receipt and parental supervision.

Conclusion: These findings support the potential of integrated approaches, such as sex- and developmental-stage-tailored cash-plus parenting interventions. Further research should assess the effectiveness of parenting programmes in reducing sexual violence and explore scalable combinations of cash-plus parenting models.

Introduction

Sexual violence against adolescents, ages 10 to 24, represents a critical public health and human rights concern. In Africa, an estimated 50% of children aged 2 to 17 have experienced physical, emotional, and sexual violence in the past year (Hillis et al., 2016). Among adolescents ages 13-24, the lifetime prevalence of sexual violence is estimated to be as high as 37% among females and 21% among males (Hillis et al., 2016). Evidence from Africa indicates that intersecting structural factors, including poverty, gender inequality, and limited access to supportive services, increase adolescents' risk of experiencing sexual violence. (Gibbs et al., 2018; Morrell et al., 2012). Lifelong effects of sexual violence include poorer mental health, socioeconomic outcomes, higher HIV infection risk, antiretroviral treatment non-adherence, and ongoing intergenerational cycles of violence (Hughes et al., 2017; Inman et al., 2025; Kuchukhidze et al., 2023). To address drivers of sexual violence, multi-sectoral strategies are needed, strategies that extend beyond individual-level change to also transform the social and economic contexts in which adolescents live (Miele et al., 2023).

Cash-plus models are increasingly seen as a promising component of multi-sectoral violence prevention efforts, though most evaluations to date have focused on adult females (Rogers et al., 2024). This builds on the broader recognition of social protection, particularly social assistance, as a structural intervention that may reduce adolescents' exposure to violence (Peterman et al., 2017). Evidence from low- and middle-income countries suggests that household cash transfers can reduce economic stress, improve school enrolment and attendance, and increase adolescents' ability to meet basic needs, all of which are theorised to lower the risk of sexual violence (Ligiero et al., 2019; Ojong & Cochrane, 2021). However, evaluations examining sexual violence outcomes associated with cash transfers suggest that cash alone may be insufficient to produce measurable reductions in sexual violence against adolescents (Cirillo et al., 2021). In a review of 14 impact evaluations examining the link between

cash transfers and violence prevention, of the 29 measures of sexual violence assessed, 40% were associated with a protective association (Peterman et al., 2017).

In response, cash-plus models combine cash transfers with complementary interventions, such as parenting support and educational incentives, to better address multiple drivers of sexual violence (Asfaw & Davis, 2018). The rationale is that integrating economic and social supports may work synergistically to disrupt multiple pathways to sexual violence. For example, cash can alleviate economic hardships, parenting interventions can enhance caregivers' capacities to provide protection and supervision, and education can increase engagement in safe environments (Cirillo et al., 2021). Recent frameworks, including the WHO-recommended INSPIRE strategies to end violence against children and UNICEF's End Violence Against Children initiative, have explicitly endorsed such integrated approaches (Miele et al., 2023).

However, emerging evidence from cash-plus programmes in Africa is mixed. Significant associations were observed in Tanzania's Ujana Salama programme, where adolescent females aged 14–19 in social grant households who received additional parenting support and healthcare linkages experienced a 5-percentage point reduction in unwanted sexual contact compared to the cash-only group at four-year follow-up (UNICEF Innocenti, 2024). Similarly, Kenya's Adolescent Girls Initiative (AGI-K), which targets girls aged 11–14, reported a 4–9 percentage point reduction in coerced sex and unwanted touching at four years among those receiving cash alongside life skills, education, and violence prevention, relative to a violence-prevention-only control (Kangwana et al., 2022). In contrast, a trial in Liberia found no significant differences in unwanted sexual touching among adolescent females aged 13–19 receiving cash combined with skills and health provisions, compared to cash-only groups, at the 24-month follow-up (Özler et al., 2020). These mixed findings suggest that the protective potential of cash-plus models may depend on multiple

factors, including the type and intensity of additional provisions, the duration of provision, and the context-specific risks that adolescents face.

A clear example of how context-specific risks can affect outcomes is the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) initiative, which yielded mixed results despite being one of the most comprehensive and layered cash-plus interventions conducted over a period of more than five years (Saul et al., 2018). Implemented across ten HIV-burdened countries in Eastern and Southern Africa, DREAMS combined cash transfers with health services, educational support, social empowerment, and community mobilisation to reduce HIV risk and experiences of violence among adolescents aged 15-24 (Saul et al., 2018). Evaluation results illustrate substantial variability across settings and age groups (Rogers et al., 2024). The risk of sexual forms of intimate partner violence decreased by 50–73% in Kenya and Malawi but not in Zambia (Floyd et al., 2022; Mathur et al., 2022). For non-partner sexual violence, reductions were observed among older adolescents in Kenya and across age groups in Malawi, while no effect was found in Zambia (Floyd et al., 2022; Mathur et al., 2022). Notably, the risk of transactional sexual exploitation increased twofold among older adolescents in both Zambia and Kenya (Floyd et al., 2022; Mathur et al., 2022). In South Africa, evidence shows that DREAMS did not change any of these outcomes (Floyd et al., 2022).

These mixed outcomes underscore the importance of critically examining the pathways through which multisectoral cash-plus interventions may exert protective effects against sexual violence. This analysis offers significant opportunities to enhance impact. First, unpacking how specific components contribute to change can support the effective adaptation of cash-plus interventions across diverse settings (Moore et al., 2015). Evidence from DREAMS has shown that even comprehensive, multi-component approaches do not necessarily guarantee success across all settings and sexual violence outcomes (Rogers et al., 2024). Second, clarifying these pathways

can inform refinement of complementary programmes, such as parenting interventions, which have already demonstrated effectiveness in reducing physical and emotional violence in children and are therefore included in cash-plus models that now also seek to evaluate their potential to prevent sexual violence (Heinen et al., 2023). Whether they also help prevent sexual and partner violence depends on whether their mechanisms align with the specific drivers of these forms of harm(Rudolph et al., 2024). Third, empirical examination of mechanisms is critical for identifying the core protective processes that not only drive change but also sustain impact over time, particularly in resource-constrained contexts where long-term effectiveness and scalability are paramount.

To address this gap, this study investigates the complex relationships between social grants and adolescents' experiences of sexual violence, specifically examining how these associations may operate through or alongside parental support, schooling, food security and affording necessities. We draw on longitudinal cohort data that include adolescent boys and a significant proportion of adolescents living with HIV (Cluver et al., 2025). These groups are often excluded from evaluations: boys are frequently left out of sexual violence prevention studies, while HIV-related interventions tend to focus on adolescents not living with HIV to prevent new infections (Jewkes 2022; Miller et al., 2021). Their inclusion helps generate more comprehensive evidence on how cash-plus approaches may work across different social identities. Although the cohort was not designed as a formal evaluation of a bundled intervention, it provides a real-world approximation of a cash-plus environment, where adolescents engage with multiple systems offering overlapping services rather than a single programme.

Methods

Settings and data collection

The analytic sample is drawn from the Mzantsi Wakho adolescent cohort, a longitudinal study conducted in the Eastern Cape Province of South Africa focusing on HIV and sexual and reproductive health. South Africa has the largest population of people living with HIV, estimated at 7.9 million, with adolescents aged 15-24 accounting for over 30% of new infections, despite representing only 10% of the population (South African Government, 2024). As of 2024, about 50% of households receive at least one social grant (child support, old age, disability), and coverage is high in the Eastern Cape, estimated at 65% (Statistics South Africa, 2025).

Between 2014 and 2015, adolescents aged 10–19 living with HIV who had ever started antiretroviral treatment were identified through record reviews at public health facilities in the district. The team traced them to their communities and invited them to participate in the study. Concurrently, adolescents without HIV were recruited from the same neighbourhood. Participants were subsequently followed up between 2016-2017 (visit 2) and 2017-2018 (visit 3). At each visit, participants completed a health and wellbeing behavioural survey on a tablet using audio computer-assisted self-interview (ACASI) software. Research assistants were available to assist participants where needed. The questionnaire was available in isiXhosa and English.

Ethical Considerations

The study team obtained informed, written, voluntary consent from all participants; for those under 18, informed consent was obtained from their primary caregiver/s. Referral protocols included linkages to emergency contraception and HIV post-exposure prophylaxis for rape cases that occurred in the last 72 hours, mental health services for heightened risk of suicidality, and social services for access to government support services, such as national identity cards or child wellbeing grants. The study team implemented proactive measures to minimise vicarious trauma among research

staff, including regular debriefing sessions and access to a local, no-cost third-party counsellor for all team members. The University of Cape Town, Oxford University, provincial Departments of Health and Education, and local healthcare facilities gave ethical approval for this study.

Study Measures

We reviewed the study tool and identified measures capturing both cash transfers and complementary provisions that could plausibly contribute to reducing adolescents' experiences of sexual violence. The complementary provisions were selected based on three main considerations: first, their frequent examination in empirical research on adolescent sexual violence outcomes; second, their alignment with components commonly targeted in social grant and adolescent-focused programmes; and third, their relevance as practical, policy-relevant domains where simultaneous intervention is feasible and scalable in real-world settings. Fitting these criteria were (i) *parenting support* (positive parenting and parental supervision), (ii) *household economic security* (food security and affording necessities), and (iii) *school enrolment or completion.*

Table 11 shows the measurement and description of key variables included in the analysis.

Table 11: Paper 2_Operational definition of variables

Variable Type	Description of assessment
Outcome	
Past-year sexual violence	*Contact sexual violence* • Has anyone made you touch your private parts or made you touch theirs when you did not want to? (Finkelhor et al., 2005a). • Has anyone had sex (vaginal, anal or oral) with you when you did not want them to? (Finkelhor et al., 2005b). • Has anyone tried to have sex with you when you did not want to?" (Finkelhor et al., 2005b). • Think back to the first time you had sex (penetrative vaginal), were you forced to have sex?" (Pettifor et al., 2005) *Non-Contact sexual violence*

	Has anyone made you look at their private parts when you did not want to" and/or "Has any wanted to look at your private parts when you did not want them to? violence (Finkelhor et al., 2005b). *Transactional sexual exploitation* "Has anyone ever given you a present for having sex with them OR have you ever decided to have sex with someone in exchange for present, money or favours" (Pettifor et al., 2005; UNICEF, 2018a).
"Cash "component	
Social grant receipt "**Cash**"	Are you or anyone in the household receiving any grants? List provided included child focused grants: child support, foster care and care dependency grants, as well as non- child focused grants, old age and disability grant (South African Government, 2024). These are all unconditional cash transfers.
"Plus" Components	
Parental support *Alabama Parenting Questionnaire (APQ) (Essau et al., 2006).*	*Positive Parenting* Six items on caregivers' physical and verbal affection, such as praise, rewards, hugs or kisses, acknowledge of in the past two months (Essau et al., 2006). Likert scale: 0=Never, 1=Rarely, 2=Sometimes, 3=Often to 4 =Always. The scale had good inter-item reliability across visits: Cronbach's alpha (α) $\geq$ 0.890 for total, $\alpha \geq 0.883$ for males and $\alpha \geq 0.896$ for females. *Parental Supervision* Ten items on caregiver's knowledge and setting of restrictions on the adolescent's social activities in the past two months, including adhering to set times for leisure activities, notice of delay, home align without an adult (Essau et al., 2006). Likert scale: 0=Never, 1=Rarely, 2=Sometimes, 3=Often to 4 =Always. The scale had good inter-item reliability across visits: Cronbach's alpha(α) $\geq$ 0.901 for total, $\alpha \geq 0.894$ for males and $\alpha \geq 0.927$
Economic security	*Food Security* Sometimes kids don't have enough food in their home. How many days in the past week (7 days) did you NOT have enough food in your home? (Wright, 2008). Can you afford at 3 meals a day at home? *Afford Necessities* Please tick the things which you can afford at home (choose as many as apply): Visit to the doctor when you are ill, enough clothes to keep you warm and dry, Toiletries, More than one pair of shoes, School uniform, School equipment (Wright, 2008).
School enrolment or completion	Question included what type of school do you go to? What grade are you in? And if you are not currently attending school what is (are) the reason(s) for not attending school?
Covariates Participants self-reported age, sex, rural/urban location, informal housing, orphanhood, number of household members, and whether any household member was formally employed. Self-reported HIV status was validated by a review of paper-based and electronic medical records for HIV-related treatment. Among school-going adolescents, free schooling included attending a no-fee school or receiving a fee exemption. Free School meals included receiving at least one meal for free at school.	

Past-year sexual violence was assessed with four items from the Juvenile Victimisation Questionnaire covering non-contact and contact acts (Finkelhor et al., 2005b). Additionally, one question assessed transactional sexual exploitation (Stoebenau et al., 2016). Past-year prevalence was defined as having experienced any of these forms at least once in the past 12 months, monthly, or weekly.

Cash transfers included both non-contributory child-focused grants and non-contributory social pensions received by any household member. Although social pensions are not specifically designed to promote child wellbeing, we include them because evidence from South Africa shows that these transfers are often pooled into household income and benefit all members, including children and adolescents (Lloyd-Sherlock et al., 2020).

Parenting support was measured using two sub-scale items of the Alabama Parenting Questionnaire on a Likert scale (Essau et al., 2006). High positive parenting was defined as selecting "often" or "always" (3–4) on all six items. Due to negative phrasing, high supervision was defined as endorsing "never" or "rarely" (0–1) on all ten items. Food Security was defined as having enough food at home in the past week and affording three meals daily, adapted from the National Food Consumption Survey (Statistics South Africa, 2019). Affording necessities included access to all six socially perceived necessities collected in the South African Social Attitudes Survey: a doctor, school uniform, school equipment, toiletries, clothes to keep warm and dry, and more than one pair of shoes (Wright, 2008). Schooling was defined as current enrolment or completion of the highest school grade appropriate for age.

A priori hypothesis

Figure 14 presents the a priori hypothesis informed by the literature. While household economic security—including food security and the ability to afford necessities—is closely linked to cash transfers, we conceptualise it as a distinct domain. This allows us to examine whether cash transfers are indirectly associated with reduced risk of sexual violence through improved economic conditions, such as food security and affordability of necessities, rather than conflating cash itself with its potential outcomes. Maintaining this separation is essential both for comparing findings across studies evaluating cash-only and cash-plus interventions, and for informing policy decisions on whether adding complementary services to cash offers added benefits.

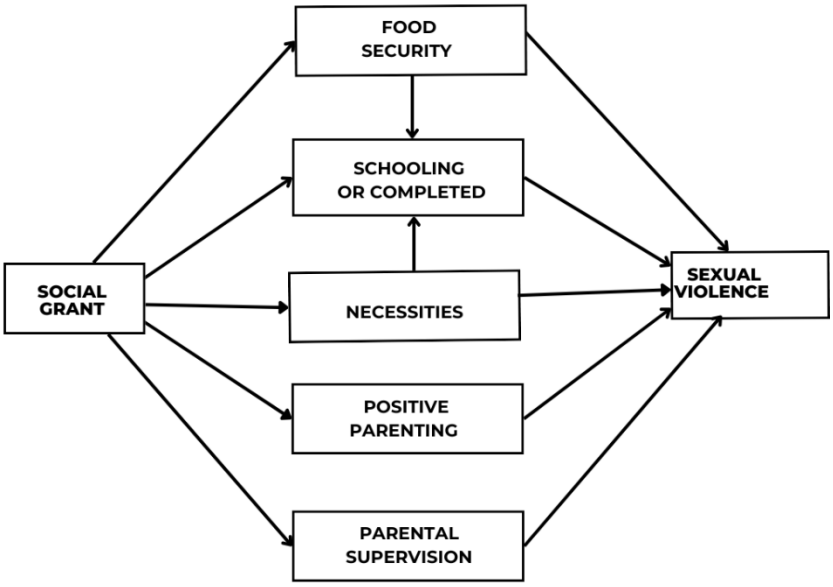


Figure 14: Paper 2_Hypothesised direct and indirect pathways from cash-plus provisions to past-year sexual violence for adolescent males and females

Food security and affording necessities were each hypothesised to directly reduce the odds of experiencing past-year sexual violence. Studies across Africa have shown that adolescents with reliable access to food are less likely to experience exploitative relationships or coerced sex (Fielding-Miller et al., 2014; Hatcher et al., 2022). Meeting

basic needs can reduce economic dependence on exploitative relationships by empowering adolescents to reject sexual partners who take advantage of their economic hardship (Lambon-Quayefio et al., 2024)

School enrolment or completion was hypothesised to offer protection by keeping adolescents in supervised settings for longer periods than they would be if out of school. Schools can also provide opportunities to equip adolescents with the skills to recognise and respond to risks, promote gender equality, and, in some contexts, foster positive peer and adult relationships (Dunkle et al., 2004; Kilburn et al., 2017). In the South African Optimus study of adolescents aged 15–17, approximately 67% of reported sexual violence cases occurred at home or in neighbouring community settings, highlighting the importance of considering where adolescents spend their time (Artz et al., 2016).

Drawing on attachment theory, parental support was hypothesised to directly reduce the odds of past-year sexual violence (Bornstein & Warmuth, 2019). Positive parenting that is nurturing, responsive, and communicative fosters secure attachments and a sense of self-worth (Bornstein & Warmuth, 2019). These qualities can challenge the normalisation of violence and enable adolescents to identify risks, disclose experiences, and seek support (Finkelhor, 2009). Adolescents who feel connected to and supported by their caregivers may also be more likely to communicate openly about their activities and relationships and to accept parental guidance and boundaries that reduce unsupervised time in settings where exploitation and coercion are more likely to occur (Rudolph et al., 2018).

Cash transfers were hypothesised to potentially enable all five complementary provisions by easing the financial burden of food, necessities, and education-related costs for households. Additionally, based on family stress theory, this economic relief

reduces financial strain and caregiver stress, which in turn promotes more positive parenting and better supervision (Maara et al., 2023; Masarik & Conger, 2017).

Taken together, Figure 14 can be interpreted in two ways: first, to test the potential direct associations of each provision with lower odds of sexual violence, and second, to explore the mediating role of these provisions in the pathway from cash transfers to reduced odds of experiencing sexual violence.

Analyses

All analyses were conducted using Stata version 18. We assessed the internal consistency of the multi-item scales using Cronbach's alpha (α), and evaluated collinearity using tetrachoric tests, with correlations above 0.7 considered strong. Descriptive statistics included percentages, medians, 95% confidence intervals (95%CI), and interquartile ranges (IQR). Group comparisons were tested using Chi-square, Fisher's exact, or t-tests, as appropriate.

The analytical sample was limited to participants who completed all three data collection visits. To address potential attrition bias, we compared baseline characteristics between those in the analytical sample and those lost to follow-up (e.g., age, household size, residence type, parental care, and receipt of social grants). We then applied stabilised inverse probability weighting (IPW), modelling the probability of retention using these baseline variables. Stabilised weights are often recommended over unstabilised weights in observational studies, as unstabilised weights can exhibit high variance and a long right tail in the distribution of estimated probabilities (Ma & Wang, 2020). Stabilisation helps make estimates more stable and efficient by reducing the influence of extremely large weights on variance (Ma & Wang, 2020). We used the inverse of the predicted probability of being retained as a weight, giving greater influence to individuals in the analytic sample who resembled those lost to follow-up (Ma & Wang, 2020). We conducted balance diagnostics by comparing key baseline

characteristics across the original baseline sample, the unweighted analytic sample, and the IPW-weighted analytic sample (Ma & Wang, 2020).

We then fit mixed-effects logistic regression models to examine associations between each cash-plus provision and the odds of past-year sexual violence. These models account for repeated measures nested within individuals across time. Fixed effects included the main cash-plus predictors (receipt of social grants, schooling status, food security, positive parenting, and supervision), as well as covariates such as age, household size, and rural versus urban residence. Time (survey wave) was included as a fixed effect. A random intercept for individuals accounted for the within-person correlation. Models were estimated using maximum likelihood, and model selection was guided by the Akaike Information Criterion (AIC).

