

Predictors of early sexual debut amongst youth in the inner city of Johannesburg, South Africa

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by

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Plagiarism Declaration

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Dedication

This research report is dedicated to my husband, Derek, and my children Daniel and Rebecca in thanks for their support, encouragement and sacrifices made during the course of my studies. I hope that you may one day have the privilege of undertaking studies of your own.

Abstract

Introduction: South African adolescents and youth face multiple sexual and reproductive health (SRH) challenges, including HIV, teenage pregnancy and sexually transmitted infections (STIs). Early sexual debut (ESD), defined as having had first sexual intercourse at age 14 years or younger, is associated with increased risk of HIV, STIs, pregnancy, and risky sexual behaviours such as low condom use and multiple partners later in life. Despite being a focus of SRH and HIV prevention programming, national surveys have reported an increase in ESD over the last nine years.

The aim of this study was to determine the prevalence and factors associated with ESD among youth (aged 15 – 24 years) in the inner city of Johannesburg. The first objective was to describe the population of youth in the inner city with ESD. The second objective was to determine the prevalence of ESD among this population and the third objective was to determine the factors associated with ESD among this population.

Methods: This study was a cross sectional secondary analysis of data collected for the Linking Information for Testing (LIFT) study. The primary study was a cross-sectional, respondent-driven, community survey among youth aged 15 – 24 years in the inner city of Johannesburg.

A descriptive analysis of the study population was undertaken. The overall prevalence of ESD was determined by tabulating experience of ESD by the explanatory variables. The factors associated with ESD were explored through inferential analysis using a univariable and then multivariable binary logistic regression analysis.

Results: There were 797 participants included in the analysis. The prevalence of ESD in the study population was 15,5% with significantly more males (27,2%) experiencing ESD compared to females (1,5%). In the adjusted analysis, being aged 15 – 19 years, of male sex,

August 2020

of a racial group other than Black African, having a male caregiver before the age of 15 years, and having a secure household food source were found to be significantly associated with an increased odds of ESD. The level of education completed, employment status, type of primary female caregiver, presence of mental health symptoms, perception of community safety, presence of peer support and whether the first sex was wanted or not were not found to be significantly associated with ESD.

Discussion: The results of this study confirm the prevalence of ESD among youth in Johannesburg at around 15%. In keeping with other local literature, males and those aged 15 – 19 years had a greater odds of ESD. Although there was no significant association, the findings are suggestive that enrolment in school continues to have a protective benefit on ESD. The study results indicate that having no primary male caregiver was protective of ESD, highlighting that adolescents from stable, two-parent families may not necessarily be at lower risk and that there may be relevant factors beyond family structure which were not explored in this study. The finding that those with a secure household food source had an increased odds of experiencing ESD compared to those with food insecurity is contrary to generally established hypotheses and warrants further investigation. This finding should be interpreted with caution given that no temporal relationship could be established. A limitation of this study was the inability to conduct a sex stratified analysis.

Conclusion and recommendations: The prevalence of ESD among youth in Johannesburg requires it to remain a priority for both research and health programming. A unique finding of this study was the protective effect of having no male caregiver on ESD, a finding that warrants further research to better understand the role of caregivers in ESD. Nationally representative, longitudinal adolescent and youth data is required to better evaluate the multiple, complex factors contributing to ESD and to provide guidance to inform specific SRH interventions relevant to the South African context.

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Table of contents

Plagiarism Declaration.....	ii
Dedication	iii
Abstract.....	iv
Acknowledgements.....	vi
Table of contents.....	vii
List of Figures	ix
List of Tables	ix
List of Abbreviations	x
Chapter One: Introduction	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Research question, study aim and objectives	3
1.3.1 Research question	3
1.3.2 Study Aim	4
1.3.3 Study Objectives	4
1.4 Justification	4
1.5 Literature Review	5
1.5.1 Early Sexual Debut defined	5
1.5.2 Personal factors.....	5
1.5.3 Interpersonal factors.....	7
1.5.4 Socio-Economic factors	9
1.5.5 Community factors.....	9
1.5.6 Literature conclusions.....	10
1.6 Conceptual Framework	10
Chapter Two: Materials and methods.....	13
2.1 Introduction	13
2.2 Study site.....	13
2.3 Study design	13

2.3.1	The primary study (LIFT).....	14
2.4	Study population	16
2.5	Study variables	17
2.5.1	Outcome variable	17
2.5.2	Predictor variables	18
2.6	Data analysis and management	25
2.6.1	Data management.....	25
2.6.2	Data analysis	25
2.7	Limitations	27
2.8	Ethical considerations	29
Chapter Three:	Results	30
3.1	Introduction	30
3.2	Objective 1: Characteristics of the study population	30
3.3	Objective 2: Prevalence of ESD.....	32
3.4	Objective 3: Factors associated with ESD	36
3.5	Summary	39
Chapter Four:	Discussion.....	41
4.1	Introduction	41
4.2	The prevalence and factors associated with ESD.....	41
4.2.1	Personal factors.....	42
4.2.2	Interpersonal factors.....	45
4.2.3	Community factors.....	48
4.3	Research Limitations.....	49
4.4	Research Strengths	50
Chapter Five:	Conclusion and Recommendations	51
5.1	Research Conclusion	51
5.2	Research Recommendations	51
References		55
Appendices		60

List of Figures

Figure 1: Conceptual framework of the factors influencing early sexual debut.....	12
Figure 2: Flow diagram of study sample	17

List of Tables

Table 1: Study variables measurement and coding.....	19
Table 2: Characteristics of the study sample	31
Table 3: Prevalence of early sexual debut (ESD) among the study sample	34
Table 4: Univariable and multivariable logistic regression analysis to determine factors associated with ESD	38

List of Abbreviations

ACASI	Audio Computer-Assisted Self-Interview
AGYW	Adolescent Girls and Young Women
CI	Confidence Interval
DEFF	Design Effect
ESD	Early Sexual Debut (Sexual debut <15 years)
HIV	Human Immunodeficiency Virus
LIFT	Linking Information for Testing
OR	Odds Ratio
PrEP	Pre-Exposure Prophylaxis
PTSD	Post-Traumatic Stress Disorder
RDS	Respondent Driven Sampling
SE	Standard Error
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infection
TB	Tuberculosis
Wits RHI	Wits Reproductive Health and HIV Institute
WAVE	Well-Being of Adolescents in Vulnerable Environments

Chapter One: Introduction

In this chapter, early sexual debut is defined in the context of adolescent sexual and reproductive health. This is followed by the problem statement, research question and the study's aims and objectives. A review of published literature is presented, with a focus on South African literature and literature relevant to the South African context. A justification for the study concludes the chapter.

1.1 Background

South Africa's adolescents and youth face multiple challenges. The country is classified as being dominated by diseases of poverty, including infectious and vaccine preventable diseases, under nutrition, HIV and sexual and reproductive health (SRH) diseases.¹ Tuberculosis (TB) and HIV are the leading causes of death in adolescents and young adults aged 10-24 years.^{2,3} However, there is a large and undefined burden of non-natural causes of death, including injuries and violence, accounting for 25,8% of deaths in adolescent females (10 – 19 years) and 50,8% of deaths in adolescent males.² Adolescents are receiving new focus and attention, both globally and locally, given their particular health challenges, and with an understanding that an early investment in their health is likely to have extended benefit through their lives and the lives of their children.¹

One of the greatest challenges currently facing young people in South Africa is HIV. Over a third (38%) of new HIV infections in South Africa occur in youth aged 15-24 years, with adolescent girls and young women (AGYW) continuing to have the highest HIV incidence in the country (1,5%), three times higher than males the same age (0,5%).⁴ There has been a significant decline (44%) in HIV incidence overall in South Africa in the last 5 years, but the decline among 15 – 24 year olds has been less marked (17%), and the HIV incidence in males aged 15 – 24 years has increased by 11%.⁵

August 2020

In addition to HIV, teenage pregnancy poses a threat, limiting ongoing educational and employment opportunities, as well as increasing poverty in young women.¹ Despite policies that support access to contraceptives for adolescents, there has been little overall decline in adolescent fertility since 1996, with an adolescent birth rate of 78 and 76 per 1000 in 1996 and 1998 respectively, declining to 65 per 1000 in 2001 and then increasing to 72 and 71 per 1000 in 2011 and 2016 respectively.² Studies have found the majority of teenage pregnancies in South Africa to be unwanted.^{6,7}

A high prevalence of Sexually Transmitted Infections (STIs) has also been reported among South African youth, with younger women (<25 years) having a higher prevalence of STIs and being more likely to have incident STIs than older women.^{8,9} Among young women (aged 15–24 years) participating in HIV prevention studies, chlamydia prevalence has been estimated at 15%⁹ and the prevalence of curable STIs among 15-24 year olds in rural Kwa Zulu Natal was reported in one study to be 18,5% in females and 7,4% in males, 75% of which were asymptomatic.¹⁰ In a study among adolescents in the Eastern Cape, 31% of sexually active females and 9% of males had an incident STI in a 12month time period.¹¹ STIs contribute to increased HIV transmission, as well as to complications in pregnancy, infertility, and cancer.¹⁰

Early sexual debut (ESD), defined as having had first sexual intercourse at age 14 years or younger,^{12,13} is associated with increased risk of HIV, STIs, pregnancy, and risky sexual behaviours such as low condom use and multiple partners later in life.¹²⁻¹⁶ The most recent South African National HIV Prevalence, Incidence and Behaviour Survey (2017) reported an increase in ESD over the last nine years, with 13,6% of 15 – 24 year olds reporting ESD.⁴ Males reported higher rates (19,5%) compared to females (7,6%), a finding that has been consistent and has been reported in other South African literature.^{4,12,17,18}

1.2 Problem Statement

Early sexual debut contributes to poor sexual and reproductive health outcomes, including HIV, STIs and teenage pregnancy. Despite being a focus of SRH and HIV prevention programming, early sexual debut has increased in South Africa, particularly in the last nine years. After being fairly stable between 2002 and 2008 at 8-9%, the percentage of 15-24 year olds reporting having had ESD increased to 10,7% in 2012 and to 13,6% in 2017.⁴ Among females, there has been an increase, to 7,6% in 2017 after having been stable at 5-6% between 2002 and 2012 (5,3% in 2002, 5,1% in 2005, 5,9% in 2008 and 5,0% in 2012).⁴ Males have consistently reported higher rates of ESD compared to females, and the increase in ESD has been more marked, from 13,1% in 2002, 11,9% in 2005 and 11,3% in 2008, to 16,7% in 2012 and to 19,5% in 2017.⁴ The influence of factors such as school attendance,^{15,16,19-24} family and household structure,²⁵ socio-economic status,^{22-24,26} and violence and coercion^{12,21,22,26} on ESD have been documented, but the findings are inconsistent. In addition, much of the research is undertaken through household or school-based surveys, which may exclude those not in school or in stable households, who are known to be some of the most vulnerable or at risk young people.¹

1.3 Research question, study aim and objectives

1.3.1 Research question

The questions asked through this study are, (1) What is the prevalence of ESD among youth (aged 15 – 24 years) in the inner city, Johannesburg, South Africa? (2) What factors are associated with early sexual debut among youth (aged 15 – 24 years) in the inner city, Johannesburg, South Africa?