To examine the cumulative effects of provisions, we used the margins and lincom commands in STATA to estimate average predicted probabilities of past-year sexual violence across different combinations of provisions. We focused on combinations that included provisions with a significant negative association with past-year sexual violence, as identified in the mixed-effect models. Adjusted risk differences (ARDs) were calculated as the difference in predicted probabilities between combinations, adjusting for covariates.

Finally, we applied Generalised Structural Equation Modelling (GSEM) to test hypothesised direct and indirect pathways linking social grants to past-year sexual violence. Models used a binomial distribution with a probit link, with standard errors clustered at the individual level. GSEM accommodates both non-linear relationships and non-normal distributions of variables. Direct effects reflect unmediated associations, while indirect effects capture mediation via complementary provisions. Models were built iteratively, guided by AIC, and tested for statistical significance (p

≤ 0.10). Bias-corrected and normal-based confidence intervals were generated using 1,000 bootstrap replications.

To assess robustness, we conducted a sensitivity analysis restricting the GSEM to adolescents under 21 years old (94% of the analytic sample), who were more likely to be enrolled in formal schooling. This restriction addressed concerns that older adolescents may have exited education for reasons unrelated to either violence exposure or social protection, potentially introducing misclassification of schooling status. Our measure of school completion did not capture alternative pathways to school completion, such as the Amended Senior Certificate (ASC) or part-time adult learning (Wills et al., 2024). To address concerns about reverse causality and strengthen temporal interpretation, we conducted two sensitivity analyses. First, we examined whether baseline exposure to cash-plus provisions (visit 1) was associated with sexual violence outcomes at subsequent visits (visit 2 and visit 3). Second, we investigated whether consistent exposure across visits 1 and 2 predicted outcomes at visit 3. These analyses were designed to ensure temporal ordering, reducing the likelihood that reverse causation drove the observed associations.

Recognising developmental and gendered differences in sexual violence exposure, perception of risk, and access to support, all analyses were stratified by sex and exploratory subgroup analyses by age were conducted.

Results

Table 12 presents the baseline characteristics of the analytical sample and those excluded. A total of 1,353 (89%) adolescents completed all three study visits and formed the analytical sample. At baseline, participants lost to follow-up were more likely than those retained to be older, from larger households, and living in rural settings. They were also less likely to have experienced high parental supervision and to have any household member receiving a social grant. No differences were observed in the past-year experiences of sexual violence, overall, and by form, between those retained and lost to follow-up.

Table 12: Paper 2_Baseline characteristics of analytical sample vs those excluded

	Total (n=1519)	Retained (n=1353)	LTFU (n=166)	p-value
Age (median, IQR)	14 (11-16)	13 (11-16)	15 (12-17)	**<0.001**
Female	864 (57%)	766 (57%)	98 (59%)	0.556
Living with HIV	1,046 (69%)	933 (69%)	113 (68%)	0.822
Maternal/Paternal orphan	789 (52%)	704 (52%)	85 (51%)	0.832
Formal housing	1247 (82%)	136 (82%)	1111 (82%)	0.940
Urban setting	1115 (73%)	134 (81%)	981 (73%)	**0.024**
Mean Household size	7.22 (4.9)	7.13 (4.2)	7.96 (8.3)	**0.036**
One household member employed	1,011 (67%)	890 (66%)	121 (73%)	0.069
Sexual violence				
Past-year sexual violence	140 (9%)	128 (9%)	16 (10%)	0.841
Cash-plus provisions				
Social grant receipt (household)	1,425 (94%)	1,277 (94%)	148 (89%)	**0.007**
Parental Support				
High Positive Parenting	762 (50%)	684 (51%)	78 (47%)	0.390
High Parental Supervision	785 (52%)	713 (53%)	72 (43%)	**0.023**
Economic Security				
Past-week Food security	1176 (77%)	1041 (77%)	135 (81%)	0.201
Afford Necessities	894 (59%)	787 (58%)	107 (64%)	0.126
Education				
Schooling or completed	1,441 (95%)	1,284 (95%)	157 (95%)	0.869

P-values for continuous variables based on T-test, and Chi-squared test for categorical. Affording school-specific necessities (No fee school or afford fees, equipment and uniform) and receiving free meals at school were limited to those attending school (visit 1;n=1266,94%, visit 2; n=1189, 88%, visit 3; n=1027, 76%). LTFU are those not attending all three visits.

Applying inverse probability weighting (IPW) to account for potential attrition bias improved balance in the analytical sample, as shown by the diagnostic test in Table 13 and Figure 15. The mean stabilised weight was 1.014, with a range of 0.924 to 1.155, well within the acceptable range often recommended in observational research (typically 0.1 to 10) for stabilised weights.

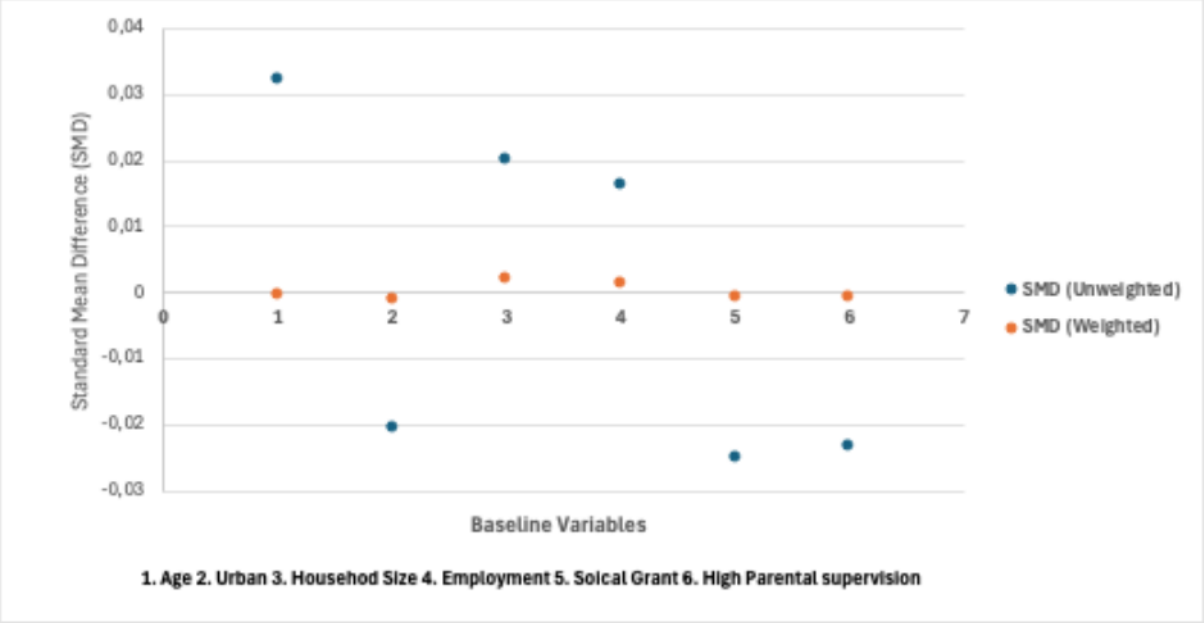


Figure 15: Paper 2_Standardised mean differences comparing baseline covariate balance across the original sample, unweighted analytic sample, and IPW-weighted analytic sample

Table 13: Paper 2_Mean and standard deviation of variables associated with attrition across the original sample, unweighted analytic sample, and IPW-weighted analytic sample

	Full cohort (n=1519)		*Retained sample (unweighted (n=1353)*			*Weighted Retained Sample (n=13523*		
	MEAN	SD	MEAN	SD	SMD	MEAN	SD	SMD
1. Age	13.8960	2.9633	13.8004	2.9578	0.0323	13.8970	3.0030	-0.0003
2. Urban	0.2660	0.4420	0.2749	0.4467	-0.0202	0.2664	0.4420	-0.0010
3. Householehold size	7.2216	4.8368	7.1304	4.1971	0.0202	7.2114	5.2400	0.0020
4. Employment	0.6660	0.4718	0.6583	0.4745	0.0163	0.6654	0.4718	0.0013
5. Social grant receipt	0.9387	0.2399	0.9445	0.2290	-0.0247	0.9389	0.2396	-0.0008
6. High Parental Supervision	0.3937	0.4887	0.4050	0.4911	-0.0232	0.3940	0.4886	-0.0007

Characteristics of the analytical sample

Table 14 summarises the sociodemographic characteristics of the analytical sample by sex. The median age at baseline was 13 (IQR=11-16), and 56% were female. Approximately 69% were living with HIV: 67% of females and 71% of males. Across the three visits, approximately two-thirds of adolescents reported having at least one household member who was formally employed, and the average household size ranged from 5.91 to 7.13 individuals. The median interval between the first and second study visits was 18 months (IQR=12-22), and 16 months (IQR=13-20) between the second and third visits.

Past-year sexual violence experiences

As shown in Table 14 past-year experiences of sexual violence were significantly higher among females than males at baseline (14% vs 4%). However, by the second visit, past-year prevalence among males had increased significantly to 12%, while rates among females remained stable. The increase in past-year sexual violence among males was observed across all three forms of sexual violence. By the third visit, past-year experiences of sexual violence had decreased by half for both sexes. Overall, transactional sexual exploitation was the most reported form (64%), followed by contact sexual violence (21%) and non-contact sexual violence (15%). This distribution did not differ by sex.

By age, past-year prevalence was highest for both sexes around a median age of 14 years. For females, prevalence ranged from 11% to 15% at visits with median ages of 14 and 16 years. For males, prevalence was highest at visit 2, when the median age was 14 years, at 12%. By the final visit (median age 17 for females and 15 for males), prevalence had declined to 5.8% for females and 4.7% for males.

Table 14: Paper 2_Summary of descriptive statistics for the analytical sample across the study visit, stratified by sex

	Visit 1 [2014/2015]				Visit 2 [2016/2017]				Visit 3 [2018/2019]			
	Total (n=1353)	**Females (n=766)**	**Males (n=587)**	**p-value**	**Total (n=1353)**	**Females (n=766)**	**Males (n=587)**	**p-value**	**Total (n=1353)**	**Females (n=766)**	**Males (n=587)**	**p-value**
Age (median, IQR)	13 (11-16)	14 (11-17)	13 (11-15)	<0.001	15 (13-18))	16 (13-18)	14 (13-17)	<0.001	16 (14-19)	17 (14-19)	15 (14-18)	<0.001
Maternal/Paternal Orphan	704 (52%)	384 (50%)	320 (55%)	0.197	732 (54%)	398 (52%)	334 (57%)	0.071	840 (62%)	457 (60%)	383 (65%)	0.036
Formal housing	1111 (82%)	615 (80%)	496 (85%)	0.061	1175 (87%)	648 (85%)	527 (90%)	0.004	1181 (87%)	651 (85%)	530 (90%)	0.006
Urban	981 (73%)	543 (71%)	438 (75%)	0.128	1007 (74%)	557 (73%)	450 (77%)	0.187	1015 (75%)	563 (74%)	452 (77%)	0.243
Household size (mean, SD)	7.13 (4.20)	7.28 (4.37)	6.94 (3.96)	0.126	6.33 (3.65)	6.44 (3.83)	6.19 (3.40)	0.212	5.91 (3.38)	6.01 (3.05)	5.77 (3.77)	0.186
Employed (household)	890 (66%)	493 (64%)	397 (68%)	0.322	885 (65%)	495 (65%)	390 (66%)	0.486	894 (66%)	506 (66%)	388 (66%)	0.987
Past-year Sexual Violence												
Any sexual violence	128 (9%)	107 (14%)	21 (4%)	<0.001	157 (12%)	87 (11%)	670 (12%)	0.747	73 (5%)	45 (6%)	28 (5%)	0.373
Non-contact	19 (1%)	13 (2%)	6 (1%)	0.349	34 (3%)	19 (2%)	15 (3%)	0.935	8 (1%)	6 (1%)	2 (0.5%)	0.374
Contact	28 (2%)	21 (3%)	7 (1%)	0.047	52 (4%)	39 (5%)	13 (2%)	0.006	11 (1%)	9 (1%)	2 (0.5%)	0.090
Transactional	95 (7%)	86 (11%)	9 (2%)	<0.001	105 (8%)	52 (7%)	53 (9%)	0.137	58 (4%)	34 (4%)	24 (4%)	0.759
Cash-Plus Provisions												
Social grant receipt	1277 (94%)	722 (94%)	555 (95%)	0.890	1229 (91%)	703 (92%)	526 (90%)	0.171	1195 (88%)	686 (90%)	509 (87%)	0.106
High Positive Parenting	684 (51%)	396 (52%)	288 (49%)	0.346	629 (46%)	363 (47%)	266 (45%)	0.446	593 (44%)	338 (44%)	255 (43%)	0.801
High Parental Supervision	548 (41%)	293 (38%)	255 (43%)	0.056	591 (44%)	372 (49%)	219 (37%)	<0.001	508 (38%)	297 (39%)	211 (36%)	0.290
Food Security	1041 (77%)	566 (74%)	475 (81%)	0.002	975 (72%)	541 (71%)	434 (74%)	0.179	1028 (76%)	557 (73%)	471 (80%)	0.001
Affording Necessities	729 (54%)	323 (55%)	406 (53%)	0.160	551 (41%)	314 (41%)	237 (40%)	0.819	533 (40%)	288 (38%)	245 (42%)	0.122
Schooling^{+}/Completed	1285 (95%)	706 (92%)	579 (99%)	<0.001	1233 (91%)	663 (87%)	570 (97%)	<0.001	1193 (88%)	635 (83%)	558 (95%)	<0.001

Note: Data are mean (SD) for continuous variables and n (%) for categorical variables. P-values for continuous variables based on T-test, and Chi-squared test for categorical. Affording school necessities (fees, equipment and uniform) and receiving free meals at school were limited to those attending school (visit 1;n=1266,94%, visit 2; n=1189, 88%, visit 3; n=1027, 76%)

Distribution of Cash-plus provisions

Table 14 also shows the distribution of the cash-plus provisions. At each study visit, most participants (90%-94%) lived in households that received at least one social grant. Parental support was low and decreased over time: 51% reported high positive parenting and 41% reported high supervision at the first visit, dropping to 44% and 38%, respectively, by the third visit. Food security levels remained stable, ranging from 71% to 76%, while the proportion of adolescents who reported affording necessities declined from 54% to 40%. School enrolment remained consistently high (95%- 98%). Overall, compared with males, females were more likely to report high parental supervision and less likely to report household food security, school enrolment, or school completion.

Multivariable Associations

Figure 16 shows the sex-specific adjusted mixed-effects regression models that examined the independent associations between the five complementary provisions and past-year sexual violence.

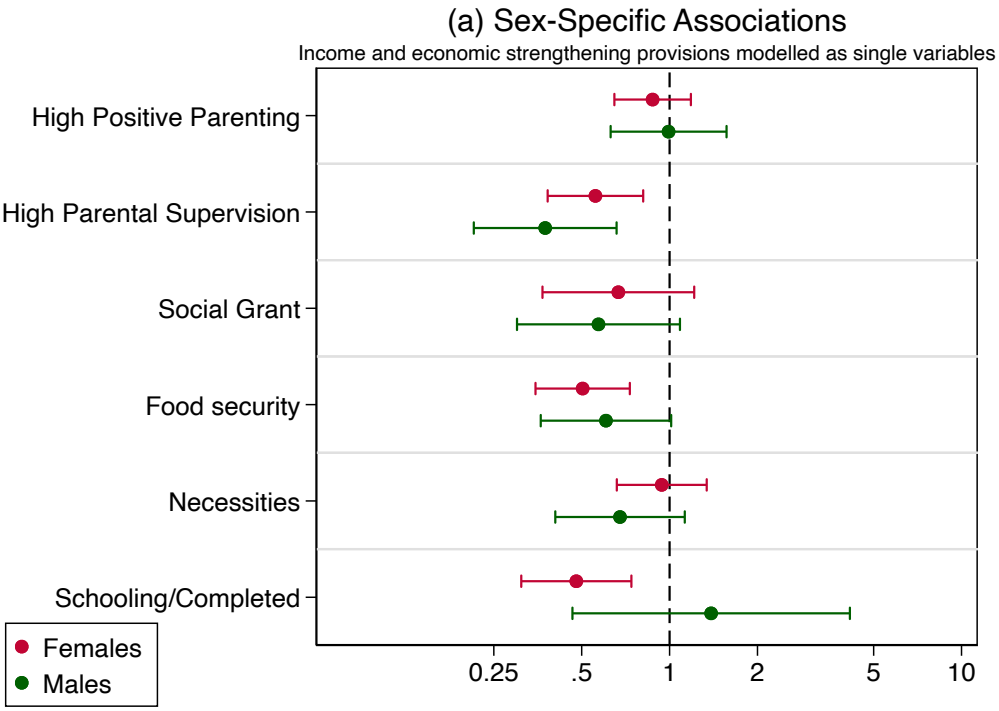


Figure 16: Paper 2_Sex-stratified Multivariate adjusted associations between past-year sexual violence and cash-plus provisions

Note: Female participants=766 and male participants=587. Models are sample inverse-weighted probability multivariable mixed-effects. Models adjusted for age, HIV status, orphanage, rural/urban household location, informal housing type, and the number of people living in the household.

In the model for adolescent females, high parental supervision was associated with 44% lower odds of past-year sexual violence (aOR = 0.56, 95%CI: 0.38–0.81). Food security and school enrolment or completion were also associated with lower odds of past-year sexual violence by 47% (aOR = 0.53, 95% CI: 0.35–0.79) and 52% (aOR = 0.48, 95% CI: 0.31–0.74), respectively. Positive parenting and affording necessities were not significantly associated with lower odds of past-year sexual violence among females. The mixed-effects model for adolescent males showed that fewer complementary provisions were associated with lower odds of past-year sexual violence. Only high parental supervision was associated with lower odds, reducing the odds of past-year

sexual violence by 57% (aOR = 0.43, 95%CI: 0.25–0.75). No significant associations were observed for positive parenting, food security, or school enrolment or completion among males.

Figure 17 shows sex- and age-stratified associations of cash-plus provisions with past-year sexual violence. Compared with overall female estimates, associations were similar in magnitude and direction among older female adolescents (15–24 years). Among younger females (10–14 years), only school enrolment was significantly associated with lower odds of past-year sexual violence, although the wide confidence interval indicates uncertainty in this estimate (aOR = 0.078, 95%CI: 0.008–0.77). In the male age-stratified models, high parental supervision remained associated with lower odds in both age groups, with a stronger association among younger males (aOR = 0.26, 95% CI: 0.09–0.68) than among older males (aOR = 0.48, 95% CI: 0.27–0.87). Affording necessities was also associated with lower odds of past-year sexual violence among older males, reducing the odds by 51% (aOR = 0.49, 95%CI: 0.28–0.93).