1.3.2 Study Aim

The aim of this study is to determine the prevalence and factors associated with early sexual debut among youth (aged 15 – 24 years) in the inner city, Johannesburg, South Africa between July 2017 and March 2018.

1.3.3 Study Objectives

1. To describe the population of youth (aged 15 – 24 years) in the inner city, Johannesburg with early sexual debut.
2. To determine the prevalence of early sexual debut among youth (aged 15 – 24 years) in the inner city, Johannesburg, South Africa between July 2017 and March 2018.
3. To determine the factors associated with early sexual debut among youth (aged 15 – 24 years) in the inner city, Johannesburg, South Africa.

1.4 Justification

There is a new focus on adolescent health in South Africa, with the development of favourable policies, such as the Adolescent and Youth Health Policy,²⁷ the revitalization of school health interventions,²⁸ and the implementation of new prevention strategies, such as pre-exposure prophylaxis for HIV (PrEP) for adolescent girls and young women (AGYW) and “She Conquers”, a three year national campaign that aims to improve the lives of AGYW in South Africa.²⁹ The increase in ESD in the last nine years speaks to the need for a new and more localised understanding of the factors contributing to ESD in South Africa. Research must include vulnerable populations, including those not in school, as well as young men, to ensure that programmes address and meet the needs of those most at risk. In addition, local data is needed to inform the implementation of interventions, understanding that with limited resources, activities need to target those at highest risk. This study identifies the predictors of early sexual debut in an evolving area of Johannesburg, with an increasing concentration of

August 2020

young people attracted by education and employment opportunities. The study provides valuable insights which support programme managers, and those working with youth, to target the implementation of SRH and HIV prevention strategies to communities and individuals at highest risk and to inform future research aimed at better understanding why ESD continues to increase in South Africa.

1.5 Literature Review

In this section, the literature relating to factors associated with ESD is presented. There have been several studies conducted in South Africa, and in similar contexts which have examined ESD specifically, as well as predictors of sexual debut among adolescents. The literature can broadly be divided into the following categories (1) Individual factors, including school attendance, mental well-being and the experience of sexual coercion (2) Interpersonal factors, including family structure and peer support and (3) Socio-Economic factors.

1.5.1 Early Sexual Debut defined

In the South African context, the legal age of sexual consent is 16 years, although there is provision made for consensual sex between an individual aged between 12 and 16 with another aged between 12 and 16, or 16 to 17 if there is less than two years age difference between the consenting individuals.³⁰ However, when considering sexual and reproductive health, early sexual debut is most commonly defined as having had first sexual intercourse at age 14 years or younger,^{12,13} and this is the definition used in this study.

1.5.2 Personal factors

Early sexual debut appears to differ by sex, with males reporting higher rates of ESD compared to females in South African studies.^{4,12,17,18} National and international studies have also reported a higher prevalence of ESD among younger compared to older adolescents and

August 2020

youth.^{21,31} Race, however, does not appear to have a marked influence on ESD or age at first sex in the South African context.^{4,13,32}

Other individual level factors associated with ESD in prior literature are outlined below:

1.5.2.1 School attendance and employment

School attendance has consistently been reported as protective against sexual debut, particularly among adolescent females, across a number of studies,^{15,19,20,23,24,33} with those attending school and having higher levels of education or being in employment less likely to have ESD than those who frequently miss school, have never attended or have dropped out of school.^{21,22,32}

1.5.2.2 Mental health and well being

There is minimal literature available regarding the association between mental wellbeing and ESD, although one study across eight African countries reported no association between mental health symptoms (loneliness, suicidal ideation and anxiety) and ESD among young adolescents.³⁴ Having poorer mental health, with symptoms of depression or anxiety, has been found to increase the risk of sexual debut in older adolescents,^{35,36} and to be associated with a low self-efficacy to delay sexual debut, increasing the risk of ESD.²⁶ However, in Nairobi, a study found that male and female adolescents with better self-esteem were more likely to have had sex than those with lower self-esteem.¹⁹

1.5.2.3 Sexual coercion and wantedness of first sex

The World Health Organization defines sexual coercion in the report “*Understanding and addressing violence against women*” as encompassing “varying degrees of force; psychological intimidation; blackmail; or threats (of physical harm or of not obtaining a job/grade etc.)”.³⁷ High rates of coercion at first sex among adolescents has been reported.^{12,38}

A local study in Soweto found that of those with ESD, 33% of female and 28% of male

August 2020

adolescents reported their first sexual experience to be coerced.¹² In nationally representative surveys across Burkina Faso, Ghana, Malawi and Uganda, more than 20% of sexually active females who had sexual debut between the ages of 12 and 14 years reported that their sexual debut was coerced (21% in Burkina Faso, 25% in Ghana, 28% in Malawi and 25% in Uganda).³⁸ Studies have also reported an increased risk of ESD among females whose first sex was coerced.^{21,22} In a survey of South African youth, females who had been forced to have sex by their first partner were two and a half times more likely to have ESD than those who had not, an association not found in males.²¹ This is consistent with findings among young women in Uganda, where those with ESD were more likely to have reported coerced first sex (14,3%) compared to those with later debut (9,1%).²²

1.5.3 Interpersonal factors

1.5.3.1 Family structure

Family dynamics, including the functionality of the family structure,¹⁹ the household structure^{20,25} and whether or not parents are alive^{20,25} have all been found to influence sexual debut in adolescents. However, the effect of these factors on individuals appears to be complex and to vary by sex. Their association with ESD specifically and in the South African context is less well documented.

For both males and females, being raised by and living with both parents appears to be protective of ESD across a number of studies, with the association appearing to be stronger for females than males.^{22,25,31,39-42} In Tanzania, an increased risk of ESD has been noted among adolescent males and females whose mother had died, but not among those whose father had died.²⁵ Whereas in Uganda, Pilgrim et. al. found that male and female adolescents who were double-orphaned or whose father was not resident had an increased odds of ESD, with no association among those whose mother was non-resident or deceased in the presence of a

August 2020

resident father.⁴² In studies from America and European countries, any family composition other than two biological parents was significantly associated with an increased risk of ESD for both males and females.^{31,40}

It has been noted that whilst orphanhood and family structure play an independent role in adolescent sexual debut,⁴³ caregiver change and family transitions may also play a role.^{24,41} However, Zito et. al. found that whilst family structure was associated with ESD in females, there was no association between ESD and family structure at birth for either males or females, and no association between family transitions and ESD in either males or females.⁴¹

There is differing evidence on the association between caregiver relationship and ESD, which appears to have more influence in female than male adolescents.^{22,25,34,41} Among females, having a parent who cared about them,²² and for both males and females, having a good relationship with parents and being able to talk about SRH matters have been found to be protective of ESD.²⁵ Peltzer found parental connectedness to be protective of ESD in females, but to have no effect in males.³⁴ Zito et. al. reported that male and female adolescents with parents with permissive attitudes to teen sex and pregnancy had an increased odds of ESD,⁴¹ whilst maternal bonding, maternal supervision and behaviour restriction was protective of ESD in females, but not males.⁴¹ Similar results were found among adolescents in Nairobi, where a dysfunctional family life (including home violence and parental unemployment) as well as lack of parental supervision (in males) was found to be predictive of earlier sexual debut.¹⁹

Whilst there is no specific literature from South Africa, two African studies have reported parental alcohol use to be associated with increased risk of ESD, but not parental education level.^{22,25} However, in an American study, a higher maternal education was significantly associated with a reduced risk of sexual debut before 13 years,⁴⁴ in keeping with another American study which found a significant association between maternal college education and reduced odds of ESD, although the result was only significant in females.⁴¹

1.5.3.2 Peer support

The role of peers in the South African context has not been consistently documented, but is reported to have both positive and negative influences among adolescents generally, in some circumstances protecting against sexual risk, but in others increasing it.¹ It has been highlighted that perceptions of peer sexual behaviour may be a strong predictor of ESD, as adolescents are highly influenced by social contexts and values.³¹ In European countries, lower peer perceived age norms for sexual debut were strongly predictive of ESD among female adolescents, but not males.³¹ This is in keeping with findings from Tanzania, that found male and female adolescents who had friends who engaged in sex or had sexual partners were more likely to have ESD.²⁵ Both males and females who discussed relationships with friends, and had peers who drank alcohol were more likely to have ESD.²⁵ In a study across African countries, lack of peer support was not associated with ESD, although adolescent females who reported having no close friends were more likely to have ESD.³⁴ Literature specific to the South African context, however is lacking.

1.5.4 Socio-Economic factors

Some studies from African countries have reported that adolescents from richer families or of higher socio-economic status are more likely to delay sexual debut, with the finding appearing to be more significant in females than males.^{23,24,26,39,45} However, a study in Uganda looking specifically at ESD did not find the same association,²² and a study across multiple European countries, reported that female adolescents with low family affluence were in fact less likely to have had ESD, although this association was not found in males.³¹

1.5.5 Community factors

Adolescent development takes place within the context of a broader community,¹ with social contexts and geography often being greater drivers of adolescent morbidity and mortality than

individual behaviour.⁴⁶ Whilst research on specific community factors and their influence on ESD is limited, there is research indicating that communities with high levels of violence, crime and poverty experience higher rates of adolescent sexual risk behaviours.^{47,48}

1.5.6 Literature conclusions

The literature summarised here shows mixed associations of some predictors, which appear to be context specific. Whilst predictors such as enrolment in school,^{21,22} and living with both biological parents^{22,25,31,39-41} appear generally to be protective of ESD, gender related differences and context specific factors may influence these associations. While there is some evidence that mental health may influence sexual debut in adolescents,^{26,35,36} literature on its role in ESD is lacking. Peer norms appear to influence sexual debut in adolescence,^{25,31} but there is minimal literature on the role of peers in the South African context. Socio economic influences on sexual debut in the South African setting have not been consistently documented and the interplay between family structure and family dynamics and their association with sexual debut appears complex. Specific literature is required for the South African context, where socio-economic status and family structure are unique and heavily influenced by political and contextual factors.⁴⁹

1.6 Conceptual Framework

A conceptual framework for the study, informed by the literature review, is presented in Figure 1. This framework is adapted from the theoretical social ecological model, which highlights the multiple spheres of influence on health behaviour, at the individual (personal), interpersonal, institutional, community and policy levels.⁵⁰ In a model described by DiClemente et al⁵¹ for adolescent sexual risk behaviour, the individual is shown to be proximally influenced by “peers, community, family and sexual relationships”, whilst being influenced distally by societal factors such as “economics, tradition, norms, laws, and mores.”