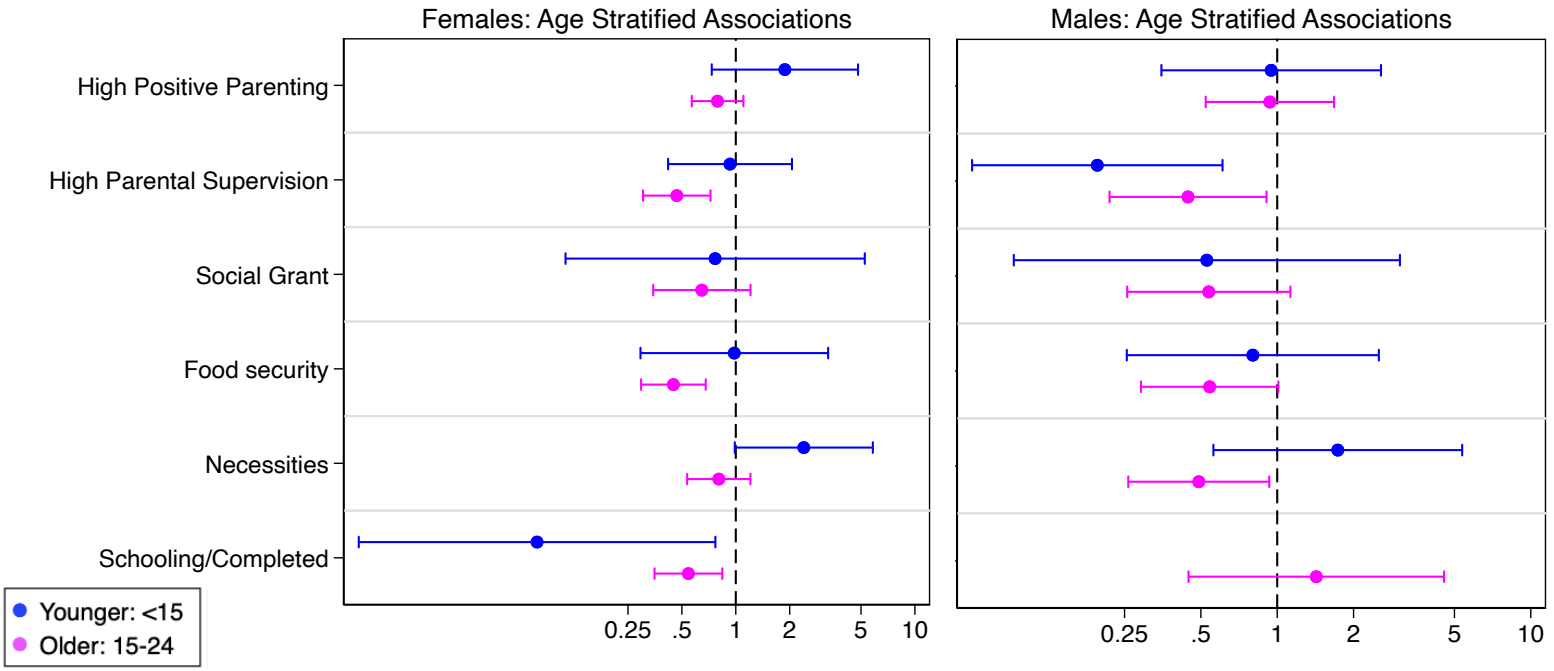


Figure 17: Paper 2_Sex-Age stratified Multivariate adjusted associations between past-year sexual violence and cash-plus provisions

To build on the individual associations, we estimated the additive effects of complementary provisions on the probability of past-year sexual violence as shown in Figure 18. This analysis tested the hypothesis that combining economic support with protective social provisions—such as parenting—offers greater protection than any single provision alone.

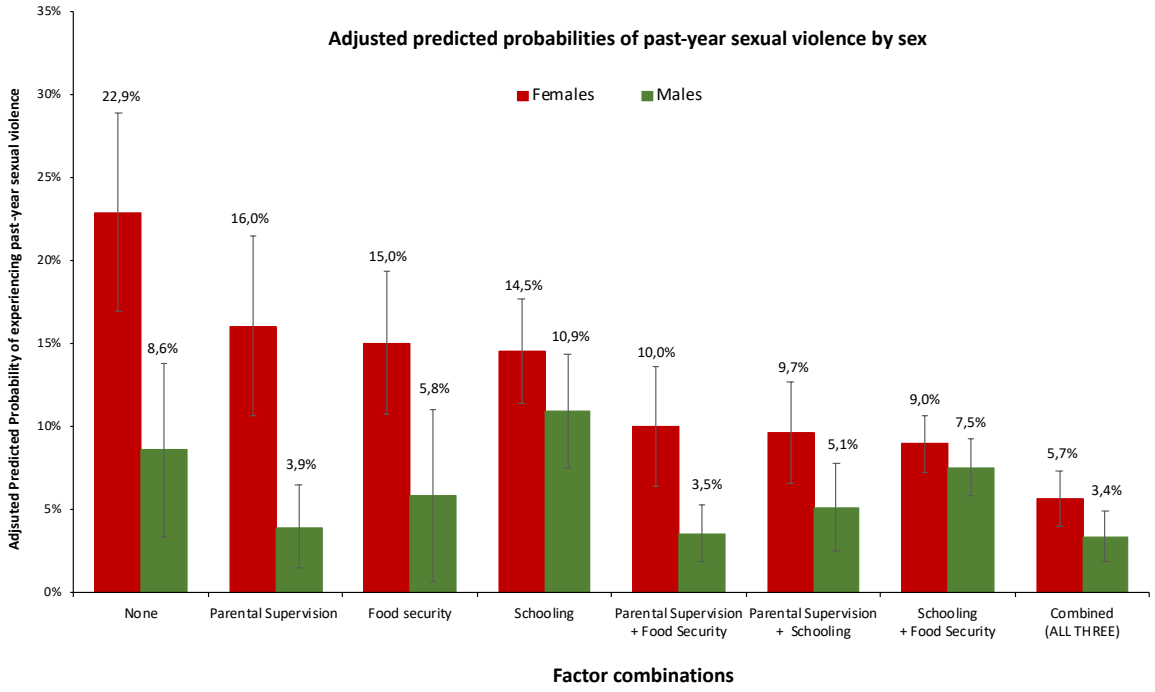


Figure 18: Paper 2_Adjusted probabilities of past-year sexual violence by sex, based on different combinations of "plus" components

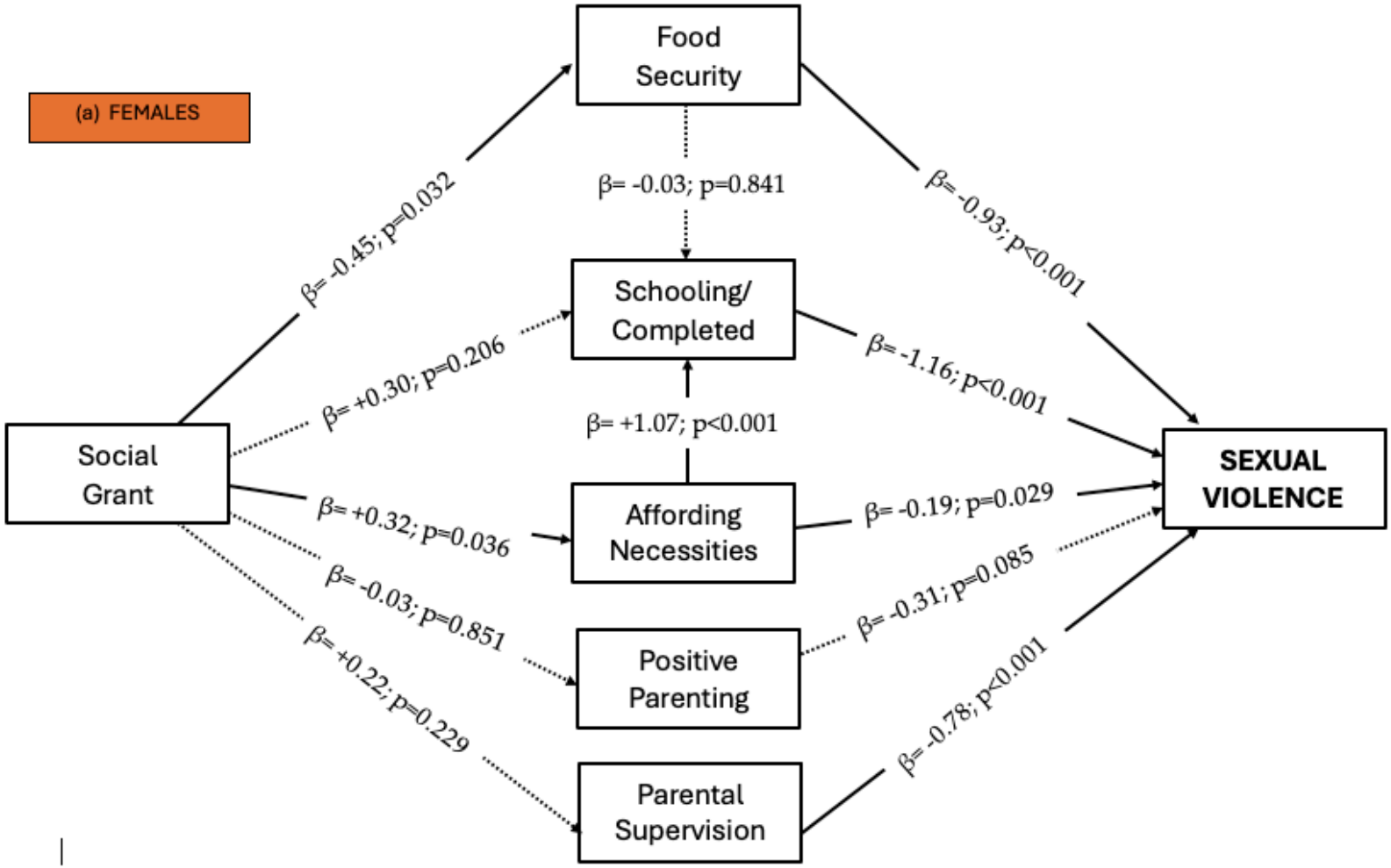
The adjusted predicted probability of past-year sexual violence among females was 22.9% in the absence of any provisions. This probability declined when each provision was present independently: parental supervision (ARD: −6.84 percentage points, 95% CI: −11.22 to −2.45), food security (−7.86, 95% CI: −12.38 to −3.34), and school enrolment or completion (−8.35, 95% CI: −13.83 to −2.89). Having any two provisions was associated with further reductions in the predicted probability, ranging from −4.89 to −6.40 percentage points, depending on the combination.

Compared to having none, the presence of all three provisions was associated with a 17.23 percentage point reduction (95% CI: −24.0 to −10.5) in the predicted probability of past-year sexual violence. Among males, only parental supervision showed a statistically significant association with lower predicted probability (−4.67, 95% CI: −8.7 to −1.63). The combined effects for males show no further reduction, given the absence of multiple significant predictors in the male-specific models.

Pathways between cash-plus provisions and past-year sexual violence

The data partially supported the hypothesised indirect pathways linking social grant receipt via complementary provision to past-year sexual violence Figure 19. Among females, two indirect pathways linked social grant receipt to lower odds of past-year sexual violence, both mediated by affording necessities (Figure 19a). First, social grant receipt was directly associated with a higher likelihood of affording necessities (β = +0.29; p = 0.036), which in turn was directly associated with lower odds of past-year sexual violence (β = −0.19; p = 0.029). Second, affording necessities was associated with a higher likelihood of school enrolment or completion (β = +1.07; p < 0.001), which in turn was associated with lower odds of past-year sexual violence (β = −1.16; p < 0.001).

There were no significant indirect pathways between social grant receipt and any of the parental care measures. Neither food security nor receipt of a social grant was associated with school enrolment or completion. Unexpectedly, receipt of a social grant was associated with decreased food security (β = −0.45; p = 0.032). High parental supervision (β = −0.78; p < 0.001) and food security (β = −0.45; p = 0.032) were each directly associated with lower odds of past-year sexual violence.


(a) FEMALES
Food Security
Schooling/ Completed
Social Grant
Affording Necessities
Positive Parenting
Parental Supervision
SEXUAL VIOLENCE
β= -0.45; p=0.032
β= -0.03; p=0.841
β= -0.93; p<0.001
β= +0.30; p=0.206
β= +1.07; p<0.001
β= -1.16; p<0.001
β= +0.32; p=0.036
β= -0.19; p=0.029
β= -0.03; p=0.851
β= -0.31; p=0.085
β= +0.22; p=0.229
β= -0.78; p<0.001

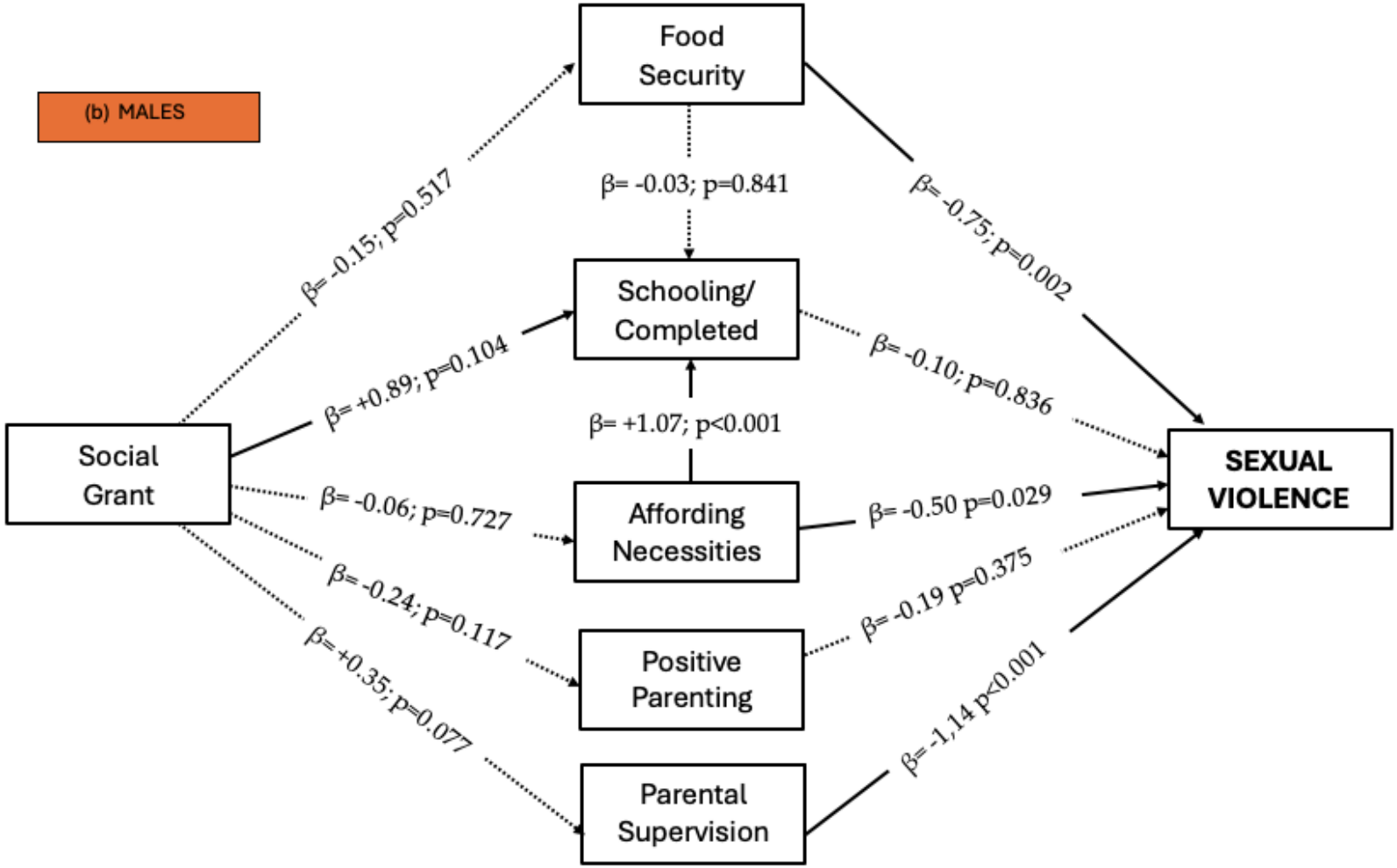


Figure 19: Paper 2_Hypothesised direct and indirect pathways of cash-plus provisions to past-year sexual violence stratified by sex: (a)females and (b)males

Statistically significant path coefficients are shown in asterisk (*) and non-significant pathways are indicated by dotted lines. All models adjusted for age, housing size, urban/rural setting, orphanage, HIV status and if any household member is employed

Among males, fewer indirect pathways were observed (Figure 19b). Among males, receipt of a social grant was associated with a higher likelihood of school enrolment or completion ($\beta = +0.89$; $p = 0.014$). However, school enrolment was not associated with past-year sexual violence ($\beta = -0.10$; $p = 0.836$). We identified no indirect associations through parental support provisions, food security, or affording necessities. Additionally, neither affording necessities nor food security were associated with school enrolment or completion among males.

Sensitivity analyses

Table 15 and Table 16 present the sensitivity analyses, including results from mixed-effects models assessing (1) whether baseline exposure to cash-plus provisions predicted past-year sexual violence at subsequent visits (Visits 2 and 3), and (2) whether consistent exposure across Visits 1 and 2 was associated with past-year sexual violence. For comparison, (3) direct associations estimated using GSEM

Among females, estimates were generally consistent across approaches: high parental supervision, food security, and schooling repeatedly showed associations with lower odds of past-year sexual violence across the main, baseline-only, and consistent exposure models, as well as in GSEM. Notably, the GSEM produced somewhat stronger associations for schooling (aOR ~0.31) and food security (aOR ~0.40) compared to the mixed-effects models. However, results for affording necessities varied more: while the main model showed no significant association, the consistent exposure and GSEM models found a protective association.

Table 15: Paper 2_Among females: Mixed effects regression of cash-plus provisions and past-year sexual violence under different definitions of the predictors, and compared to direct association of GSEM

	Main	(1) Baseline	(2) Consistent	(3) GSEM
High Positive Parenting	0.87	0.84	0.87	0.73*
	[0.65,1.18]	[0.48,1.05]	[0.53,1.25]	[0.54,1.00]
	(0.385)	(0.124)	(0.385)	(0.047)
High Parental Supervision	0.56*	0.61*	0.50*	0.46*
	[0.38,0.81]	[0.42,0.89]	[0.24,0.80]	[0.32,0.65]
	(0.002)	(0.010)	(0.000)	(0.000)
Social grant receipt	0.67	1.02	0.86	0.63
	[0.37,1.21]	[054,1.92]	[0.41,1.59]	[0.38,1.02]
	(0.186)	(0.599)	(0.599)	(0.060)
Food security	0.50*	0.74*	0.62*	0.40*
	[0.35,0.73]	[0.59,0.92]	[0.41,0.90]	[0.29,0.55]
	(0.000)	(0.006)	(0.046)	(0.000)
Afford Necessities	0.94	1.01	0.68*	0.86*
	[0.66,1.34]	[0.69,1.48]	[0.24,0.98]	[0.69,0.98]
	(0.733)	(0.962)	(0.043)	(0.029)
In School or completed	0.48*	0.99	0.78*	0.31*
	[0.31,0.74]	[0.80,1.22]	[0.47,0.97]	[0.22,0.46]
	(0.001)	(0.927)	(0.025)	(0.000)

Among males, findings were broadly similar across specifications, with high parental supervision consistently showing a strong protective association. Some variability was observed for affording necessities, which was significantly associated with lower odds of past-year sexual violence only in the consistent exposure and GSEM models.

Table 16: Paper 2_Among males: Mixed effects regression of cash-plus provisions and past-year sexual violence under different definitions of the predictors and compared to direct association of GSEM

	Main	**Baseline**	**Consistent**	GSEM
High Positive Parenting	0.99	1.17	0.99	0.82
	[0.63,1.57]	[0.82,1,66]	[0.54,1.81]	[0.54,1.27]
	(0.973)	(0.392)	(0.965)	(0.375)
High Parental Supervision	0.37*	0.63*	0.33*	0.32*
	[0.21,0.66]	[0.41,0.94]	[0.13,0.85]	[0.19,0.55]
	(0.001)	(0.0024)	(0.021)	(0.000)
Social grant receipt	0.57	0.76	0.76	0.62
	[0.30,1.09]	[0.43,1.35]	[0.43,1.35]	[0.35,1.08]
	(0.087)	(0.352)	(0.352)	(0.093)
Food security	0.61	0.86	0.55	0.47*
	[0.36,1.01]	[0.49,1.52]	[0.40,1.00]	[0.30,0.76]
	(0.056)	(0.559)	(0.051)	(0.002)
General Necessities	0.68	0.61	0.74*	0.61*
	[0.41,1.13]	[0.34,1.08]	[0.56,0.97]	[0.39,0.95]
	(0.134)	(0.092)	(0.037)	(0.029)
In School or completed	1.39	1.41	2.50	0.91
	[0.46,4.15]	[0.73,2.74]	[0.87,7.15]	[0.35,2.32]
	(0.557)	(0.309)	(0.088)	(0.836)

Table 17 shows analyses restricted to adolescents under 21 years of age at any visit (who comprised 94% of the retained sample); most associations remained consistent in direction and magnitude compared to the main analyses (supplementary material). Among females, the previously observed negative association between social grant receipt and food security became statistically insignificant ($\beta = -0.35$, 95% CI: −0.76 to +0.06). Among males, the positive association between social grant receipt and school enrolment or completion also became insignificant in this restricted sample. All other associations were stable in both direction and effect size, supporting the robustness of the primary findings

Table 17: Paper 2_GSEM model outputs for full sample analyses and when restricted to those <21 years, stratified by sex

	Females		Males	
	Full sample	**≤21 years**	**Full sample**	**≤21 years**
OUTCOME: sexual violence				
High Positive Parenting	-0.31* [-0.61,0.04]	-0.30 [-0.61,0.01]	-0.19 [-0.62,0.24]	-0.30 [-0.61,0.01]
High Parental Supervision	-0.78* [-1.13,-0.44]	-0.75* [-1.10,-0.40]	-1.14* [-1.68,-0.60]	-0.75* [-1.10,-0.40]
Social Grant	-0.47 [-0.96,0.02]	-0.30 [-0.82,0.22]	-0.48 [-1.05,0.08]	-0.30 [-0.82,0.22]
Food security	-0.93* [-1.25,-0.60]	-0.96* [-1.30,-0.63]	-0.75* [-1.22,-0.28]	-0.96* [-1.30,-0.63]
Necessities	-0.19* [-0.37,-0.12]	-0.22* [-0.53,-0.25]	-0.50* [-0.95,-0.05]	-0.19 [-0.53,0.15]
Schooling/ Completed	-1.16* [-1.54,-0.78]	-1.22* [-1.61,-0.83]	-0.10 [-1.04,0.84]	-1.22* [-1.61,-0.83]
OUTCOME: Schooling/Completed				
Social Grant	0.30 [-0.16,0.76]	0.38 [-0.10,0.86]	0.89* [0.18,1.59]	0.38 [-0.10,0.86]
Food security	-0.03 [-0.34,0.27] (0.841)	-0.13 [-0.45,0.19] (0.415)	0.38 [-0.27,1.02] (0.252)	-0.13 [-0.45,0.19] (0.415)
Necessities	1.07* [0.72,1.42] (0.000)	1.15* [0.78,1.52] (0.000)	0.64 [-0.05,1.33] (0.069)	1.15* [0.78,1.52] (0.000)
OUTCOME: Affording Necessities				
Social Grant	0.32* [0.02,0.62] (0.036)	0.38* [0.07,0.69] (0.017)	-0.06 [-0.42,0.29] (0.727)	0.26 [-0.10,0.61] (0.155)
OUTCOME: Food security				
Social Grant	-0.45* [-0.85,-0.04] (0.032)	-0.35 [-0.76,0.06] (0.095)	-0.15 [-0.60,0.30] (0.517)	-0.35 [-0.76,0.06] (0.095)
OUTCOME: High Parental Supervision				
Social Grant	0.22 [-0.14,0.57] (0.229)	0.25 [-0.11,0.61] (0.173)	0.35 [-0.04,0.73] (0.077)	0.25 [-0.11,0.61] (0.173)
OUTCOME: High Positive Parenting				
Social Grant	-0.03 [-0.37,0.30] (0.851)	-0.06 [-0.40,0.28] (0.748)	-0.24 [-0.60,0.11] (0.177)	-0.06 [-0.40,0.28] (0.748)

Discussion

This study investigated the potential mechanisms by which social grants and complementary provisions may be associated with lower odds of past-year sexual violence among adolescent males and females. At baseline, past-year sexual violence was higher among females than males, and this difference decreased over time as the proportion of males reporting sexual violence increased at the second study visit. Among females, receipt of a social grant was positively associated with affording necessities, which was negatively associated with sexual violence. Affording necessities was positively related to school enrolment or completion, which was negatively associated with sexual violence. Among males, while social grant receipt was associated with higher odds of school enrolment or completion, this did not appear to translate into lower risk of sexual violence. For both sexes, high parental supervision was consistently associated with reduced odds of past-year sexual violence.

The sharp increase in past-year sexual violence reported by males at the second visit, followed by a decline at the third, warrants further exploration. A global systematic review has noted that transactional sexual exploitation of male adolescents often occurs between ages 12 and 18, which corresponds to the interquartile age range of our sample at the second visit (Moss et al., 2023). During this developmental stage, adolescent males may be particularly vulnerable to pressures to conform to masculinity norms that emphasise sexual initiation and economic independence (Adjei & Saewyc, 2017). These pressures could increase the likelihood of both contact and non-contact forms of sexual violence, including coerced touching and exposure to unwanted sexual content, as captured in this study (Artz et al., 2016; Moss et al., 2023). Additionally, peer and community expectations around economic independence may expose some male adolescents to transactional or exploitative

relationships (Bhana, 2016). The subsequent decline in reported sexual violence could reflect the development of coping strategies, reduced exposure to high-risk environments, or growing reluctance to disclose such experiences as adolescents mature (Moss et al., 2023). Further research is needed to better understand how age-related transitions and gender norms may shape vulnerability and disclosure among male adolescents.

The sex-specific pathways identified in this study highlight the importance of considering gendered risk factors in the potential protective mechanisms that cash transfers can play in sexual violence reduction among adolescents. Social grant receipt was directly associated with a higher likelihood of school enrolment or completion among males. For females, receipt of a social grant was indirectly linked to school enrolment or completion, via increasing the likelihood of affording necessities. These pathways support existing evidence that for adolescent females, economic constraints related to meeting basic material needs may be a more significant barrier to school enrolment or completion (Chikayaka et al., 2018).

In contrast, for males, school enrolment may respond more directly to cash transfers, although literature on the role of cash transfers among adolescent males remains limited (Churchill et al., 2021; Baird et al., 2014). These findings also align with prior research showing that economic strengthening interventions can improve school attendance and progression among females, with some evidence indicating stronger effects when combined with support for material needs such as uniforms, transport, and learning materials (Groves et al., 2024; Kilburn et al., 2017). Programmes like DREAMS have underscored the value of layered interventions that combine household financial support with support for education-related costs to address the economic vulnerabilities that increase adolescent females' risk of sexual exploitation (Saul et al., 2018).

While social grant receipt was associated with higher school enrolment or completion for both sexes, through different pathways, our findings suggest that schooling's protective potential against sexual violence may be highly gendered. Among adolescent females, enrolment or completion was associated with a 52% reduction in odds of past-year sexual violence, suggesting that schools can offer a safer environment from sexual violence (Behrman et al., 2017). However, researchers found no such association for males. One possible explanation for this contrast in findings is that a greater proportion of sexual violence incidents against males may occur within the school setting. Data from the South African Optimus study show that 37% of non-contact sexual violence against males occurred in schools, compared to 4.5% for females (Artz et al., 2018).

The adjusted regressions linked school enrolment to twice the odds of experiencing sexual violence for males, but not females (Artz et al., 2018). It is also possible that for male adolescents, increased school attendance does not translate into greater social or psychological empowerment, which is associated with reduced risk of experiencing sexual violence, as it might for females (Mayer et al., 2021). While our findings reinforce the role of cash transfers in improving educational access, they also highlight that improved school access isn't enough without broader investments in creating safer, supportive environments for all adolescents.

The evidence that multiple complementary provisions were associated with lower odds of sexual violence among adolescent females highlights how targeting multiple intersections of gender, poverty and age, shown to increase risk of sexual violence, can have beneficial outcomes (Ligiero et al., 2019). In addition to schooling, we observed that food security and high parental supervision were each associated with lower odds of past-year sexual violence among females, particularly for older adolescents (those ages 15-24). Food insecurity is a recognised risk factor for transactional sexual exploitation among adolescent females, often stemming from

gendered expectations that assign females the responsibility of ensuring that there is enough food for the household (Adjei & Saewyc, 2017). Such gendered expectations may intensify during adolescence as gender norms become more entrenched, which could partly explain the stronger associations observed among older adolescents (Stark et al., 2019). Similarly, parental monitoring can limit adolescents' exposure to unsafe environments and strengthen their capacity to respond to risk, which may have particular significance in older adolescents, as they face greater economic pressures and social expectations on their role in intimate and non-intimate relationships (Martin et al., 2023; Rudolph et al., 2024). Notably, the combination of these three provisions was associated with a 17-percentage-point reduction in the predicted probability of past-year sexual violence, a much larger decrease than any single provision, highlighting the benefits of combinations in responding to intersectional risk faced by adolescent females.

However, the absence of multiple provisions linked to lower odds of past-year sexual violence among males should not be seen as evidence of a lack of intersectional vulnerability. Instead, our findings might reflect differences in the nature and context in which adolescent males experience sexual violence, which were not fully captured by our analyses (Devries et al., 2018). However, findings from the age-disaggregated models suggest that, like females, the risks of sexual violence shift across developmental stages. Among older males (ages 15–24), we observed that affording necessities was associated with lower odds of past-year sexual violence. High parental supervision showed a stronger protective association among younger males (under age 15) compared to older male adolescents. One possible explanation is that as adolescent males grow older and gain greater autonomy, parental monitoring may have less direct influence over their environments and behaviours (Adjei & Saewyc, 2017). Conversely, economic pressures related to masculine notions of independence may become more prominent with age (Van Der Heijden & Swartz, 2014). Societal expectations to demonstrate economic self-sufficiency can increase vulnerability to

transactional sexual exploitation, as well as contact and non-contact forms of sexual violence, as adolescent males seek ways to meet these societal norms (Van Der Heijden & Swartz, 2014).

Our findings that social grant receipt was not associated with increased parental support do not align with family stress theory, which posits that economic strain increases parental stress, leading to decreased positive parenting and parental supervision (Masarik & Conger, 2017). One possible explanation is that the social grant did not significantly alleviate parental stress or reach a level sufficient to increase positive parenting and parental supervision (Winchester et al., 2021). Evidence from the Child Support Grant in South Africa and globally indicates that cash transfers typically provide between 20%-25% of annual household income (World Bank, 2024; Ohrnberger et al., 2020). However, our study questionnaire did not assess parental stress indicators; therefore, we could not evaluate this pathway empirically. However, literature shows that improved parental mental health is associated with access to social assistance programs, including cash transfer programs (Ohrnberger et al., 2020).

The study offers unique methodological strengths. It is among the few to longitudinally examine mechanisms linking social protection and complementary provisions to adolescents' risk of sexual violence. Inverse probability weighting and generalised structural equation modelling enabled a more robust examination of potential causal pathways while accounting for time-varying confounding and complex interrelationships among predictors. Future studies should build on this analytical approach by incorporating mixed-methods mediation models to further evaluate the theoretical constructs that underpin this work. Additionally, more age- and sex-specific research is needed to understand how protective pathways develop throughout adolescence.

However, several limitations must be acknowledged. First, although the observational nature of the data limits causal inference, the temporal ordering in our sensitivity analyses mitigates, to some extent, concerns about reverse causality. Nonetheless, we cannot entirely rule out bidirectional causality. This bidirectional association could explain the negative association between social grant receipt and food security, reflecting the socio-economic targeting of grants to already vulnerable households experiencing food insecurity rather than an actual adverse effect of the grants. Second, unmeasured confounding may remain, and we interpret the findings as associations rather than causal effects.

Second, we acknowledge the risk of endogeneity and reverse causation inherent in observational studies of social protection and violence outcomes. Among observational designs, one of the most robust approaches to addressing endogeneity and strengthening causal inference is instrumental variables (Fu & Kim, 2021). Instrumental variables methods rely on an exogenous source of variation, such as randomised assignment, policy eligibility thresholds, or administrative cutoffs, that affects the exposure but is unrelated to unmeasured confounding or the outcome except through that exposure (Aker, 2017; Baird et al., 2017; Duflo, 2003). In this study, no such exogenous variation was available, as the cohort was not linked to a randomised intervention or policy rollout with clear eligibility criteria. Without a valid instrument, we instead relied on alternative strategies to mitigate concerns about endogeneity and reverse causation. Specifically, we employed temporal ordering by using baseline measures of cash-plus provisions to predict later experiences of sexual violence. We conducted sensitivity analyses comparing different definitions and timing of exposures (baseline, consistent, cumulative) and examined consistency across modelling approaches (mixed-effects regression and GSEM). Even with these steps, combined with the potential for unmeasured confounding, we recognise the limitations inherent in observational data and therefore interpret associations cautiously, without implying causality.

Third, all measures were self-reported, which could misclassify outcomes and predictors. Experiences of sexual violence may be underreported due to stigma, fear, or recall bias (Kavanagh et al., 2023). Adolescents' self-reports on household income and economic strengthening provisions, and parent-child communication dynamics may influence the accuracy of these reports. However, we used previously validated tools with strong reliability, which helps ensure consistency and construct validity, though reporting biases may still affect accuracy. Fourth, the study sample included a high proportion (69%) of adolescents living with HIV, which reflects the programmatic focus of the parent cohort studies but may limit generalizability to other adolescent populations. Although stratification by HIV status was considered in the analysis, the low prevalence of past-year sexual violence within sex-HIV subgroups constrained the feasibility of stratified analyses.

Importantly, our findings have several implications for programming and policy. Our findings that parental supervision is associated with lower odds of past-year sexual violence among both adolescent males and females emphasise the importance of family-based efforts to reduce adolescents' risk of sexual violence (Rudolph et al., 2024). While most parenting programs have focused primarily on reducing emotional and physical violence, our findings suggest that evaluations should also assess their impact on sexual violence outcomes (Backhaus et al., 2023, 2024). If current programmes are not yielding reductions in sexual violence, it may be necessary to consider adapting content to better address these risks, for example, by strengthening modules on caregiver engagement, awareness of sexual violence risks, and promoting open, supportive communication between adolescents and caregivers (Backhaus et al., 2023, 2024).

More broadly, our study highlights the promise of combining cash transfers with parenting programmes as a multisectoral strategy to prevent sexual violence against

adolescents, aligned with global frameworks such as the WHO's INSPIRE initiative (Rogers et al., 2024; World Health Organisation, 2016). A relevant example comes from the Philippines, where a pilot study tested a locally adapted version of the *Parenting for Lifelong Health for Parents and Teens* programme among 30 caregiver-adolescent dyads who were recipients of a government conditional cash transfer (Jocson et al., 2023; Cluver et al, 2018). Feedback from caregivers revealed discomfort and cultural hesitancy around discussing sexual health—some parents expressed embarrassment ("It is embarrassing to talk about"), while others believed their adolescents were "too young" to engage in such topics (Jocson et al., 2023). Adolescents themselves remained silent on these issues during focus groups (Jocson et al., 2023). These observations point to the need to revise and culturally adapt the sexual health module to improve comfort, relevance, and engagement for both caregivers and adolescents (Jocson et al., 2023).

Moreover, the findings highlight the importance of tailoring sexual violence prevention strategies to address the different needs and vulnerabilities of adolescent males and females (Ligiero et al., 2019). While interventions that combine economic support, food security, and parental supervision may hold particular promise for reducing risk among adolescent females, the lack of similar protective associations across multiple provisions for males underscores the need to design approaches that also respond to adolescent males' specific experiences and pathways of risk (Kavenagh et al., 2023; Moss et al., 2023). This includes ensuring that prevention efforts recognise adolescent males as survivors of sexual violence, address masculine norms linked to economic independence and disclosure barriers, and create safer environments in schools.

Conclusion

This study provides pathway-based evidence on how cash-plus provisions may help reduce the likelihood of sexual violence among adolescents in South Africa. The ability to afford necessities and school enrolment were each associated with lower odds of past-year sexual violence through pathways that involved social grant receipt. The patterns of association differed by sex and age. To eliminate violence against adolescents by 2030—now less than five years away—it will be essential to invest as much effort in understanding how and for whom combined interventions work as in evaluating whether individual components are effective. Accounting for differences by sex, age, and other relevant characteristics will be crucial to developing strategies that leave no adolescent behind.

Chapter VI: COVID-19 and Intimate Partner Violence

Rationale

Adolescent females are at heightened risk of sexual violence, as evidenced by Paper 1 and Paper 2, which estimated the lifetime prevalence of sexual violence among females at 27%, compared with 18% among adolescent males. However, it remains unclear how experiencing both motherhood and crisis situations may further amplify this risk. Motherhood during adolescence may increase vulnerability to violence due to economic dependence on partners, greater social isolation, and power imbalances in relationships. Similarly, crises such as the COVID-19 pandemic exacerbate existing inequalities by disrupting support systems, increasing household stress, and limiting access to protective services, all of which may elevate the risk of violence. In this paper, I focus specifically on intimate partner violence (IPV), which includes sexual violence within intimate relationships and other forms of violence, such as emotional and physical abuse. By examining IPV among adolescent mothers living with and without HIV during the pandemic, this study explores how intersecting vulnerabilities shape experiences of violence in crisis contexts.

Research Question:

Did the COVID-19 pandemic have a differential impact on the lifetime prevalence of intimate partner violence among adolescent mothers living with HIV compared to those without HIV?

Objectives:

1. To compare pre-pandemic and pandemic-period estimates of lifetime intimate partner violence among adolescent mothers.
2. To examine differences in lifetime intimate partner violence by HIV status during each period (pre-pandemic and during COVID-19).
3. To assess whether changes in the lifetime prevalence of intimate partner violence from pre-pandemic to pandemic periods were greater among adolescent mothers living with HIV compared to those without HIV.

Title page

Intimate Partner Violence among adolescent mothers living with and without HIV: a pre-and during-COVID-19 South African cohort analysis

Nontokozo Langwenya[1,2§], Elona Toska,[1,3,4], Heidi Stöckl[5], Lucie Cluver [1,2,6]

1. Centre for Evidence-Based Social Intervention, Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom
2. Nuffield College, University of Oxford, Oxford, United Kingdom
3. Centre for Social Science Research, University of Cape Town, Cape Town, South Africa
4. Department of Sociology, University of Cape Town, Cape Town, South Africa
5. Institute for Medical Information Processing, Biometry and Epidemiology, Ludwig-Maximilians-Universität, Munich, Germany
6. Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa

§Corresponding author
Nontokozo Langwenya
Department of Social Policy and Intervention, Barnet House, 32-37 Wellington Square, OX1 2ER, United Kingdom
Phone number: +44 7713 934173
Email: nontokozo.langwenya@nuffield.ox.ac.uk
ORCID-ID 0000-0001-7883-621X

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Author contributions: N.L. conceptualised, conducted the analyses, and wrote the manuscript draft. NL, E.T., and L.C. designed the cohort study and led data collection activities, including referrals. H.S. provided expert knowledge, including refinement of research questions, framing and interpreting results. All authors reviewed the results and contributed to the interpretation of the findings and approved the manuscripts.

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Abstract

Introduction: Adolescent mothers face heightened economic and social vulnerabilities, which can place them at increased risk of intimate partner violence (IPV), both before and during COVID-19. However, few studies examine this population, and even fewer disaggregate findings by HIV status.