August 2020

The application of a socio-ecological type model allows for an improved understanding of the multiple levels of influence on adolescent and youth health and behaviour, including contextual factors, and the interactions between them,⁵⁰⁻⁵²

In the framework illustrated in Figure 1, the personal factors of age, sex, race, education level, employment status, mental health and wantedness of first sex all directly influence the individual's sexual debut. At the interpersonal level, the male and female caregiver as well as peer support also have a direct influence on the individual's sexual debut. There is also an inter-relation between the personal and interpersonal factors, with the personal factors exerting influence on the interpersonal factors, and the interpersonal factors in turn exerting influence on the personal factors. Broadening the understanding of influence on youth to their context, economic factors, measured in this study through household food security, exert a direct influence on both personal and interpersonal factors. Community level factors, measured through the perception of community safety, exert a direct influence on economic factors as well as on personal and interpersonal factors. Thus, the individual's sexual debut is influenced directly by personal and interpersonal factors, indirectly by economic factors through personal or interpersonal factors, and distally by community factors through economic factors and interpersonal and personal factors, or through interpersonal and personal factors.

August 2020

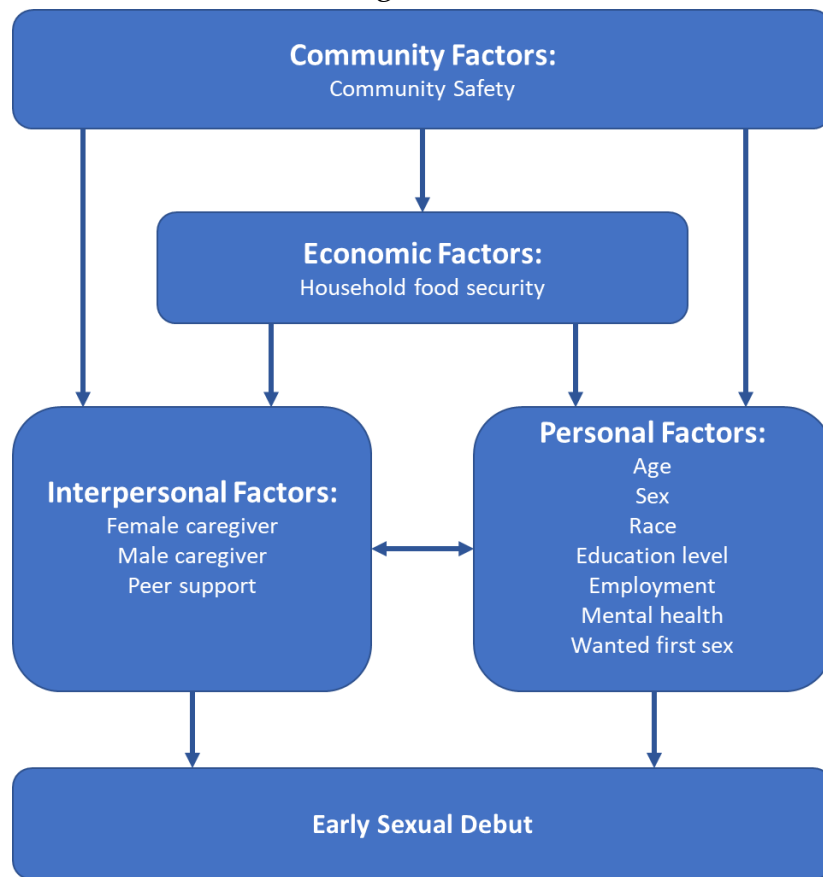


Figure 1: Conceptual framework of the factors influencing early sexual debut

Chapter Two: Materials and methods

2.1 Introduction

In this chapter, the study site is described. A summary of the primary study (LIFT) is presented, including an overview of the primary study design and the primary study population and sample. The study population and study sample are then outlined, followed by a detailed description of the study variables as well as a description of the process followed to obtain the study results.

2.2 Study site

This study is set in the inner city of Johannesburg, South Africa, focused in the areas of Hillbrow and Rosettenville. The inner city is a densely populated hub of economic, social and residential activities and is often the first point of entry for both national and international migrants moving to the city. It is characterized by a diversity of people and cultures, but faces high levels of poverty, crime, overcrowded accommodation, failing infrastructure, and urban decay.⁵³ The vulnerabilities of youth living in deteriorated urban areas has been documented but requires ongoing research, especially in South Africa, where there are high levels of rural to urban migration and an estimated 63% of the population lives in urban areas.⁵⁴ This study provides an opportunity to examine adolescents living in these areas, and to provide information which can inform health planning as urban growth in the country continues.

2.3 Study design

This study is an analysis of cross-sectional secondary baseline data collected for the Linking Information for Testing (LIFT) study.

2.3.1 The primary study (LIFT)

2.3.1.1 Primary study design

The primary study was a cross-sectional, respondent-driven, community survey among youth aged 15 – 24 years in the inner city of Johannesburg conducted between July 2017 and March 2018. It aimed to estimate the prevalence of HIV and to understand the behavioural and social risks contributing to HIV incidence and poor sexual and reproductive health (SRH) outcomes, and their geographic distribution, among youth in inner city Johannesburg. The primary study also used the National Department of Health's youth mobi-site B-Wise (bwisehealth.com), to increase voluntary uptake of HIV counselling and testing in this age group, and to provide evidence for using incentives and geographic mapping tools to increase testing among higher-risk young people.⁵⁵

2.3.1.2 Primary study sample

The primary study had a sample size of 1000, sufficiently large to estimate a true HIV prevalence with a precision of $\pm 0,05$, a sensitivity of 0,7 and a specificity of 0,9 in a large population of adolescents with an assumed HIV prevalence of $\leq 10\%$.

2.3.1.3 Primary study population

Participants were recruited using respondent driven sampling (RDS) methodology. This surveillance method, using chain-based peer referral, aimed to recruit marginalized and hidden population groups, such as adolescents engaged in high-risk behaviours, including those that are not in school and not in stable households, and has been used in previous, similar adolescent research.⁵⁶ A selection of "seeds", members of the population of interest (youth), were chosen to begin the sample. Seeds then referred a limited number of other youths from their social circles, who in turn were enrolled (if eligible) and referred other youth, in waves, until the desired sample size was reached. The number of referrals per person was restricted to a

maximum of three, to ensure that recruitment chains progressed through diverse social networks. Coded coupons were used to link referrals. A primary incentive of a prevention and hygiene kit (i.e. condoms, lubricants and health information) and a R100 cash reimbursement for time and transport was given for completion of the survey and secondary incentives of R30 for each referral, to a maximum of R90, were given for each successfully referred peer. To be eligible for the primary study, participants had to be aged 15 – 24 years (confirmed through formal documentation) and have resided, worked, studied, or socialised in the inner city, Johannesburg, South Africa between July 2017 and March 2018. They had to have been in possession of a valid study recruitment coupon (except seeds), and willing and able to attend the study visit. They had to be willing to register as a user on B-Wise (a national health mobile site) and have had with them at enrolment a functioning (i.e. with a SIM) feature phone or smartphone. Participants less than 18 years of age had to have a parent or guardian provide a signed informed consent, with the participant also providing a signed informed assent. Participants not meeting these criteria were excluded, and participants could only participate in the study once.⁵⁵

2.3.1.4 Primary study data collection

Data for the primary study was collected between July 2017 and March 2018. It was collected through a standardized survey questionnaire, with the first fifteen questions asked by the field worker, after which the remaining questions were completed by each participant through a computerized, self-administered interview on a tablet computer using Audio Computer-Assisted Self-Interview (ACASI) technology. This allowed for participants to answer sensitive questions on their own, limiting potential bias.⁵⁷ In cases where participant's use of the technology was not adequate for the needs of the survey, the field worker assessed the participant's area(s) of difficulty and either assisted the participant to use the tablet or administered the questionnaire as an interview for the participant. Logic checks and skip

August 2020

patterns were built into the survey questionnaire programme to minimize errors in data collection. Data from the tablet computers was synced to a secure SQL server at the end of each day and checked against a paper register that all participant data was uploaded.

2.4 Study population

The study population consisted of sexually active 15 – 24 year olds who resided, worked, studied, or socialised in the inner city, Johannesburg, South Africa between July 2017 and March 2018 interviewed in the primary study.

As is outlined in Figure 2, there were 1001 participants enrolled in the primary study. Of these, 14 were excluded from the analysis because it could not be determined if they had ever had sex; 7 reported not knowing if they had ever had sex, and 7 declined to answer. Of the 987 participants in whom their status of ever having had sex was known, 165 (16,72%) reported that they had never had sex. Of the 822 participants who reported to have ever had sex, 25 were excluded from the analysis as their age of sexual debut was invalid (n=6), unknown (n=10) or participants had declined to provide the information (n=9). There were 797 participants included in the final analysis.