Methods: We analysed data from 843 South African adolescent mothers, 36% living with HIV (LHIV). Participants reported on physical, psychological and sexual IPV exposure at two interviews: 2018-2019 (pre-pandemic) and 2021-2022 (during COVID-19). We estimated the lifetime prevalence of IPV, disaggregating by HIV status. We used inverse-weighted probability multivariate mixed-effects logistic regression to examine changes in IPV between the two periods and whether changes in IPV differed by HIV status.

Results: A quarter of adolescent mothers had experienced any IPV during COVID-19, quadruple pre-pandemic levels (24.7% vs 6.0%). The increase was driven by surges in physical (+15.7%) and psychological (+11.2%) IPV. In both periods, psychological and physical IPV were the most prevalent forms and the most common combination among those who had experienced multiple forms of IPV. Exposure to any IPV was significantly more prevalent among those LHIV compared to those without HIV, pre-pandemic (9.5% vs 4.1%, $p=0.026$) and during COVID-19 (31.8% vs 20.6%, $p<0.001$). Adjusted models revealed an 18.2% significant increase in the average predicted probability of reporting IPV during COVID-19 compared to pre-pandemic, with no differential effect by HIV status.

Discussion: Adolescent mothers experienced a significantly higher burden of IPV during COVID-19 than pre-pandemic, with those LHIV experiencing the highest level. Initiatives to reduce IPV need to reach adolescent mothers, particularly those living with HIV.

Introduction

Both intimate partner violence (IPV) and Human Immunodeficiency Virus (HIV) pose significant threats to the health and wellbeing of adolescent girls and young women, females aged 15-24, living in Africa (Sawyer et al., 2018). IPV constitutes physical, sexual, psychological and economic harm experienced in current or former intimate relationships (Adams et al., 2008). Among females aged 15 and older, global past-year estimates of combined physical and sexual IPV (16%) are highest among ever-partnered adolescents aged 15-24 (Sardinha et al., 2022). These estimates are higher in Africa, with a median prevalence of 25% (Wado et al., 2021b).

In parallel, the risk of HIV acquisition in Africa is highest among this age group, accounting for more than 77% of all new HIV infections in 2022 (UNAIDS, 2023). Approximately 85% of adolescents aged 10-19 living with HIV globally reside in Africa (UNAIDS, 2021). Intimate partner violence is associated with a reduced ability to negotiate condom use and with overlapping sexual relationships, heightening the risk of HIV acquisition. Among those living with HIV (LHIV), exposure to IPV is associated with reduced adherence to antiretroviral therapy and viral load suppression (Hatcher et al., 2015). Thus, the dual burden of IPV and HIV is of concern to many African countries which are experiencing an unprecedented growth in the population size of adolescents.

Research on the intersection of IPV and HIV during adolescence has rarely focused on the unique experiences of adolescent mothers. Yet, compared to never-pregnant adolescent females, the heightened economic and social vulnerabilities associated with early parenthood may place adolescent mothers at a greater risk of IPV (Hill et al., 2015; Jochim et al., 2021; Johnson et al., 2023). During pregnancy, adolescent females may be pressured to drop out of school due to stigmatisation and unsupportive school policies,

negatively impacting their educational and employment prospects (Jochim et al., 2021). At home, the costs of antenatal care and childcare may contribute to financial stress, especially in resource-constrained households (Hill et al., 2015). In cases of limited alternative economic and social avenues for support, these social and economic stresses may lead to establishing informal and inequitable intimate relationships, heightening the risk of both IPV and HIV acquisition (Johnson et al., 2023).

The few studies that estimate IPV among adolescent mothers are largely cross-sectional, recruit participants at antenatal care facilities, and have small sample sizes (Johnson et al., 2023; Yonga et al., 2022). Compared to older females, adolescent females are less likely to engage in antenatal care due to the stigma associated with teenage pregnancy and lower partner and familial support received during pregnancy (Johnson et al., 2023; Mekonnen et al., 2019). Consequently, facility-based sampling may be biased as those at risk of IPV are more likely to be excluded from the study, limiting the external validity of the findings. Adolescent mothers are often a subgroup of the sample, not the focus of the study, resulting in small sample sizes that are underpowered to provide robust estimates on IPV or further disaggregate findings by HIV status (Gebrekristos et al., 2020; Gibbs et al., 2022). For example, evidence from South Africa suggests that IPV among adolescent mothers can vary between 25% (n=159) before birth to 46% (n=90) at six weeks postpartum (Gebrekristos et al., 2023; Gibbs et al., 2022). Research focused on adolescent mothers and with adequate sample sizes can enhance our understanding of this population's vulnerability to IPV.

The exclusion of adolescent mothers' experiences of IPV extends to the currently available evidence of the impact of the COVID-19 pandemic on IPV. We could not find any published data on the levels of IPV experienced by adolescent mothers in Africa during the COVID-19 pandemic (Meskele et al., 2021). Most studies provided aggregate

estimates among adolescent females, with conflicting findings (Bukuluki et al., 2023; Decker et al., 2021; Hartmann et al., 2023; Karp et al., 2021). For example, a longitudinal cohort study of 1217 Kenyan adolescent females aged 15-24 found no difference in the past-year prevalence of combined physical and sexual IPV (17%) pre-pandemic versus during COVID-19(Decker et al., 2022). In contrast, a cross-sectional study of 756 Kenyan adolescent females aged 15-24 revealed an increase of 5% in physical, emotional, or sexual IPV during COVID-19 (Karp et al., 2021). In South Africa, adolescent females aged 13-24 (n=373) reported a 13% increase in the experience of physical, emotional, or sexual IPV, with no observed difference in the proportion reporting IPV by HIV status (Hartmann et al., 2023). While these studies likely include a small proportion of adolescent mothers, they did not disaggregate findings by motherhood status.

This analysis examines whether the lifetime prevalence of IPV increased among adolescent mothers between two periods: before COVID-19 (pre-pandemic) and during the COVID-19 pandemic. We assessed whether there were differential changes in the lifetime prevalence of IPV during COVID-19 among those living with HIV compared to those without HIV.

Methods

Study Procedures

Recruitment

We used data from a cohort of adolescent mothers living in the Eastern Cape province of South Africa who were recruited through five sampling strategies: an existing adolescent cohort study, community-based activities (door-to-door, referrals, schools, malls), and public healthcare facilities (maternity and HIV care, and participant referrals) (Toska et

al., 2022). Eligible participants were females aged 10 to 24 who had their first child before age 20. Pre-pandemic interviews were conducted in person and were 45 minutes long. Participants used audio-enhanced computer-assisted self-interviewing (ACASI) methods with the assistance of a trained same-sex research assistant. During COVID-19, interviews were conducted by telephone with same-sex interviewers and lasted 20 minutes.

Adolescent mothers who completed both interviews form the analytic sample: n=843, 72.7% of the cohort. Of those excluded, 1.6% (n=18) were deceased, 3.8% (n=44) later refused participation, 11% (n=126) were unreachable by telephone, and 11% (n=127) had an incomplete follow-up interview.

Data collection

At both interviews, participants completed questionnaires on their livelihoods, school progression, violence, sexual and reproductive health, and familial relationships. Interviewers completed one-to-two months of training on conducting research with vulnerable populations, such as adolescent mothers and those exposed to multiple vulnerabilities, such as violence and HIV. Additionally, interviewers received training on remote data collection safety protocols, including obtaining informed consent, assessing the safety and availability of private space, managing interruptions, and recognising signs of discomfort through verbal cues. The study team received regular refresher training as scheduled or on request.

Ethics

Ethical approvals were obtained from the University of Oxford (R48876/RE001-3, SSD/CUREC2/12–21) and University of Cape Town (HREC 226/2017, CSSR 2013/4), Eastern Cape Departments of Health and Basic Education, and participating health and educational facilities. Participation in the study was voluntary, and the researchers

sought written informed consent from adolescent mothers. If the participant was younger than age 18, consent from the caregiver was also sought. Pre-pandemic, participants received a certificate of participation, snacks, and a small gift pack, including stationery and toiletries for their participation. During COVID-19, participants received a mobile phone voucher of ZAR30.00/ $2.15.

Participants reporting IPV were offered referrals to counselling and social protection services, depending on their needs. Before data collection, the research team mapped referral sites providing violence response services and conducted regular check-ins to confirm ongoing service availability. When participants declined a referral, the team encouraged them to contact the research team when ready. During COVID-19, the research team included an in-house counsellor who provided initial counselling (three sessions) and oversaw timely linkage to local remote counselling and protection services. In addition, a registered child protection social worker held weekly meetings with the study team to review referral management. To support interviewers with vicarious trauma, the research team held weekly debrief sessions and had access to one-on-one counselling services with an external provider.

Study Measures

Dependent variable: Intimate Partner Violence included measures of psychological, physical, and sexual IPV. Pre-pandemic levels of IPV were assessed using six items from the revised Conflict Tactics Scale, with participants reporting on their lifetime exposure (Straus et al., 1996). During COVID-19, we assessed past-year exposure to IPV using four items from the WHO Violence Against Women Instrument, which closely captured the same constructs assessed pre-pandemic (García-Moreno et al., 2005). Figure 20 shows the exact wording for the comparable IPV assessments and covariates. We estimated lifetime

IPV prevalence during COVID-19 as the cumulative affirmative reports of IPV from the pre-pandemic and COVID-19 interviews. For comparability with existing literature, we computed two additional measures of IPV occurrence: physical and/or sexual IPV and exposure to multiple forms of IPV, which could include co-occurrence with psychological IPV.

Independent variable: Period and HIV status. Data collected in 2018-2019 were coded 0 for pre-pandemic, and data collected in 2021-2022 were coded 1 for during COVID-19. Participants self-reported HIV status at both interviews, and the research team validated it through paper-based and electronic reviews of medical records. Those living with HIV were coded 1, and those without HIV were coded 0.

Covariates: We controlled for established risk factors of IPV and COVID-19 stressors associated with IPV, including age, housing (formal/informal), orphanhood status (maternal/paternal) and enrolment in education or employment (Yonga et al., 2022). Relational factors included having an intimate relationship in the preceding 12 months, being ever-engaged in an age-disparate relationship (>5-year age difference) and knowing their partner's HIV status. Grant receipt was defined as receiving any government-issued social support grant. Food security was measured as having enough food in the last seven days, adapted from the South African National Food Consumption Survey (Labadarios et al., 2005). Figure 20 shows the hypothesised relationships between all variables included in the analysis.

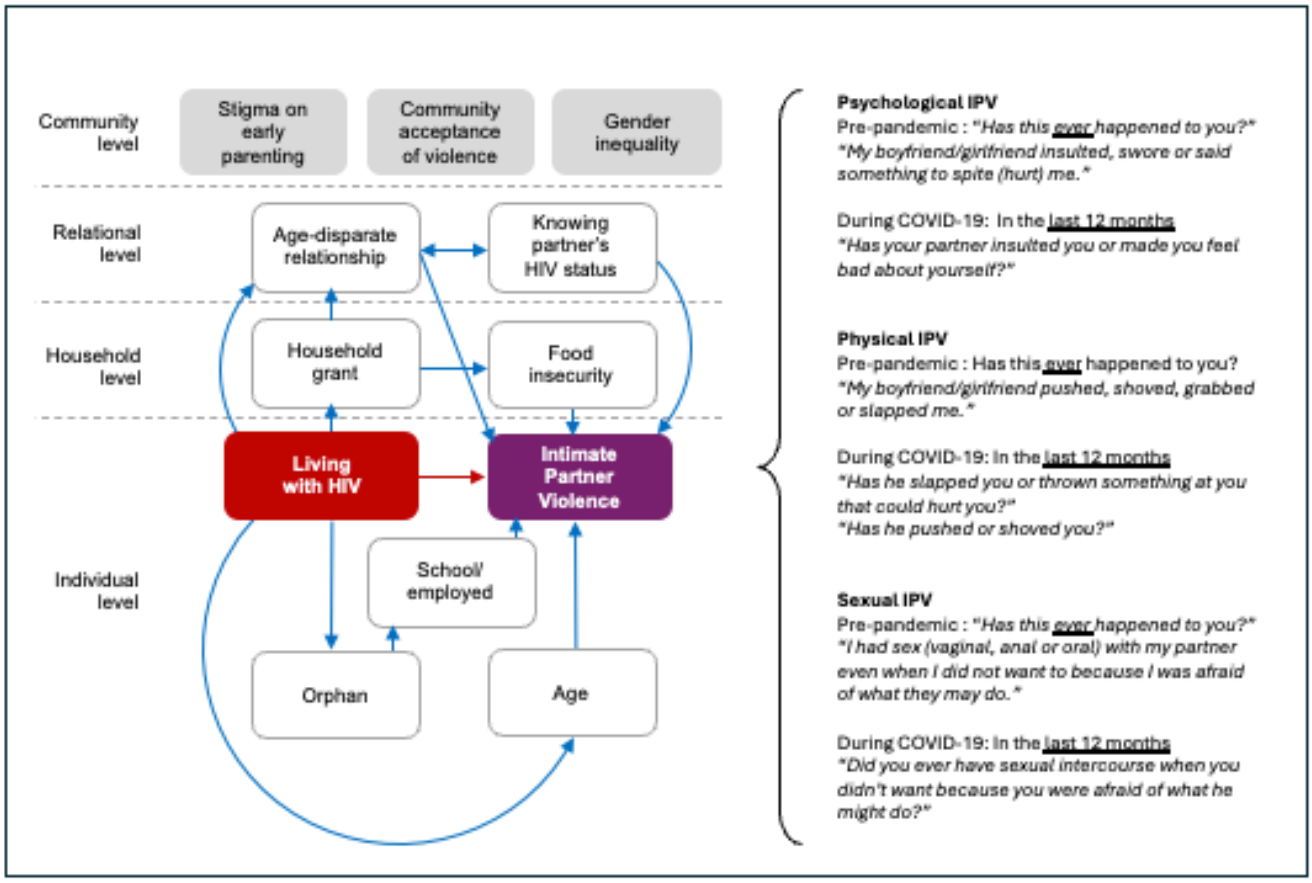


Figure 20: Paper 3_Conceptual framework on pathways between living with HIV and risk for IPV, including study measurement of IPV at both periods

Data Analysis

We compared the proportion reporting IPV, any and by form, between the two periods and by HIV status using a two-sample t-test, chi-squared test or Fisher's exact test. Bivariate analysis showed an unbalanced distribution of the measured confounders at baseline. Therefore, before applying regression modelling, an inverse probability weighting (IPW) technique was used to improve exchangeability between those living with HIV and those without.

We allocated LHIV as the exposure and calculated exposure weights (w_e) as the inverse probability of being "exposed" (w_e) among those LHIV and the inverse probability of

being unexposed among the HIV uninfected. To predict the probability of exposure (LHIV), we ran a logistic regression model using age, education and household grant receipt. We considered food security and relationship status to be in the causal pathway and excluded them from generating weight estimates.

We applied the exposure weights to a multivariate mixed-effects logistic regression to estimate the changes in IPV during COVID-19 among those with LHIV and those HIV uninfected. The model included an interaction term to assess if the effect of HIV on IPV changed during COVID-19 (β_3). To aid the interpretation, we estimated average adjusted probabilities using the *margins* command in STATA.

$$\text{logit}\left(\frac{1}{1-p}\right) = \beta_0 + \beta_1 Time_i + \beta_2 HIV_{it} + \beta_3 (Time_i * HIV_{it}) + \beta_k X_{kit} + \alpha i + \gamma t + \epsilon it$$

In a sensitivity analysis, we considered the potential selection bias introduced by missing data of those without an interview during COVID-19. We generated sample weights (w_s) using a logistic regression containing all baseline covariates, including HIV and IPV values. We re-ran the mixed-effects model weighted using the sample and exposure weights, which were included in the code as a product term (w_s* w_e). In doing so, we assigned greater weight to participants with characteristics associated with the probability of being lost to follow-up. Lastly, we restricted the analytical sample to those in intimate relationships in the past year and re-ran the mixed-effects regression model with the appropriate exposure and sample weights. Analysis was conducted in STATA 16.

Results

Overall, there was no significant difference in baseline experiences of any intimate partner violence and HIV status between participants who completed both interviews and those who only completed the pre-pandemic interview (Table 18). However, baseline reports of physical IPV (6% vs 3%, *p*=0.021) and sexual IPV (6% vs 3%, *p*=0.049) were slightly higher among participants who did not complete the follow-up interview.

Table 18: Paper 3_HEYBABY study participants' characteristics of adolescent mothers stratified by follow-up status

	No follow-up (n=315, 27%)	**Retained** (n=843, 73%)	**p-value**
Age [median, IQR]	191 (17-19)	18 (17-19)	0.223
Multiple children	29 (10%)	66 (9%)	0.649
School/Employed	136 (43%)	438 (52%)	**0.008***
Formal housing	229 (72%)	687 (81%)	**0.00***
Orphanhood	104 (33%)	226 (27%)	**0.041***
Food Secure	220 (70%)	618 (74%)	0.195
Household Grant	283 (90%)	767 (92%)	0.400
Intimate Relationship (12 months)	206 (67%)	554 (67%)	0.994
Know Partner's HIV status	131 (42%)	366 (44%)	0.536
Age-disparate relationship (12 months)	75 (24%)	189 (23%)	0.641
Transactional sexual exploitation (ever)	30 (10%)	95 (11%)	0.374
Living with HIV	119 (37%)	305 (36%)	0.616
Perinatally acquired HIV	19 (16%)	43 (16%)	0.969
Baseline Lifetime Prevalence of Intimate Partner Violence (IPV			
Any IPV	22 (7%)	39 (5%)	0.110
Psychological IPV	13 (4%)	25 (3%)	0.330
Physical IPV	18 (6%)	24 (3%)	**0.021***
Sexual IPV	18 (6%)	27 (3%)	**0.049***
Multiple IPV	9 (3%)	13 (2%)	0.114

Among the 843 adolescent mothers who completed both interviews, the median age at birth of the first child was 17 (IQR=16-18), and about one-third (n=305, 36%) were living with HIV, as shown in Table 19. The median age pre-pandemic and during COVID-19 was 18 and 22, respectively. Between the two periods, there was an increase in the proportion of adolescent mothers in school/employed, living in formal housing, in intimate relationships, and knowing their partners' HIV status. Food security levels significantly decreased during COVID-19. Compared to those without HIV, adolescent mothers LHIV were older, more likely to be out of school/unemployed and had an intimate relationship in the past year. Additionally, a substantially lower proportion of adolescent mothers LHIV knew the HIV status of their intimate partner. These differences by HIV status were observed for both periods.

Table 19: Paper 3_Socio-demographic characteristics of adolescent mothers pre-pandemic and during COVID-19, stratified by HIV status

	Pre-pandemic				During COVID-19			
	Total (n=843)	L HIV (n=305,36%)	Without HIV (n=538,64%)	P value	Total (n=843)	LHIV (n=305,36%)	Without HIV (n=538,64%)	P value
Age [median, IQR]	18 (17-19)	19 (18-21)	18 (17-19)	**<0.001**	22.2 (21.1-23.5)	23.4 (22.1-25.3)	21.8 (20.7-22.7)	**<0.001**
10-19	657 (79%)	156 (53%)	501 (94%)	**<0.001**	42 (5%)	7 (2%)	35 (7%)	**<0.001**
20-24	176 (21%)	142 (47%)	34 (6%)		630 (75%)	166 (54%)	464 (86%)	
25+	1 (0%)	1 (0%)	0 (0%)		170 (20%)	132 (43%)	38 (7%)	
School/Employed	438 (52%)	102 (33%)	336 (62%)	**<0.001**	590 (70%)	184 (60%)	406 (75%)	**<0.001**
Formal housing	659 (81%)	225 (78%)	434 (82%)	0.188	803 (95%)	514 (95%)	289 (95%)	0.606
Past-week Food Security	618 (74%)	213 (71%)	405 (76%)	0.158	534 (63%)	187 (62%)	367 (65%)	0.388
Household Grant	767 (92%)	282 (94%)	485 (91%)	0.062	794 (94%)	283 (93%)	513 (95%)	0.166
Intimate Relationship (past-year)	554 (67%)	216 (73%)	338 (54%)	**0.003**	668 (79%)	246 (81%)	422 (78%)	0.446
Know Partner's HIV status	365 (65%)	112 (52%)	251 (74%)	**<0.001**	496 (74%)	165 (67%)	331 (78%)	**0.001**
Age-disparate relationship (ever)	189 (23%)	86 (29%)	103 (19%)	**0.002**	221 (26%)	98 (32%)	123 (23%)	**0.003**

Lifetime prevalence of IPV: pre-pandemic and during COVID-19

The lifetime prevalence of IPV quadrupled during COVID-19, from 6.0% (95%CI=4.5-7.9) pre-pandemic to 24.7% (95%CI=22-28) during COVID-19 [Figure 21]. Increases in IPV during COVID-19 were driven by surges in physical (+15.7%) and psychological (+11.2%) IPV. While few reported sexual IPV pre-pandemic, this increased to 6.9% (95%CI=5.2-8.8) during COVID-19. The lifetime prevalence of physical and/or sexual IPV increased sixfold during COVID-19. Among those who have ever experienced IPV, the proportion exposed to multiple forms of IPV increased to more than half (n=110, 53%) during COVID-19, compared with a third (n=18, 35%) pre-pandemic. Psychological and physical IPV were the most prevalent forms and the most common combination among those who had ever experienced multiple forms of IPV.

Differences in levels of IPV by HIV status at both periods

In both periods, adolescent mothers LHIV experienced significantly higher levels of IPV compared to those without HIV [Figure 21]. Pre-pandemic, the proportion who had ever-experienced IPV was 9.5% among those LHIV compared to 4.1% among those without HIV (p=0.026). During COVID-19, levels increased to 31.8% and 20.6%, respectively. Differences at both periods were primarily driven by adolescent mothers with HIV being more likely to have ever experienced psychological IPV than their HIV-negative peers (p-value<0.001). During COVID-19, adolescent mothers with HIV disproportionately experienced physical and/or sexual IPV, including a heightened co-occurrence of IPV forms.

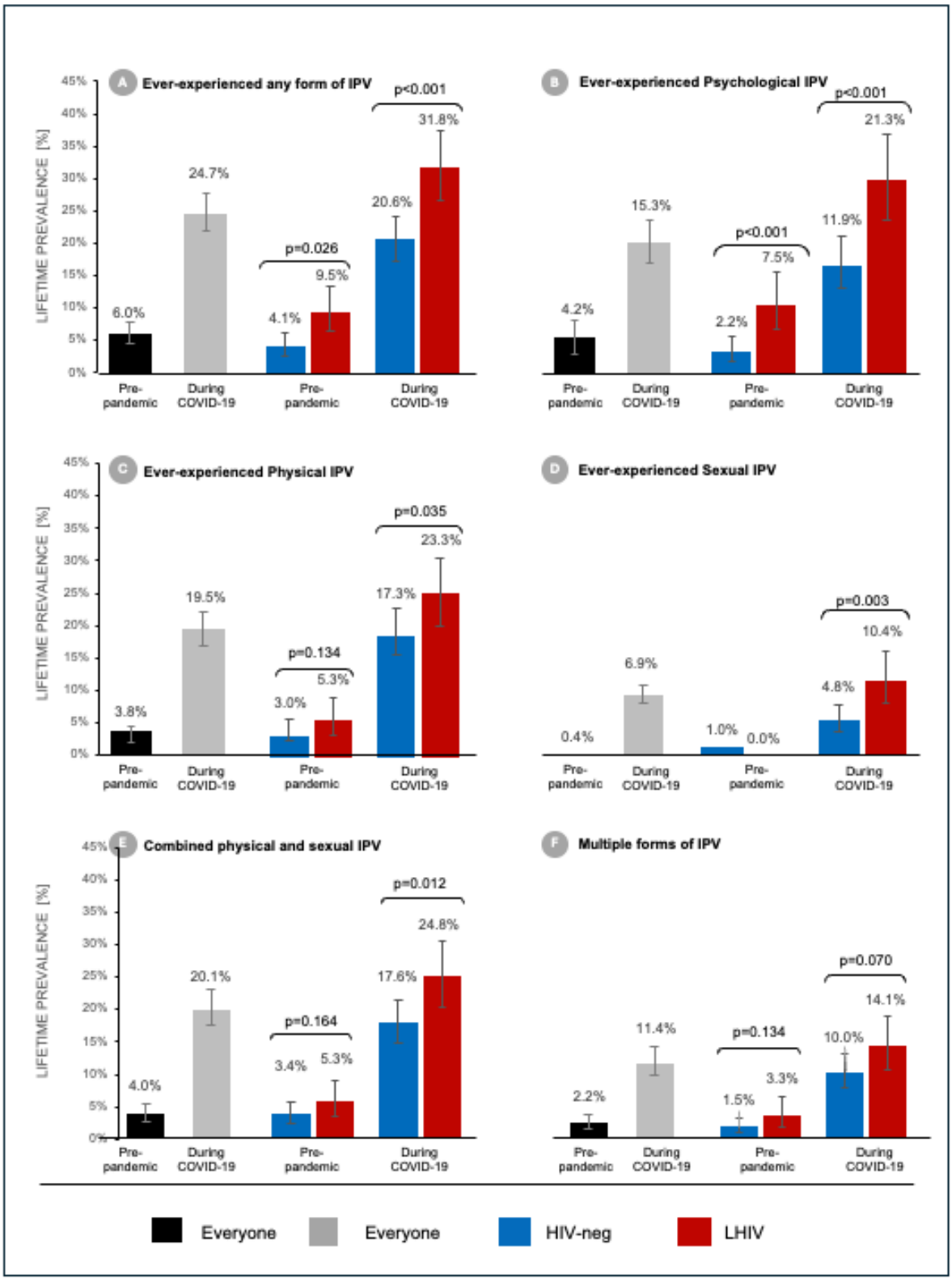


Figure 21:Paper 3_Lifetime prevalence of IPV pre-pandemic and during COVID-19, stratified by HIV status

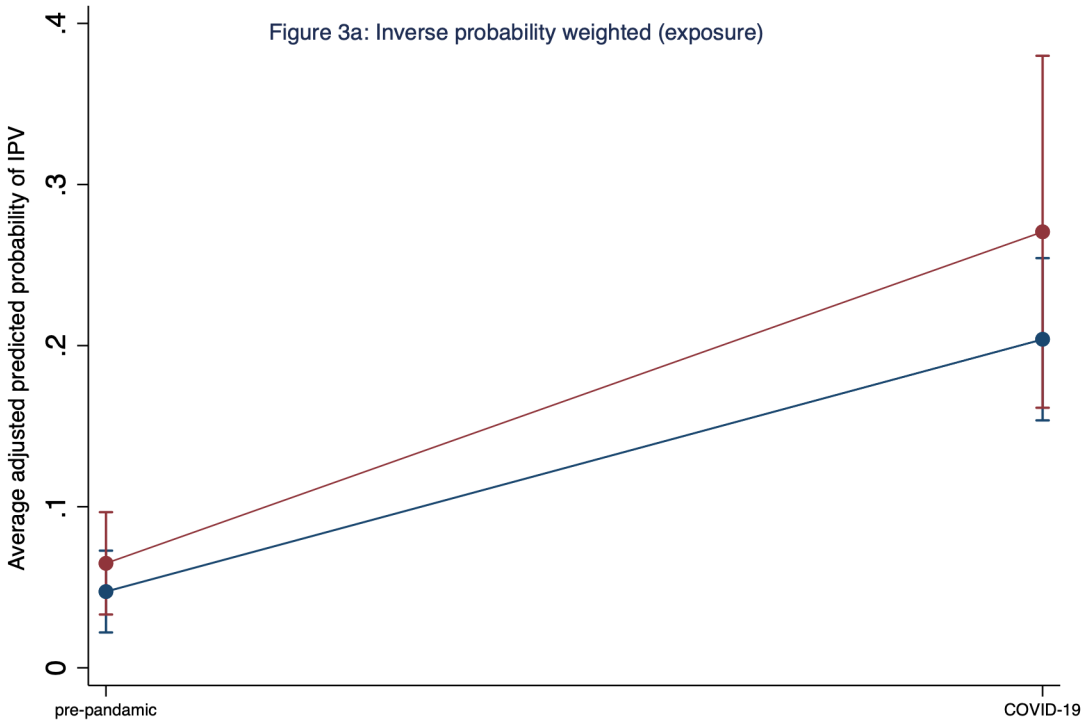
Average adjusted predicted probabilities of IPV pre-pandemic and during COVID-19

In a multivariate IPW mixed-effects model adjusting for measured covariates, the mean predicted probability of ever experiencing IPV increased by 18.2% during COVID-19 [Table 20 and Figure 22]. The model showed no differential effect in the increased average adjusted predicted probability of IPV during COVID-19 based on the adolescent mothers' HIV status; the COVID*HIV interaction estimate is not significant.

Table 20: Paper 3_Average adjusted predicted probabilities of IPV and 95% Confidence Intervals based on mixed-effects models under multiple conditions

	Exposure Weighted	Exposure and sample weighted	In a relationship: exposure weighted
Period			
Pre-pandemic	0.056 (0.033 - 0.080)	0.0668 (0.039 - 0.094)	0.094 (0.053 - 0.135)
During COVID-19	0.238 (0.164 - 0.312)	0.263 (0.184 - 0.342)	0.280 (0.190 - 0.369)
HIV status			
Without HIV	0.134 (0.109 - 0.159)	0.147 (0.120 - 0.173)	0.180 (0.143 - 0.216)
Living with HIV	0.177 (0.133 - 0.221)	0.201 (0.1545 - 0.247)	0 .223 (0.165 - 0.281)
Differential effect			
Pre-pandemic*without HIV	0.047 (0.022 -0.073)	0.052 (0.024 - 0.081)	0.081 (0.034 - 0.128)
Pre-pandemic*living with HIV	0.065 (0.033 - 0.100)	0.077 (0.041 - 0.114)	0.103 (0.0525 - 0.154)
During COVID-19*without HIV	0.2039617 (0.154 - 0.254)	0.2183535 (0.166 - 0.271)	0.2467831 (0.183 - 0.311)
During COVID-19*living with HIV	0.271 (0.161 - 0.380)	0.298 (0.187 - 0.410)	0.306 (0.179 - 0.432)

Models were adjusted for the following covariates: age, housing, school/employment, past-week food security, grant receipt, past-year relationship, and age-disparate relationship. In the analysis restricted to those with intimate partners in the last year, adjusted covariates also included knowing your partner's HIV status.



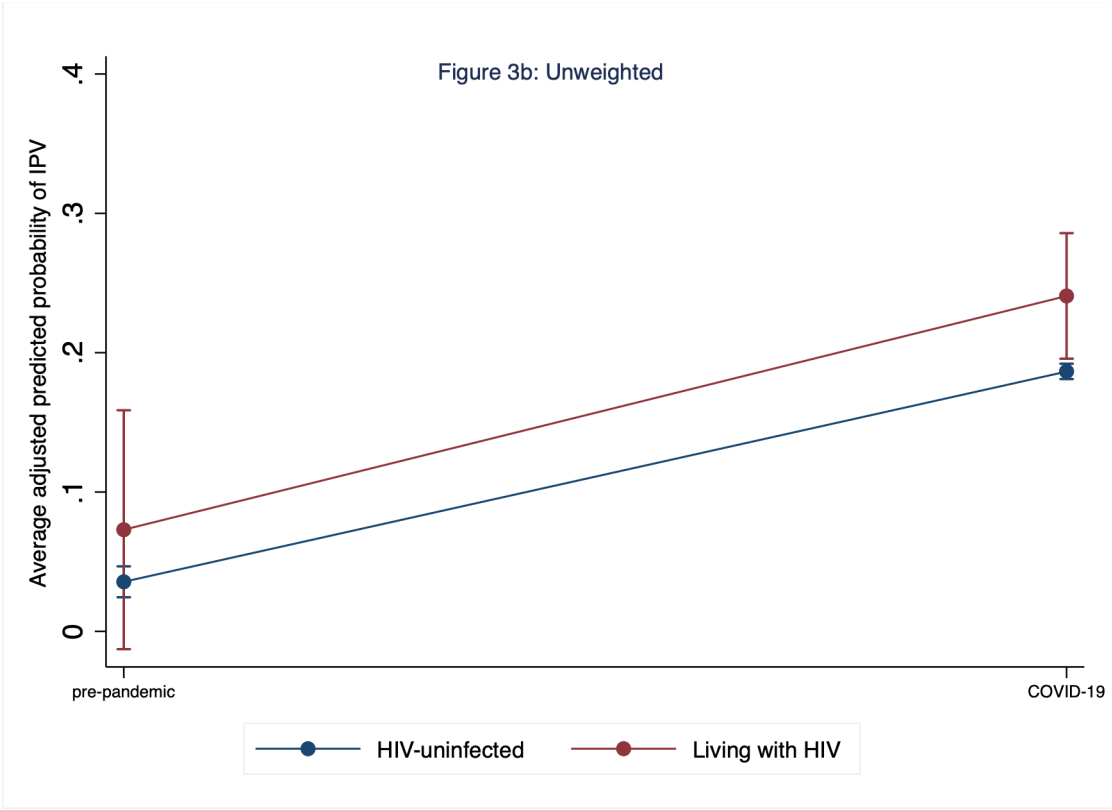


Figure 22: Paper 3_Exposure Inverse Probability Weighted, and non-weighted average adjusted probability estimate of IPV by HIV status between the two periods: pre-pandemic and during COVID-19

Sensitivity analyses

Findings persisted in two sensitivity analyses, as shown in Table 20. In exposure and sample-weighted analyses, which account for effects of loss to follow-up, the observed associations did not differ significantly from those estimated using the analytical sample. However, the error terms were slightly wider. The same was observed in the restricted analysis of those in intimate relationships in the past year.

Discussion

Our findings confirm that adolescent mothers experienced a significantly higher burden of IPV during COVID-19 compared to the pre-pandemic period. One in four (24.7%) compared to one in sixteen (6.0%). While IPV was heightened at both periods among adolescent mothers LHIV compared to those without HIV, the effect of HIV on the probability of ever-experiencing IPV did not change during COVID-19, suggesting adolescent mothers, regardless of HIV status, were equally vulnerable to COVID-19 stressors that increased the likelihood of IPV. Our analysis is among the first to provide rigorous empirical evidence on IPV levels among a uniquely vulnerable yet underexamined population in Africa: adolescent mothers.

The study findings contribute to the research on IPV and HIV in five important ways. First, this research adds to the limited empirical body of evidence confirming anecdotal concerns of increased violence against women during COVID-19. In particular, a longitudinal design involving the same participants established temporality and controlled for time-invariant confounders, such as early childhood exposure to violence, that could affect the observed relationship between COVID-19 and IPV. However, the robustness of the estimates is threatened by the differences in the measures used to assess

IPV at the two periods. IPV measures during COVID-19 included fewer behaviours that constitute psychological IPV, which could result in the underestimation. The physical IPV act of being grabbed was replaced with having something thrown at you at COVID-19 interviews. Taken together, the variation in the assessment of IPV most likely resulted in the underestimation of IPV during COVID-19, providing conservative estimates. Nonetheless, the lack of comparative studies focused on IPV among adolescent mothers living in Africa highlights the need for future research to understand the vulnerability of this population better.

Second, our study unpacks how different forms of IPV may have increased during COVID-19. While the prevalence of psychological and physical IPV was similar during the pre-pandemic period, we observed higher rates of physical IPV than psychological IPV during COVID-19. This included acts of being pushed, shoved, grabbed, or slapped by an intimate partner. As adolescent mothers grow older, they are more likely to cohabit with their intimate partner. Thus, stay-at-home restrictions would have inadvertently increased the chances of their partner perpetrating physical IPV. Additionally, experiences of anxiety and uncertainty associated with COVID-19 may have resulted in greater negativity and hostility towards others, including intimate partners (Hamadani et al., 2020; Jarnecke & Flanagan, 2020). This may explain why psychological IPV acts such as being insulted or sworn at by an intimate partner increased more than sexual IPV.

Third, our findings draw attention to the compounding effect of HIV on vulnerability to IPV. At both periods, IPV levels were significantly higher among adolescent mothers LHIV than those without HIV. Compared to those without HIV, we observed higher rates of out-of-school or unemployment among those LHIV; a higher proportion had engaged in age-disparate relationships, and a lower proportion knew their partners' HIV status. These relationship factors have been shown to increase the risk of IPV (Izugbara et al.,

2020). Our study with adolescents recruited in community settings provides essential and missing information to the latest meta-analyses of pre-pandemic estimates of IPV by HIV status among adult African women (Tenkorang et al., 2021). Our findings suggest there may be variability in experiences of IPV among women, with specific subgroups, such as adolescent mothers, facing differential risk of IPV based on their HIV status, which may not exist in adult women (Tenkorang et al., 2021).

Fourth, our analysis contributes to the understanding of how COVID-19 affected existing inequalities by illustrating that the pandemic did not exacerbate HIV's effect on IPV occurrence among adolescent mothers. While we did not investigate which COVID-19 stressors were associated with increased IPV, several theoretical, empirical, and qualitative studies have illustrated how financial stress and prolonged isolation experienced during COVID-19 could heighten the risk of IPV(Agüero, 2021). Specific to South Africa, qualitative interviews with adult women suggested that vulnerability to IPV during COVID-19 was potentially amplified by the limited access to social support from friends, family, and social services during lockdown periods (Ndlovu et al., 2022).

Fifth, our hypothesis that IPV among adolescent mothers is higher than among adolescents who are non-mothers is not supported by pre-pandemic estimates. We observed a lower lifetime IPV prevalence of 6.0% pre-pandemic compared to global (24%), regional (Africa, 15.8%), and local (South Africa, 13.1%) estimates for aggregated adolescent girls ages 15-24, mostly non-mothers (Gibbs et al., 2022; Sardinha et al., 2022; Wado et al., 2021b). The comparison studies used at least eight items from the 13-item WHO Violence Against Women instrument, whereas our study used six items from the revised Conflict Tactics Scale. While both scales have been validated in South Africa, using fewer items and assessing different acts of IPV may have underestimated our sample's pre-pandemic lifetime prevalence of IPV. Another plausible explanation

involves social desirability bias, where due to fear of stigma and blame related to early parenthood, adolescent mothers are less willing and able to disclose their experience of IPV (Toska et al., 2020).

There are limitations to this analysis. Unsuccessfully traced participants, who account for 27% of the cohort, had baseline factors associated with increased IPV risk; thus, even though we used IPW methods, the study may underestimate IPV levels during COVID-19. The transition from self-administered to telephonic interviews could have contributed to underreporting IPV during COVID-19. Self-administered violence measures are less prone to social desirability bias than estimates from interviewer-led assessments (Yonga et al., 2022). In some cases, participants may not have had complete privacy and therefore could not share sensitive information over the phone. Conversely, participants may have disclosed higher levels of IPV exposure during COVID-19 interviews because they trusted the research team more during the second interview. The net effect of these methodological limitations is inconclusive. Nevertheless, these methodological constraints cannot entirely account for the observed increase in IPV levels during COVID-19.

Notwithstanding these limitations, the data presented here are unique in investigating IPV exposure among adolescent mothers and the effect of COVID-19 on IPV levels in South Africa, a country heavily burdened by both IPV and HIV. Community-based recruitment strengthens the external validity of our findings, particularly for peri-urban settings in Africa characterised by high levels of poverty and economic insecurity. Assessing IPV during COVID-19 using past-year recall provides a broader understanding of IPV dynamics during COVID-19 than the three- to six-month recall periods used in most studies (Karp et al., 2021).