August 2020

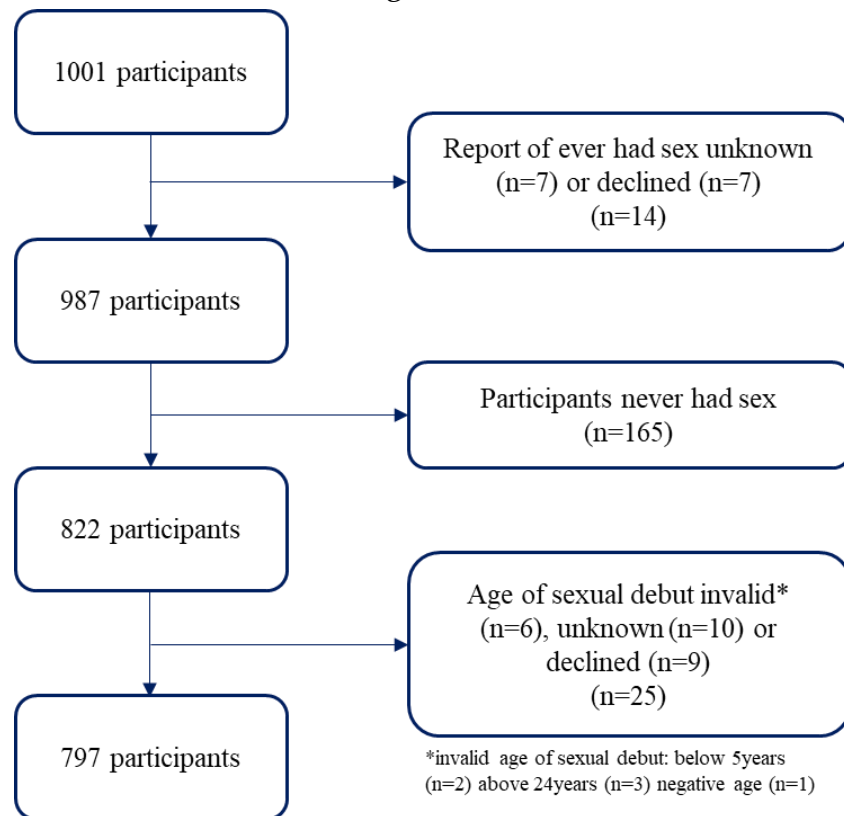


Figure 2: Flow diagram of study sample

2.5 Study variables

2.5.1 Outcome variable

The outcome variable in this study was early sexual debut (ESD). This is a binary variable, defined as having reported first sexual intercourse at age ≤ 14 years. The outcome was derived from two responses in the questionnaire. Those that responded yes to the question “Have you ever had sexual intercourse?” were categorized as having had sexual intercourse. Participants whose responses were unknown or who declined to answer were dropped from the data analysis. They were further categorised as “yes” to having ESD if the reported age of first intercourse (asked in the questionnaire “How old were you when you had sexual intercourse for the first time?”) was ≤ 14 years, and “no” to having ESD if the reported age of first

August 2020

intercourse was >14 years. Participants whose responses were invalid, unknown or who declined to answer were dropped from the data analysis.

2.5.2 Predictor variables

The choice of predictor variables for this study were informed by prior literature and are outlined in Table 1. The predictor variables, based on prior literature, that were included in the analysis were: Highest level of education completed, employment status (including in school), wanted first sexual encounter, primary female caregiver before 15 years of age and primary male caregiver before 15 years of age. The remaining predictor variables household food security, mental health symptoms, perceived community safety and peer support were selected based on their potential contribution to ESD. Household food security was used as a proxy measure for socio-economic status. In addition, the potential confounders age, sex and race were included.

Table 1: Study variables measurement and coding

Variable name	Type	Measurement and coding
Personal factors:		
Age	Categorical, ordinal	This variable was measured in years, as self-reported by participants as their age at their last birthday. It was categorised into 15 – 19 years and 20 – 24 years.
Sex	Binary	This variable was categorised into “Male” and “Female.”
Race	Binary	This variable was categorised into “Black African” and “Other.” All responses other than Black African were categorised as “Other.”
Highest level of education completed	Categorical, ordinal	The highest level of education completed was collapsed into three categories, “Less than Matric”, “Matric” and “Tertiary or higher”.
Employment status	Categorical, nominal	Employment status was categorised into “employed”, “unemployed” and “unemployed and in school”. Employment status was determined by analysing responses to a question on the participant’s source of income in the last 30 days. Participants who reported their source(s) of income to include a full-time job, part-time job, temporary work, providing services or selling goods were categorised as employed. Participants who did not report any of these as a source of income were categorised as unemployed. A third category “unemployed and in school” was created by further categorising those unemployed into those that were unemployed but also currently in school or place of higher education, and those who were unemployed but not in school or place of higher education.

Variable name	Type	Measurement and coding
Wanted first sexual encounter	Categorical, nominal	This variable was determined by categorising responses to the question “Did you want to have sex the first time you had sex?” Responses were categorised into those who reported wanting to have sex the first time “Yes”, those who reported they did not want to have sex the first time “No” and those who response was unknown, declined or missing “Other.”
Mental health symptoms	Categorical, nominal	This variable was determined by combining two variables, one for depression symptoms and one for post-traumatic stress symptoms. The first variable, “depression symptoms” was determined by calculating a depression score for each participant from ten depression related screening questions. The screening questions used were the short 10-item version of the Center for Epidemiological Studies Depression Scale, which has been used previously in similar adolescent research.⁵⁸ The screening questions were: (1) You were bothered by things that usually don’t bother you in the past 7 days; (2) You had trouble keeping your mind on what you were doing in the past 7 days; (3) You felt depressed in the past 7 days; (4) You felt that everything you did was an effort in the past 7 days; (5) You felt hopeful about the future in the past 7 days; (6) You felt fearful in the past 7 days; (7) Your sleep was restless in the past 7 days; (8) You were happy in the past 7 days; (9) You felt lonely in the past 7 days; (10) You could not get "going" in the past 7 days. Responses were scored according to the frequency of the symptom, with a higher reported frequency of the symptom resulting in a higher score as follows: 0 = Rarely or none of the time (less than 1 day); 1 = Some or a little of the time (1-2 days); 2 = Occasionally or a moderate

August 2020

Variable name	Type	Measurement and coding
		amount of the time (3-4 days); 3 = Most or all of the time (5-7 days). Two questions were reverse scored to account for the negative direction of questioning. To avoid removing data from the analysis, observations with responses of “don’t know” or “decline to answer” (n=683; 8,6%) were imputed with the calculated mean of the individual’s completed responses to the remaining questions. For individuals where all responses were “don’t know” or “decline to answer” (n=8) the average score for the question was imputed. Research comparing imputation methods for missing data in multi-item scales has indicated that where less than 10% of values are missing, these imputation methods are acceptable.^{59,60} For each participant, the symptom score for all 10 depression questions was summed to give an overall score for depression symptoms. The minimum score was 0 and the maximum score 30. Participants who had a total score of 11 or higher were categorised as having symptoms of depression present.⁵⁸ The second variable, “post-traumatic stress” was determined by calculating a posttraumatic stress score for each participant from six items from the Post-Traumatic Stress Disorder (PTSD) Checklist-Civilian version, as used previously in similar adolescent research.⁵⁸ The questions were: (1) In the past 30 days, how much did you suddenly act or feel like a stressful experience was happening again (like you were reliving it)? (2) In the past 30 days, how much did you feel very upset when something reminded you of a stressful experience from the past? (3) In the past 30 days, how much did you lose interest in things that you used to enjoy?

Variable name	Type	Measurement and coding
		(4) In the past 30 days, how much did you feel emotionally numb or unable to have loving feelings for people close to you? (5) In the past 30 days, how much did you feel like your future would be cut short somehow? (6) In the past 30 days, how much did you have difficulty concentrating? Responses were scored according to the frequency of the symptom, with a higher reported frequency of the symptom resulting in a higher score as follows: 1 = Not at all; 2 = A little bit; 3 = Moderately; 4 = Quite a bit; 5 = Extremely. For each participant, the total symptom score for all 6 related questions was summed to give an overall score for posttraumatic stress symptoms. The minimum score was 6 and the maximum score 30. Observations with responses of “don’t know” or “decline to answer” (n=110; 2,3%) were imputed with the calculated mean of the individual’s completed responses to the remaining questions in keeping with the methodology used for calculating the depression score. For individuals where all responses were “don’t know” or “decline to answer” (n=4) the average score for the question was imputed. Participants who had a total score of 13 or higher were categorised as having symptoms of posttraumatic stress present.⁵⁸ Participants were then categorised into those with “mental health symptoms present”, if they had been classified as having either posttraumatic stress or depression symptoms present, or “no mental health symptoms” for those that had neither symptom present.

Variable name	Type	Measurement and coding
Interpersonal factors:		
Primary female caregiver before age 15years	Categorical, nominal	This variable was determined by analysing responses to the question “Before you were 15, who was the primary woman who raised you?” The variable was categorised into “Mother” or “Grandmother” for those who reported their mother or grandmother was the primary woman who raised them before they were 15 years of age, and “Other” for those who reported any other primary female caregiver.
Primary male caregiver before age 15years	Categorical, nominal	This variable was determined by analysing responses to the question “Before you were 15, who was the primary man who raised you?” The variable was categorised into “Father” for those who reported their father was the primary man who raised them, “Other” for those who reported any other primary male caregiver, and “No primary male caregiver” for those who reported that they had no primary male caregiver.
Peer-related support	Continuous	This variable was derived from responses to the following statements, similar to those used in a prior study ⁵⁸ : I have at least one friend that (a) I can trust (b) I can talk to about family problems or real personal problems (c) I find it easy to talk to about sex (d) I would turn to if I were in trouble (e) who accepts me for who I really am. Responses were recorded as: 0 “agree a lot,” 1 “agree a little,” 2 “disagree a little,” to 3 “disagree a lot” and were all in the same direction. The responses were reverse scored during analysis. Scores were summed to give an aggregate score, with higher scores indicating higher levels of peer support and lower scores indicating lower levels of peer support. The minimum score was 0 and the maximum score 15. In order to avoid removing observations with missing data, responses that were reported as

August 2020

Variable name	Type	Measurement and coding
		unknown or declined to answer (n=63; 1,6%) were imputed with the calculated mean of the individuals completed responses to the remaining questions (person mean). This methodology has been found to be acceptable for multi-item instruments when less than 10% of the data is missing. ⁶⁰ For individuals where all responses were “don’t know” or “decline to answer” (n=1) the average score for the question was imputed.
Economic factors:		
Household food security	Binary	This variable was a binary variable derived from responses to the question, “In the last 6 months has your household ever run out of money to buy food?” with those responding “no”, categorised as having a secure food source, and those responding “yes” categorised as having an insecure household food source. Responses that were unknown (n=23) or declined (n=9) were categorised as having an insecure food source.
Community factors:		
Perceived community safety	Binary	This was a binary variable derived from responses to the question, “In terms of violence, how safe do you consider the community you live in?” Responses were collapsed into “very safe / safe” or “very unsafe / unsafe” in keeping with a prior, similar study. ⁶¹ Responses of “don’t know” (n=30) or “declined to answer” (n=2) were categorised as “very unsafe / unsafe.”

2.6 Data analysis and management

2.6.1 Data management

Data for the primary study was electronically captured onto a tablet computer as described in section 2.3.1.4. Data was analysed using the software package STATA version 13. The measurement and coding, as well as the recoding of responses that were missing or unknown are outlined in Table 1 with the description of the study variables.

2.6.2 Data analysis

According to the methodology of respondent driven sampling (RDS), a weighting was assigned to each participant, to represent the probability of a participant's inclusion in the sample. This was done to ensure that the sampling design was taken into account and to avoid under-estimation of standard errors or false positive statistical tests.