Conclusion

The data presented here offer critical implications for policy and practice. There is a need for tailored IPV support services for adolescent mothers living with HIV that can be provided at both the community level and at service entry points such as antenatal care clinics and child wellbeing health facilities. This includes strengthening linkage and referral pathways through peer supporters who promote adolescent uptake of services as they act as affirming role models who share similar experiences with young mothers (Laurenzi et al., 2022). Programmes need to tackle harmful social norms and gender inequality (Lowe et al., 2022). Adaptation of successful school-based and community-led intervention programmes involving both boys and girls, such as SASA! from Uganda and PREPARE from South Africa, can support relationship skills building, including conflict resolution skills, which have been shown to decrease all three forms of IPV (Abramsky et al., 2016; Mathews et al., 2016). Early intervention can include evidence-based parenting programmes and social protection packages, such as government cash transfers, which can prevent exposure to violence among adolescents (Meskele et al., 2021). To end violence against women, governments and communities must invest in understanding the impact of COVID-19 to support pandemic preparedness and response.

Chapter VII: Discussion

My doctoral research had two aims: first, to explore how adolescents' social identities and the COVID-19 pandemic affected their experiences of sexual and intimate partner violence; second, to examine how relational and structural interventions like cash transfers, parenting support, and schooling might reduce sexual violence risk. These aims were addressed through three empirical chapters, each contributing to different dimensions of the overall inquiry. In this final chapter, I reflect on the key contributions of my doctoral research, limitations, and implications for research, practice, and policy.

For ease of reference and narrative flow, I refer to the empirical components of this doctoral research as Paper 1, Paper 2, and Paper 3, in the order presented, rather than by chapter number.

Key doctoral research findings

For my doctoral research, I adopted an intersectional feminist lens to frame both the approach and interpretation of the research. I argued that adolescent experiences of sexual and intimate partner violence are shaped by the overlapping systems of oppression linked to sex and its social expression as gender, as well as age, HIV status, and early motherhood. Drawing on Crenshaw's conceptualisation of intersectionality, I use this lens to hypothesise differential patterns of sexual and intimate partner violence across these social identities, and to understand how structural power imbalances, existing at economic, political, and social levels, may operate simultaneously to produce and sustain vulnerability. This framing also informed my theorisation of how socio-economic-related crises, such as those instigated by the COVID-19 pandemic, may intensify existing power hierarchies and exacerbate intimate partner violence. Importantly, such intensification may not occur equally across social positions; for

example, adolescent mothers living with HIV may be more vulnerable to these shifts due to pre-existing structural exclusions. With this perspective, I also argued that effective prevention requires recognising and responding to these layered and intersecting forms of disadvantage. Evidence reviews show that such intersectional considerations have been limited in the field of sexual violence prevention, particularly for adolescent males and adolescent mothers (Groves et al., 2022; Melesse et al., 2020).

Aim 1: How adolescents' social identities and the COVID-19 pandemic influence their experiences of sexual and intimate partner violence in South Africa.

This doctoral research aim is addressed across all three empirical papers. Paper 1 (Chapter IV) examined disparities in the lifetime prevalence of sexual violence across sex, age, and HIV status. Paper 2 (Chapter V) extended this analysis to past-year experiences of sexual violence, disaggregated by sex. Paper 3 (Chapter VI) explored how the COVID-19 pandemic shaped lifetime experiences of intimate partner violence among adolescent mothers living with and without HIV. I synthesise the collective insights from these three papers into four thematic takeaways:

1. *Females are at heightened risk of sexual violence, but for intimate partner violence, early parenthood may not be associated with heightened risk.*

Paper 1 revealed notable sex disparities in the lifetime prevalence of sexual violence, with prevalence estimates of 27.9% (95% CI: 24.8–31.1) among females and 18.7% (95% CI: 15.7–22.0) among males, consistent with global patterns (Piolanti et al., 2025; UNICEF, 2024). Overall, the lifetime prevalence increased with age, ranging from 7.0% among 10–14-year-olds to 23.3% among 15–19-year-olds and 51.6% among 20–24-year-olds. The most significant age-related increases were observed for exploitative forms of sexual violence: from 1.1% among 10-14-year-olds to 41.8% among 20-24-year-olds. When age-

group estimates were separated by sex, disparities were minimal in the 10-14 and 15–19 age groups but became more notable in the 20–24 age group, where prevalence reached 54.5% for females and 43.2% for males. However, interpretation for males aged 20–24 (n = 74) remains limited due to the cohort's age structure.

When examining past-year experiences of sexual violence, Paper 2 found that prevalence was highest for both sexes around a median age of 14 years. For females, prevalence ranged from 11% to 15% at visits with a median age of 14 and 16 years. For males, the highest prevalence was observed at visit 2, when the median age was 14 years, at 12%. By the final visit (median age 17 for females and 15 for males), prevalence had declined to 5.8% for females and 4.7% for males. These findings suggest that risk may peak in early adolescence, around age 14, for both sexes, followed by a decline. However, the decline appears more gradual for females, indicating that while early adolescence is a particularly vulnerable period for both sexes, the elevated risk may persist longer for adolescent females than males.

These findings enhance understanding of how vulnerability to sexual violence develops during adolescence, suggesting that developmental stage, with age as a proxy, operates together. Prior to adolescence, biological and social gender differences are minimal, and all adolescents, regardless of sex, are generally dependent on adults (Wekerle & Kerig, 2017; Whittier, 2016). Their limited autonomy and power make them vulnerable to abuse by adults or older individuals who exploit authority, trust, or control (Ritcher, 2006). However, as adolescents age, gendered expectations begin to take shape, with adolescent males increasingly internalising norms of dominance and sexual entitlement, while adolescent females experience pressures around purity, submission, and respectability (Kågesten et al., 2016; Ritcher, 2006). Qualitative evidence from the Global Early Adolescent Study with 11–14-year-olds found that gendered expectations begin to

crystallise in this period (Mmari et al., 2017). Quantitative analysis of gender socialisation scales among 10–14-year-olds further confirmed that power differences in romantic expectations and sexual double standards are evident already in this age group (Mmari et al., 2021; Moreau et al., 2019). Within this doctoral thesis, this widening asymmetry is reflected in the sharp rise in exploitative sexual violence among older adolescent females. Such patterns align with developmental frameworks, including Finkelhor's model, which emphasise how early power asymmetries are compounded by gendered socialisation processes (Finkelhor et al., 2009). Overall, these findings underscore the need for prevention efforts that begin early, before gender norms become crystallised, and evolve to address the intensifying gendered power dynamics that accompany later adolescence.

During this period of gender socialisation, reflecting on the differential impact of contact and non-contact forms of sexual violence is particularly important in contexts shaped by patriarchal sexual norms. In many Eastern Cape communities, girls' social value in early adolescence is closely tied to ideals of virginity and sexual purity, while boys' identities are often linked to notions of sexual dominance and the expectation of participating in Ulwaluko (the traditional initiation into manhood through circumcision) (Gittings et al., 2023; Mtotywa et al., 2023; Ngidi, 2022). In such settings, contact sexual violence (e.g., rape or forced touching) may carry severe social repercussions for adolescent females, including stigma, victim-blaming, or exclusion, as it is perceived to compromise their moral worth or family honour (Bhana, 2016; Ntuli, 2023). Non-contact forms of sexual violence, such as sexual harassment or coercive sexual comments, may reinforce social pressures around modesty and reputational risk, perpetuating the idea that it is the female's responsibility to regulate male sexual behaviour. Conversely, both contact and non-contact forms of sexual violence experienced by adolescent males may be normalised or trivialised as part of preparation for manhood, reinforcing expectations of sexual dominance and invulnerability (Siweya et al., 2018).

Paper 3 adds further nuance to the gendered experience of sexual violence by focusing on adolescent mothers, a group historically underrepresented in both violence against children and violence against women literatures (Guedes et al., 2016). This examination yields two main contributions. First, this research positions adolescent mothers as a distinct social group whose experiences warrant focused analytical attention, rather than being folded into broader categories of adolescent girls or pregnant women (Temmerman, 2017). In recent years, adolescent research has increasingly recognised the need to centre marginalised groups—such as adolescents living and working on the streets or those engaged in sex work—to ensure that interventions respond to diverse realities (Auerswald et al., 2017). This thesis extends that inclusive lens to adolescent mothers, a growing and highly vulnerable population across many African countries. Yet, despite their visibility in public discourse, adolescent mothers are rarely the population of interest in violence research (Abdullahi & Abdulquadri, 2018).

Studies on intimate partner violence during pregnancy often rely on small age-disaggregated subsamples that limit insights into adolescent mothers' experiences (Román-Gálvez et al., 2021). Likewise, studies on adolescent girls frequently include adolescent mothers without interrogating how early parenthood may shape unique pathways of risk and resilience (Groves et al., 2022). My thesis is among the first in South Africa to directly focus on adolescent mothers, using a sufficiently powered sample to generate population-level estimates. This shift in recognising adolescent mothers not as a peripheral group but as a group whose experiences merit dedicated attention marks an important contribution to adolescent violence research.

Second, by centring my doctoral research on this often-overlooked adolescent group, I identified patterns that challenge theories suggesting that early parenthood may be

associated with an increased risk of intimate partner violence due to economic dependence, relationship instability, or caregiving burden (Baird et al., 2021; Meyer, Hardt, Brambilla, Shukla, et al., 2024). Pre-pandemic, lifetime intimate partner violence among adolescent mothers in this study was 6.0%, notably lower than national estimates for adolescent females aged 15–24 (13%) (Sardinha et al., 2022; World Health Organisation, 2021). While my doctoral research did not directly assess adolescent mothers' agency, the lower-than-expected prevalence of intimate partner violence may reflect their resilience and capacity to navigate relationships within a challenging structural context (Ajayi et al., 2023). This interpretation is supported by Jochim et al. (2022), who, using the same cohort, found that many adolescent mothers actively sought to return to school after childbirth, demonstrating both educational aspirations and the ability to act on them when supported by relational and institutional structures.

Together, these two key contributions from the third paper lay a foundation for future research that centres on adolescent mothers not only as a group at risk but also as active agents navigating complex social realities (Erfina et al., 2019).

2. *Crises like the COVID-19 pandemic can heighten the risk of intimate partner violence.*

Paper 3 advances our understanding of how crises marked by socio-economic stressors—such as those caused by the COVID-19 pandemic—can heighten the risk of intimate partner violence (Posel et al., 2021). My doctoral research showed that the lifetime prevalence of intimate partner violence quadrupled during the COVID-19 pandemic. Adjusted models indicated an 18.2% significant increase in the predicted probability of reporting such violence compared to pre-pandemic levels, with no difference observed based on HIV status. Longitudinal data were critical for capturing these temporal shifts and examining whether pre-existing inequalities were exacerbated.

To date, most studies examining changes in intimate partner violence during the COVID-19 pandemic in Africa have relied on retrospective reports of pre-pandemic experiences (Kim & Royle, 2024). These studies have yielded mixed findings, some reporting no difference while others indicate an increase in the prevalence of intimate partner violence experienced by both adolescent and adult females (Kim & Royle, 2024). By contrast, the longitudinal design in this thesis enables within-person analysis, improves accuracy, and strengthens causal inference by controlling for stable individual characteristics and establishing the temporal order of events (Bonita et al., 2016). The longitudinal design also strengthens temporal inference by clearly establishing the sequence of events, allowing for more confident attribution of change to the pandemic period (Bonita et al., 2016). As a result, the doctoral research offers clearer insight into how the pandemic may have intensified risk.

Future research on the impact of crises should, where feasible, prioritise longitudinal or mixed-methods study designs and leverage existing cohort studies that can adapt data collection strategies to capture time-sensitive changes in risk. While crisis-response

platforms, such as South Africa's Gender Based Violence Command Centre, offer vital support services during emergencies, and tools like UNICEF's U-Report capture young people's perspectives in real-time, they are inherently responsive and not designed to function as population-level surveillance systems (Davis-Buitendag et al., 2025; Nortje & Hull, 2024; Powell et al., 2021). Cohort-based methods, like embedded remote follow-up during the COVID-19 pandemic, provide complementary and more comprehensive evidence on evolving risks among marginalised adolescent groups, including adolescent mothers.

3. *Male adolescents also experience transactional sexual exploitation.*

A key contribution of this thesis is its focus on male adolescents' experiences of transactional sexual exploitation, a less-studied form of sexual violence compared to contact and non-contact forms (Mihretie et al., 2023). While transactional sex is often conceptualised as a risk primarily faced by adolescent girls, due to their heightened material and structural vulnerabilities, the experiences of male adolescents have received far less attention. This reflects a broader trend in sexual violence research, where male adolescents are often positioned primarily as perpetrators rather than as potential victims (Quarshie, 2021).

Doctoral findings from paper 1 showed that one in eight adolescent males (12.3%) reported ever experiencing transactional sexual exploitation, defined here as the exchange of sex for goods, money, school items, or protection. This prevalence exceeds rates reported in Moss et al.'s (2023) global systematic scoping review, which found that only 1–5% of school-attending adolescent males reported sexual exploitation. Crucially, the emergence of this evidence does not indicate that transactional exploitation of adolescent males is "new", but rather that it has been overlooked and has not been consistently measured (Radford et al., 2017). Acknowledging that adolescent males can

also experience sexual violence is essential for building more inclusive and gender-responsive prevention systems.

Therefore, these findings call for a re-examination not only of how sexual violence is conceptualised but also of how it is investigated, prioritised, and reported, particularly concerning male adolescents. While global surveys such as the Violence Against Children Surveys (VACS) collect data on boys' experiences of transactional sexual exploitation, these findings are rarely the focus of published analyses or policy discussions (Nace et al., 2022). In contrast, there is a growing body of qualitative and mixed-methods research on females' experiences of such violence, often underpinned by critical gender and power analyses (Wamoyi et al., 2019). The relative lack of equivalent inquiry into adolescent males' experiences limits our understanding of how gendered and structural power dynamics manifest in their lives (Adjei & Saewyc, 2017; Moss et al., 2023; Williams et al., 2012). A more balanced evidence base is needed to inform inclusive and gender-responsive prevention efforts.

4. *Living with HIV may not increase the likelihood of experiencing sexual and intimate partner violence among adolescents.*

This doctoral research hypothesised that adolescents living with HIV face heightened vulnerability to sexual and intimate partner violence due to two intersecting domains of risk. HIV-specific disadvantages, including stigma, partner rejection, and disrupted access to social protection, may place adolescents living with HIV at unique risk (Jewkes, 2010; Toska et al., 2016). Additionally, a set of structural factors, including poverty, orphanhood, school exclusion, and economic dependence, while not exclusive to this group, are often more prevalent among them (Cluver et al., 2016). Drawing on an intersectional feminist framework, I treated HIV status not merely as a biomedical category but as a social marker of overlapping disadvantages. Institutional and relational

exclusions shape and reinforce these disadvantages (Armstrong et al., 2018). Papers 1 and Paper 3 tested the empirical value of HIV status as a proxy for intersectional risk and examined how this relationship manifests during both non-crisis and crisis conditions, including the COVID-19 pandemic. My doctoral findings partially support my hypothesis.

Neither descriptive nor adjusted longitudinal analyses found significant differences in the lifetime prevalence of sexual violence or in the pandemic-related increase in intimate partner violence based on HIV status. This suggests HIV status may not, on its own, predict an increased risk of sexual or intimate partner violence among adolescents in South Africa. The convergence of findings across methods, time points, and adolescent groups indicates that structural vulnerabilities associated with violence, such as poverty, gendered power imbalances, relationship instability, and school exclusion, may be equally prevalent among adolescents living with HIV and their HIV-uninfected peers (Bossonario et al., 2022). This also suggests that although HIV-related disadvantages are significant, they may not independently increase the risk of violence. For instance, adolescents living with HIV might benefit from protective factors accessed through HIV-care services, such as clinic-based support and adherence counselling, which could mitigate their vulnerability to certain forms of violence (Bhana et al., 2016; Crowley et al., 2022).

Alternatively, the findings may reflect the limitations of using a binary HIV status indicator to capture intersectional disadvantage. For instance, while inverse probability weighting in Paper 3 enhances internal validity, it may also control for variation in structural inequalities such as food insecurity, orphanhood, and disrupted education. Yet, this variation in structural inequalities gives HIV status its meaning within an intersectional framework. Consequently, the analysis may have inadvertently obscured

the intersecting disadvantages it aimed to examine, treating them as confounders rather than as integral components of the risk pathway. A similar critique may be applied to the adjusted GEE models in Paper 1. Collectively, these findings illustrate a broader tension between epidemiological approaches that seek to isolate causal effects and intersectional frameworks that view risk as socially embedded and mutually reinforcing.

At the same time, the disaggregated analysis by mode of HIV acquisition reveals significant variation within the group of adolescents living with HIV. In Paper 1, adolescents with horizontally acquired HIV were more likely to have ever experienced sexual violence than those with perinatally acquired HIV. This finding illustrates how the context in which HIV is acquired may be associated with a higher likelihood of having experienced violence. Evidence indicates that recently acquired HIV, through sexual exposure, among adolescents may be influenced by sexual coercion, exploitation, or other forms of inequality (Jewkes et al., 2010). That is, adolescents who acquire HIV sexually may be at greater risk of experiencing violence before diagnosis, and it remains unclear how this risk may change after diagnosis (Mabaso et al., 2018).

Aim 2: How relational and structural interventions may mitigate the risk of experiencing sexual violence

The second aim of this doctoral research, explored thoroughly in Paper 2, was to examine how relational and structural interventions may reduce adolescents' risk of experiencing sexual violence, thereby informing more equitable and context-responsive prevention strategies. I investigated how combining established protective factors (food security, meeting basic material needs, and school enrolment) with emerging protection interventions (such as parenting and social protection) may be associated with lower odds of experiencing sexual violence. This analysis was grounded in the cash-plus

framework, which explores potential mechanisms linking cash transfers to complementary provisions. The key overarching contribution under this aim lies in demonstrating the potential of social protection when delivered through integrated, cash-plus approaches.

My doctoral research offers critical insights for the design of cash-plus interventions aimed at preventing sexual violence against adolescents by identifying how different components operate through distinct mechanisms. Economic pathways such as improved food security and school enrolment mediated the association between cash transfers and reduced odds of experiencing past-year sexual violence, particularly for adolescent females. At the same time, parental supervision was independently associated with lower odds of past-year sexual violence for both sexes but was not enhanced by cash transfers. This suggests that while both economic and relational pathways are important, cash alone does not strengthen relational protection. As such, the "plus" components in cash-plus models must be intentionally selected and specified—either to build on the effects of economic relief or to operate through their own distinct pathways based on the specific drivers of violence in a given context. Simply layering support is not enough; each component must be tailored to disrupt the specific mechanisms driving violence.

That said, the analysis does not demonstrate that combining cash with parenting support will automatically yield additive or synergistic effects. Establishing such effects would require explicit interaction terms in the mixed-effects models; however, in the cohort data used, between 83% and 94% of the sample benefited from cash transfers across visits. This did not provide sufficient variation to test interaction effects, which should ideally be tested in randomised programme evaluations. Still, these findings point to a key implication: cash-plus can mean more than cash-enabled (Roelen et al., 2017; Rogers et al., 2024). Programmes should intentionally combine economic and relational supports

in ways that reflect the gendered and structural realities shaping adolescents' vulnerability.