2.6.2.1 *Objective 1: To describe the population of youth in the inner city, Johannesburg, South Africa with ESD*

A descriptive analysis of the study population was undertaken. Unweighted frequencies and weighted proportions were calculated for the categorical variables: Age, Sex, Race, Highest level of education completed, Employment status, Wanted first sex, Primary female caregiver before age 15 years, Primary male caregiver before age 15 years, Household food security, Mental health symptoms and Perceived community safety. Weighted mean and standard errors were calculated for the continuous variable Peer support score. Descriptive statistics were stratified by the outcome of interest (ESD).

2.6.2.2 *Objective 2: To determine the prevalence of ESD among youth in the inner city, Johannesburg, South Africa*

The overall prevalence of ESD was determined by calculating the number of participants with ESD and dividing this by the total number of participants. The prevalence of ESD was then

determined for each variable of interest, by cross tabulating the ESD by the variables. Chi-square test for the categorical variables and a t-test for the continuous variable of peer support score were conducted. The number of participants with ESD, by category, was calculated and divided by the total number of participants in each category to determine the prevalence of ESD for each category.

2.6.2.3 Objective 3: To determine, the factors associated with ESD among youth in the inner city, Johannesburg, South Africa

The association between ESD and the predictor variables was explored through inferential analysis using a binary logistic regression analysis as the outcome variable was binary.

Step 1: A univariable logistic regression analysis was undertaken, to examine the association of each predictor variable of interest to the outcome (ESD). Crude odds ratios and 95% confidence intervals (CIs) were determined. The significance level was set at 5%.

Step 2: A multivariable logistic regression analysis was undertaken, with a significance level set at 5%. All variables were included in the final model.

Step 3: The design effect (DEFF) was measured for each of the predictor variables. The design effect ranged from 1,12 to 2,46 indicating an acceptable effect and that at most the variance was 2,46 times what it would have been if a simple random sample had been used.

Step 4: Cronbach's alpha tests were conducted on the predictor variables measured through Likert scales to determine their reliability or internal consistency. For the variable "Peer support score" the Cronbach's alpha value was 0,67. For the variables "Depression score" and "PTSD score" from which the Mental Health Symptoms variable was derived, the Cronbach's alpha values were 0,74 and 0,82 respectively. The PTSD score therefore shows high reliability, but the Depression and Peer support scores are less reliable.

2.7 Limitations

There are limitations to the study methodology and study variables which should be noted:

1. Selection bias:

(a) As has been reported in prior literature on RDS methodology, there may be selection bias introduced using this sampling methodology if specific sub-population groups are over or under represented within or between the networked groups.⁵⁶ In addition, sampling may favour those who are geographically closer to the study site, or for whom transport or access was easier. Both these factors may affect the representativeness of the sample and bias the results to a certain sub-population of youth in the inner city.⁵⁶

(b) While it is estimated that over 95% of adolescents have access to a cellphone,² restricting study enrolment to those who had a phone may have excluded some of the most vulnerable adolescents.

2. Generalisability: As this research was undertaken in a very localised area of Johannesburg, the findings may not be generalisable to other areas of South Africa.

3. Limited study variables: As this was a secondary analysis of data collected for a different primary objective, not all variables that would have been preferable to include in the analysis were available. Specifically, measuring only the primary caregiver and not the influence of other caregivers, or the characteristics of caregivers, is insufficient to evaluate the complexity that family structure and caregiver relationships have on the sexual behaviour of adolescents. Further, measuring only adolescents' perception of community safety does not provide detail on the community and social contexts which may influence adolescent behaviour. Other factors such as a more refined measurement of wealth and socio-economic status, the type of peer support offered and the direction of influence it exerted, and the inclusion of measurements on the circumstances around

first sex, including the age of the partner at the time of first sex, would also have been valuable.

While efforts were made to measure potential confounders, there may be unmeasured confounders which cannot be controlled for.

4. Information bias: All variables in this study were measured through self-report. Whilst the use of a self-administered questionnaire and the anonymity of this attempts to overcome bias, the sensitive nature of the topic may have been subject to social-desirability bias of unknown direction and magnitude. There may also have been recall bias in responses which required a retrospective answer, which may have been greater the further away the event in question was. In prior studies there was found to be a high percentage of misclassification bias with regards to reporting of sexual activity and timing of first sex among adolescents, up to 40% in one South African study⁶² and 20% in a Kenyan study.⁶³ Males have been found to have higher probabilities of misreporting of sexual behaviour compared to females, possibly explained by an increased acceptability of sexual activity among males, and pressure to become sexually active.⁶³ Older adolescents have also been found to have higher rates of incorrect reporting of first sex compared to younger adolescents, possibly as a result of lapses in memory.⁶³ Although efforts were made to use standardised and validated tools where available, some of the variables measured in the study may have been less reliable than others. For example, the perception of community safety, peer support score and reporting of mental health symptoms are subjective. In addition, the responses of participants with a lack of previous exposure to using computers and tablets may be less reliable.
5. Inability to conduct a sex stratified analysis: It was planned for the logistic regression to be stratified by sex, given that the literature indicated differing associations by sex.

However, the final model could not be fitted by sex due to an insufficient sample size, and therefore only one combined model could be developed.

2.8 Ethical considerations

The personal and sensitive nature of the questions may have resulted in distress to some participants. Provision was made in the primary study for psycho-social support to be provided through an on-site counsellor or social worker for any participant in need of these services. The survey also had built-in checks such that study staff were alerted if the participant responded positively to any report of abuse, forced sex, mental health problems or potential self-harm. If alerted, a distress protocol was followed by study staff. Permission to use the data for this study was requested and granted by the Principal Investigator at the Wits Reproductive Health and HIV Institute (Wits RHI) (see Appendix 2). The study also received ethics clearance from the Wits Human Research Ethics Committee, number M190109 (see Appendix 3). The data for this study was already de-identified when received and is in a password protected computer.

Chapter Three: Results

3.1 Introduction

This chapter presents the results of the descriptive and inferential analysis of the study. The personal, interpersonal, economic and community characteristics of the study participants are described, and the prevalence of early sexual debut (ESD) presented. Thereafter, the results of the univariable and multivariable logistic regression analysis are presented.

3.2 Objective 1: Characteristics of the study population

Table 2 presents the personal, interpersonal, economic and community characteristics of the study participants. There were 797 participants included in the analysis. The mean age of participants at the time of enrolment was 20,4 years, with the majority (65,58%) being aged 20 – 24 years. There were slightly more males compared to females in the study (54,45% vs. 45,55%) and most participants were Black African (94,89%). More than half (61,20%) of the participants had completed Matric level education and 26,81% had completed a tertiary or higher level of education. The majority of participants (60,35%) were unemployed and currently in school, with 27,80% employed and 11,85% unemployed. Most participants (73,80%) reported that they wanted their first sexual encounter. Almost two thirds (64,28%) of participants had mental health symptoms. Mothers were the primary female caregivers to 63,07% of participants, with the remainder being cared for primarily by grandmothers (30,71%) or other females (6,22%) before 15 years of age. Less than half (41,09%) of participants reported their father as their primary male caregiver, with 38,07% reporting another male as their primary male caregiver and 20,8% reporting no male caregiver before 15 years of age. Just over a half (52,41%) of participants reported having an insecure household food source. Half (50,95%) of the participants perceived their communities to be safe, and half (49,05%) perceived them to be unsafe.

Table 2: Characteristics of the study sample

Variable Category	Early sexual debut (Sexual debut at age≤14years) Unweighted n (weighted %) Weighted mean (SE)		Total
	Yes	No	
Total	121 (15,49)	676 (84,51)	N=797
Personal factors:			
Age	19,95 (0,36)	20,44 (0,17)	20,37 (0,15)
Age category			
15 – 19 years	51 (47,03)	221 (32,11)	272 (34,42)
20 – 24 years	70 (52,97)	455 (67,89)	525 (65,58)
Sex			
Male	114 (95,56)	340 (46,91)	454 (54,45)
Female	7 (4,44)	336 (53,09)	343 (45,55)
Race			
Black African	108 (87,22)	656 (96,30)	764 (94,89)
Other	13 (12,78)	20 (3,70)	33 (5,11)
Highest level of education completed			
Less than Matric	30 (25,00)	63 (9,60)	93 (11,98)
Matric	65 (51,67)	407 (62,95)	472 (61,20)
Tertiary or higher	26 (23,33)	206 (27,45)	232 (26,81)
Employment status			
Unemployed	15 (11,51)	68 (11,91)	83 (11,85)
Unemployed and in school	63 (50,67)	434 (62,12)	497 (60,35)
Employed	43 (37,82)	174 (25,96)	217 (27,80)
Wanted first sex			
No	6 (3,46)	108 (19,24)	114 (16,80)
Yes	109 (91,29)	505 (70,60)	614 (73,80)
Unknown / Declined / missing data	6 (5,25)	63 (10,16)	69 (9,40)
Mental health symptoms			
No mental health symptoms	50 (29,39)	242 (36,88)	292 (35,72)
Mental health symptoms present	71 (70,61)	434 (63,12)	505 (64,28)

Variable Category	Early sexual debut (Sexual debut at age≤14years) Unweighted n (weighted %) Weighted mean (SE)		Total
	Yes	No	
Interpersonal factors:			
Primary female caregiver before age 15years			
Mother	95 (75,66)	447 (60,76)	542 (63,07)
Grandmother	18 (19,79)	167 (32,71)	185 (30,71)
Other	8 (4,55)	62 (6,53)	70 (6,22)
Primary male caregiver before age 15 years			
No male caregiver	20 (7,57)	132 (23,26)	152 (20,83)
Father	63 (58,33)	312 (37,93)	375 (41,09)
Other	38 (34,09)	232 (38,80)	270 (38,07)
Peer support score (0 – 15)	12,91 (0,32)	12,99 (0,23)	12,98 (0,20)
Economic factors:			
Household food security			
Insecure food source	61 (37,75)	362 (55,10)	423 (52,41)
Secure food source	60 (62,25)	314 (44,90)	374 (47,59)
Community factors:			
Perceived community safety			
Safe / very safe	55 (44,23)	352 (52,18)	407 (50,95)
Unsafe / very unsafe	66 (55,77)	324 (47,82)	390 (49,05)

3.3 Objective 2: Prevalence of ESD

Table 3 presents the prevalence of ESD by category. The overall prevalence of ESD among the study sample was 15,49%. Among participants aged 15 – 19 years, the prevalence of ESD was higher (21,16%) than among 20 – 24 year olds (12,51%). It was also more prevalent among males (27,18%) compared to females (1,51%). Those who were Black African had a lower

prevalence of ESD (14,24%) than those from other races (38,77%). The prevalence of ESD was higher among those with less than Matric level education, at 32,31%, compared to 13,08% among those with Matric and 13,48% among those with tertiary education. Among those who were unemployed the prevalence of ESD was 15,04%, among those unemployed and in school it was 13,01% and it was highest among those employed at 21,07%. Of participants who reported to have wanted their first sexual encounter, the prevalence of ESD was 19,16%. Of those who did not want their first sexual encounter, ESD prevalence was 3,19% and among those for whom this data was missing, or it was unknown if the first encounter was wanted, 8,65% had ESD. For participants without mental health symptoms present, the prevalence of ESD was 12,74% and among those with mental health symptoms it was slightly higher at 17,02%. For participants raised by their mothers, the prevalence of ESD was 18,58%, for those raised by their grandmothers 9,98% and for those raised by other females 11,34%. For participants raised by their fathers the prevalence of ESD was 21,99%, for those raised by other men 13,87% and for those who did not have a primary male caregiver 5,63%. Among those with ESD, the mean peer support score was 12,91 and among those without ESD the peer support score was 12,99. The prevalence of ESD among those reporting to have an insecure food source was 11,16% and among those with a secure food source it was higher at 20,26%. The prevalence of ESD was 13,45% among participants who perceived the community to be safe and 17,61% among participants who perceived the community to be unsafe.