One unexpected finding was a negative association between receiving social grants and food security, highlighting the complexity of evaluating cash-plus strategies. In Paper 2, this counterintuitive result was explained by accounting for bidirectional causality. Even in longitudinal studies, such as this one, where multiple waves of data and sensitivity checks strengthen causal inference, the possibility of reverse causality remains. For example, experiencing sexual violence may increase the risk of food insecurity or school dropout, just as much as food insecurity or school dropout may increase the risk of violence. These feedback loops complicate efforts to determine causal direction, even when the temporal sequence of events is known (Murray et al., 2022). Randomised controlled trials also face these challenges, particularly when interventions are targeted, have spillover effects, or when outcomes influence subsequent exposure (e.g., a young person becoming eligible for a grant after dropping out of school) (Murray et al., 2022). This underscores the importance of using appropriate modelling strategies and triangulating findings across different methodologies, as reflected in Paper 2.

In Paper 2, Generalised Structural Equation Modelling (GSEM) was used to test one plausible causal pathway linking cash transfers to reductions in sexual violence. GSEM is a powerful tool for understanding complex relationships, but it is only as strong as the theoretical assumptions and variables that inform it (Gunzler et al., 2013). For instance, the absence of significant indirect protective pathways among male adolescents may indicate that the theorised mechanisms through which social protection reduces risk do not fully reflect how adolescent males may be protected from sexual violence (Gunzler et al., 2013). This aligns with growing calls in the literature for more nuanced approaches to theorising males' experiences of sexual violence (Moss et al., 2023; Sumner et al., 2016).

To harness the full potential of social protection for violence prevention, future research must empirically test alternative causal models, drawing on diverse theoretical perspectives and methodological approaches.

Limitations

Rather than repeating the specific limitations already discussed in each empirical chapter, this section outlines the overarching methodological, conceptual, and analytical limitations of the doctoral research.

Conceptual and Terminological Constraints

My doctoral research used binary sex-disaggregated analyses because of data availability, as dictated by the data collection method. However, the interpretation of sex-specific findings is situated within an understanding that these biological categories are closely intertwined with gendered social experiences and expectations, recognising that sex and gender shape adolescents' lived realities in complex ways (Ritz, 2025). However, relying on binary sex categories to represent gendered experiences conflates the two distinct concepts (Webster, 2021). It further excludes the experiences of transgender, non-binary, and gender-diverse adolescents who are likely to face distinct and intersecting forms of violence and marginalisation (Tajima, 2021). Moreover, this limitation restricts our understanding of how gender-diverse adolescents might experience or respond to structural interventions such as cash-plus interventions. Future research and data systems should expand to include inclusive, self-identified gender categories, enabling researchers to examine how gender diversity intersects with other social markers such as poverty, HIV status, or schooling, to shape adolescents' experiences of sexual violence and their access to protective provisions.

Analytical and Measurement Limitations

My doctoral research is subject to several overarching analytical and measurement limitations. These limitations relate to the absence of key variables on perpetrator characteristics and violence settings, the lack of primary qualitative data, and the inherent constraints of observational data in drawing causal inferences.

First, a critical limitation is the lack of data on the characteristics of perpetrators and the settings in which sexual violence occurred. This gap is especially significant in the case of transactional sexual exploitation among male adolescents, where little is known about the identities or motivations of perpetrators (Mihretie et al., 2023). Without detailed information on whether perpetrators were peers, adults, authority figures, or strangers and where the incidents took place, it presents challenges to fully unpack the social and structural dynamics in which sexual violence occurred (Hassan et al., 2015; Turchik et al., 2016). As a result, this limited my ability to interpret how protective factors, such as economic strengthening or school enrolment, may operate differently across sexes. A more nuanced understanding of perpetrator profiles and situational contexts is essential to designing prevention strategies that are responsive to the environments in which adolescents live and experience harm (Devries et al., 2018).

Second, although I participated in several participatory workshops in which adolescents helped shape research priorities in sexual and reproductive health, this doctoral research does not include primary qualitative data from adolescents themselves. The absence of direct narrative accounts limits how fully adolescents' meanings, interpretations, and priorities are represented, even though the quantitative analyses are guided by intersectional feminist theory, carefully selected indicators, and contextually informed

interpretation (Coakley et al., 2024). As the field increasingly embraces survivor-led and participatory approaches, including adolescents' voices through qualitative or participatory methods could have offered greater depth (Oram et al., 2022). This may have enhanced understanding of how structural interventions are experienced, how harm is perceived, and what meaningful prevention looks like from the perspective of those most affected.

Finally, as with many observational analyses, this doctoral research is limited in establishing causal relationships. Although longitudinal data and advanced analytical methods such as inverse probability weighting, Cox regression, and generalised structural equation modelling can enhance the temporal and conceptual robustness of the findings, they do not eliminate the possibility of unmeasured confounding or model misspecification (Fan et al., 2016; Ma & Wang, 2020). Moreover, some associations, particularly between sexual violence and economic stressors such as food insecurity or affordability of basic needs, may be bidirectional, complicating assumptions of linearity (Murray et al., 2022). While care is taken to avoid causal language, the findings should be interpreted as indicative of associations and plausible pathways, rather than definitive causal claims.

Generalisability

A key limitation of this doctoral research relates to the generalisability of findings, particularly due to the intentional oversampling of adolescents living with HIV in the Mzantsi Wakho cohort data used in Paper 1 and Paper 2. In this dataset, approximately 69% of participants are adolescents living with HIV, substantially higher than the national prevalence among South African adolescents (Zungu et al., 2021). This oversampling was a deliberate effort to ensure adequate representation of a population

often excluded from research, such as adolescent males living with HIV, and to allow for meaningful subgroup analyses of HIV and gender intersections. However, this sampling strategy limits the extent to which findings can be generalised to the broader adolescent population in South Africa.

Moreover, within the group of adolescents living with HIV, study eligibility was restricted to those who had initiated antiretroviral treatment (ART) at some point, regardless of current treatment engagement. National estimates from 2014–2017 indicate that 40–60% of adolescents living with HIV (ages 10–19) were not on treatment during that time (Inbarani et al., 2022), meaning this research likely underrepresents the experiences of a significant subgroup of treatment-naïve adolescents. While treatment coverage has improved over time—with more recent estimates suggesting that 30–38% of adolescents living with HIV remain untreated—this exclusion still limits generalisability to all adolescents living with HIV in South Africa (Inbarani et al., 2022). This was particularly evident in Paper 2, where sample size constraints made disaggregation by HIV status infeasible.

Additionally, while the findings provide valuable insight into how intersecting factors such as gender, age, and HIV status shape adolescents' experiences of sexual violence, the study's location in a single province, the Eastern Cape, poses limitations for wider generalisation. The province's unique socio-economic and cultural profile, marked by high unemployment, rurality, and a history of being an independent Bantustan, may have amplified certain risks and shaped the effectiveness of social protection differently from more urbanised or economically diverse settings. Thus, the results should be interpreted as contextually grounded rather than nationally representative. Comparative

analyses across provinces and regional contexts are needed to test the transferability of these mechanisms and to identify place-specific levers for prevention

Contributions to the Wider Research Agenda

Despite its limitations, this doctoral research advances the wider academic and policy conversations in three key areas: the role of disaggregated data for equity-oriented prevention, operationalising intersectional feminist theory in quantitative research methods, and statistical innovation in violence prevention research.

By systematically documenting three distinct forms of violence (contact, non-contact, and transactional sexual exploitation), this work provides a more nuanced picture of risk. To my knowledge, no prior study has examined these three forms simultaneously in this age group, and few existing studies include adolescent males in their estimates (Abrahams et al., 2014; Amene et al., 2024; Moss et al., 2023). Devries et al. (2018) noted that this persistent evidence gap stems partly from concerns about the validity and ethics of asking younger adolescents about sensitive experiences. My research demonstrated that using piloted, age-appropriate language focused on specific behaviours (e.g., touching or looking at private parts) enabled younger adolescents to report on their own experiences in developmentally suitable and analytically meaningful ways. These findings align with evidence from the Global Early Adolescent Study (GEAS), which has also shown that younger adolescents can articulate their own experiences and are already navigating complex social and sexual realities (Mmari et al., 2017). Collectively, this evidence underscores that early adolescence is not merely a transitional phase, but a critical window of opportunity for preventing sexual violence and promoting long-term well-being.

Revisiting the role of disaggregated data for equity-oriented violence prevention

In the context of my doctoral research, equity involves recognising and addressing the unequal distribution of risk and access to protective provisions related to adolescents' experiences of sexual and intimate partner violence. Disaggregating my findings by sex, age, and HIV status revealed differences in both experiences of sexual violence and access to protective provisions. It confirmed that a one-size-fits-all approach will not suffice to eliminate violence against adolescents. Datasets such as Violence Against Children Surveys and DREAMS programme data offer valuable opportunities for secondary analysis to produce disaggregated estimates of sexual violence by sex and age (Nguyen et al., 2019; Saul et al., 2018). These large datasets have been instrumental in addressing evidence gaps related to adolescent boys and younger adolescents, particularly where individual studies lack sufficient power (Nace et al., 2022). Nonetheless, it remains essential to interpret aggregated estimates with caution, as contextual factors such as differences in programme implementation and sociocultural norms can significantly affect both reporting and experiences of violence (Mulder et al., 2021).

Linked to data disaggregation, my doctoral research contributes to the empirical application of intersectional feminist theory in public health and social epidemiology. It examines how compounded identities, such as being a female adolescent who has experienced early motherhood and is living with HIV, may influence the risk of experiencing intimate partner violence during crisis conditions, such as the COVID-19 pandemic. The mixed findings regarding the potential heightened risk of sexual and intimate partner violence associated with living with HIV suggest that a binary proxy for intersectional disadvantage may often be inadequate. While I am uncertain about how to

move beyond these binary proxies, exploring composite indicators that combine economic precarity, exposure to stigma, access to institutions related to schooling and healthcare, and exposure to stigma could be worthwhile.

Advancing methods for modelling pathways for violence protection among adolescents

With global commitments to end all forms of violence against children and adolescents by 2030, it is increasingly urgent to identify not only whether interventions work, but also how they work. This thesis responds to that call by applying GSEM to examine the indirect pathways through which social protection, in the form of cash transfers, may reduce adolescents' risk of experiencing sexual violence. While GSEM is widely used in education and psychology, it remains underutilised in violence prevention research (Fan et al., 2016). This doctoral research demonstrates its potential to uncover layered and interactive protection mechanisms, while also highlighting the importance of theory-driven model specification. By noting the strengths and limitations of this methodological approach, my doctoral research makes the methodological contribution necessary to generate evidence that shifts violence prevention from promise to realisation. Future research must test alternative models, refine causal assumptions, and integrate longitudinal and participatory approaches to build a more robust understanding of what works, for whom, and under what conditions.

Policy recommendations

Findings from this doctoral research advocate for a coordinated, context-responsive approach to preventing adolescent sexual and intimate partner violence in South Africa and worldwide. Disparities in risk based on sex, age, and HIV status underscore the

necessity for violence prevention policies to employ targeted and inclusive strategies, recognising the unique vulnerabilities encountered by various adolescent groups, in both crisis and non-crisis situations.

Advancing gender, age, and HIV-sensitive violence prevention aligned with local and international violence prevention frameworks

Taking both aims together, this research underscores the need for gender-responsive approaches to prevent sexual violence, highlighted in the South African National Strategic Plan on Gender-Based Violence and Femicide (GBVF) and World Health Organisation's INSPIRE frameworks. Both frameworks call for evidence-informed, multisectoral interventions that address the unique risks adolescents face.

To fulfil the GBVF Plan's commitment to prevention and early intervention, my doctoral findings suggest that strengthening school retention policies, scaling up adolescent-friendly social protection, and investing in parenting support are key. This should involve a coordinated, gender-responsive policy approach that involves the Department of Basic Education, the Department of Social Development, and the Department of Health, with support from civil society actors (South African Government, 2024). There is a need to strengthen the implementation of school-based sexual and intimate partner violence prevention efforts that explicitly recognise that adolescent males are also survivors of sexual violence. Educators can be equipped with the skills, knowledge, and resources needed to create a safe, respectful, and supportive environment for both sexes (Koch & Wehmeyer, 2021). School-based prevention strategies should be linked to complementary services such as adolescent-friendly sexual and reproductive health and rights services and psychosocial support (Shaikh et al., 2021).

National investments on childhood and adolescent violence prevention should include parenting interventions, such as Parenting for Lifelong Health, which foster nurturing and protective caregiver-adolescent relationships and have demonstrated adaptability to local contexts (Cluver et al., 2018). These programmes can be incorporated into child protection and social development frameworks to ensure maximum reach (Strydom et al., 2020). Furthermore, my doctoral findings reinforce the necessity for ongoing investment in social protection systems, as these can reinforce protective factors, such as continued education and enabling families to afford essentials.

My doctoral research provides empirical support for implementing key components of the WHO INSPIRE framework, specifically income and economic strengthening, education and life skills, and parent and caregiver support (World Health Organisation, 2016). Predictors such as food security, the ability to afford necessities, and access to social grants fall under income and economic strengthening and were associated with a lower likelihood of sexual violence among adolescents. Similarly, school enrolment or completion and parental support emerged as protective factors. These findings align with the framework's emphasis on multisectoral action and support the adoption of cash-plus approaches that integrate social protection with educational and family-based interventions to address intersecting risks for adolescent sexual and intimate partner violence (World Health Organisation, 2016).

Pandemic preparedness should include addressing the heightened risk of intimate partner violence.

Findings from Paper 3 revealed a significant increase in intimate partner violence among adolescent mothers during the COVID-19 pandemic, regardless of HIV status. This finding, alongside others from the same period, suggests that the pandemic acted as a

broad-based stressor, elevating intimate partner violence risk across the entire group, not just among those facing compounded vulnerabilities (Ndlovu et al., 2022). In the South African context, where adolescent mothers already face multiple structural disadvantages, this highlights the urgent need for pandemic preparedness and emergency response plans to incorporate proactive intimate partner violence prevention measures (Tambo, 2017). The Departments of Health and Social Development should lead efforts to ensure that parenting support, psychosocial services, and social protection programmes are designated as essential and remain accessible during periods of crisis (South African Government, 2024). Collaboration with the Department of Basic Education and community-based organisations can further support adolescent mothers through school-linked services and local response networks (World Health Organisation, 2017). Strengthening digital platforms and telehealth options for both prevention and care services can also maintain continuity of wellbeing (Baerecke et al., 2024; Y. Pillay & Motsoaledi, 2018; Schafer et al., 2023). Crucially, these measures are necessary not only in times of crisis but also foundational to a long-term, equity-driven strategy to prevent intimate partner violence among adolescents.

HIV Programming and Funding

Findings from this doctoral research support the transition from HIV-only violence prevention strategies toward more integrated programming that addresses the broader determinants of adolescent health and safety, helping to sustain current gains (Ratevosian et al., 2025). The lack of significant differences in the risk of sexual violence or pandemic-related increases in intimate partner violence by HIV status suggests that adolescents living with HIV may not face elevated risk compared to their peers without HIV (El-Bassel et al., 2022; Maman et al., 2000). In the theoretical chapter, these risks were

conceptualised along two dimensions: those shared with HIV-negative adolescents but potentially heightened, such as poverty, school exclusion, and unequal gendered power dynamics, and those distinct to HIV status, including stigma, disclosure-related conflict, and partner coercion (Jewkes, 2010; Toska et al., 2016). The null findings may reflect the protective influence of HIV services that mitigate HIV-specific risks, or a convergence driven by widespread structural vulnerabilities affecting all adolescents. While the current data do not allow these pathways to be definitively disentangled, the findings nonetheless support a transition toward integrated programming that simultaneously addresses both HIV-related and broader structural drivers of violence.

At the same time, some differences—most notably the higher overall burden of intimate partner violence among adolescent mothers living with HIV—point to the need for caution when shifting toward more generalised programming. For historically neglected groups, such as adolescent mothers living with HIV, tailored monitoring and targeted support may still be required to avoid further marginalisation and ensure that no one is left behind in the transition. As global HIV funding declines, there is a pressing need to integrate violence prevention, education, and social protection into HIV programming to sustain and extend current gains (Ratevosian et al., 2025). Future research and programme monitoring should assess how reductions in HIV-specific services affect adolescents' access to protective resources—particularly in low-resource settings with fragile or fragmented welfare systems (Herselman et al., 2023).

Future research on sexual and intimate partner violence among adolescents

This thesis has examined several pressing questions regarding the prevalence, patterns, and prevention of sexual and intimate partner violence among adolescents in South Africa. However, it also raises new questions that remain unanswered and indicates

broader future directions for the field. These opportunities for further inquiry arise from both the limitations of this doctoral work and evolving perspectives on how adolescent violence prevention is conceptualised and implemented.

Applying structural models in crisis settings

While Paper 2 employed GSEM to examine protective pathways under non-crisis conditions, the same theoretical models could—and should—be tested using data from crisis periods, such as the COVID-19 pandemic or natural disasters. Paper 3 demonstrated that crisis contexts can heighten the risk of intimate partner violence among adolescent mothers; however, the underlying mechanisms remain unclear. Applying structural modelling or similar statistical methodologies to crisis-period data could help identify which provisions, such as emergency social grants, school re-engagement, or caregiver support, are most effective at disrupting pathways to intimate partner violence during pandemics.

Theorising and measuring sexual violence risk among male adolescents

There is an urgent need to create adjacent, serious spaces for understanding and responding to sexual violence against boys. While global frameworks like the intersection of violence against children (VAC) and violence against women (VAW) agendas have made essential progress in addressing gender-based violence, they have predominantly centred the experiences of girls and women, a focus that is both necessary and evidence-based, given their higher burden (Guedes et al., 2016; Pearson et al., 2023). However, there is virtually no research examining how sexual violence against male children and adolescents intersects with or is shaped by the same patriarchal systems that underpin VAW (Bacchus et al., 2024). Future research should expand the evidence base by developing complementary frameworks that recognise how harmful gender norms and

structural inequalities also place males (children and adolescents) at risk, particularly in settings marked by economic vulnerability and rigid masculinity ideals (Wamoyi et al., 2023; Young et al., 2025). This work can be conducted without undermining the critical gendered analysis that underpins efforts to protect females. Instead, it should enhance the broader goal of ending gender-based violence in all its forms by ensuring that male survivors are no longer rendered invisible.

Co-produced and participatory modelling

To better align with feminist and intersectional principles, future research should incorporate participatory approaches into both model design and interpretation. For instance, Coakley et al. (2024) demonstrated how Youth-Participatory Action Research, involving adolescents as co-researchers, can uncover nuanced insights into bodily autonomy, healthy relationships, and empowerment within sexual and reproductive health programmes. Co-developing theories of change with adolescents may also enhance the acceptability and relevance of interventions, particularly when young people are involved not only in data collection but also in shaping the assumptions and priorities underlying models. This type of meaningful participation, as conceptualised by Casale et al. (2023), includes iterative processes that respect young people's agency and are embedded across multiple stages of research and programme design. In this way, participatory methods may uncover protective mechanisms or relational dynamics not visible through traditional quantitative analysis, while also fostering frameworks that are more attuned to adolescents' lived realities.

Summary of the chapter

This thesis makes important substantive and methodological contributions to the field of sexual and intimate partner violence prevention among adolescents in high HIV-

prevalence settings. It identifies persistent disparities in experiences of sexual and intimate partner violence by sex, age, and HIV status; challenges dominant assumptions linking early parenthood to heightened risk of intimate partner violence; and provides new evidence on the experiences of adolescent males. Policy and practice implications emphasise the necessity for multi-sectoral, adolescent-responsive strategies that are grounded in disaggregated data, attuned to gender and HIV-related vulnerabilities, and resilient in the face of crisis. Limitations related to generalisability, data inclusivity, and participatory engagement point to the need for future research that embraces intersectional, co-produced approaches, centring adolescents not only as subjects but also as partners in knowledge generation and violence prevention.

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