Table 3: Prevalence of early sexual debut (ESD) among the study sample

Variable Category	Early sexual debut (Sexual debut at age≤14years) Unweighted n (weighted %)		Total	p-value
	Yes	No		
Total	121 (15,49)	676 (84,51)	N=797	
Personal factors:				
Age category				
15 – 19 years	51 (21,16)	221 (78,84)	272 (100,00)	0,072
20 – 24 years	70 (12,51)	455 (87,49)	525 (100,00)	
Sex				
Male	114 (27,18)	340 (72,82)	454 (100,00)	<0,001***
Female	7 (1,51)	336 (98,49)	343 (100,00)	
Race				
Black African	108 (14,24)	656 (85,76)	764 (100,00)	0,058
Other	13 (38,77)	20 (61,23)	33 (100,00)	
Highest level of education completed				
Less than Matric	30 (32,31)	63 (67,69)	93 (100,00)	0,023*
Matric	65 (13,08)	407 (86,92)	472 (100,00)	
Tertiary or higher	26 (13,48)	206 (86,52)	232 (100,00)	
Employment status				
Unemployed	15 (15,04)	68 (84,96)	83 (100,00)	0,250
Unemployed and in school	63 (13,01)	434 (86,99)	497 (100,00)	
Employed	43 (21,07)	174 (78,93)	217 (100,00)	
Wanted first sex				
No	6 (3,19)	108 (96,81)	114 (100,00)	0,002**
Yes	109 (19,16)	505 (80,84)	614 (100,00)	
Unknown / Declined / missing data	6 (8,65)	63 (91,35)	69 (100,00)	

Variable Category	Early sexual debut (Sexual debut at age≤14years)		Total	p-value
	Unweighted n (weighted %)			
	Yes	No		
Mental health symptoms				
No mental health symptoms	50 (12,74)	242 (87,26)	292 (100,00)	0,319
Mental health symptoms present	71 (17,02)	434 (82,98)	505 (100,00)	
Interpersonal factors:				
Primary female caregiver before age 15years				
Mother	95 (18,58)	447 (81,42)	542 (100,00)	0,199
Grandmother	18 (9,98)	167 (90,02)	185 (100,00)	
Other	8 (11,34)	62 (88,66)	70 (100,00)	
Primary male caregiver before age 15 years				
No male caregiver	20 (5,63)	132 (94,37)	152 (100,00)	0,010*
Father	63 (21,99)	312 (78,01)	375 (100,00)	
Other	38 (13,87)	232 (86,13)	270 (100,00)	
Peer support score (0 – 15)	12,91 (0,32)	12,99 (0,23)	12,98 (0,20)	0,839
Economic factors:				
Household food security				
Insecure food source	61 (11,16)	362 (88,84)	423 (100,00)	0,040*
Secure food source	60 (20,26)	314 (79,74)	374 (100,00)	
Community factors:				
Perceived community safety				
Safe / very safe	55 (13,45)	352 (86,55)	407 (100,00)	0,353
Unsafe / very unsafe	66 (17,61)	324 (82,39)	390 (100,00)	

*p<0,05; **p<0,01; ***p<0,001

3.4 Objective 3: Factors associated with ESD

The results of the unadjusted and adjusted logistic regression analysis determining the factors associated with ESD are presented in Table 4.

In the unadjusted analysis, sex, highest level of education completed, the wantedness of first sex, primary male caregiver before 15 years of age and household food security were found to be significantly associated with ESD. In the adjusted analysis the highest level of education completed and the wantedness of first sex were no longer found to be significantly associated with ESD and age and participant race were found to be significantly associated with ESD. In the adjusted analysis, age, sex, race, primary male caregiver before 15 years of age and household food security were found to be significantly associated with ESD.

The odds of having experienced ESD among participants aged 20 – 24 years was 0,46 times the odds of ESD among those aged 15 – 19 years, a significant result in the adjusted analysis. The odds of female participants experiencing ESD was 0,04 times the odds among males, significant in both the unadjusted and adjusted analyses. Participants from racial groups other than Black African had an odds of experiencing ESD 4,56 times that of Black Africans, significant in the adjusted analysis. Whilst not statistically significant in the adjusted analysis, those with a matric level education had an odds of ESD 0,41 times the odds of ESD among those with less than matric, and those with a tertiary level of education had an odds of ESD 0,55 times the odds of those with less than matric level education. The odds of ESD among those who were unemployed but in school was 0,64 times the odds of ESD among those who were unemployed, and among those who were employed the odds of ESD was 0,76 times the odds of ESD among those who were unemployed, although these results were not statistically significant. Those who reported that their first sexual encounter was wanted had an odds of ESD 1,26 times the odds of those who did not want their first encounter, but this was not

statistically significant in the adjusted analysis. The odds of experiencing ESD among participants who reported experiencing symptoms of mental health disease was 2,05 times the odds of ESD among those with no symptoms, although this result was not significant.

Participants whose primary female caregiver before the age of 15 years was a grandmother or another female caregiver had an odds of experiencing ESD 0,46 and 0,65 times the odds of experiencing ESD among those whose primary female caregiver was their mother, although this was not significant. Compared to participants who had no primary male caregiver before the age of 15 years, participants whose primary male caregiver was their father had an odds of ESD 5,96 times and those whose primary male caregiver was another male had an odds of ESD 3,48 times that of participants with no primary male caregiver, a significant result in both the adjusted and unadjusted analysis. Participants' experience of peer support was not associated with ESD.

Participants who had a secure source of household food had an odds of ESD 2,49 times that of those with an insecure source of food, a significant result in both the adjusted and unadjusted analyses.

Participants who felt their communities were unsafe had an odds of experiencing ESD 1,24 times that of those who felt their communities were safe, although this was not significant.

Table 4: Univariable and multivariable logistic regression analysis to determine factors associated with ESD

	Unadjusted Analysis	Adjusted Analysis
Variable	Crude Odds Ratio	Adjusted Odds Ratio
Category	(95% Confidence Interval)	(95% Confidence Interval)
Personal factors:		
Age category		
15 – 19 years	1,00	1,00
20 – 24 years	0,53 (0,27 – 1,07)	0,46 (0,23 – 0,93)*
Sex		
Male	1,00	1,00
Female	0,04 (0,02 – 0,11)***	0,04 (0,01 – 0,10)***
Race		
Black African	1,00	1,00
Other	3,82 (0,87 – 16,66)	4,45 (1,09 – 18,05)*
Highest level of education completed		
Less than Matric	1,00	1,00
Matric	0,32 (0,13 – 0,78) *	0,41 (0,15 – 1,14)
Tertiary or higher	0,33 (0,12 – 0,91)*	0,55 (0,17 – 1,77)
Employment status		
Unemployed	1,00	1,00
Unemployed and in school	0,84 (0,33 – 2,14)	0,64 (0,22 – 1,87)
Employed	1,51 (0,56 – 4,05)	0,76 (0,26 – 2,26)
Wanted first sex		
No	1,00	1,00
Yes	7,19 (2,55 – 20,30) ***	1,26 (0,35 – 4,53)
Unknown / Declined / missing data	2,87 (0,59 – 14,02)	0,62 (0,10 – 3,68)
Mental health symptoms		
No mental health symptoms	1,00	1,00
Mental health symptoms present	1,40 (0,72 – 2,75)	2,05 (0,94 – 4,50)

	Unadjusted Analysis	Adjusted Analysis
Variable Category	Crude Odds Ratio (95% Confidence Interval)	Adjusted Odds Ratio (95% Confidence Interval)
Interpersonal factors:		
Primary female caregiver before age 15 years		
Mother	1,00	1,00
Grandmother	0,49 (0,21 – 1,11)	0,46 (0,16 – 1,35)
Other	0,56 (0,11 – 2,81)	0,65 (0,16 – 2,63)
Primary male caregiver before age 15 years		
No male caregiver	1,00	1,00
Father	4,72 (2,13 – 10,48) ***	5,96 (1,93 – 18,39)**
Other	2,70 (1,08 – 6,75)*	3,48 (1,13 – 10,72)*
Peer support score (0 – 15)	0,99 (0,89 – 1,10)	1,05 (0,92 – 1,21)
Economic factors:		
Household food security		
Insecure food source	1,00	1,00
Secure food source	2,02 (1,02 – 4,00)*	2,49 (1,21 – 5,13)*
Community factors:		
Perceived community safety		
Safe / very safe	1,00	1,00
Unsafe / very unsafe	1,38 (0,70 – 2,71)	1,24 (0,62 – 2,48)

*p<0,05; **p<0,01; ***p<0,001

3.5 Summary

The prevalence of ESD in the study population was found to be 15,5% with significantly more males (27,2%) experiencing ESD compared to females (1,5%). In the adjusted analysis, being aged 15 – 19 years, of male sex, of a racial group other than Black African, having a male caregiver before the age of 15 years, and having a secure household food source were found to be significantly associated with an increased odds of ESD. The level of education completed,

August 2020

employment status, type of primary female caregiver, presence of mental health symptoms, perception of community safety, presence of peer support and whether the first sex was wanted or not were not found to be significantly associated with ESD.

Chapter Four: Discussion

4.1 Introduction

The aim of this study was to determine the prevalence and factors associated with ESD among youth (aged 15 – 24 years) in the inner city of Johannesburg, South Africa. The prevalence of ESD in this population was found to be 15,5%. Being aged 15 – 19 years, of male sex, of a racial group other than Black African, having a father or other male caregiver before the age of 15 years, and having a secure household food source were found to be significantly associated with an increased odds of ESD in this study. The level of education completed, employment status, type of primary female caregiver, presence of mental health symptoms, presence of peer support, perception of community safety, and whether the first sex was wanted or not were not found to be significantly associated with ESD.

4.2 The prevalence and factors associated with ESD

This study found a prevalence of ESD of 15,5% among youth in the inner city of Johannesburg. This is consistent with the prevalence of ESD reported among urban youth in South Africa (15,1%) and the prevalence of ESD reported among youth in Gauteng (16,5%),⁴ although slightly higher than the national prevalence, reported at 13,6%.⁴ It is, however, lower than the prevalence of ESD among youth in Soweto, another suburb of Johannesburg, which was reported at 23,5%.⁶⁴ There may be socio-economic, educational or household factors which accounted for the difference in the prevalence of ESD between Soweto and inner city Johannesburg. Differences have been noted between the two areas, with Soweto having higher rates of functional illiteracy and unemployment and lower household income than inner city Johannesburg.⁶⁵ The prevalence of ESD reported in this study is consistent with the prevalence of ESD reported across European countries at 13,5% among adolescent girls and 15,4% among

adolescent boys,³¹ but higher than that reported across countries in Sub-Saharan Africa, reported at 6% for both boys and girls.³⁹

4.2.1 Personal factors

4.2.1.1 Age

The prevalence of ESD in this study was significantly higher in those aged 15 – 19 years compared to those aged 20 – 24 years and the odds of ESD was significantly lower in those aged 20 – 24 years compared to those aged 15 – 19 years. National and international studies have also reported a higher prevalence of ESD among younger compared to older adolescents and youth,^{21,31} with the South African study reporting 15 – 19 year olds having an odds of ESD between 1,94 and 3,76 times that of 20 – 24 year olds.²¹ It has been noted that older adolescents have been found to have higher rates of incorrect reporting of first sex compared to younger adolescents,⁶³ which may account for these differences. Although it is likely that the higher prevalence in the younger age group reflects an increase in ESD over time, as has been reported nationally.⁴

4.2.1.2 Sex

The prevalence of ESD among males in this study was 27,2%, higher than the national average of 19,5% reported among males.⁴ However, it is lower than the prevalence of ESD among males in Soweto, another suburb of Johannesburg, which has been reported at around 40%.^{12,64} There may be socio-economic, educational, household or cultural factors which accounted for the differences between the prevalence of ESD nationally, in Soweto and in the inner city Johannesburg, with differences in these areas being noted previously.⁶⁵

The prevalence of ESD among females in this study was lower than males, in keeping with the national picture.⁴ However, at only 1,5%, it is much lower than the national average of 7,6%,⁴ and lower than the 6,8% prevalence reported among female adolescents in Soweto.⁶⁴ Given the

much lower prevalence reported amongst females in this study compared to elsewhere in South Africa, one cannot discount that there may have been under-reporting of the age of sexual debut, possibly as a result of social desirability or recall bias, as has been reported in other studies.^{62,63,66} The gender differences in ESD are in keeping with the national picture⁴ and other local data^{12,13,64} and may reflect societal norms which appear to differ between genders and permit greater freedom for adolescent males than females.^{31,34}

4.2.1.3 Race

The prevalence of ESD was found to be higher in youth from other races compared to those who were Black African. The prevalence of ESD among Black Africans in this study (14,24%) is similar to the national picture (13,7%),⁴ but the prevalence among other races (38,77%) is much higher than reported nationally (White 13,7%; Coloured 13,4% and Indian/Asian 11,0%).⁴ The findings of this study could have been as a result of merging the other race categories. The study found that youth of other races were 4,6 times more likely to have experienced ESD than those of Black African race. The marked difference between races is contrary to results from national studies which have not found a significant difference in ESD or age at first sex between races.^{4,13,32} The difference may in part be explained by the more localised context of this study, where race may not necessarily be representative of the experiences of races in other regions of the country. A race difference was noted in a localised study from Cape Town, where adolescents of African race were more likely to have earlier sexual debut than those of coloured race.¹⁶ There may also have been other unmeasured confounders such as cultural influences, family structure and attitudes to family and gender roles which are linked to race in South Africa,^{67,68} that may have contributed to this.

4.2.1.4 Level of education and employment status

Although not significant in the adjusted analysis, the study found a higher level of education to be protective of ESD. It was also found that compared to those who were unemployed, being

employed or unemployed but in school was protective of ESD, although the result was also not statistically significant. This is in keeping with and contributes to the body of evidence from other studies which have shown school attendance or employment to be protective of ESD as well as to delay the age of sexual debut in adolescents, particularly females.^{15,19-21,23,32,33}

4.2.1.5 *Wantedness of first sex*

In this study, 16,8% of participants reported their first sexual experience to be unwanted, in keeping with results from a national survey in 2003 in which 16% of 15-24 year olds reported they did not want their first sexual experience.¹³ The apparent lack of decline over time in the percentage of adolescents with unwanted first sex reiterates the need for further research into this area and for adolescent health programming to address SRH rights, sexual consent and the prevention of sexual coercion.³⁸ There was no significant association between the wantedness of first sex and ESD in this study. This finding aligns to results from a study among adolescent girls across Sub-Saharan African countries,³⁸ as well as findings from an American study among adolescents and young men⁴⁴ in which no association between wantedness or coercive first sex and age at sexual debut were found. However, the results contrast with findings from a South African study which reported a more than two fold increase in ESD among young women who had had forced sex,²¹ and a study from Uganda which reported a higher prevalence of ESD among young women who had experienced coercion at first sex.²² This may be due to the definition of coercion and force used in these studies, rather than the definition of wantedness that was used in this study. The South African study looked at young women whose first partner had physically forced them to have sex,²¹ and in the Ugandan study the definition of coercion included verbal and physical force.²² In addition, these studies reported their results by sex, focusing either on males or females and not both, which may have accounted for differences compared to this study's results and highlight the need for sex stratified analyses.

4.2.1.6 Mental Health symptoms

There was a notably high prevalence of mental health symptoms reported in this population (64% overall), similar to a previous study conducted in Johannesburg and noted to be much higher than elsewhere in the world.⁵⁸ Although the findings were not statistically significant, those with mental health symptoms had a higher odds and higher prevalence of ESD than those without symptoms. A challenge with the interpretation of this variable and its association with ESD is the fact that mental health symptoms were assessed in the present, and not at the time of sexual debut. Longitudinal data is required to determine if mental health symptoms are a predictor rather than an outcome of early sexual debut.³⁶ Literature is varied on the association between mental health symptoms and sexual debut as it appears to be influenced by social norms and contextual factors,^{36,69,70} although there is literature that indicates that female adolescents who initiate sex early may be more likely to experience depression.^{69,70} There is also some literature to suggest that young female adolescents with poor psychological well-being may be more likely to experience ESD.^{34,71} These findings are in keeping with the results of this study.

4.2.2 Interpersonal factors

4.2.2.1 Primary childhood caregiver

An unexpected finding of this study was that youth who had no male caregiver before 15 years of age had a significantly lower odds of ESD compared to youth who had male caregivers (either a father, or another male). This contrasts literature which has suggested that adolescents with no father or neither parent in the household are at greater risk of ESD.^{22,39,41,42} Although not significant, youth raised by grandmothers or other female caregivers had a lower odds of ESD than those raised by their mothers. This also contrasts prior literature from the African region which has found living with biological parents, rather than other relatives or siblings to be protective against ESD.²⁵

In this study, only 41% of youth reported their fathers to be their primary male caregiver, with 21% reporting no male caregiver. Mothers were the primary female caregiver in 63% of youth in the study. This is in keeping with national data which indicates that only 36% of South African children reside with their biological fathers, and that 29% have no male caregiver.⁴⁹ In Johannesburg, 36% of adolescents report being raised by relatives other than their biological parents.⁴³

A possible explanation for the increased odds of ESD among youth raised by a father or other male caregiver could be the influence of household and domestic violence, which was not explored in this study.^{43,45,72} In a similar study conducted among adolescents in Johannesburg, female adolescents living with both biological parents were more likely to have experienced violence at home than those living in other family structures, and those who had been victims of violence at home were more likely to have had sex.⁴³ In Johannesburg, high exposure to violence in the home, including sexual abuse, witnessing intimate partner and domestic violence and experiencing emotional abuse and neglect have been reported, particularly among female adolescents.⁷³

Another explanation for the difference in findings in this study that was also not fully explored, may be, as reported by Marteleto et. al., that the influence of family and parents lies not just in the absence of a parent, but in the changes to this structure over time.⁷⁴ This is particularly relevant in the South African context, where up to 41% of adolescents experience instability in family structure, and where there are multiple influences on parent or family structure.⁷⁴ Marteleto et. al. found that among female adolescents in Cape Town, maternal and paternal transitions in parent-child co-residence increased the odds of sexual initiation.⁷⁴ Goldberg also found that adolescent sexual debut may be related to the number of caregiver changes, with initiation of sex more likely to occur in a short time period after the caregiver change.²⁴

It has also been noted that the effect of orphan status and family structure on sexual debut may be more indirect than that of parent-child interactions, relationships and support.⁴³ These were not explored in this study. A number of studies have reported good parent communication and concern for the adolescent as being protective of ESD and sexual debut in adolescents,^{22,25,66,75} with family dysfunction¹⁹ and lack of parental supervision^{19,76} being associated with earlier sexual debut. A South African study noted higher levels of parent-adolescent communication in female headed households of Black Africans compared to male headed households,⁷⁷ a factor which requires further study in light of the finding of the lower odds of ESD among youth with no male caregiver in this study.

4.2.2.2 Peer support

The perceived level of peer support was not found to be associated with ESD in this study. Whilst there is a lack of literature on this, one study conducted across several African countries also failed to find an association.³⁴ It appears that the influence of peers lies rather in the social norm setting of sexual debut and behaviour in adolescents, with adolescents who perceive their friends to be sexually active, or to have a younger age of acceptability for sexual debut being more likely to experience sexual debut.^{25,31,78} These factors were not explored through this study and require further research.

4.2.2.3 Economic factors

In this study, household food security was assessed as a proxy measure of socio-economic status. It was found that adolescents having a stable source of household food were over two times as likely to have experienced ESD as those who did not have a stable source of food in the household. This contrasts with the generally established hypothesis that adolescents from poorer households have an increased risk for ESD, having lower educational and career aspirations, fewer opportunities as well as lower parental supervision and less exposure to

preventative interventions that aim to delay sexual debut.²⁶ Female adolescents in particular may experience ESD as a result of transactional sex, with the provision of a material or financial gift in exchange for sex.⁷⁹ Studies from Sub-Saharan Africa as well as developed countries have supported this association in females, finding that females from wealthier households or higher socio economic status were less likely to experience ESD, transition to sexual debut or have a higher age of sexual debut than those from poorer households, however this association has not been consistently found to be significant in males.^{33,39,40,66,80} Whilst other studies have not supported this finding,^{22,31,42,80,81} this study found an increased risk of ESD among participants with a stable food source. It is possible that the measure used in this study was not reliable in measuring socio-economic status, or that measurement of current food security did not relate to food security at the time of sexual debut. There may also be complexities to the association that have not been fully measured in this study. One study across European countries has suggested that the association may be more complex than just the level of socio-economic status, finding that for both males and females, those with a perceived socio-economic status lower than average had an increased odds of ESD.³¹

4.2.3 Community factors

4.2.3.1 Perception of community safety

Studies have reported the important role that both the physical and social environments play in health⁶¹ and have highlighted the need for evaluations on adolescent sexual risk behaviour to go beyond just individual factors, but also to examine societal and community factors which influence adolescent behaviour.^{32,45,61} In this study, almost half of the adolescents perceived their communities to be unsafe or very unsafe, which is in keeping with the high levels of violence reported in the province, where 93% of adolescents have been exposed to community violence.⁸² Those who perceived their communities to be unsafe or very unsafe had a higher

odds of ESD than those who perceived their communities to be safe, although this result was not statistically significant. This finding supports findings from other local studies, one of which found that being a victim of violence directly increased the risk of sexual debut in adolescents,⁴⁵ and another which noted the influence of neighbourhood quality (safety and cohesion) on youth sexual risk behaviour through its association with positive parenting.⁴⁷

4.3 Research Limitations

The findings of this study should be interpreted with an understanding of its limitations. Firstly, as this study was not nationally representative, the findings are not generalisable beyond the context of Johannesburg, and caution should be exercised in making programmatic decisions for other contexts based on these findings.

One of the major limitations was the insufficient sample size in each of the sex categories to allow for a stratified analysis and a final model for each sex. This limits the value of the findings, as there may be differences in the contribution of factors to ESD between males and females which were not able to be explored. It has been noted in prior literature that the gender differences with regards to a number of predictors of sexual debut requires further research.^{39,43}

As the study relied on self-report, some of the variables measured in the study may be less reliable than others. The perception of community safety, peer support score and evaluation of mental health symptoms have been noted to be subjective. The Cronbach's alpha scores for the PTSD measure indicated a high internal reliability, however the scores for the Depression (also a component of the mental health variable) and Peer support scales appeared to be less reliable and therefore should be interpreted with some caution.

Finally, as the study is a cross-sectional study, the temporal sequence of events and causal pathways were not able to be determined. Some of the variables measured reflect factors in

their current state, rather than at the time of sexual debut, and as these may have changed over time (e.g. community factors in a young person that has moved) there may be bias introduced. Results relating to these variables should also be interpreted with caution.

4.4 Research Strengths

One of the major strengths of this study is the unique context in which it was undertaken. This gives a perspective and insight into a local population of vulnerable youth, living in an area with high rates of poverty, overcrowding, crime and violence. The RDS methodology applied allows the inclusion of vulnerable youth in the research and avoids the exclusion of youth who are not in stable households or in school, a known limitation of school-based studies. The use of Audio Computer-Assisted Self-Interview (ACASI) technology allowed for participants to answer sensitive questions on their own, limiting potential bias documented in this population. In addition, the inclusion of variables such as mental health symptoms, wantedness of first sex, community safety and peer support which are not routinely collected in traditional demographic health and similar national surveys adds an additional dimension to the research.

Chapter Five: Conclusion and Recommendations

5.1 Research Conclusion

The results of this study confirm the prevalence of ESD among adolescents and youth in Johannesburg at around 15%, with those aged 15 – 19 years, of male sex and of a race other than Black African having a greater odds of having experienced ESD. Although there was no significant association, the study findings are suggestive that enrolment in school continues to have a protective benefit on ESD. Whilst not found to be associated with ESD, the prevalence of mental health symptoms in this population is noted to be particularly high. Findings from this study indicate that having no primary male caregiver was protective of ESD, highlighting that adolescents from stable, two-parent families may not necessarily be at least risk and that there may be caregiver related factors beyond family structure which are relevant. The study found that those with a secure source of household food had an increased odds of experiencing ESD compared to those with household food insecurity, a finding that should be interpreted with caution and warrants further investigation. The wantedness of first sex, the primary female caregiver before 15 years of age, the perception of community safety and peer support were not found to be significantly associated with ESD in this study.

5.2 Research Recommendations

The prevalence of ESD among youth in Johannesburg requires it to remain a priority for further research as well as ongoing intervention. The notably higher prevalence of ESD seen in 15 – 19 year olds compared to 20 – 24 year olds speaks to the need for SRH interventions targeted at younger adolescents

The significant difference noted in the prevalence of ESD between males and females requires further research within the South African context to better understand these gender differences, including the circumstances surrounding first sex and the age of the partner at the time of first sex. This will improve the ability to ensure interventions are tailored appropriately to each gender. Whilst much focus has been placed on AGYW, it is essential that male adolescents are not left behind in SRH policy and programming. The Adolescent and Youth Health Policy should consider more gender balanced interventions, particularly targeted at adolescent boys and young men and the She Conquers campaign should be expanded to provide specific interventions tailored for adolescent boys and young men.

Further research is required to better understand the significant association found between race and ESD in this study. In particular, the inclusion of additional variables which consider other possible social or contextual confounders would be recommended.

Keeping adolescent girls in school has been a focus of national campaigns, and is likely to remain an area of intervention given the broad range of benefits that staying in school offers young people. The results of this study would support this recommendation, although the evidence would be strengthened through a larger sample size and a sex stratified analysis. This would further the understanding of whether the protective effect of education and employment in the South African context extends to males as well as females. This would inform the implementation of the Integrated School Health Policy as well as programming for school retention for both males and females.

Whilst this study did not find the wantedness of first sex to be significantly associated with ESD, the findings do reiterate the need for sexual health programmes to address SRH rights, sexual consent and the prevention of sexual coercion, as well as strengthening the implementation of legislation which protects young people from sexual abuse.

The high prevalence of mental health symptoms in this population is alarming and requires urgent evaluation and intervention. Further research is required to fully explore the factors contributing to the high prevalence of mental health symptoms in this population and further longitudinal research is required to explore in more detail the effect of mental health symptoms in young adolescents and the role it may play in ESD and other risk behaviours in the South African context.

Adolescent SRH research and interventions must extend beyond the individual, personal level factors and consider the social and contextual factors within which adolescents live and socialise. The role of the primary caregiver and family structure in ESD has been highlighted but requires further evaluation beyond the traditional measurements to account for the unique and complex factors that are at play. The contribution of factors relating to parenting, characteristics of parents and adolescent-parent relationships as well as the role of other caregivers in ESD warrants further investigation, especially given the findings of an increased odds of ESD among youth with male caregivers. Exploring caregiver change over time and around the time of sexual debut in future research would also provide a richer understanding of the role of caregivers in ESD.

The influence of peers remains under-researched and it is recommended that future research and interventions on ESD as well as SRH, should focus on peer and societal norms and acceptability of sexual behaviour among adolescents and their peers, rather than the level of support offered by peers alone.

Further research is required to fully understand and explain the associations between socio-economic status and ESD in the South African context. Longitudinal data would be more beneficial to better explore the temporal relationship between socio-economic factors and ESD.

Given the paucity of South African literature on the topic, and the fact that interactions between social and physical environments and health appear to be very context specific,⁶¹ further research into the specific community factors which relate to adolescent sexual health and ESD, and how they do so within the context of South Africa is required. It is also recommended that adolescent sexual health risk reduction interventions ensure they are targeted and tailored to local contexts. Interventions should not ignore the influence that community factors such as violence, which are so pervasive in the South African context, may have.

Lastly, multi-level interventions that span personal, interpersonal, economic and community level factors are required to address ESD as well as other adolescent SRH issues. Nationally representative, longitudinal adolescent and youth data which can provide further information on the role and interplay of these factors is required to provide guidance to inform interventions relevant to the South African context.

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Appendices

Appendix 1: Plagiarism declaration report



PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Catherine E. Martin (Student number: 517522) am a student registered for the degree of MSc Infectious Disease Epidemiology in the academic year 2020.

I hereby declare the following:

- ❖ I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- ❖ I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- ❖ I have followed the required conventions in referencing the thoughts and ideas of others.
- ❖ I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: 

Date: 08/08/2020

August 2020

Appendix 2: Data use permission

Wits Reproductive Health and
HIV Institute
22 Esselen Street
Hillbrow
26th September 2018

Permission to use data from the Wits Reproductive Health and HIV Institute (Wits RHI)

This letter serves to confirm that permission has been granted for Catherine Martin (student number 517522) to analyze the data from Wits RHI's LIFT study (Wits Human Research Ethics Committee, number M170139) for the purposes of a postgraduate Master's project titled *"Early sexual debut: prevalence and predictors amongst youth aged 15 – 24 years in the inner city of Johannesburg, South Africa in 2017/2018"* for the degree MSc in Infectious Disease Epidemiology. Access to the full de-identified dataset is granted to the student, and to the student's supervisors.

Yours sincerely,



Dr. Sinead Delany-Moretlwe
Director: Research
Wits Reproductive Health and HIV Institute

sdelany@wrhi.ac.za
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Johannesburg, South Africa | www.wrhi.ac.za

Wits RHI is an Institute of the University of the Witwatersrand and a WHO Collaborating Centre

August 2020

Appendix 3: HREC approval certificate



R14/49 Dr Catherine Martin

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M190109

NAME: Dr Catherine Martin
(Principal Investigator)
DEPARTMENT: Faculty of Health Sciences
School of Public Health
Wits Reproductive Health and HIV Institute

PROJECT TITLE: Predictors of early sexual debut amongst youth in the inner city of Johannesburg, South Africa

DATE CONSIDERED: 25/01/2019

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Latifat Ibisomi

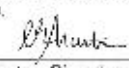
APPROVED BY: 
Doctor CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 25/01/2019

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Philip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **January** and will therefore be due in the month of **January** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).


Principal Investigator Signature

Date 25 February 2019

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 4: Turnitin summary report

517522:20200118_CatherineMartinReport_Final_Draft.docx

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